

Emerging Economies and the Emergence of South-South Protectionism

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Abstract

Do exports resume when import-restricting *temporary* trade barriers such as antidumping are finally removed? To establish the importance of this question for emerging economies, this paper uses newly available data from the World Bank's *Temporary Trade Barriers Database* to update a number of inter-temporal indicators of import protection along three dimensions: additional time coverage through 2011, additional policy-imposing country coverage, and a more comprehensive depiction of impacted trading partner coverage. It then turns to the emerging economy exporters affected by temporary trade barriers and highlights the economic significance of frequently bilateral import restrictions imposed by other

emerging economies, i.e., South-South protectionism. Finally, it then investigates empirically whether country-level exports resume when the previously imposed—but temporary—import protection is *finally* removed. China's exporters respond quickly and aggressively to the market access opening embodied in the removal of such import restrictions. This differs markedly from the slow and tepid export response of other emerging economies, especially when the import protection had been imposed by another emerging economy trading partner. This evidence suggests a previously unidentified long-run cost associated with such South-South protectionism that merits further research and inquiry.

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1 Introduction

As the world economy struggled to climb out of the Great Recession during 2009-2011, emerging markets were the source of much of the relatively meager economic growth taking place. The IMF (2011) estimates that emerging markets contributed more than 75 percent of total global GDP growth in 2011 even though they accounted for less than half of world GDP. For countries seeking an export-led growth strategy, one implication is the need to *reorient* trade to take advantage of emerging market growth.¹

However, as the global economy rebalances after the Great Recession, policymakers in emerging markets have been placed under increased pressure to impose new import restrictions, perhaps partially *because of* the adjustment pressure associated with the reorientation of exports. While many emerging economies withstood pressure to raise generally applied import tariffs early in the crisis (Kee et al, forthcoming), a growing number implemented significant new bilateral import restrictions through antidumping, safeguards, and countervailing duty policies – referred to jointly as temporary trade barriers (TTBs). Bown (2011) used data from the World Bank’s *Temporary Trade Barriers Database* to show that, in comparison with pre-Great Recession levels of 2007, seven major emerging economy G20 members collectively increased by roughly 40 percent the share of nonoil import product lines that they subjected to these import restrictions by 2009.² Newly available data for these economies indicates coverage was an additional 13 percent higher in 2011 than 2009, and thus stands 67 percent higher than 2007. This 67 percent increase is particularly large relative to only a 13 percent increase for this same period by *high-income* G20 member economies, countries that have gone through a much weaker period of economic growth.

This paper provides a threefold examination of issues concerning emerging economies and these newly evolving forms of import protection. First, we characterize the heterogeneous economic

¹ This reorientation is not limited to *emerging* economies’ export-led growth strategies. According to the U.S. President’s Council of Economic Advisers (CEA 2011, Figure 4-12, p. 102) more than 70 percent of nominal United States export growth between 2009 and 2014 associated with the potential doubling of US exports was expected to derive from exports to emerging markets.

² Throughout this paper, we use “imports” and “nonoil imports” interchangeably and “exports” and “nonoil exports” interchangeably. I.e., our analysis always strips away oil products from total imports, total exports and TTB policy actions.

significance of TTB use across policy-imposing countries.³ Second, we identify which emerging market *exporters* are adversely affected by such policies, thereby highlighting the extent to which these policies affect South-South trade. Third, given that these trade barriers are supposed to be *temporary*, we examine the important but previously unaddressed issue concerning the export response after the trading partner removes the import protection. *Do exports resume?*

Section 2 provides an inter-temporal, country-by-country assessment of emerging economy imports affected by the TTBs that their own governments impose. We use newly updated data from the *Temporary Trade Barriers Database* and extend results first presented in Bown (2011) along three dimensions: additional time coverage through 2011, additional policy-imposing country coverage, and a more comprehensive depiction of impacted trading partner coverage. The analysis covers 24 policy-imposing high-income and emerging economies that collectively accounted for more than 80 percent of global GDP and 86 percent of world merchandise imports in 2011, and it includes a number of smaller (non-G20) emerging economies for the first time. While there is evidence of a continued increase in TTB coverage of imports by emerging markets, and a number of major G20 emerging economies in particular, we also document substantial heterogeneity across policy-imposing countries.

