The Great Recession and Import Protection

The Role of Temporary Trade Barriers

THE WORLD BANK

edited by **Chad P. Bown**

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The sculpture on the cover of this book is *Bread Line* by George Segal, Franklin Delano Roosevelt Memorial, Washington, DC

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In 2004, Bernard Hoekman took me up on the idea of obtaining funding for the creation of the Global Antidumping Database. Without him, even the mere collection and public dissemination of the data would not have occurred. His support for the continued provision of this global public good has been unwavering.

Over the next seven years, many research assistants contributed tirelessly to the evolution and expansion of what has eventually turned into the World Bank's *Temporary Trade Barriers Database*. This began with the leadership of David Cheong in 2004, and, during the height of trade policy uncertainty of 2009 into 2010, it included the relentless data gathering and data improvement efforts of Milla Cieszkowsky, Yubing Cui, Paul Deng, Laura Gutowski, Sharon Kim and Aimi Yamamura.

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Chad P. Bown, Editor

1

Introduction

CHAD P. BOWN[1]

The Great Recession of 2008–9 caused a negative shock to the global economy that is comparable with the Great Depression of the 1930s. The major advanced nations experienced painful economic contraction, severe dislocation to industrial production and sharp spikes in unemployment. Trade flows collapsed across all the regions of the world. Even the high-achieving emerging markets, seemingly isolated from the underlying financial-system mishaps that triggered the recessions in advanced economies, suffered a severe slowdown in their growth trajectories. The simultaneity and depth of this recession were new, and with them came an uncertainty that was especially endemic to the early periods of the crisis. There was uncertainty regarding the nadir to which global economic activity would ultimately plunge. There was uncertainty regarding the policies that governments were committed to implementing. There was particularly acute uncertainty regarding trade policy. Could the modern trading system withstand such a devastating economic blow? Specifically, would governments live up to their early-crisis pledge to refrain from protectionism?

In many ways, the 21st century world economy is very different from the 1930s. The possibility of a simultaneous and widespread economic calamity is greater given that trade volumes are larger, technology is more advanced, information flows more quickly, trade costs are lower, supply chains are extended across more countries, and nations are more economically and financially integrated with one another. And yet, cooperative international institutions—such as the World Trade Organization (WTO), World Bank, International Monetary Fund (IMF) and the Group of Twenty (G20)—have arisen since the 1930s to establish rules, norms and means of communicating and coordinating national policy decisions, especially during times of crisis, to help prevent calamity.

Ex post, one fundamental distinction between the Great Depression and the Great Recession is that the 2008–9 global economic contraction did *not* result in a massive wave of new protectionism. International trade was one of the

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casualties of the 1930s as countries responded to recession by implementing policies designed either to isolate themselves from the global economy or to discriminate among potential trading partners as a form of retaliation (Irwin 2011). The 1930s policies contributed to the immediate disruption of international commerce and had the effect of impeding resumption of multilateral trade when underlying national economic conditions ultimately improved. In the midst of the 2008–9 global economic crisis, international trade flows also suffered a precipitous collapse. Nevertheless, international commerce quickly resumed on the path towards recovery. It is now unequivocal that the 2008–9 Great Recession did not lead to a set of catastrophic protectionist policies on anywhere near the scale of the 1930s Great Depression.

Comprehending *why* the 2008–9 economic crisis failed to trigger a downward spiral of 'beggar-thy-neighbour' policies is fundamental to understanding the resilience of the global economy and the 21st century multilateral trading system. The lack of a more potent protectionist response is still a puzzle, and the potential causes of the system's resilience will be investigated by researchers over the near and long term. Was it that the WTO architecture was impeccably constructed for the handling of the crisis? Or was it completely unrelated to WTO rules, and was the lack of a major protectionist response the result of a new political–economic order based on global supply chains? That is, because firms are exporters *and* importers, and lobbying for protection no longer happens, has the multilateral, rules-based WTO system become redundant? Was it the proliferation of preferential trade agreements (PTAs) that dampened the incentive to impose new trade barriers that would have ultimately only favoured PTA partners through trade diversion and not domestic industry? Was the policy discipline the result of developed economies' decisions to use fiscal stimulus as opposed to alternative (and arguably less efficient) trade policy to subsidise domestic industry and to address falling aggregate demand and political pressure? Or was it that the 'lessons learned' from earlier eras of economic calamity, including the Great Depression, created a stalwart resolve of the world's leaders this time around?

What is clear is that an ultimate understanding of how the multilateral trading system survived the crisis requires an accurate assessment of how the import protection landscape did change alongside the events of 2008–9. While there was not a large-scale resort to protectionism, the facts simply do not support the idea that countries did not adjust their trade policies during this period. Many countries were quite active with their trade policy during the crisis, and an understanding of the details of this activity is required in order to generate insight into how the trading system withstood the threat of collapse.

Policies like anti-dumping, safeguards and countervailing duties (CVDs)—what this volume refers to collectively as *temporary trade barriers* (TTBs)—played an important and perhaps even critical role during the 2008–9 crisis. Governments are authorised, under the rules of the WTO system, to have access in place to such policies and to implement new trade restrictions that

temporarily limit imports if certain economic conditions are met. During the crisis, the media focused tremendous public attention on certain high profile TTB cases, such as European Union (EU) treatment of imported footwear from China, the US safeguard on imports of tyres from China, and China's retaliatory use of anti-dumping—in one instance on EU exports of steel fasteners and in another on US exports of autos and chicken parts. Nevertheless, TTBs arguably made substantial contributions to the *stability* of the trading system during 2008–9, although the channels through which this took place are complex. These channels include not only the ways in which TTBs were used, but how they were not used, and how their availability made it possible for governments to *avoid* using other, potentially more draconian protectionist measures. This volume offers a collection of research that begins to fill a major information gap by providing empirical details of many of the important changes taking place under these trade policies during 2008–9.

This volume focuses on 11 of the largest economies in the world.[2] By 2007, these 11 economies—including 4 developed and 7 emerging—collectively accounted for nearly three-quarters of world GDP and nearly two-thirds of world merchandise imports. Each of these economies is a member of the G20 and the WTO, and is thus subject to multilateral disciplines on TTB use. They each had substantial pre-crisis experience with TTB use, and collectively they account for 76% of total TTB investigations initiated by all WTO members between 1995 and 2007. The approach of each chapter in the volume is to establish facts on how one economy used TTBs in 2008–9 given the context of its historical use, how these TTBs relate to its other trade policies, and how the economy was affected by prevailing conditions during the crisis. Collectively, these facts improve our understanding of how the WTO system was able to withstand the crisis intact, and the facts contribute an insight into what policy and institutional challenges remained as a legacy of the crisis.

The rest of this introductory chapter proceeds as follows. Next, I provide a more detailed timeline and summary of events in the Great Recession, including its macroeconomic and trade impacts, the uncertainty over trade policy in 2008–9, and the response to calls for additional monitoring of trade policy. In particular, Section 1 highlights the real time monitoring efforts of the World Bank's Global Antidumping Database and subsequent *Temporary Trade Barriers Database*. These contributions have addressed some of the immediate concern about the unknown scale of protectionism taking place in 2008–9, but they have also revealed a lack of informational preparedness that has ultimately spurred this volume's research. In Section 2, I introduce a relatively simple methodological framework to improve intertemporal assessment of the scope of TTB use, an approach that many of the volume's chapters adopt or modify to construct better measures of the 'stock' and 'flow' of imported

[2]In particular, and in chapter order, these 11 economies are the USA, the EU, Canada, Korea, China, India, Brazil, Argentina, Mexico, Turkey and South Africa.

products that countries subject to TTBs. (A more technical description of the methodology is provided in the Appendix (Section 6), along with details of the many common data sources used across the subsequent chapters.)

What are the empirical results? Section 3 provides a simple application of this methodology and finds that, during the crisis, these economies collectively increased by 25% the imported products that they subjected to TTB import protection. Nevertheless, it turns out this collective expansion in TTB coverage during 2008–9 was dominated by *emerging* economies. Developing countries used TTBs to cover 39% more imported products by the end of 2009 compared with 2007, whereas recession-ravaged high-income economies surprisingly increased their coverage by only 4%. However, it is also clear from the data that understanding these crisis changes demands recognition of longer-term trends. Thus, given these high-level results, Section 4 turns to a number of common questions that the subsequent chapters investigate, on an economy-by-economy basis, in more detail. This section provides a short preview of how the volume's authors subsequently address these questions by placing the trade policy changes of 2008–9 into historical context. Section 5 then concludes.

1 A WALK THROUGH 2008–10

1.1 The Great Recession, Trade Collapse and Protectionist Uncertainty

The 2008–9 Great Recession resulted in a massive global economic contraction. The IMF has estimated that world output contracted by 0.2% in 2009, led by a developed economy decline of 3.2% and relatively anaemic emerging and developing economy growth of only 2.5% (IMF 2010).

Figure 1.1 illustrates the abrupt and simultaneous decline in economic activity during the Great Recession for the 11 economies studied in this volume. In the quarterly data, panel (a) illustrates that real US GDP began to decline in the first quarter (Q1) of 2008.[3] After a brief respite in Q2, US GDP fell sharply in Q3 (−4.0% at an annualised rate) and Q4 (−6.8%) and continued its decline into 2009 Q1 and Q2. Quarterly GDP for the EU and Canada followed a similar trend—each also experienced steady declines until the EU (respectively, Canada) shrank by a *stunning* 9.4% (respectively, 7.0%) at an annualised rate in 2009 Q1. Each of these three major developed economies did not achieve positive quarterly growth again until 2009 Q3.

Panels (b) and (c) of Figure 1.1 indicate similar trends on GDP growth for other major economies. Korea, Turkey, South Africa, Argentina, Brazil and Mexico had all been experiencing positive growth until 2008, when economic conditions sharply deteriorated and each of them witnessed at least one quar-

[3]The National Bureau of Economic Research's official Business Cycle Dating Committee marked the monthly beginning of the US recession as December 2007 and its conclusion as June 2009 (NBER 2010). In the full quarterly data, US GDP did not fall until 2008 Q1.

ter of economic contraction. The exceptions in Figure 1.1 are China and India, presented in panel (d), whose economies did not contract during 2008–9. Nevertheless, even China's and India's real GDP experienced sharp slowdowns to their growth trajectories in the second half of 2008 and the first half of 2009, coinciding with the timing of the economic contractions experienced in other economies.

In comparison, international trade flows collapsed shortly *after* the decline in real GDP growth in the major developed economies in early 2008. Figure 1.2 presents indices of nominal, seasonally adjusted merchandise imports by country on a quarterly basis for 2007–10. European Union imports began to decline sharply in 2008 Q3 and bottomed out in 2009 Q1. US and Canadian imports began to fall in 2008 Q4 and did not reach their lowest point until 2009 Q2. The sharp contraction in international trade flows beginning in 2008 Q4 is apparent for each of the other economies illustrated in Figure 1.2 as well. This includes China and India, countries that did not experience economic contraction. The peak-to-trough *decline* in nominal imports for these 11 economies during this period ranged from a low of 30% for the EU to a high of 49% for South Africa, with all of the others in between.[4]

The economic uncertainty beginning in late 2008 was palpable. Was this another Great Depression? How deep would the economic contraction get? Why were international trade flows falling so much faster than even GDP, which itself was contracting sharply? How much of the trade collapse was due to protectionism? Would a continued recession spark additional demands by injured industries and unemployed workers for isolationist trade policies? While it was difficult even for economic analysts to address these questions at the time given the delay in data reporting and the lack of comprehensive and up-to-date information, public attention quickly picked up on these themes.

Figure 1.3 illustrates some of this uncertainty and the associated public interest by plotting a Google Trends time series of data for two Internet searches. Internet searches for the term 'Great Depression' spiked sharply in 2008 Q4 (October), a timing that corresponds with the deepening contraction illustrated by the macroeconomic indicators of Figure 1.1.[5] In September,

[4]Freund (2009a,b) provides a thorough comparison of the 2008–9 trade collapse with other historical downturns. It is important to highlight that the indices in Figure 1.2 are presented in nominal terms by design. The collapse in *real* imports during this period was much smaller than the collapse in nominal imports, due to the sharp drop in import prices that accompanied the fall in volumes. (The sharp run-up in oil and other commodity prices reversed itself in the middle of 2008, the price decline moderating the impact on real imports.) Nevertheless, because this price decline was potentially not immediately understood by all market participants, the nominal figures are illustrated here.

[5]Figure 1.3 does not seasonally adjust the search terms. For example, it might be the case that Internet searches for 'Great Depression' tend to increase during the spring and fall, when students are writing term papers. For a discussion of uses of Google Trends in research, see Choi and Varian (2009).

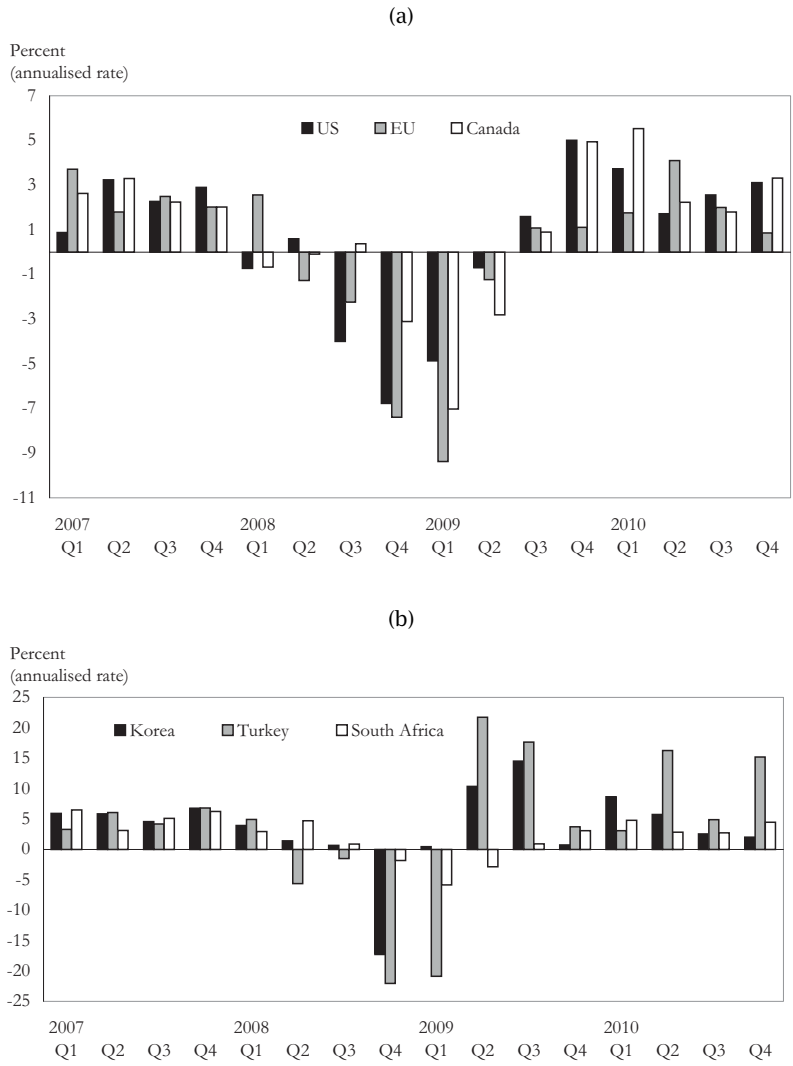
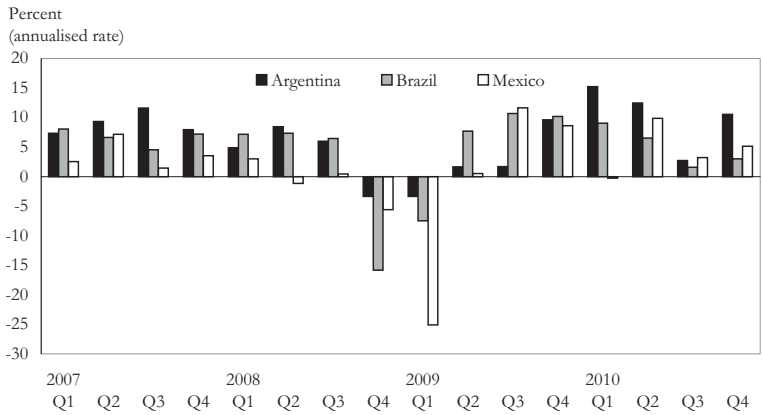


Figure 1.1: *The Great Recession: real GDP growth by quarter, 2007–10.*

the investment bank Lehman Brothers had filed for bankruptcy, setting off US government support for other major financial institutions that ultimately led to the US establishment of the Troubled Asset Relief Program in October.

The first G20 leaders' summit took place in Washington in November 2008, and world leaders announced the need for major policy coordination. One particularly important and oft-cited announcement was their call for self-

(c)



(d)

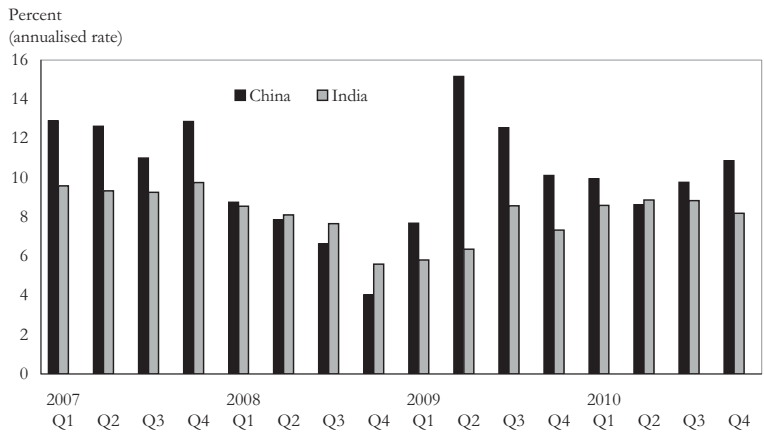


Figure 1.1: *Continued.*

Source: OECD (2011) for all countries except China and India, for which the data are World Bank estimates. Each figure presents the percentage change in quarterly real GDP growth at an annualised rate. Brazil's figures are estimates.

restraint on protectionist behaviour.[6] Nevertheless, the scope of new trade barriers that countries may have *already* imposed was, for data availability

[6]The G20 leaders' summit on 15 November 2008 included the following in its declaration (emphasis added): 'We underscore the critical importance of *rejecting protectionism* and not turning inwards in times of financial uncertainty. In this regard, within the next 12 months, we will refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing WTO-inconsistent measures to stimulate exports'.

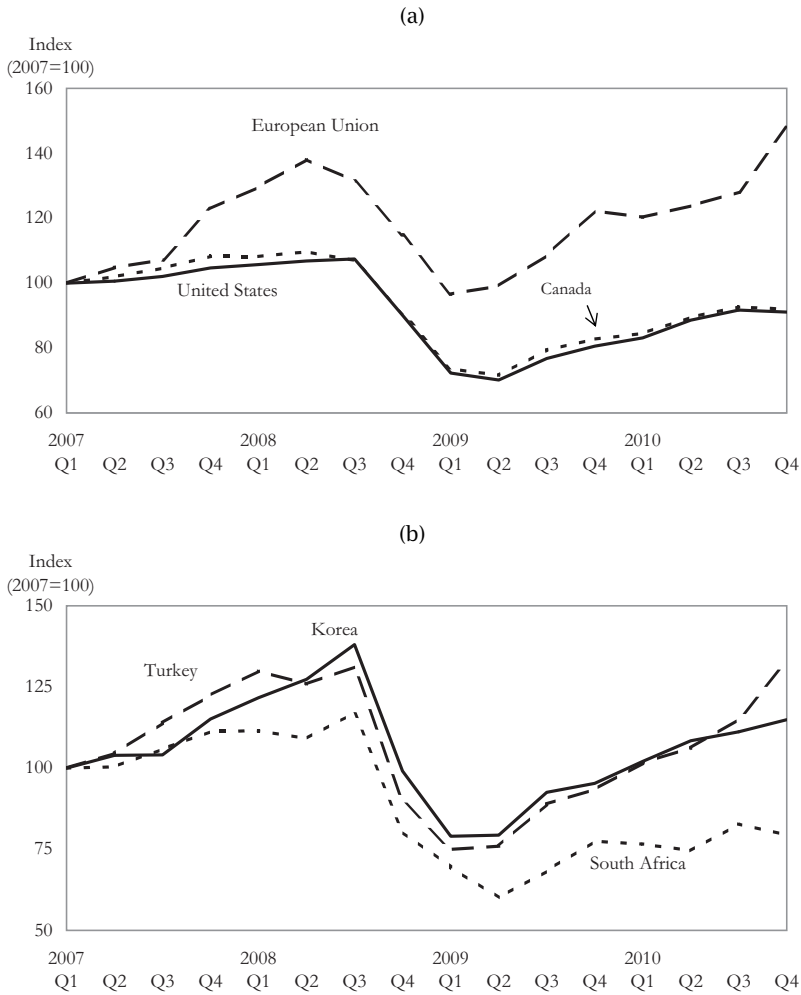


Figure 1.2: *The great trade collapse and recovery: merchandise imports by quarter, 2007–10.*

reasons, still largely unknown. The trade collapse that had begun in 2008 Q3 (see again Figure 1.2) was still in the early stages of being detected by the government statistical agencies charged with collecting and disseminating monthly trade data. The extent to which previously undetected protectionism may have somehow contributed to the deepening and ongoing trade collapse was unclear, but the idea that new trade barriers had been contributors was likely under suspicion. Furthermore, a second and increasing concern was that the deepening contraction to the global macroeconomy might stoke

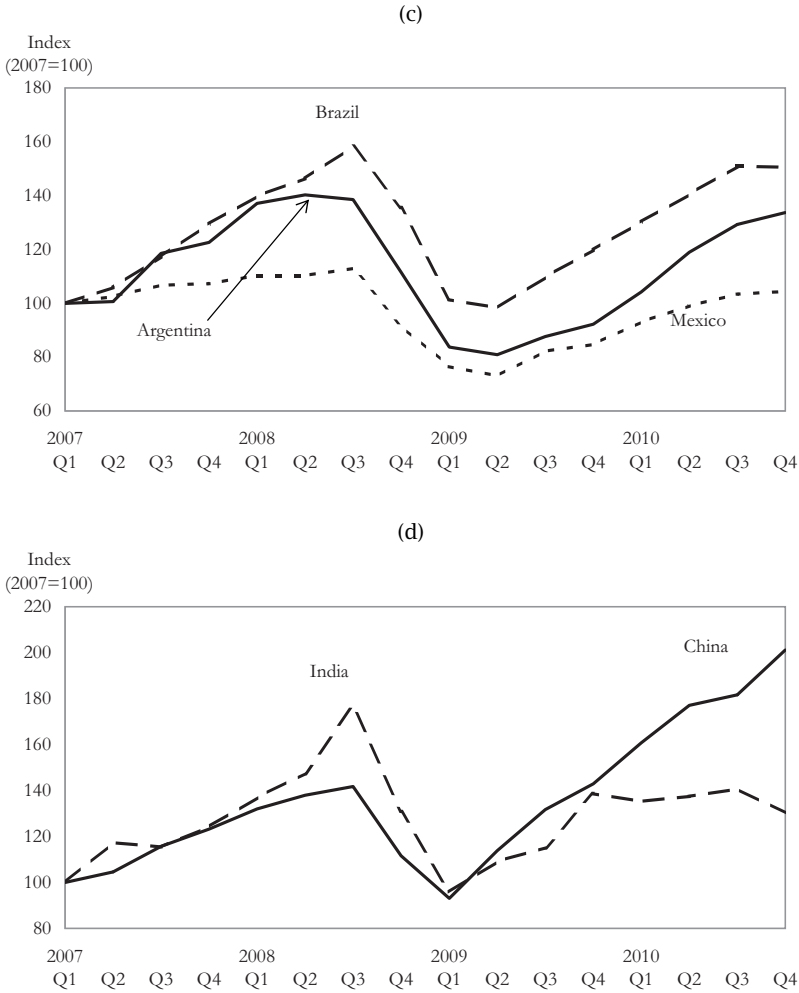


Figure 1.2: *Continued.*

Source: author's calculations based on data provided by World Bank's Trade Watch (Freund and Ngeau 2011). Each figure presents an index of seasonally adjusted, nominal merchandise trade flows.

nationalist sentiment and populist demands that governments impose *future* trade barriers in an attempt to isolate national economies from the events of the global economy.

Figure 1.3 documents this uncertainty over trade policy and the increased public interest during 2008–9 by plotting the Google Trends time series of data for an Internet search of the term 'Protectionism'. This search term tracked the increased search for 'Great Depression', with an accompanying

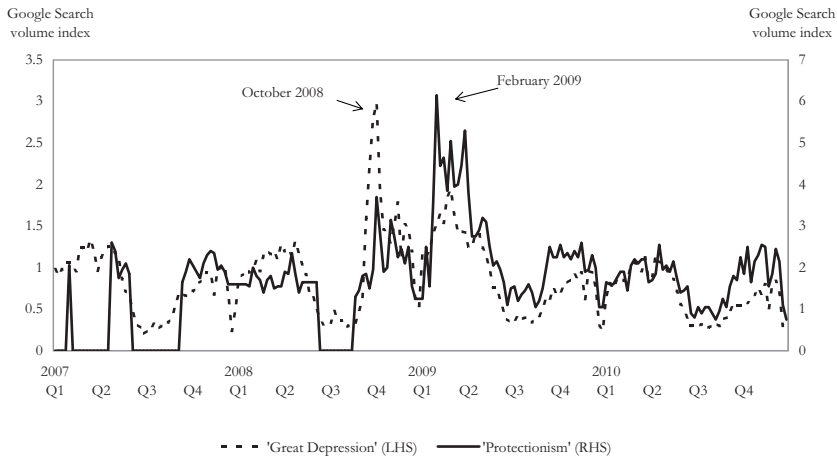


Figure 1.3: *Increased public interest in the Great Depression and Protectionism during 2008–9.*

Source: author's calculations from Google Trends based on Internet searches for 'Great Depression' and 'Protectionism'. Data reported weekly and each index averages a value of 1 for 2004–10.

uptick in November 2008, which was also likely to be due to public curiosity drawn by the attention of the Washington G20 summit. The public interest in 'Protectionism' continued to increase until it reached a peak in 2009 Q1 (February).

During the period of November 2008 to February 2009, what *facts* did the public and policymakers know about recently occurring changes to national trade policies? The answer is 'not much'. While there were anecdotal stories about events taking place, the next section describes how it was not until March 2009 that data *began* to emerge and facts began to be learned about how national governments had been adjusting their trade policies in 2008. Hence, March 2009 was the turning point at which sufficient information *began* to be revealed so that some of this public uncertainty on the scope and impact of any 'Protectionism' in 2008 could begin to be resolved.

1.2 The Trade Collapse and Great Recession Spur New Trade Policy Monitoring Initiatives

The spectre of potential protectionism and the uncertainty over how the major economies were utilising their trade policy inspired a number of monitoring initiatives in 2009 that were designed to improve transparency. Table 1.1 provides a timeline of three major initiatives and how their activities took shape over the course of the year. In January 2009, the WTO published a

Table 1.1: *Timeline of major new trade policy monitoring initiatives in 2009.*

Organisation	Date	Information and data provided
WTO Secretariat: report to the TPRB from director-general on the financial and economic crisis and trade-related developments	23 January	Identification of problem of potential of new crisis-induced trade barriers; no provision of any detailed lists of new trade or trade-related measures
World Bank: Global Antidumping Database	5 March	Provides public list *and* detailed data on anti-dumping use through December 2008
WTO Secretariat: report to the TPRB from the director-general on the financial and economic crisis and trade-related developments	20 April	Provides public list of trade and trade-related measures imposed from September 2008 to March 2009
World Bank: Global Antidumping Database	11 May	Provides public list *and* detailed data on anti-dumping, global safeguards, China-specific safeguards, and CVD use through March 2009
Global Trade Alert	8 June	Launch begins its *ongoing* and continuous provision of detailed and real-time information on state measures likely to affect foreign trading partners

report from the Trade Policy Review Body (TPRB) identifying the problem of new crisis-induced protectionist barriers. Nevertheless, the TPRB did not yet make public any new information on actual trade barriers that members had imposed.

In March 2009, a World Bank-sponsored initiative called the Global Antidumping Database provided its first crisis-era update. This database had published historical details of cross-country use of anti-dumping, CVDs and safeguard policies—with information dating back to the 1980s—and had been made freely available on the Internet since 2005.[7] The March 2009 release provided details on policy activity that had taken place through 2008 Q4, and it was accompanied by a brief monitoring report that examined simple

[7]Bown (2008) provides a first use of the Global Antidumping Database information to document the heterogeneous application of anti-dumping over time across developing countries. The database had been updated periodically since 2005, and the last complete update (prior to the crisis) was published in June 2007. In 2009–10, the Global Antidumping Database was folded into the World Bank's larger *Temporary Trade Barriers Database*, since it contains detailed policy data on other, increasingly used TTBs such as CVDs and safeguards in addition to anti-dumping. The *Temporary Trade Barriers Database* is the source of much of the detailed policy data used by the authors in the subsequent chapters to this volume.