Section 3 shifts perspective to emerging market *exporters* impacted by foreign-imposed TTBs. First, we estimate that by 2011, 3 percent of emerging economy exports overall were covered by foreign-imposed TTBs, up from 2.5 percent a decade earlier. Second, a number of different emerging market exporters are adversely affected by trading partner use of TTBs; e.g., by 2011, nearly 5 percent of China's total nonoil exports were covered by TTBs. However, China's experience is not unique; by 2011, Vietnam, Russia, and Ukraine had a *higher* share of their nonoil exports impacted by foreign TTBs than even China. Other exporters significantly impacted by foreign-imposed TTBs include India, Thailand, Pakistan, Mexico, Kazakhstan and Indonesia. Third, we identify for each exporter the extent to which this TTB coverage of its exports results from South-South protectionism.

Given the economic significance of South-South protectionism, Section 4 investigates the key issue of what happens to emerging economy exports once a previously imposed *temporary* trade barrier is removed and exports become "free" (in theory) to resume. We construct a sample of nearly 750 antidumping import restrictions that G20 member economies had imposed and removed between 1992 and 2008. We trace the impact of import restrictions on product-level exports for *two* different five-year

³ Antidumping and related TTBs have a much longer history of both policy use by high-income economies like the United States and European Union and research examining this use. See, for example, Finger (1992).

windows – i.e., one window timed around the *imposition* of the original import restriction and one timed around its *removal*.

Our results provide evidence of a number of previously undocumented features of the export response to TTB removals. On average and relative to other exporters, China’s exports resume quickly and aggressively after a foreign trading partner removes an antidumping import restriction. However, for all other exporters, the evidence is not nearly as positive. Other emerging economy exporters have a particularly difficult time regaining lost export sales and restoring export market share after a trading partner removes an import restriction, especially in the case of exports sent to *other* emerging economies.

Section 5 concludes with a discussion of a number of questions these results raise for future research as well as policy implications.

2 Temporary Trade Barriers Imposed by Emerging Economies

An increasing number of emerging economies have imposed antidumping, countervailing duties and safeguards – collectively referred to here as temporary trade barriers (TTBs) – over an increasing share of their imports. Table 1 summarizes newly constructed indicators on TTB use through 2011 for fifteen emerging economies broken into two cohorts – members and non-members of the G20.⁴ The approach follows the methodology proposed in Bown (2011), which reported data on policy use through 2009 for a more limited set of countries.⁵ As a point of comparison, the lower third of the table reports policy use by nine high-income economies also included in the *Temporary Trade Barriers Database*.

Consider first column (1) of Table 1 which reports the share of import product lines, at the 6-digit Harmonized System (HS-06) level, over which the policy-imposing economy had at least one import-restricting TTB in effect in 2011. To clarify, this measure captures the “stock” of products covered by the accumulation of TTBs over time and that were in effect in 2011. The emerging economy

⁴ The only G20 countries not included in the policy-imposing economy analysis are Russia, which had not yet acceded to the WTO and thus become subject to multilateral disciplines (and reporting requirements) on TTB use during this period, and Saudi Arabia.

⁵ The Appendix provides a more complete discussion of the methodology and data used to construct the two main measures reported in Table 1, as well as benefits and caveats associated with each approach.

G20 members collectively had 3.2 percent of their import product lines subject to TTBs in 2011; for comparison, this is more than double their import coverage (1.5 percent) from a decade earlier, as reported by column (2).⁶ Six of the eight individual G20 emerging economies had higher levels of import coverage in 2011 relative to 2001 – the two exceptions are Mexico and South Africa. In comparison, the cohort of six *high income* economy G20 members in the sample combined to increase their coverage to only 1.9 percent of import product lines in 2011, up from 1.8 percent in 2001.