Table 1.1: *Continued.*

Organisation	Date	Information and data provided
WTO Secretariat: report to the TPRB from the director-general on the financial and economic crisis and trade-related developments	15 July	Provides public list of trade and trade-related measures imposed from 1 March to 19 June 2009
World Bank: Global Antidumping Database	23 July	Provides public list *and* detailed data on anti-dumping, global safeguards, China-specific safeguards, and CVD use through June 2009
World Bank: Global Antidumping Database	21 October	Provides public list *and* detailed data on anti-dumping, global safeguards, China-specific safeguards, and CVD use through September 2009
WTO Secretariat: overview of developments in the international trading environment—annual report by the director-general	18 November	Provides public list of trade and trade-related measures imposed through October 2009

Source: reports to the WTO's Trade Policy Review Body (TPRB) were documents JOB(09)/2, WT/TPR/OV/W/1 and WT/TPR/OV/W/2 and the November annual report by the director-general was WT/TPR/OV/12. The monitoring reports for the Global Antidumping Database (now *Temporary Trade Barriers Database*) are all available online at http://econ.worldbank.org/ttbd/. Global Trade Alert's website is www.globaltradealert.org.

indicators on the newly collected policy data. It was this March 2009 release that provided the first public evidence on the relative increase in trade policy activity during 2008.[8] While this initial step was informative, it too was incomplete for a number of reasons that are addressed in more detail in the discussion below. However, and most importantly for transparency reasons, the data used in the analysis were made public immediately for other policy analysts to examine, verify and include in their own monitoring efforts. The World Bank continued to update this policy data publicly and promptly at the end of each of the nine quarters between 2008 Q4 and 2010 Q4. Public

[8]This monitoring report was published on the initial website of the Global Antidumping Database at www.brandeis.edu/~cbown/global_ad/monitoring/. The evidence from this report was also published in March 2009 as Bown (2009a) and was circulated most publicly as part of the information provided in Gamberoni and Newfarmer (2009a,b). Later in the crisis, the ongoing monitoring efforts were transferred to a new World Bank website for the *Temporary Trade Barriers Database*, http://econ.worldbank.org/ttbd/. The *Temporary Trade Barriers Database* website also provides examples of media dissemination beginning in March 2009 of the World Bank-sponsored monitoring through reporting featured in, among others, *Economist*, *Financial Times*, *Wall Street Journal*, *BusinessWeek*, *Reuters*, *Xinhua* and *VoxEU.org*.

monitoring reports that interpreted the newly arriving data were provided for those first six quarters from 2008 Q4 to 2010 Q1.

The other monitoring efforts also continued through 2009. In addition to the ongoing Global Antidumping Database monitoring reports and data releases, the WTO initiative came out with its first *list* in April of trade and trade-related measures that members had imposed between September 2008 and March 2009. The WTO followed up with additional, periodic lists in July and November. The third and final monitoring initiative—the Global Trade Alert (GTA)—was introduced through a public launch in June 2009. The GTA quickly became the most publicly visible and aggressive watchdog to report on trade policy changes during 2009–10.[9] While each of the initiatives provided useful information and served an important role during this period, the WTO and GTA efforts were somewhat limited by the fact that there existed no comparable historical (*ie* pre-crisis) data against which to evaluate the magnitude of the information on their lists. For comparative purposes, it was unclear whether the trade policy activity that these two initiatives identified was any larger or more frequent than what WTO members undertook during the 'normal' course of operation, *ie* even in the *absence* of a crisis.

1.3 New TTBs in 2008 Did Not Cause the 2008–9 Trade Collapse

While the collective monitoring efforts continued throughout the crisis, a first rough estimate of the *potential trade impact* and hence economic scale of the new, 2008-to-date protectionism was not published until July 2009. This first estimate in Bown (2009b) focused on the G20's new anti-dumping, global safeguard, China-specific safeguard and CVD activity for the five quarters between 2008 Q1 and 2009 Q1.[10] These estimates indicated that *at most* 0.45% of the major G20 economies' merchandise imports were being affected by newly imposed import restrictions under TTB policies. Hence, this evidence made clear for the first time that the massive, global trade collapse of 2008 Q4 to 2009 Q1 (see again Figure 1.2) had *not* been caused by new TTB activity during that particular time period.

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[9]Many interpreted the GTA approach as an attempt to 'name and shame' governments and prevent countries from imposing, in an undetected way, a trade policy to successfully pawn off its domestic economic woes as a negative externality on its trading partners. Nevertheless, the GTA was also subject to criticism during the crisis; see, for example, Rodrik (2009) and the Reuters interview with Richard Eglin, Director of the WTO's Trade Policies Review Division (Lynn 2009).

[10]The Bown (2009b) approach was to match product-level, six-digit Harmonized System import data on pre-crisis trade flows to the TTB-affected product codes. A full description of the data and approach to the July 2009 estimates was later published in Bown (2009c). Kee *et al* (2010) provide later evidence broadly confirming the relative size of the initial estimates from Bown (2009b,c) through a more rigorous approach that relies on trade elasticities and the Overall Trade Restrictiveness Index (OTRI) methodology.

It is worth noting one additional caveat before returning to an examination of the escalating use of TTBs in 2009. First, and as the WTO and GTA information revealed, governments made many *other* policy adjustments beyond TTBs during 2008–9 in ways that also may have affected trade flows. This includes governments subsidising industries directly (including through bailouts), intervening in currency markets to affect relative exchange rates, inserting local content requirements into stimulus packages, and even changing applied tariff rates— both upwards and downwards—in selected instances. Nevertheless, most of the measures that these initiatives have identified were also imposed in 2009 or beyond and thus could not have been responsible for the global trade collapse that began in 2008 Q4.

Thus, a focused examination of the data and information provided in the World Bank's *Temporary Trade Barriers Database*—which admittedly only reported data on anti-dumping, CVD and safeguard use—does not provide a comprehensive assessment of all trade-impacting policies in use during the crisis. Where possible, the chapters in this volume attempt to complement TTB data with other information so as to begin to address the more complete picture. That being said, this volume is still a first step in the research literature with a primary aim of establishing clear facts on the use and role of TTBs during 2008–9.

1.4 Tracking Protectionism and Lessons Learned from Monitoring TTBs through 2009–10

The World Bank's ongoing contribution to the monitoring of TTBs continued throughout 2009 and into 2010 even though it had become clear by July 2009 that new TTBs in 2008 had not caused the trade collapse.[11] In addition to that initial, first-order concern about the contributing causes to the 2008–9 collapse, the impact of *future* TTBs on a potential 'V-shaped' trade recovery was still an unknown. To what extent would the industries and workers devastated by the global economic contraction increasingly petition their governments for additional TTBs? Would their governments respond favourably to domestic political pressure and impose such barriers?

Figure 1.4(a) presents quarterly data on anti-dumping use during 2007–10 in a manner consistent with the reporting approach of earlier prominent research on the global proliferation of the policy (Prusa 2001; Zanardi 2004). Though the figure breaks down the information into a higher frequency (quarterly) than anti-dumping use has traditionally been reported, this method of listing the counts of new investigations was also how such policy activ-

[11] For a collection of early research (published in November 2009) assessing the suspected causes of the 2008–9 trade collapse, including the contraction of global demand and supply-side credit constraints, see Baldwin (2009).

ity would typically be reported semi-annually by the WTO.[12] In March 2009, the Global Antidumping Database initially adopted this approach of counting anti-dumping investigations (and newly imposed final measures) as the 'headline' summary statistic for its first monitoring report that accompanied the public release of the full data for 2008. For the 11 major economies illustrated here, the number of new anti-dumping initiations in 2008 had grown by 33% relative to 2007.[13] Furthermore, the second half of 2008 experienced 38% more anti-dumping investigations than the first half of 2008. The 2008 Q4 data alone saw a 65% increase in anti-dumping investigations relative to the same period in 2007, and a 69% increase relative to 2008 Q3.

However, when the 2009 Q1 information in the Global Antidumping Database arrived, it became clear that basing the headline summary statistic on anti-dumping alone and simply counting the number of new investigations might not provide an accurate assessment of the demands that industries and workers were making for new trade barriers.[14] In particular, newly available information increasingly suggested that countries were using *other* TTB instruments, many of which were extremely close substitutes for anti-dumping in terms of the desired effect of shielding domestic industries from what was perceived as injurious imports. Figure 1.4(b) illustrates the newly initiated *CVD* investigations over this full period, including a bunching of cases that would occur later in 2009 Q3. Similarly, Figure 1.4(c) documents the counts of newly initiated *global safeguard* investigations, including a spike in 2009 Q2. Finally, Figure 1.4(d) shows the *China-specific safeguard* investigations, including the highly publicised US investigation of tyres that was initiated in 2009 Q2 (April).

To explain this potential concern most clearly, let us focus on the case of India. Consider the problem that arises when examining its anti-dumping use in isolation and ignoring the other TTB policies. In 2009 Q1, India initiated 7 new anti-dumping investigations, a sharp decline in industry demand for new

[12] The WTO reported information on new anti-dumping activity typically twice per year, and thus with a substantial delay relative to when the activity had occurred, due to the fact that it was constrained to obtain information from member economies' self-reporting to the Committee on Antidumping. The Global Antidumping Database approach was to gather its information directly from official, national government sources from their Internet websites. As such, it was able to update its data publicly and to disseminate quarterly monitoring reports relatively quickly.

[13] These figures are slightly different from the monitoring report published in March 2009 (which found a 31% increase) because that report covered a wider sample of countries than those covered by this volume.

[14] For ease of discussion, this section focuses only on the data released covering newly initiated TTB investigations. In reality, the monitoring efforts in 2009–10 also tracked (and provided detailed data on) the imposition of final measures and even preliminary measures. The text here focuses on newly initiated investigations as its leading indicator of domestic economy demands for new import protection. The discussion below also focuses in substantial detail on important other indicators including, of course, imposed measures.

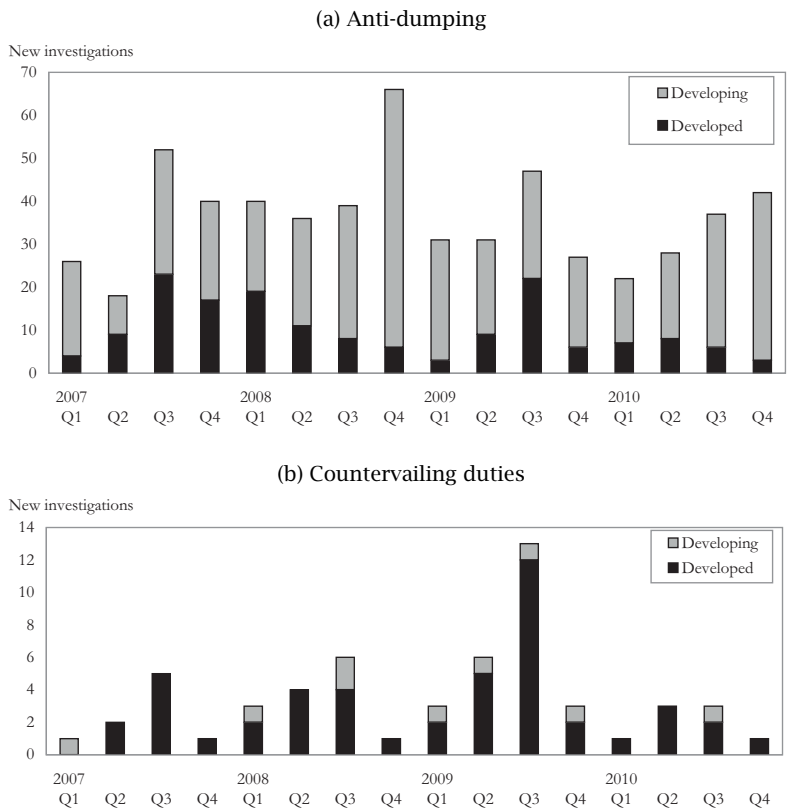
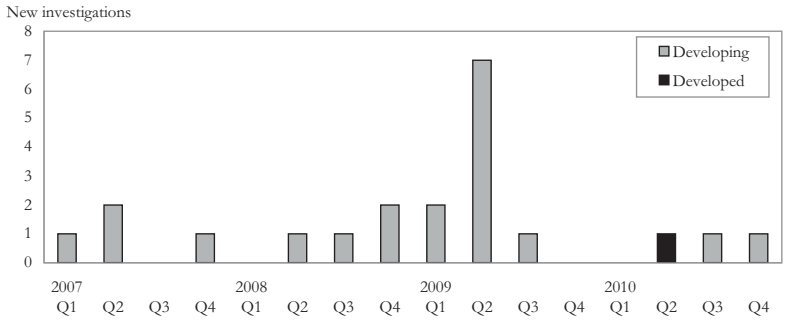


Figure 1.4: *Monitoring TTBs: initiations of new investigations by policy, by quarter, 2007–10.*

protection when compared with the 39 new anti-dumping investigations it had initiated in 2008 Q4. However, also in 2009 Q1, India initiated three different China-safeguard investigations, two different global safeguard investigations, and its first-ever CVD investigation. Furthermore, an examination of the prior period's Indian anti-dumping data (*ie* 39 new investigations, a major share of the aggregate spike for the 11 economies illustrated in Figure 1.4(a)) reveals that 29 of the 39 new investigations in 2008 Q4 were associated with only 3 products (cold-rolled flat stainless steel, hot-rolled steel and carbon black) that were imported from many foreign sources.[15] This example illustrates

[15]Put differently, because of the means of reporting the information inherent in Figure 1.4, the 2008 Q4 data presented in Figure 1.4 would have looked much different if India had initiated three global safeguard investigations (over cold-rolled flat stainless steel, hot-rolled steel and carbon black) instead of 29 anti-dumping investigations over those same products, even though the economic impacts might have been quite similar.

(c) Global safeguards



(d) China-specific safeguards

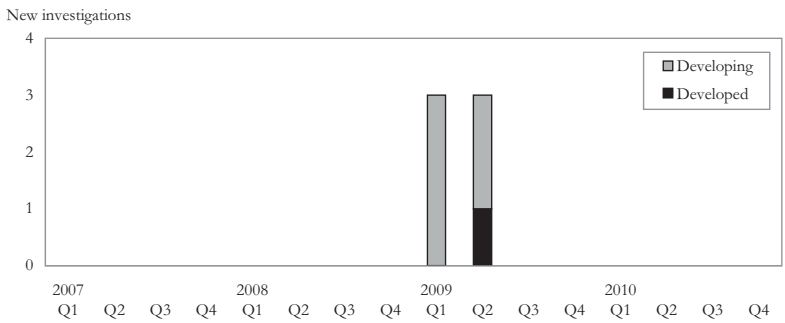


Figure 1.4: *Continued.*

Source: author's calculations from the *Temporary Trade Barriers Database* (Bown 2010a). Each panel includes data for the 11 policy-imposing economies in this volume: Argentina, Brazil, Canada, China, the EU, India, Mexico, South Africa, Korea, Turkey and the USA.

that, even when focusing on TTBs, an examination of anti-dumping alone had the potential to miss one important part of the new import protection and to overstate another. To be more comprehensive, reporting a headline statistic on protectionism through TTBs needed to capture more accurately the expanding use of these other policy instruments. Although more countries were beginning to expand use of CVDs, global safeguards and China-specific safeguards, the Indian 2008 Q4 data also revealed that focusing on anti-dumping based on the number of initiated investigations could potentially *overstate* a run-up in protectionism.

With these considerations in mind, beginning in 2009 Q1, the subsequent Global Antidumping Database monitoring reports presented an alternative headline summary statistic characterising the newly reported data on protectionism. Instead of focusing on anti-dumping alone, the headline for the 2009 Q1 report included all four TTB policies—anti-dumping, CVDs, global

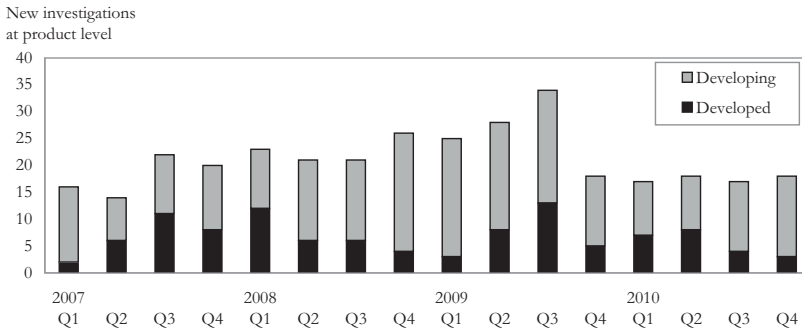


Figure 1.5: *Monitoring TTBs: combining data on TTB investigations over non-redundant products by quarter, 2007–10.*

Source: author's calculations from the *Temporary Trade Barriers Database* (Bown 2010a). Figure includes data for the 11 policy-imposing economies in this volume: Argentina, Brazil, Canada, China, EU, India, Mexico, South Africa, Korea, Turkey and the USA. This figure makes comparable the data on policy use across different (anti-dumping, CVD, safeguards, China-specific safeguards) TTBs by counting, for each policy-imposing economy, multiple investigations over the same product at most once, regardless of how many policy instruments (*eg* anti-dumping or CVDs) simultaneously investigate the product and regardless of how many foreign sources of imports of the product (*eg* anti-dumping versus safeguards) are investigated.

safeguards and China-specific safeguards. Furthermore, so as to make these policies more comparable, it also no longer simply counted up all investigations against all named foreign sources. Instead, in order to reduce the likelihood of double counting, the approach was to provide information on 'non-redundant' cases and the products behind those investigations—regardless of how many foreign trading partners were being investigated and how many different TTB policy instruments were being used against the same product.[16]

Figure 1.5 presents this alternative reporting approach and applies it to these 11 economies' TTB use over the period 2007–10. The figure shows that 2009 Q1 experienced 9% more of these non-redundant, product-level TTB investigations than a year earlier (2008 Q1), though there was a small decline from the spike of the previous quarter (2008 Q4). Under the approach illustrated in Figure 1.5, these 11 economies continued to show increases in newly initiated investigations in each of 2009 Q2 and 2009 Q3. Then in 2009 Q4, new investigations were cut nearly 50% from the previous quarter, and new initiations remained remarkably flat at this new, lower level through each quarter of 2010. This measure suggests 2009 Q3 as the clear end to at least the *initial*

[16]This was designed to address the issue that, increasingly, governments were simultaneously initiating CVD investigations over the same product and against the same foreign target as their anti-dumping investigations. For a discussion, see Bown (2011).

run-up in demands for new TTB activity associated with the 2008–9 global economic crisis.

While this reporting during the crisis provided useful information about the flows of new TTB investigations, and it made some improvement relative to earlier approaches, the information provided was nevertheless still incomplete for at least two additional reasons.

First, the monitoring still did not accurately reflect the concern that a 'product' was reported however an industry's TTB petition defined it, for which there was no standard. One petition's product could cover billions of dollars of trade, and another less than one million.

Second, reporting information on the flow of newly initiated investigations and newly imposed measures revealed insufficient information on the accumulating 'stock' of TTBs, because it ignored other potentially important elements of the TTB process. In particular, the ongoing TTB monitoring efforts ignored whether countries were *removing* on schedule what were supposed to be *temporary* trade barriers that had been imposed prior to the crisis. Indeed, one of the highest profile TTB cases captured by media attention did not involve the imposition of any *new* barriers, but whether, in 2008 and again in 2009, the EU would remove anti-dumping measures on imported footwear from China that had been imposed long before the crisis. Eventually, the EU decided to renew the TTB and keep it in place. While such an important policy decision prevented an anticipated decline in the stock of products covered by TTBs during 2008–9, this was not picked up by the monitoring approach at the time.

One of the lessons learned from the monitoring of TTBs during 2009–10 is that, despite even the prior data collection efforts through the Global Antidumping Database, the research community was still not well enough positioned to provide an immediate assessment on the scale and potential impact of new protection. Trade policy monitors can do better. The more formal approach described in the next section, as well as the results reported beginning in Section 3 that are developed in great depth throughout the chapters in this volume, should inspire much improved and responsive monitoring efforts earlier in the *next* crisis.

2 TRANSITIONING TO RESEARCH ON TEMPORARY TRADE BARRIERS: INSTITUTIONS, METHODOLOGICAL APPROACH AND DATA

2.1 Institutional Aspects of Anti-Dumping, CVDs and Safeguards

Anti-dumping, CVDs, global safeguards and China-specific safeguards—collectively referred to as TTBs—are the four policy instruments of central focus to this volume of research. This section briefly introduces some of the more

formal institutional aspects of TTBs.[17] Collectively, TTBs are some of the primary means through which many governments have flexibility with respect to their trade policy. In particular, in the face of binding legal commitments on WTO members' most-favoured-nation (MFN) tariff rates as well as preferential tariff commitments, many economies are prevented from simply raising their applied tariff rates to respond to political–economic shocks. The WTO's legal agreements covering TTBs create conditions by which countries can impose new trade barriers in potentially WTO-consistent ways and thus achieve some trade policy flexibility in response to changes in domestic economic conditions.[18]

The four TTBs have a number of common elements, which, for domestic industry users and policymakers, implies some degree of substitutability. First, each can be permissible under the rules of the WTO, provided certain economic conditions are met and certain procedures are adhered to so as to justify new measures being imposed under their auspices. For example, a necessary condition required before implementation of a new trade barrier is evidence of injury (or threat thereof) to a domestic industry that competes with the imported products. Second, each of the trade barriers imposed under these TTB provisions is supposed to be *temporary*. While the relevant WTO agreements implemented after the Uruguay Round precisely define the legal requirements, anti-dumping and CVDs are typically supposed to be removed after five years after a sunset review investigation, and global safeguards are typically terminated after three (if no compensation is granted) or four years. The China-specific safeguard is a transitional policy introduced into the WTO under the terms of China's WTO accession in 2001, and other WTO members have the right to use the policy to address injurious import surges from China until the policy expires in 2013.

Despite a number of common characteristics, there are important distinctions between the TTB policies. Perhaps most importantly, triggering the safeguards provisions requires no evidence that trading partners have done anything 'unfair'. Broadly put, all that is required is evidence of injury that can

[17]This section does not attempt to provide a thorough legal analysis of the similarities and differences among the TTBs since the literature is vast in this area. Mavroidis *et al* (2008) is an accessible legal–economic assessment with a much more detailed discussion of the relevant WTO agreements on TTBs; see also Hoekman and Kostecki (2009). Blonigen and Prusa (2003) and Nelson (2006) provide extensive surveys of the economic research on anti-dumping, and Bown and Crowley (2005) survey the economic literature on safeguards. Reynolds (2008) discusses CVDs. Bown (2010b) describes early use of the China-specific safeguard. Bagwell and Staiger (2002) present a classic political–economic theory of the WTO, including one particular role for TTBs (Chapter 6).

[18]See, in particular, the WTO Agreement on Antidumping, Agreement on Safeguards, and the Agreement on Subsidies and Countervailing Measures. For the China-specific safeguard, see China's Accession Protocol.

be linked to proper evidence of changes to imports.[19] The other two TTBs—anti-dumping and CVDs—require a second piece of important evidence. In addition to demonstration of injury, use of anti-dumping requires evidence that the injury can be linked to imports that have been priced at a value that is 'too low'. Use of CVDs requires evidence that domestic injury can be linked to imports that have benefited from foreign subsidies. A final important distinction between the TTBs involves how they are applied. Global safeguards are supposed to be applied on a relatively non-discriminatory basis across all trading partners, regardless of the source of imports. On the other hand, anti-dumping and CVDs allow for much more discrimination between foreign sources of the same product. In fact, the imposed duties are often firm-specific, indicating the possibility of using trade policy to discriminate between firms within the same exporting country, let alone between firms in one country versus another. Finally, as indicated by its name, the China-specific safeguard is also discriminatory as it can only be applied against imports from China.

In a typical TTB case, a domestic industry petitions its government under one (or more) of these TTB laws. The government quickly makes the decision whether to initiate an investigation—in most instances choosing to do so—and then begins collecting information on whether the case has merit. Each WTO member has its own distinct domestic implementing legislation that generates some variation in timing of when new trade barriers would subsequently get imposed. Nevertheless, the government makes a preliminary determination, typically within 30–90 days, of whether the case has enough merit to impose a preliminary trade barrier and to continue to the final investigation. The final investigation then takes longer to complete. The investigation of whether to impose a final (definitive) measure can take as long as 14–18 months depending on the investigating country and the TTB policy being used.

Historically, anti-dumping has been the most frequently used TTB policy. As such, anti-dumping has also been the most thoroughly researched of the TTB policies, though until the late 2000s much of the detailed research in this area focused on developed economy use, mainly due to data availability reasons. With the spread of increased use to developing economies in the 1990s and the initial publication of detailed data in the Global Antidumping Database in 2005, additional research has emerged assessing the policy's use by other countries, including a number of major emerging economies.

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[19]Nevertheless, the practical evidence necessary to impose a WTO-consistent safeguard is still relatively unsettled, given the evolving jurisprudence on this issue under the WTO's Dispute Settlement Understanding (see, for example, Sykes (2003) and Irwin (2003)). For a legal–economic assessment of the substantial number of WTO Panel and Appellate Body decisions regarding WTO consistency with regard to applied TTBs, see also the American Law Institute-sponsored research (Mavroidis and Horn 2004, 2005, 2006, 2008, 2009).

2.2 Methodological Approach and Data

As suggested in Section 1, the approach to monitoring new TTBs during the crisis so as to provide useful information on their *economic importance* amid fear of growing protectionism was still incomplete. First, simply counting cases relied on a domestic industry's own, self-reported characterisation of a 'product' subject to a newly initiated investigation or imposed barrier. There is no uniform definition of a 'product'—it results from the petition filed by the domestic industry and is designed so as to increase the likelihood that the petition will be accepted and that a new barrier will be imposed. If there is substantial heterogeneity in the amount of product coverage across TTB investigations, countries or time, relying on this measure may not accurately reflect the economic importance or unimportance of TTBs. Second, the information on the initiation of new investigations or even the imposition of newly imposed barriers only reports on 'flow' variables, and these variables may themselves be affected by the pre-existing 'stock' of TTBs already in place. However, examining the 'stock' build-up of such trade barriers not only requires information on past flows, but it also requires up-to-date information on *removals* of previously imposed barriers. Data on policy removals have typically been more difficult to obtain systematically. For example, during the crisis, reliable data on removals were obtained only after a substantial time lag relative to the flow data on newly initiated investigations and newly imposed barriers, thereby hindering the construction of stock measures.

Bown (2011) proposes two methodological approaches to move beyond previous accounting efforts that assess TTB proliferation. Each method addresses some of these concerns by constructing flow and stock measures of imported products and the share of a country's imports that are affected by its use of TTBs. The merits of such an approach include the ability to better assess the scope of TTB coverage in the face of heterogeneity in the timing of newly imposed barriers, the length of time that such barriers stay imposed, and the trading partners affected. The remainder of this section summarises and provides the intuition behind the Bown (2011) approaches. The technical details are explained in the Appendix (Section 6).

The first methodological approach of Bown (2011) constructs 'count' measures of the annual stock of Harmonized System products at the six-digit level (HS-06) subject to TTBs, measured as the share of the importing economy's total set of that year's imported HS-06 products from all sources. This count measure reflects information on the country's newly imposed trade barriers, previously imposed trade barriers, and the removal of previously imposed barriers. The methodology starts with the approach of Bown and Tovar (2011, Figure 1), which focused on India's use of anti-dumping over the 1992–2003 period, and modifies it along three important dimensions: first, by examining not only cumulative stocks but also flows; second, by examining not only anti-dumping, but also HS-06 products subject to other TTB policies such as

CVDs, global safeguards and China-specific safeguards to address the concern raised in Section 1.4 (when comparing Figure 1.4(a) with Figure 1.5); and third, by normalising the count of TTB-affected HS-06 products by the economy's stock of HS-06 products with positive imports in that year.

The second approach refines the 'count' measure by using data on import values to trade-weight the importance of TTBs at the HS-06 product level. Construction of this complementary 'value' measure is one way of investigating the possibility that there may be significant variation in the economic (trade) importance across HS-06 products affected by TTB use. Some TTBs are applied against multiple foreign sources and can affect more imports than a TTB used against a single foreign supplier. Furthermore, some HS-06 products may be larger contributors to the economy's overall level of imports than others; one product from one foreign source may cover only a few hundred thousand dollars of trade, while another may cover billions of dollars. The 'value' approach uses HS-06 import-value data from the United Nations Comtrade database to construct year-by-year trade-weighted coverage ratios of imports subject to TTBs. The results reported in this chapter construct the economy's TTB-affected imports as a share of the economies' *non-oil* imports. The Appendix (Section 6) provides a more detailed explanation of methodology and data.

The product-level TTB policy data are taken from the World Bank's *Temporary Trade Barriers Database* (Bown 2010a).

3 HIGH-LEVEL OVERVIEW OF RESULTS: CHANGES TO THE STOCKS OF IMPORTS SUBJECT TO TEMPORARY TRADE BARRIERS

This section applies the methods described in Section 2 and in the Appendix (Section 6) to provide a broad and suggestive overview of results. The added context then raises questions for the country-specific research in the subsequent chapters. In particular, this section reports the results from Bown (2011) and begins with evidence aggregated over the countries in this volume—so as to make comparisons with Figure 1.4(a) and Figure 1.5—before introducing some country-specific results. Note first that the results reported in this section are all based on *annual* data—as opposed to the quarterly information highlighted earlier—due to data availability constraints on policy *removals* and HS-06 imports.

Before turning to a discussion of results on TTB use over the longer period of 1997–2009, it is useful to first describe how Figure 1.6 *presents* four distinct pieces of information.[20] First, the *solid grey* line defines the TTB indi-

[20]The aggregated data in Figures 1.6 and 1.7 begin in 1997 because 1997 was the first year for which all of the economies in this volume were using TTBs. (China was the last of these economies to initiate use.) The economy-specific results of Figures 1.8, 1.9, 1.10 and 1.11 illustrate TTB use beginning in 1990. These four figures, discussed in more detail below, use the same visual approach as Figure 1.6 to present the results.