Columns (3) through (7) of Table 1 report information for each of the 24 policy-imposing countries' use of temporary trade barrier policies in 2011 based on an alternatively constructed measure that *trade-weights* policy use by bilateral, product-level (HS-06) import data. The four cohorts of policy-imposing economies in Table 1 are each ranked by column (3). For example, among the cohort of emerging economy G20 members, this coverage ranged from a low of 0.3 percent of imports (Mexico) to a high of 6.3 percent of imports (India). Turkey, China, Argentina, Brazil and Indonesia also had a significant share of imports affected by TTBs in 2011. From the non-G20 cohort of emerging economies, Pakistan, Peru and Thailand each had more than 1 percent of imports subject to TTBs in 2011.

Column (4) provides information to disentangle the extent to which the country relies exclusively on its antidumping policy to implement TTBs. For example, while 6.3 percent of India's imports were subject to some TTB policy in 2011, 5.8 percent of India's imports were subject to antidumping alone. The differential of 0.5 is thus the percentage of India's imports subject to some *other* TTB policy. Antidumping is the most commonly used TTB policy for each economy, and India's 0.5 percentage point differential is relatively high for the year 2011, though it is not unprecedented in the longer time series of data capturing policy use, as we observe below. Countries with significant imports subject to some TTB policy in effect in 2011 *other than* antidumping include India, Turkey, Indonesia, the United States and the European Union.

Columns (5), (6) and (7) of Table 1 summarize information on the *foreign source* of the imports that the policy-imposing country subjects to its TTBs in 2011, categorizing based on whether the imports derive from China, another emerging economy (non-China), or a high-income economy. For example, while 6.3 percent of India's total imports were subject to some TTB policy in 2011, 21.9 percent of its imports from China were subject to a TTB, compared to only 3.0 percent of its imports from other emerging economies and 2.7 percent of imports from high-income trading partners. Furthermore, while India's TTBs against China establish the high end of the range of outcomes, TTB coverage of a greater-

⁶ This includes Argentina, Brazil, China, India, Indonesia, South Africa and Turkey. To be consistent with Bown (2011), Mexico is omitted from this particular aggregation given that it removed antidumping import restrictions on China in 2008 that covered over 20 percent of its import product lines and had been in effect since 1993.

than-average share of imports from China is common across policy-imposing countries. In fact, 19 of the 23 policy-imposing countries (non-China) reported in Table 1 have TTBs that covered a larger share of their total imports from China (column 5) than their overall average (column 3) in 2011. Chile, Japan, Malaysia, and New Zealand are the only exceptions, and each of these countries is a small overall user of TTBs in 2011. Collectively, six of the emerging economy G20 members covered 10.8 percent of imports from China in 2011 with TTBs.⁷ While it has been long recognized that WTO member countries have increasingly used antidumping and other TTBs to target China's exports since its 2001 accession (Messerlin, 2004), to our knowledge, Table 1 presents the first quantification of its inter-temporal trade coverage based on product-level data.

Figure 1 presents a longer-time series and other informative indicators on TTB use for each of the fifteen emerging economies summarized by Table 1. The left column of panels in Figure 1 (column a) follows Bown (2011, Figure 1) and presents additional information on the "stock" (TTBs in effect) and "flow" (new TTB investigations) measures for imports affected each year, by all TTB policies and for the antidumping policy alone. The right column of panels in Figure 1 (column b) provides a new characterization of the trading partner-incidence of TTBs; it plots the share of annual imports covered by TTBs deriving from China, from other emerging economies (non-China), and from high-income economies.