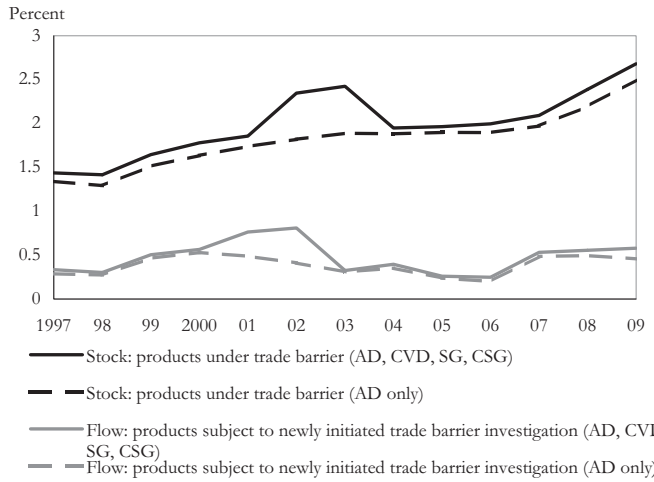

Figure 1.6: *The major economies' imported products collectively affected by TTBs, 1997–2009.*

Source: figure based on annual data, author's calculations using a modified version of Equation (1.1) from data in the *Temporary Trade Barriers Database* (Bown 2010a). Data are aggregated over the following ten policy-imposing economies: Argentina, Brazil, Canada, China, the EU, India, South Africa, Korea, Turkey and the USA. Of the economies analysed in this volume, Mexico is the only user of such policies not included in construction of the data for the figure, for reasons explained in Chapter 10 by Raymond Robertson (this volume). See also Figure 1.10.

cator based on imported products affected by newly initiated investigations under *any* TTB policy, and is thus a broad measure of the potential annual 'flow' of new barriers. Second, the *dashed grey* line defines the indicator similarly, but captures the flow of potential imported products affected by the *anti-dumping* policy alone. For countries that only used anti-dumping and did not have any CVD, global safeguard or China-specific safeguard investigations during this period, the solid grey line and the dashed grey line would overlap. Any divergence between these two lines represents the products subject to investigations under the countries' other (non-anti-dumping) TTB policies. For the reasons described in the last section, these two lines serve as more informative 'flow' indicators of new protectionism than the data presented in Figures 1.4(a) or even Figure 1.5. The *solid black* line in Figure 1.6 presents the third piece of information on the annual 'stock' of import products subject to *any* TTB policy. It defines the TTB indicator as taking on a value of 1 whenever the import was subject to some TTB that had been imposed in that year or a prior year (and had not yet been removed). Fourth, the *dashed black* line represents the stock of products subject to *anti-dumping* policy only.

3.1 These Economies Collectively Increased TTB Product Coverage by 25% During the Crisis

Figure 1.6 illustrates the data cumulated across the policy-imposing economies in this volume over the period 1997–2009. It uses the 'count' method described in Equation (1.1) (see the Appendix (Section 6)) and constructs measures of the aggregated stocks and flows of imported products subject to TTBs.[21] By the end of 2009, the solid black line indicates that these economies had collectively increased the stock of imported products they subjected to imposed TTBs by 25% relative to the pre-crisis levels of 2007. By 2009, 2.7% of HS-06 products that these economies imported were subject to a TTB, having increased from 2.4% of imported products prior to the crisis in 2007. Despite the potential concern over TTB policy substitutability raised in Section 1, the vast majority of the increase in TTB product coverage came through anti-dumping policy (dashed black line) and not through CVDs and global or China-specific safeguards. The figure reveals that this differs from the major TTB increase during 2001–3. During that period it turns out that *global safeguards* on steel products were a major contributor to increased TTB use.

Figure 1.7 further divides the black and grey lines of Figure 1.6, *ie* the stock and flow series based on *all TTBs*, according to whether the policy-imposing economy was developed or developing. The result shows that the main source of the overall increase in the stock of product coverage during the 2008–9 crisis was new TTBs imposed by *developing* economies. The developing economies in this volume combined to have 39% more products subject to a TTB by 2009 (2.9% of their imported HS-06 products) than before the crisis in 2007 (2.4% of their imported HS-06 products). On the other hand, the developed economies combined to have only 4% more products subject to a TTB in 2009 (2.4% of their imported HS-06 products) than before the crisis in 2007 (2.3% of their imported HS-06 products).

Did the 2008–9 crisis *cause* the observed changes in new TTB protection? The second main insight from Figure 1.7 is that, visually, it is difficult to rule out the possibility that the relative changes in the data between 2007 and 2009 are simply part of a longer-term trend in TTB use. In particular, the 39% increase for developing economy users may have taken place even under more 'normal' macroeconomic conditions had the 2008–9 crisis not occurred, given the pre-crisis upwards trend. Furthermore, the relatively small (4%) increase in TTB coverage between 2007 and 2009 for developed economies, while surprising in the face of a crisis, is consistent with the secular decline in the importance of TTB coverage for these economies since 2003.

[21] Of the economies analysed in this volume, Mexico is the only user of such policies that is not included in construction of the data for the aggregate Figure 1.6 and Figure 1.7. For reasons explained below (see also Figure 1.10) and in Chapter 10 by Raymond Robertson (this volume), Mexico coincidentally removed TTBs over imports of hundreds of products from China in late 2008 that had been in place since 1993.

Table 1.2: *The crisis: predicted versus realised economies' stocks of imposed TTBs in 2009.*

Imposing economy (ranked by column 1)	Percentage change in 2009 import share relative to pre-crisis 2007 level, by count (1)	2009 import share, by count (2)	Predicted 2009 share, by count (3)	Percentage change in 2009 import share relative to pre-crisis 2007 level, by value (4)	2009 import share, by value (5)	Predicted 2009 import share, by value (6)
Total	24.83	2.68	2.38	—	—	—
Developing economy total	39.29	2.87	2.44	—	—	—
India	69.69	6.09	4.28	39.14	2.94	2.62
Argentina	48.01	2.81	2.12	18.66	2.01	2.36
Turkey	34.39	5.31	4.36	−9.25	3.05	3.35
Brazil	20.03	1.53	1.27	−13.57	1.73	2.49
China	−10.03	0.87	1.65	−28.75	1.71	3.91
South Africa	−18.54	0.76	1.00	−60.57	0.25	0.51
Mexico	−287.94	1.09	18.98	−31.81	0.68	0.76
High-income economy total	3.93	2.40	2.28	—	—	—
Canada	15.68	1.27	1.19	21.04	0.64	0.59
USA	10.17	4.72	4.63	−0.11	2.33	1.80
European Union	−4.98	2.50	2.37	−58.04	1.59	2.66
Korea	−36.39	0.86	0.92	−14.33	0.39	0.45

The aggregate levels for 'Total' and 'Developing economy total' do not include Mexico, for reasons described in the text and in Chapter 10 by Raymond Robertson (this volume).

Source: Bown (2011, Table 2), and author's calculations. Columns 1, 2 and 3 are based on Equation (1.1) and columns 4, 5 and 6 are based on Equation (1.2).

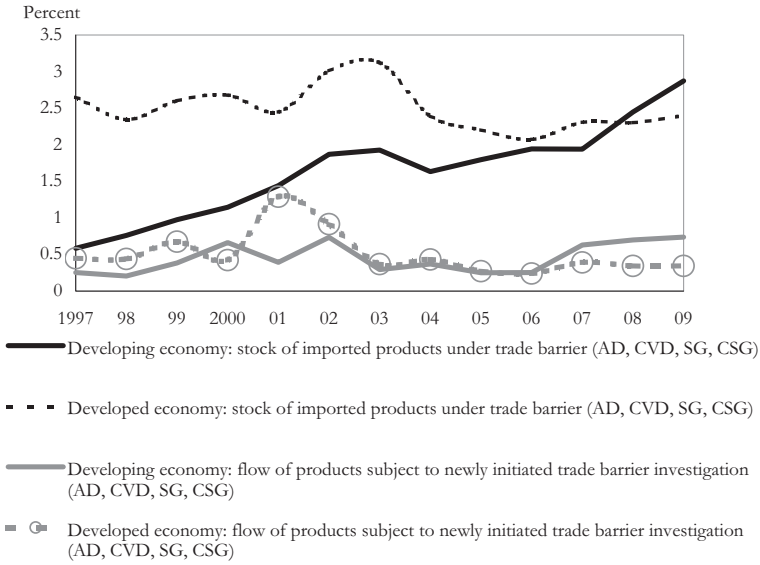

Figure 1.7: *Developed economy versus developing economy imported products collectively affected by TTBs, 1997–2009.*

Source: figure based on annual data, author's calculations using a modified version of Equation (1.1) from data in the *Temporary Trade Barriers Database* (Bown 2010a). Data are aggregated over the following ten policy-imposing economies: Argentina, Brazil, Canada, China, the EU, India, South Africa, Korea, Turkey and the USA. Of the economies analysed in this volume, Mexico is the only user of such policies not included in construction of the data for the figure, for reasons explained in Chapter 10 by Raymond Robertson (this volume). See also Figure 1.10.

One way to investigate this question more formally is to decompose these overall trends into economy-by-economy use of TTBs. Table 1.2 presents data on the percentage change in the stock of product coverage of TTBs between 2007 and 2009. The table reports both the count (column 1) and value (column 4) methods of Equations (1.1) and (1.2), respectively. First, the table summarises the data based on Figure 1.7 reported above: developed economies increased their count of products covered by 3.93% compared with the developing countries' combined increase of 39.29%. By category of country, the economies are then ordered according to which had the largest percentage change in TTB product coverage between 2007 and 2009 using the count method. Two major emerging economies—India and Argentina—lead the list with the largest percentage increases in the stocks of products covered by TTBs during this period.

Table 1.2 also provides simple, economy-by-economy forecasts of the 2009 level of TTB coverage based on predictions from each economy's histori-

cal data. (The economy-specific historical data are discussed in more detail below.) Motivated by Figure 1.7, results are reported from a simple regression of the 1997–2007 import share data on a linear time trend; the estimated coefficient from the regression is then used to predict the (out-of-sample) import share for 2009. Column 3 reports the prediction which uses the count measure, and column 6 reports the prediction that uses the value measure.

Compare the prediction for 2009 in Table 1.2 with the realised data. Regardless of whether one compares column 2 with column 3 or column 5 with column 6, there is hardly conclusive evidence that the change in TTB product coverage taking place between 2007 and 2009 is different from that predicted by the historical trend. According to the count measure, seven economies (four developing and three developed) had a larger share of 2009 imports becoming subject to TTBs than was predicted from the models. Four economies (China, South Africa, Mexico and Korea) had *less* product coverage by 2009 than was predicted. A comparison of column 5 with column 6, which uses the value measure, gives different results. Only three economies (one developing and two developed) had a higher-than-predicted share of imports become subject to TTBs by 2009. While these economies (India, Canada and the USA) did experience increases in the share of imported products subject to TTBs during the economic crisis (see column 4), the simple linear time-trend model predicted this. Thus, it is really only the small difference between the realised 2009 data and the 2009 forecast that would be the *unpredicted* component to the new import protection to be associated with the crisis. For a country such as Argentina, column 6 suggests that it actually experienced a *smaller* increase in imports covered by TTBs in 2009 than that predicted by the time-trend model.

3.2 The 4% TTB Increase: High-Income-Economy Use Before and During the Crisis

Figures 1.8 and 1.9 present the 'stock' and 'flow' TTB information (formatted in the same way as Figure 1.6) on an economy-by-economy basis for the developed economies. Figure 1.8 illustrates the time trend of product coverage using the 'count' measure of Equation (1.1), and Figure 1.9 illustrate the time trend of import coverage using the 'value' measure of Equation (1.2). For each economy, I examine TTB use dating back to either its inception or 1990, whichever is later.

First, consider the USA and the EU. Across developed economies, the USA and the EU have the first- and second-highest annual stock of products covered by TTBs on average, and their historical use tends to track (countercyclically) domestic macroeconomic indicators. The USA, for example, experienced a spike in TTB flows (and increases to stocks) during its 1990–1 recession, in response to the surge in imports during the 1997–8 Asian crisis, and during the 2001–2 recession. In terms of policy choice across TTBs, most US

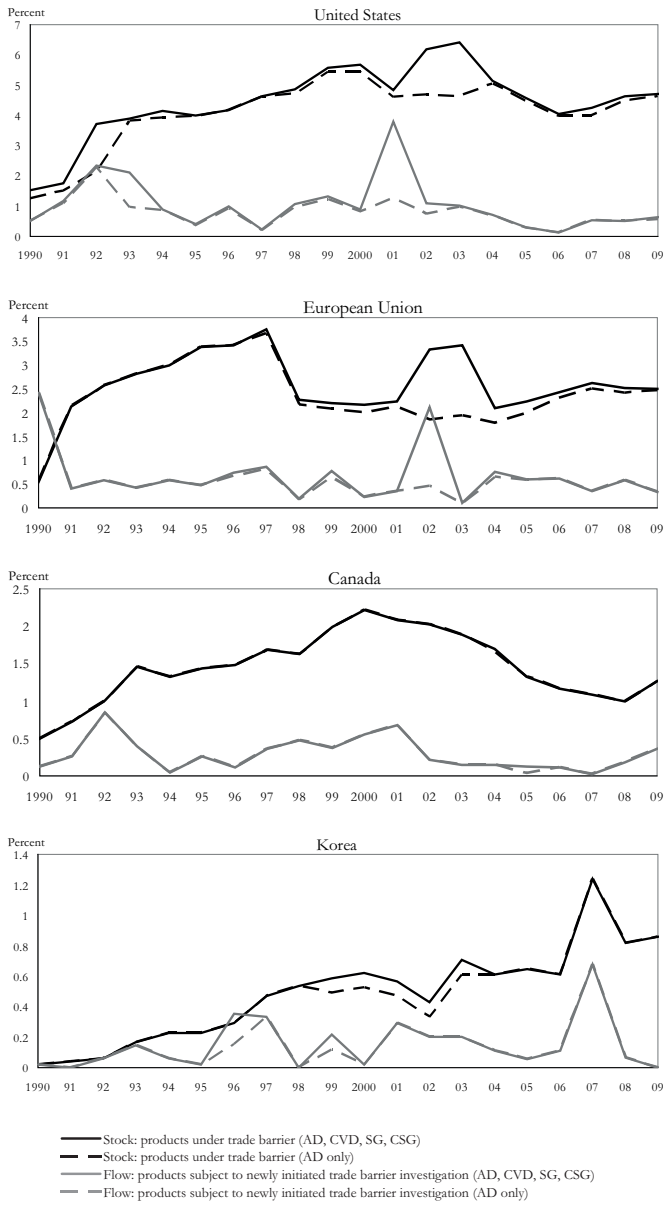

Figure 1.8: *Developed economies' use of TTBs by economy, 1990–2009, using Equation (1.1): counts of products.*

Source: Bown (2011, Figure 1).