To interpret, consider the Figure 1 panels for China's use of TTBs, and begin with the left column. The black lines refer to the "stock" measures – i.e., the share of imports each year subject to any TTB policy (black *solid* line) or the antidumping policy alone (black *dashed* line). The grey lines refer to the "flow" measures – i.e., the share of imports each year subject to a new TTB policy investigation (grey *solid* line) or new investigation under the antidumping policy alone (grey *dashed* line). China began using TTBs in 1997, even before it acceded to the WTO in 2001. Initially, its TTB use each year was small – both the flow and the accumulated stock were less than 1 percent of imports – and policy use was confined to antidumping so the dashed and solid lines overlap. In 2002, similar to a number of other policy-imposing economies that year, China initiated a safeguard investigation and imposed a (non-antidumping) TTB over a significant share of imports of steel. Hence, there is both a *spike* in the TTB flow variable in 2002 and a *wedge* between the solid and dashed lines (the difference between all TTBs and antidumping only). By 2003, China's accumulated stock of TTBs covered more than 4.5 percent of imports. This fell sharply when the safeguard was removed in late 2003, and almost all of China's TTBs

⁷ To present this data consistently, we again omit Mexico from the aggregation. When we include Mexico, 8.1 percent of China's exports to the G20 emerging economies were covered by a TTB by 2011.

since have been confined to antidumping. During the Great Recession, China had a sharp increase in the flow of new TTB investigations (grey solid line) covering nearly 1 percent of imports in 2009 alone. Nevertheless, while the stock of imports covered by its TTBs (and antidumping in particular) has grown to 3.2 percent by 2011 – the same information summarized in column 3 (and 4) of Table 1 – the grey lines indicate the flow of new TTB investigations fell considerably after 2009 to roughly 0.1 percent of imports in both 2010 and 2011.

A number of broad inferences drawn from China are common to other policy-imposing emerging economies in Figure 1, and they illustrate the utility of this representation of the data. Over time, certain emerging economy G20 members have increased considerably the share of imports covered by TTBs. However, information from the “flow” measures does reveal variation in the *timing* of significant deviations from the basic upward trend of import coverage, including major relative increases in TTBs in Argentina (1996, 2000, 2004, 2009), Brazil (1992-1993), India (1996, 2002, and 2008-2009), Indonesia (1999, 2006, 2011), Mexico (1993), and Turkey (1994, 2000, 2006-2008). Bown and Crowley (2012), for example, use these indicators to document evidence of an important relationship between macroeconomic shocks – such as recessions and exchange rate fluctuations – and the inter-temporal imposition of new import protection through TTBs for these particular policy-imposing economies over 1995-2010. Furthermore, the figure indicates that antidumping is the dominant TTB policy instrument; though there are also periods in which the safeguards policy has also played a significant role for Argentina, Brazil, India, Indonesia and Turkey.

Figure 1 also provides time series information for the first time for a number of emerging economies. While few of the non-G20 emerging economy users of TTBs had a large share of imports covered by TTBs in 2011, the first result of interest is to note that many went through historical episodes of significant trade coverage. For example, Chile (1999-2004), Colombia (1999, 2005-2006) and Peru (1997, 1999, 2002-2004) each experienced periods in which TTBs covered or threatened to cover more than 2 percent of imports in a year. Furthermore, while countries like Malaysia, Pakistan and Thailand still had a relatively small share of imports covered by TTBs in 2011, their import coverage was on the same upward trajectory that other policy-imposing countries (e.g., India, Turkey) with similar trends have yet to reverse.

Next consider Figure 1’s right column (column b) of panels which describe, for each policy-imposing country, the *trading partner* incidence of the imposed TTBs in effect each year. For ease of exposition, focus again on the panel representing China as the policy-imposing country. First, the solid black line *reproduces* the solid black line from the panel in the left column as the share of China’s

imports from *all sources* that are subject to a TTB in effect that year. The other two lines in the right column characterize whether the foreign source of the imports was a high income trading partner or another emerging economy. Every year after 2005 China had TTBS that were imposed over a greater share of its imports from high-income economies (dashed line) than its imports from other emerging economies (circle markers).

However, this particular result for China differs markedly from almost all other policy-imposing emerging economies. By 2011, recall from columns (6) and (7) of Table 1 that six out of the other seven G20 emerging economies and six out of the seven non-G20 emerging economies had TTBS implemented over a greater share of imports from other emerging economies (non-China) than imports from high-income economies. Figure 1 illustrates that this phenomenon is pervasive over recent years. Furthermore, a comparison of top row of columns (6) and (7) from Table 1 indicates that once we strip away China as an exporter *and* as an importer, 2.3 percent of G20 emerging economy imports from other emerging economies was covered by a TTB in 2011, as compared to only 1.7 percent of their collective imports from high-income trading partners. Aside from China, almost all policy-imposing emerging economies target imports from other emerging countries (non-China) at *higher* rates than they target imports from high-income countries.

Nevertheless, even more striking for almost all of the other policy-imposing emerging economies (non-China) is the grey solid line in the right column of panels in Figure 1. Over a longer time series, this confirms the result summarized for 2011 by column (5) of Table 1: over the first decade of the 2000s, the share of the country's imports from China impacted by its TTBS is almost always larger than the share of the country's overall imports impacted by its TTBS.

3 Emerging Economy Exporters and the Incidence of Foreign-Imposed TTBS

Section 2 revealed a number of important pieces of evidence confirming that South-South trade flows are significantly covered by TTBS. First, almost all emerging economies that use temporary trade barrier policies had, in 2011, TTBS in place that covered a larger share of their imports from other emerging economies than their imports from high-income economies. This holds for both their imports from China and their imports from all other emerging economies (non-China). Second, a large share of China's exports to emerging economies was subject to TTBS in 2011. Here we examine the extent to which this phenomenon extends beyond China to other individual emerging market exporters. We begin by

identifying which other emerging markets faced substantial foreign-imposed TTB coverage of their exports as of 2011; we then present an extension of this analysis backward over time.⁸

Consider Table 2, which summarizes information on the exporters most affected by the TTBs in place in 2011; it compares this to the TTB coverage of their exports a decade earlier. The indicators are constructed based on the trade-weighted measure using data on imports and policies imposed by the 24 major TTB-using economies covered in Table 1. The top segment of the table contains information on emerging economies affected by foreign-imposed TTBs; entries are ranked by column (1).

Since we are already familiar with China's indicators, begin Table 2 with China as an export target. Column (3) reminds us that 10.8 percent of China's collective exports to other G20 emerging markets were subject to TTBs in 2011. Overall 4.9 percent of China's exports to these 24 economies in 2011 were subject to TTBs, and this includes 4.7 percent of its exports to high-income G20 markets and 1.0 percent of its exports to the category of "other," which is an aggregation of the ten non-G20 economies listed in Table 1. While targeting China's exports with TTBs in 2011 is not a new phenomenon, the share of its exports covered by TTBs has increased considerably since its WTO accession in 2001, when only 3.2 percent of its total exports were subject to TTBs.

Table 2 identifies other exporting countries that are particularly affected by foreign-imposed TTBs. Column (1) reveals that Vietnam, Russia and Ukraine have a larger share of 2011 total nonoil exports subject to foreign-imposed TTBs than China. For Russia and Ukraine, this is not a recent phenomenon. While the export coverage in 2011 is high relative to other countries, column (2) indicates it is actually lower than each country's exporters faced in 2001. Furthermore, unlike China, these three exporters had a larger share of exports to high-income G20 economies subject to TTBs in 2011 than exports to other emerging G20 economies.

Other emerging economies with a sizeable share of exports impacted by foreign-imposed TTBs include India, Thailand, Pakistan, Mexico, Kazakhstan, Indonesia and Brazil – each had more than 1 percent of total exports subject to foreign-imposed TTBs in 2011. Thailand, Pakistan, and Indonesia were like China and had a larger share of their exports to other emerging economies subject to TTBs than their exports to high-income economies. These are examples of other exporting countries for which South-South protectionism is particularly important.