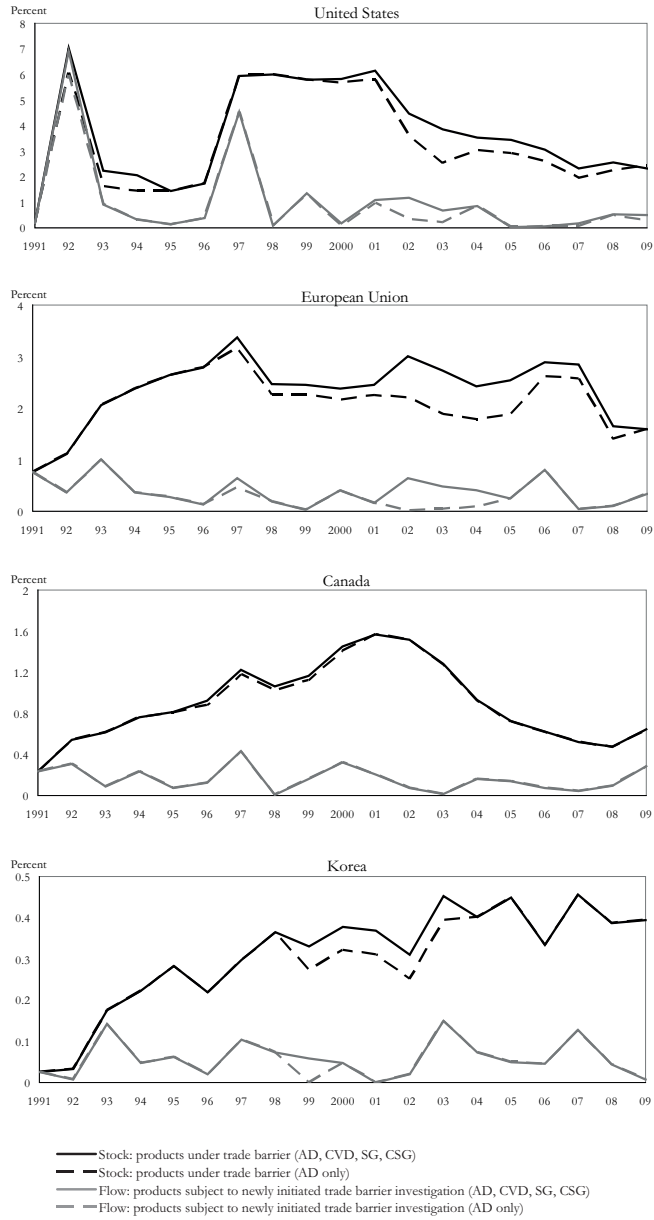

Figure 1.9: *Developed economies' use of TTBs by economy, 1990–2009, using Equation (1.2): share of value of imports.*

Source: Bown (2011, Figure 1).

and EU use involves anti-dumping policy during 1990–2009. The exception for both was 2001–3, during which the two economies used the *global safeguards* policy over a large share of imported steel products. Furthermore, in comparing Figure 1.8 with Figure 1.9, the 'count' and 'value' measures for these two economies tend to track fairly closely over time. Divergences between the two series reveal instances in which counts of products overstate or understate the trade-weighted importance of the TTBs. Finally, the time trend also suggests a relatively flat or declining importance attached to TTB use by these economies during 2005–9 in particular, lacking even a major uptick in import coverage in response to the 2008–9 crisis, as reported in Table 1.2.

The other panels of Figures 1.8 and 1.9 illustrate TTB use for Canada and Korea. While at a lower average level, the time series changes to Canada's TTB coverage also tracks US and EU changes; the one difference is a slightly larger increase in TTB use during 2008–9. Korea has the lowest average TTB coverage of these four developed economies, and the pattern to its time series is quite different as well.

3.3 The 39% TTB Increase: Emerging-Economy Use Before and During the Crisis

Developing economies' use of TTBs as presented in Figure 1.10 and Figure 1.11 indicates a different story. To highlight some of the distinctions from developed economy use during this period, consider the example of India. India only began using TTBs in 1992. While the flow of products under India's investigations spiked at various points in time (1999, 2002 and 2007), the stock of Indian imports affected by TTBs indicates a steady, *continual* increase over 1992–2009. By 2009, India had a stock of TTBs in place that covered 6% of its imported HS-06 product lines and 3% of the value of its imports. While India is now a user of each of the four TTB policy instruments—it initiated the most anti-dumping, global safeguard and China-specific safeguard investigations during 1995–2009, and it initiated its first CVD investigation in 2009—the divergences between the straight and dashed lines in Figure 1.10 and again in Figure 1.11 are relatively small. This reveals that anti-dumping has been the instrument that has affected most of the products impacted by India's total use of TTBs.

Each of the developing economies illustrated in Figures 1.10 and 1.11 has its own distinct history of TTB use, though many share characteristics with the Indian experience. Countries like Argentina, Brazil, China, Mexico and Turkey each experienced substantial increases in TTB coverage after they undertook transformative episodes of trade liberalisation. Some of them also witnessed a substantial increase in TTB coverage during the 2008–9 crisis. Other economies did not. Mexico even managed the astonishing result, despite being in the middle of the 2008 Q4 trade collapse, of following through with the planned removal of TTBs that had covered 20% of its imported products

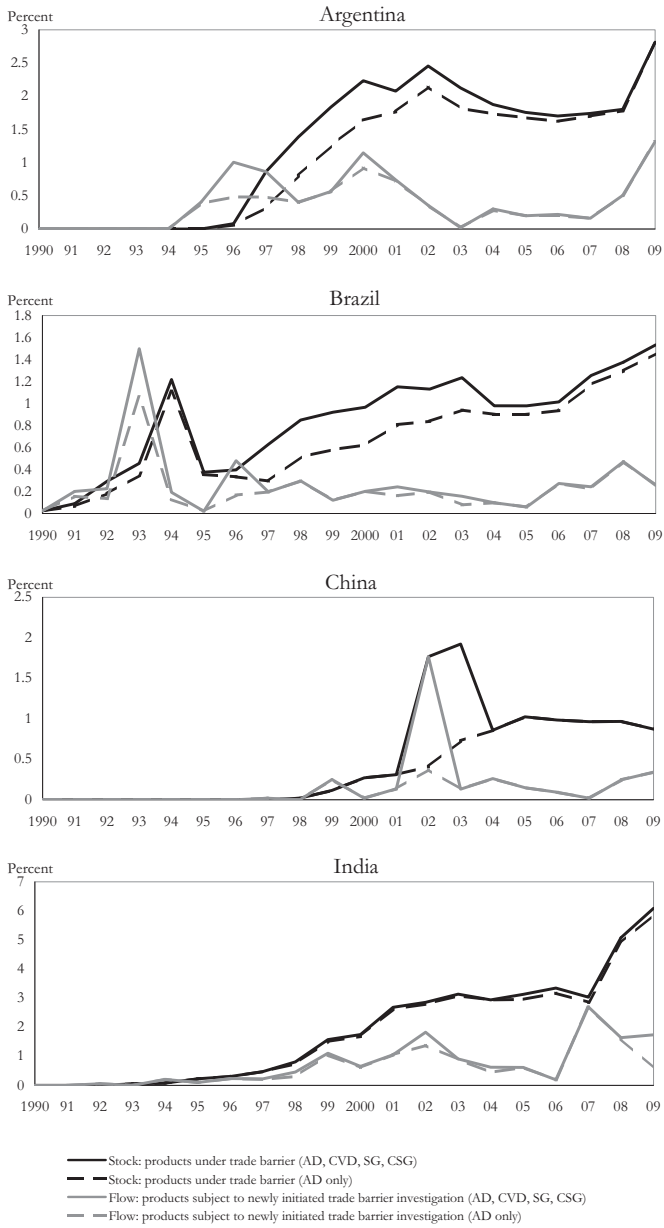

Figure 1.10: *Developing economies' use of TTBs by economy, 1990–2009, using Equation (1.1): counts of products.*

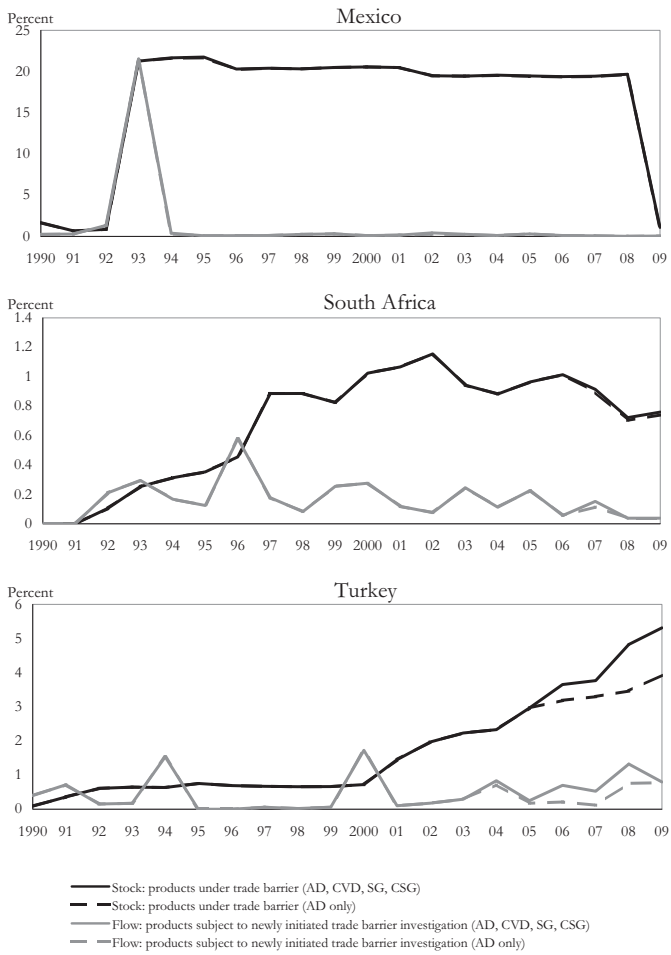

Figure 1.10: *Continued.*
Source: Bown (2011, Figure 2).

from China since 1993. For all of these economies, as well as South Africa, the chapters that follow document how TTB use relates to the countries' own macroeconomic conditions; paths towards trade liberalisation and use of other (*ie* non-TTB) trade barriers; political–economic relationships between industry, workers and government; comparative advantage; and trading relationships.

To summarise the results of this section, while there is an increase in TTB coverage alongside the 2008–9 crisis, this is mainly attributable to an increase

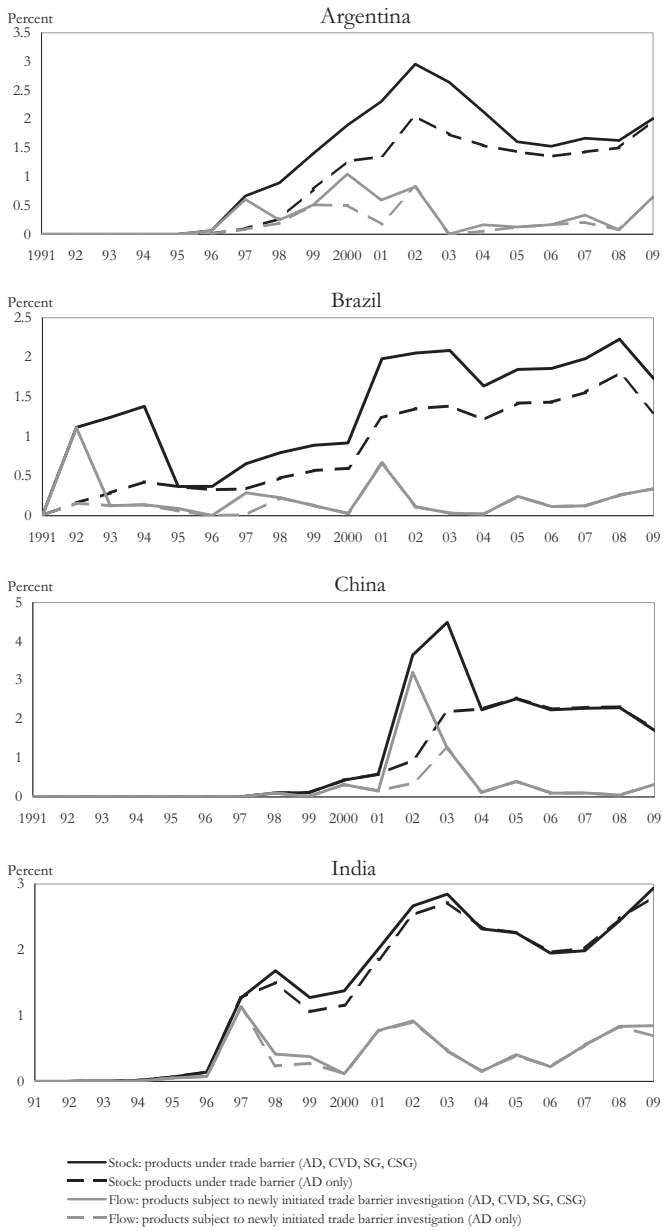

Figure 1.11: *Developing economies' use of TTBs by economy, 1990–2009, using Equation (1.2): share of value of imports.*

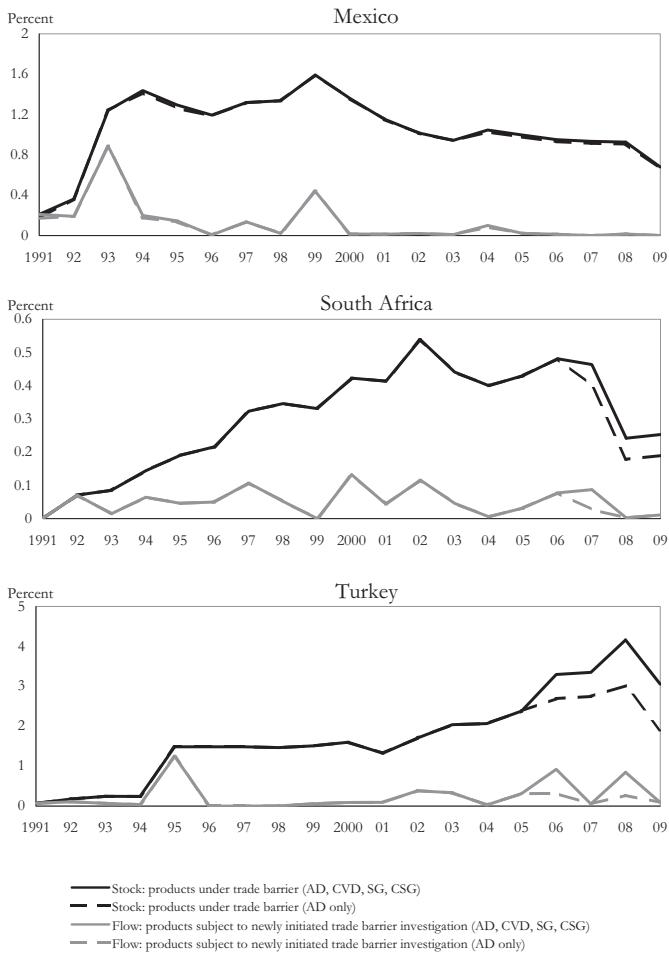

Figure 1.11: *Continued.*
Source: Bown (2011, Figure 2).

in usage by developing countries. For many of these emerging economies, TTB coverage was already increasing prior to the crisis. Thus, there is an evolving consensus that the response of the overall WTO system, and how it withstood the crisis, was positive—TTBs may have increased, but WTO members weathered the severe uncertainty and economic calamity of 2008–9 with the multilateral trading system intact. Nevertheless, even at this broad level, the import protection in place at the end of 2009 appears somewhat different from how it was before the crisis hit. The next section provides a preview

of the details of trade policy changes taking place, economy by economy, in the chapters that follow. This research also begins to examine explanations for this policy response based on a more micro-orientated analysis as well as a more nuanced historical context that better reflects how each economy arrived at its *pre-crisis* trade policies by 2007.

4 COUNTRY-SPECIFIC QUESTIONS AND PREVIEW OF CHAPTERS' RESULTS

The flavour of the results presented in Figures 1.8, 1.9, 1.10 and 1.11 suggests heterogeneity in TTB use across these major economies over time. Indeed, the main purpose of this volume is to document the economic significance and details of 11 major economies' varied use of TTBs, in order to better understand the implications for the world trading system. These figures also make clear that understanding the trade policy changes of 2008–9 requires a recognition of prevailing, pre-crisis trends in the evolution of national trade policies.

4.1 Baseline Questions: Putting 2008–9 TTB Use into Historical Context

The authors of the subsequent chapters have been tasked with addressing a fundamental question. Each has been asked to shed light on how TTB policies were used during the global economic crisis of 2008–9, and how this use (and non-use) compares with *expected* use based on economic theory and pre-crisis experiences. To form those expectations, each chapter considers many additional questions and thus considers a much longer time horizon than 2008–9.

The formation of expectations of the economy's potential TTB use in response to the events of 2008–9 is likely to be fuelled by a number of factors from its political–economic history. How has the economy's TTB use been affected by prior macroeconomic shocks such as recessions and crises (Knetter and Prusa 2003)? Even in the absence of prior macroeconomic shocks, how has TTB use evolved alongside the economy's other fundamental trade policy changes, such as episodes of trade liberalisation and commitments to the multilateral system (Bown and Tovar 2011)? Is there a relationship between the economy's TTB use and its applied MFN tariffs, bound tariffs and PTA tariffs? Does the amount of 'water' in the economy's tariff structure (defined as the difference between its legally bound and the applied tariff rates) affect the economy's TTB use?

Table 1.3 provides a snapshot of these economies' trade policies immediately prior to the crisis. It reports information on their levels of tariff protection and the restrictiveness of their import regimes in 2007. Even at this extremely aggregated level, the table reveals substantial variation across policy-imposing economies based on a number of trade policy indicators that

Table 1.3: *Tariffs, trade restrictiveness and TTBs immediately before the crisis in 2007.*

Economy	Average applied MFN tariff	Average bound MFN tariff	MFN tariff binding coverage	Average applied tariff (including preferences)	OTRI	TTB coverage by value by 2007	Share of world merchandise imports in 2007
USA	3.5	3.5	100.0	1.3	6.3	2.3	19.6
EU	5.2	5.4	100.0	2.1	6.4	2.8	20.1
Canada	5.5	6.5	99.7	3.1	5.1	0.5	3.7
Korea	12.2	17.0	94.6	6.8	—	0.5	3.6
China	9.9	10.0	100.0	4.8	9.8	2.3	8.7
India	14.5	50.2	73.8	7.8	18.0	2.0	2.2
Brazil	12.2	31.4	100.0	7.0	20.3	2.0	1.2
Argentina	12.0	31.9	100.0	5.4	9.3	1.7	0.4
Mexico	12.6	36.1	100.0	11.1	18.0	0.9	2.8
Turkey	10.0	28.3	50.4	1.8	3.8	3.4	1.6
South Africa	7.8	19.1	96.6	4.9	6.3	0.5	0.7

Source: first three columns of data are from WTO (2008). The data on average applied tariff (including preferences) are trade-weighted. These data and the Overall Trade Restrictiveness Index (OTRI) are from the World Bank's World Trade Indicators. For data availability reasons, Mexico's and Turkey's OTRI are for 2006. Temporary trade barrier coverage by value by 2007 is calculated by the author according to Equation (1.2). The share of world merchandise imports in 2007 excludes intra-EU trade and is taken from Comtrade.

many of the individual chapters investigate further in detail. High-income economies, such as the USA, the EU and Canada, came into the crisis with relatively low applied and bound MFN tariff rates, nearly 100% of their tariffs being legally bound in the WTO, and also very little water in their tariff structure. Other measures of their import regimes in 2007—such as the trade-weighted applied tariffs inclusive of preferences, and the Overall Trade Restrictiveness Index (OTRI) developed by Kee *et al* (2009)—also indicate evidence of relative openness. For the major emerging economies, on the other hand, Table 1.3 indicates that they were not nearly as open by 2007. On average, emerging economies had much higher OTRIs, applied tariffs and bound tariffs, and they had much less tariff binding coverage.

Nevertheless, a number of the individual chapters highlight a major point that can be missed by focusing on the Table 1.3 snapshot of 2007 data, *ie* even these emerging economies were *much more open* by 2007 than they had been 15 years earlier. The chapters investigate the potential role of TTBs in those liberalisation processes, and how liberalisation forces may have also shaped the economy's TTB response to the events of the 2008–9 crisis.[22] Each chapter

[22] See Finger and Nogués (2005), for example, which provides an interesting collection of case studies describing the potential role that TTBs played during the major wave of Latin American trade liberalisation in the 1990s. Moore and Zanardi (2009) use relatively aggregated data to examine the cross-country relationship between average tariff cuts and previous resorting to anti-dumping for a number of developing economies.

also investigates the within-country, cross-product variation in TTB use relative to some of the other trade policies listed in Table 1.3 to better understand the interrelationship across instruments of import protection. An important research question is how these TTB policies interact, *ie* as substitutes, complements or independently, both with each other and with other important trade policy changes to the economy's applied MFN or preferential trade agreement tariffs.

Furthermore, many of the chapters address, in empirical detail, the important issue of the temporary nature of TTBs. The *time coverage* of the average TTB may be changing in addition to any changes in the scope of TTB product coverage. Moore (2006) and Cadot *et al* (2007) were among the first to examine the Uruguay Round's addition of a formal sunset review requirement for anti-dumping that attempted to limit the time duration of imposed measures. How have such innovations affected the impact of TTBs, and did this change systematically during the crisis?

Finally, consider the set of TTB-affected economy-wide imports. Are there changes across industries as to which sectors' imports are covered by TTBs? Can changes in this structure of TTB-affected industries be linked to the evolution of political–economic forces and changes to comparative advantage? Furthermore, the broad evidence aggregated across countries (Bown and Kee 2011) is that TTBs overall, but anti-dumping in particular, are increasingly targeting imports from *developing* countries. The practice of using TTBs to target imports from China is well known (Bown 2010b) but, for the chapters on TTB policy use by emerging economies in particular, is the targeting of developing countries specific to China's exports, or are there other emerging-country exporters increasingly and significantly impacted by TTB use, and was China simply the first casualty of TTBs affecting more south–south trade?

This section has raised a number of questions. While not all of the following chapters address each of these issues, each chapter addresses most of these questions. Furthermore, each chapter also pursues a number of more subtle, economy-specific questions that arise from the authors' examination of the details of the underlying events.

4.2 High-Income-Economy Use of TTBs

In Chapter 2, Thomas Prusa examines the USA's TTBs, finding a sharp decline in the flow of TTBs over the longer term (2000–2009) and only a modest uptick during 2008–9. Despite experiencing a macroeconomic slowdown that traditionally would have triggered a sharp increase in TTBs, the USA initiated relatively few investigations during the 2007–9 US recession. With respect to the targets of protection, he finds that US TTBs are increasingly directed at imports from developing countries in general, and China in particular. While the steel industry has long been the heaviest user of TTBs within the USA, other industries such as seafood and wood products display significant ebbs

and flows in TTB protection. Surprisingly, the Uruguay Round mandatory sunset provisions have adversely affected developing countries as US TTBs brought against developing countries are at least 60% more likely to remain in place than those against developed countries. Finally, he briefly examines the widely publicised 2009 China safeguard on tyres, highlighting how the availability of many alternative tyre suppliers limited the likely impact of the discriminatory import restriction.

Hylke Vandenbussche and Christian Viegelahn examine the EU's use of TTBs in Chapter 3. They too fail to find clear signs of a major trade policy change since the outbreak of the crisis. Like many other economies, EU anti-dumping policy has increasingly focused on China as a target. The chapter provides an innovative method of analysis and finds that the EU is more likely to impose protection against countries and country–industry combinations the more similar they are to the EU in their product mix. Country–product combinations subject to a preferential tariff are also more likely to be targeted by the EU's TTBs. In terms of product characteristics, the shares of consumer goods and differentiated goods covered by EU anti-dumping measures have increased rapidly, and they have remained at a relatively high level during the crisis. These TTB patterns do not appear to be driven by a few outlying countries within the EU but are also similar when considering individual EU member states.

Canada's use of TTBs during 1989–2009 is the focus of the study by Rodney Ludema and Anna Maria Mayda in Chapter 4. Despite the retreat in the stock of products covered by TTB over the 2000s, they find signs of a rebound. The connection of anti-dumping protection to the business cycle remains strong as new Canadian anti-dumping cases have surged since the crisis, which portends a rise in anti-dumping stocks that could last for several years. They also provide evidence of a major structural shift occurring in terms of the products and countries on which Canada's TTBs are applied. The product scope of anti-dumping protection has narrowed, and increases in anti-dumping protection have taken place in sectors with relatively small reductions of MFN tariffs. China and, to a lesser extent, other developing countries are being targeted with far greater intensity than before 2000. Finally, the duration of anti-dumping remedies fell during the first half of the 2000s, though this seems to have been reversed in the later half of the decade.

Chapter 5 presents an examination of Korea. Moonsung Kang and Soonchan Park describe Korea's export-led growth strategy beginning in the 1970s, which led its exporters to become a major anti-dumping target in the 1980s and 1990s. As Korea has become more market-orientated and liberalised its import regime, it has slowly used TTBs with more regularity. In particular, Korea had a dramatic increase in usage during the Asian financial crisis of 1997–8, immediately before the recession of 2000, and a small increase during 2008–9. Korea's TTB use has most frequently targeted China, followed by Japan and the USA. Finally, evidence from Korea's anti-dumping use during

2008–9 suggests that its politically organised sectors tend to receive more protection than unorganised ones.

4.3 Emerging-Economy Use of TTBs

The last seven chapters of the volume focus on developing economies' emerging use of TTBs, beginning with Piyush Chandra's analysis of China in Chapter 6. While the flow of new Chinese anti-dumping investigations increased during 2008–9, the stock of China's imports subject to anti-dumping measures decreased as China terminated a number of previously imposed measures covering large numbers of products and shares of imports. Nevertheless, the 2008–9 crisis did lead to a number of changes in how China is using anti-dumping in particular. The increase in the flow of China's anti-dumping investigations was a reversal of the trend from the previous five years. Furthermore, whereas prior to the crisis almost all of China's anti-dumping use was confined to only five industrial sectors, during 2008–9 China initiated new, large-scale anti-dumping investigations in previously unaffected sectors—including the controversial cases against US autos and chicken parts that immediately followed the US-imposed China safeguard on tyres in 2009. Furthermore, China is similar to other countries in the large number of anti-dumping measures that last longer than five years, but it is different from other countries in that most of its anti-dumping targets high-income trading partners. Finally, Chandra also provides evidence that, despite anti-dumping affecting a relatively sizeable share of China's imports, very few Chinese firms have participated as petitioners in the process.

Patricia Tovar analyses India's increasing reliance on TTBs in Chapter 7. While India did not use anti-dumping, safeguards and countervailing measures prior to 1992, it has subsequently become the WTO system's dominant user of TTB policies. There has been an increase in the stock of Indian imports subject to anti-dumping measures during 1992–2009; in particular, the percentage of tariff-line products affected by an anti-dumping measure increased from 1.8% in 2007 to 4.0% by 2009. Another dimension along which India's anti-dumping protection increased during 2008–9 was via the failure to remove previously imposed policies that came up for review during the crisis. Furthermore, the incidence of India's anti-dumping policy has shifted over time towards China and other developing countries. Finally, while India increased its use of anti-dumping, global safeguards and China-specific safeguards during 2008–9, India's process of tariff liberalisation continued during the period. As such, it is possible that India's use of TTBs may have contributed to its sustained move towards greater openness.

Marcelo Olarreaga and Marcel Vaillant present the case of Brazil in Chapter 8. Brazil put a regime of TTB protection into place in the late 1980s, when it began its process of trade liberalisation. In the period 1990–2009, Brazil's TTBs were highly concentrated in a few sectors and its government

relied most heavily on anti-dumping measures, as opposed to countervailing or safeguards measures. While Brazil's TTBs affect a relatively small share of its imports overall, 18% of imports within politically sensitive sectors are affected. The main historical targets of Brazil's TTBs are high-income and upper-middle-income countries, with imports from China and lower-middle-income countries increasingly targeted over the 2000s. There is some evidence of complementarity between Brazil's MFN tariffs and its use of TTBs, which could signal that politically strong sectors are able to obtain both forms of protection. Furthermore, although Brazil had a significant amount of 'water' in its MFN tariff structure during this period, the TTBs are twice as large as would be allowed by the water in the existing tariff structure. Interestingly, any acceleration of Brazilian TTBs during 2008–9 appears to be unrelated to the performance of the Brazilian real economy (which continued to grow in annual terms), relating instead to an appreciation of the *real* with respect to the currency of Brazil's trading partners.

In Chapter 9, Michael O. Moore investigates Argentina's use of TTBs. Argentina, once a prominent example of the 'Washington consensus', took dramatic steps to reduce its integration into the world economy in the aftermath of the peso crisis in 2001. Thus, while it would not have been unprecedented for Argentina to use TTBs aggressively in response to the 2008–9 crisis, the share of imports subject to ongoing Argentine TTBs increased from 1.2% of total imports in 2006 to only 2.7% by 2009. Considering a broader definition of suppressed imports allows the affected import share to rise to 5% by 2009. With respect to export targets, while Argentine anti-dumping continues to focus on developing countries, this focus has shifted from Brazil in earlier periods to almost all of the recent anti-dumping activity being narrowly focused on China.

Raymond Robertson documents Mexico's experience with TTBs in Chapter 10. Among developing economies, Mexico was one of the early liberalisers of its overall import regime. In the early 1990s, Mexico stood out as one of the largest users of TTBs—almost entirely in the form of anti-dumping measures—but consistent with its other trade barriers, Mexico has reduced the use of these measures over time. Mexico's two primary targets have been and remain China and the USA. Unlike many other developing countries, Mexico's increased use of TTBs during the 2008–9 crisis was slight (if at all), especially when compared with historical use. The most significant Mexican TTB activity during the crisis was the *removal* in 2008 of anti-dumping measures over hundreds of tariff lines that had been in place against China since 1993 (see Figure 1.10).

Turkey's use of TTBs is the subject of Baybars Karacaovali's study in Chapter 11. Turkey has been an active user of anti-dumping since the 1990s and more recently began using safeguards and CVDs. Turkey's use of TTBs during the 1990s took place at the same time that it was liberalising its import regime as a founding member of the WTO and through formation of a customs

union with the EU in 1996. Turkey has also signed numerous PTAs that the EU has been involved in as part of its EU candidacy. The drastic intra-group and extra-group trade liberalisation brought on by the relations with the EU in particular is a likely contributing determinant to the rise of Turkey's use of TTBs during 2000–2009. Turkey continued to use TTBs aggressively during 2008–9 as it was significantly affected by the global economic crisis. Finally, Turkey has not targeted established EU members with TTBs but instead has targeted developing countries, and especially China, at rates that are disproportionate to their import market share.

Lawrence Edwards concludes with a detailed analysis of South Africa's use of TTBs in Chapter 12. South Africa's TTBs exhibit many similarities with other emerging economies: an increase in the use of anti-dumping measures during the 1990s and a shift in the incidence of anti-dumping policy towards China, India and other emerging economies in the 2000s. Yet there are important differences that reflect the unique domestic characteristics of South Africa's anti-dumping policy. While South Africa was a world leader in the use of anti-dumping measures during the 1990s, it had dramatically reduced the number of products subject to TTBs by the late 2000s. South Africa responded to the global economic crisis in 2008–9 by revoking over a third of all anti-dumping measures. This, however, was not a proactive response by the government to the crisis, but rather the consequence of a High Court ruling that various anti-dumping measures had exceeded the five-year period allowed under the WTO. South Africa's anti-dumping measures were not used to offset the 1990s multilateral tariff liberalisation but were more likely used to cover products that already had high tariffs and faced relatively low tariff reductions, suggesting common political economy determinants of South Africa's tariff and anti-dumping policy. Finally, there is little evidence that the political economy determinants of anti-dumping policy have changed, despite the integration of previously unrepresented economic interests after the demise of apartheid in 1994.

5 CONCLUSIONS

The chapters in this volume clarify a number of important facts on TTB policy changes during the 2008–9 crisis. These changes are presented in the context of a longer-term perspective; the trading system and global economy have undergone a significant evolution over the previous 20 years. Ultimately, these facts raise more questions for research than they answer. Recall the questions described earlier. What are the likely contributing causes to the resilience of the WTO system in the face of the 2008–9 global economic shock? How is this related to the evolving landscape of import protection through TTBs that, for some WTO members, forms an increasingly important portion of its overall portfolio of protection? What does the changing nature of TTB use mean for the future of a cooperative, multilateral WTO system?

The legacy of the TTB policy changes taking place during the crisis is far from decided. The 25% increase in product coverage by 2009 has established new barriers that are likely to remain in place for a number of years, before the battles begin for their removals under sunset reviews. Nevertheless, other battles over crisis-era TTBs have already been initiated. By 2010, a number of these TTBs were already subject to a formal dispute settlement challenge at the WTO—including the US-imposed China safeguard on tyres, China's anti-dumping and CVDs on US exports of grain-orientated electrical steel, the EU's decision to continue duties on Chinese exports of footwear, and China's imposed anti-dumping duties on steel fastener imports from the EU. This is also consistent with pre-crisis trends; the relative importance of TTBs is also accounted for by its increasingly significant role as a source of formal WTO legal challenges (Bown 2009d).

To conclude, it must stressed that, despite the contribution of the following chapters to economic research, it will be a long time before we can close the book on the 2008–9 crisis and its long-term implications for import protection.

6 APPENDIX

6.1 Technical Explanation of Methodological Approach

This description follows from Bown (2011). The first methodological approach takes an importing economy's set of HS-06 products as the unit of observation and builds from Bown and Tovar (2011, Figure 1). More formally, let k be the policy-imposing (importing) economy and let $m^k_{i,t} \in \{0,1\}$ be an indicator for whether the economy had non-zero imports of product i in year t. The HS-06 product i is in the economy's time-varying set of HS-06 products with non-zero imports, defined as I^k_t. Next, let $b^k_{i,t} \in \{0,1\}$ be an indicator for whether the importing economy k 'applies' a TTB on imports of product i in year t. Thus, define the first 'count' measure of the share of annual stock of economy k imported products subject to a TTB as

$$\frac{\sum_{I^k_t} b^k_{i,t} m^k_{i,t}}{\sum_{I^k_t} m^k_{i,t}}. \tag{1.1}$$

The approach can rely on a variety of definitions for the TTB indicator $b^k_{i,t}$ depending on the application. Sometimes it may be defined as an indicator of the initiation of a TTB *investigation* of product i in year t; alternatively, $b^k_{i,t}$ may be defined as the actual application of a barrier (*eg* import duty, quantitative restriction, price undertaking) imposed over product i in year t. Note that, when referring to applied barriers, the approach adopted in the text is to take the year of imposition as the first year that the barrier was imposed, even if it was only a preliminary barrier and even if that preliminary

barrier was subsequently removed after completion of the full investigation. The application, even of preliminary barriers, can affect trade both directly (raising costs to exporters) and indirectly (increasing uncertainty about future policy); see Staiger and Wolak (1994).

The second approach refines Equation (1.1) by replacing the binary indicator variable for imports, $m^k_{i,t}$, with import-value data at the product level and thus *trade-weighting* the $b^k_{i,t}$ indicator by the HS-06 product-level value of imports from country j, $v^k_{i,j,t}$. While this approach builds from Equation (1.1), it is adapted in two ways.

First, redefine the product-specific, time-varying TTB indicator to now be at the *bilateral* level: let $b^k_{i,j,t} \in \{0, 1\}$ be an indicator for whether a TTB applies to the economy k imports of product i from exporter j in year t. This modification allows the approach to address the possibility of heterogeneity across foreign sources in terms of which trading partners are negatively affected by the TTB and which are not.

The second adaptation requires a slightly more detailed explanation. In order, ultimately, to create coverage ratios that are comparable within a country *over time*, an assumption is required for the counterfactual level of economy k imports in t (as well as $t + 1$, *etc*) from a supplier j whose exports had been subject to a TTB imposed in an earlier year (*eg* $t - 1$, $t - 2$, *etc*) and thus did not grow at a 'normal' rate in later years (*eg* t, $t + 1$, *etc*). To determine the counterfactual level of imports for such products, the approach in the text is to make the simple and conservative assumption that, beginning in year t, yearly imports of TTB-impacted products would have grown *at the same rate* as the economy's non-TTB impacted products.[23] To make this clear, decompose the set of economy k imported products I^k into two subsets. Define the first subset as $\hat{I}^k$ and allow it to contain those HS-06 products i subject to a TTB imposed during the sample and for which there is a need to construct *counterfactual* import values, defined as $\hat{v}^k_{i,j,t}$, for all years that the TTB is in effect. Define the second subset of products as I^{*k} and allow it to contain all (other) imported HS-06 products i that were never subject to an imposed TTB and for which there is *not* a need to construct counterfactual import val-

[23] There are arguments to suggest that such products may grow at a rate that is different from other products in the economy. For example, these are products that typically had been growing at rates faster than the average rate of import growth, perhaps because of a technological innovation or productivity improvement, and thus one might expect that to have continued. On the other hand, if the imports were growing at faster rates because they were dumped or subsidised (and if the dumping or subsidisation had terminated), one might expect the rate of growth to fall (if the dumping or subsidising stopped), even in the absence of the TTB. While acknowledging the range of theoretical arguments for counterfactual import growth, to construct these measures the approach adopted here is to rely on the conservative assumption of TTB-impacted imports growing at the same rate as imports not impacted by TTBs.

ues, and thus for which only the observable import data $v^k_{i,j,t}$ is required.[24] This modification also addresses the well-known concern that any TTB policy imposed in year t may reduce the (contemporaneous) year t value of imports, and this would underweight the economic importance of the trade barrier in the averaging.

The second measure of the share of annual stock of economy k imported products subject to a TTB in year t, reflecting the three modifications to Equation (1.1) and thus weighted by the 'value' of imports, is defined as[25]

$$\frac{\sum_{I^k_t} b^k_{i,j,t} \hat{v}^k_{i,j,t}}{\sum_{\hat{I}^k_t} \hat{v}^k_{i,j,t} + \sum_{I^{*k}_t} v^k_{i,j,t}}. \tag{1.2}$$

There are at least three other, more subtle transmission mechanisms through which Equations (1.1) and (1.2) can diverge beyond ways through which trade-weighting the HS-06 products leads to differences between the two series that have already been identified. First, defining the series according to the stock of covered HS-06 products prevents the case of a product already subject to a TTB in $t-1$ from being double counted if a new TTB is imposed over the same product in subsequent years (*eg* in year t). For example, suppose a HS-06 product from a given foreign trading partner became subject to an anti-dumping barrier in $t-1$ and then a CVD in t. Since the approach is to measure the 'stock' of products affected by TTBs, this would not result in a change to series (1.1) or (1.2) between $t-1$ and t. On the other hand, if there is a *new* trading partner being subject to the TTB between $t-1$ and t, even if the underlying product is unchanged, there can be a change in series (1.2). A change in trading partner coverage could occur because either the second partner was targeted under a different underlying TTB policy instrument (*eg* anti-dumping versus CVD) or because of differences in the timing under the same policy instrument (*eg* the first anti-dumping imposed over the HS-06 product was imposed against country A in $t-1$ and not against country B until t). Third, the stock series can also be affected through differential timing in the *removal* of a previously imposed TTB over the same HS-06 product. For example, if the TTB on trading partner A is removed in $t-1$ but the TTB on trading partner B is not removed until t, this differential timing in the removal will affect series (1.2). However, there will be no change in series (1.2) until *all* previously imposed TTBs affecting this product are removed.

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[24] The approach in the text adopts the mean annual growth rate of products from the set I^{*k} in t to construct the counterfactual import levels for the products in $\hat{I}^k$ in t, which are denoted $\hat{v}^k_{i,j,t}$.

[25] The 'value' share measures presented throughout the Introduction are based on non-oil import data only. In the country-specific chapters of this volume, the authors have made alternative applications of this and related methodological approaches to different samples of trade data.

Before concluding this section, consider five remaining caveats to these approaches.

First, some economies impose TTBs at a level of product disaggregation (*eg* HS-08, HS-10) that is finer than the HS-06 level that is the focus here. Nevertheless, examination at the HS-06 level is desirable for the context of this chapter, since HS-06 is the finest level of disaggregation that is both comparable across countries and that has available import-value data back to the early 1990s. While the application of measures using HS-06 data will overstate the trade impact (in the level) for any economy that typically does not cover all subproducts within an HS-06 category, because these measures are defined consistently over time and across trading partners, measurement error is much less of a concern for two questions of interest to this and the subsequent chapters in the volume: *intertemporal changes* (*ie* whether the scope of imported products subject to a country's use of TTBs is increasing or decreasing over time) and the *relative exporter incidence* (*ie* whether certain exporters are relatively more or less frequently targeted than others by the stock of imposed TTBs).

Second, these approaches concentrate entirely on the potential first-order impact of TTBs on trade. There is a substantial theoretical and empirical literature from case studies that identifies potentially important second-order effects of TTBs (especially anti-dumping) on trade flows. Some accentuate the potential negative trade effects identified here, while others are offsetting and reduce the overall size of the trade effects. Examples of accentuating effects include downstream impacts, tariff-jumping foreign direct investment, and retaliation, while examples of offsetting effects include trade diversion. For an excellent survey of the anti-dumping literature, see Blonigen and Prusa (2003). Furthermore, alternative approaches to measuring the economic importance of anti-dumping in particular include Egger and Nelson (forthcoming) and Vandenbussche and Zanardi (2010) for gravity-model-style assessments and Gallaway *et al* (1999) for a computable general equilibrium style assessment.

Third, even trade-weighting the incidence of TTBs does nothing to address heterogeneity in the size of the imposed trade barriers. Bown (2010b), for example, notes substantial heterogeneity in the size of duties imposed across both policy-imposing economies and across targeted exporters by (within) a policy-imposing country, especially with respect to barriers imposed on imports from China.

Fourth, these approaches do not address potential heterogeneity in the *form* of the applied TTBs. For example, some economies apply anti-dumping as *ad valorem* duties, whereas others may be more likely (or against certain trading partners or over certain imported products) to apply it as a specific duty or a 'price undertaking' in which the exporter voluntarily raises its price above some threshold under the threat of an imposed duty. Global safeguards,

Table 1.4: *Industry classification in the Harmonized System.*

Section	Two-digit HS codes	Description
I	01–05	Live animals, animal products
II	06–14	Vegetable products
Iii	15	Animal or vegetable fats and oils
IV	16–24	Prepared foodstuffs
V	25–27	Mineral products
VI	28–39	Chemicals
VII	39–40	Plastics and rubber
VIII	41–43	Leather, raw hides and skins
IX	44–46	Woods and articles of wood
X	47–49	Pulp of wood
XI	50–63	Textiles
XII	64–67	Footwear
XIII	68–70	Stone
XIV	71	Pearls
XV	72–83	Metals
XVI	84–85	Machinery and electrical
XVII	86–89	Vehicles
XVIII	90–92	Optical instruments
XIX	93	Arms and ammunition
XX	94–96	Miscellaneous manufacturing
XXI	97–98	Works of art

on the other hand, are frequently applied as quantitative restrictions such as tariff rate quotas.

Fifth, these approaches do not address the issue of the likely import demand or export supply responses to the imposed TTBs because they do not control for import demand or export supply elasticities. For an application of the OTRI approach to the global economic crisis of 2008–9, see Kee *et al* (2010).

6.2 Data

Detailed data on anti-dumping, CVDs, global safeguards and China-specific safeguards are available from the World Bank's *Temporary Trade Barriers Database* (Bown 2010a). For anti-dumping and CVD policies, the data in Bown (2010a) are derived from original government source documents. Each government reports tariff-line product codes that are subject to the investigations, the dates and countries from whom imports are being investigated, and the decisions regarding whether to impose preliminary and final trade barriers, as well as when they are removed. The data on the use of global safeguards and China-specific safeguards are derived from both original government source documents and what governments report to the WTO's Committee on Safe-

guards. Bown (2010a) provides a complete discussion of the data sources, as well as the other information contained in the database that is not used in the analysis here.

The tariff-line product codes from Bown (2010a) are then matched to bilateral import data at the product level taken from UN Comtrade via the World Bank's Internet-based, freely available World Integrated Trade Solution (WITS).[26] Comtrade has two levels of disaggregation available: at the HS-06 level and at the tariff-line level, which may be at the 8-, 10- or 12-digit level, depending on the economy. Only the HS-06 data are publicly available. Chapter authors also have access to the tariff-line import data, though they differ on which of the different import series they chose to apply given tradeoffs associated with each. For example, whereas the tariff-line level import data provide more granularity, they are generally not available in as long a time series as the HS-06-level data (which date back at least to the early 1990s), and they also may be more susceptible to classification changes of products over the sample.

This volume also takes advantage of data on tariff-line MFN applied tariff rates and PTA rates, as well as information on tariff-line WTO bindings from the WTO's Consolidated Tariff Schedules. While there are many years of tariff data available for these economies, most countries are missing at least one or two years' worth of tariff data.

The chapter authors then further supplemented the data on TTBs, trade and tariff policies with data on the macroeconomy, industries or national features of the domestic political economy from a number of other sources. Additional details are provided within each chapter where appropriate.

Finally, many of the chapters in this volume use a common approach to defining 'industries' so as to examine more detailed data on TTB policy use and trade flows. In many instances, the authors refer to industries based on the two-digit Harmonized System 'sections' that are documented in Table 1.4.

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