⁸ While we first identified this issue in Bown (2011), here we make two important measurement improvements. First, we examine the incidence of all TTBs and not just antidumping. Second, we use trade-weighting to better identify the economic importance of the foreign-imposed TTBs.

As a final point of comparison, the lowest rows in Table 2 show the impact of TTBs on export coverage of high-income economies. One potential cause for *optimism* for the major emerging economy exporters currently subject to substantial TTB coverage is the experience of Japan and Taiwan, China – two economies from an earlier generation that pursued export-led growth strategies. These two economies each experienced significant *reductions* in their share of exports covered by foreign-imposed TTBs between 2001 and 2011: from 7.1 percent to 2.2 percent for Japan and from 9.6 percent to 2.9 percent for Taiwan, China.

Figure 2 plots these indicators over a longer time series for the fifteen emerging economy exporters from Table 2. The black solid line plots the share of total exports (to all 24 policy-imposing markets) subject to TTBs in each year, the other lines plot the TTB-affected share of exports to high-income G20, emerging G20, and “other” policy-imposing trading partners, respectively. Figure 2 reveals one way that China is unique: its overall exports and its exports to each of the three different categories of policy-imposing trading partners have become increasingly subject to additional TTB coverage.

For a number of emerging economy exporters, the TTB coverage of exports by high-income trading partners in the 1990s has been replaced recently with TTB protection affecting its exports to other emerging economies. Indonesia, for example, faced substantial TTB coverage of its exports to high-income markets after the Asian financial crisis in the late 1990s; since 2006, a larger and growing share of its exports to other emerging markets has become covered by TTBs. Figure 2 reveals exports from India, Malaysia, and Thailand facing similar reversals over time.

This result is nevertheless not universal. First, the opposite result holds for Brazil, Mexico, and Russia. Historically, a greater share of their exports to other emerging economies than exports to high income economies were covered by TTBs, more recently the relative increase in exports covered by TTBs has been due to policies imposed by high-income trading partners. Second, some emerging economy exporters that were significant TTB targets in the past were no longer significantly targeted by 2011. For example, Argentina and Turkey each faced episodes in the mid-1990s in which 4-5 percent of exports were subject to foreign-imposed TTBs; by 2011, foreign TTBs targeted less than 0.5 percent of total exports.

To set up the next section, we pause to draw one final inference from the panels in Figure 2. There are many episodes with substantial downward breaks in the data. These indicate instances in which the exporting country had a trading partner(s) *remove* previously-imposed TTBs covering a substantial share of its exports. For example, Turkey went from 4.5 percent of total exports in 1997 being subject to foreign-imposed TTBs to only 1.0 percent in 1998 as trading partners removed a

number of antidumping import restrictions. Such breaks remind us that these barriers are temporary as they reveal a sudden foreign market access liberalization facing the exporter – at least with respect to it confronting less TTB policy coverage of its *potential* exports. Nevertheless, none of the indicators presented thus far address whether exports previously confronted by a TTB *actually* resume. The next section turns to this question.

4 The Removal of Antidumping Import Restrictions: Do Exports Resume?

The indicators of the previous two sections document at least two pieces of important evidence. First, major emerging markets have increased the scope of their imports covered by TTBs. Second, major emerging countries have a sizeable share of their total exports and exports sent to other emerging economies impacted by foreign-imposed TTBs. An important question yet to be addressed is what happens to exports when these *temporary* trade barriers are finally removed? To what extent do exports resume?

4.1 Regression approach and data sample

We use the *Temporary Trade Barriers Database* to construct a baseline sample of TTBs that one of the fourteen member economies of the G20 (listed in Table 1) imposed and removed between 1992 and 2008. Let t be the year that the TTB was first imposed and let T be the year that the TTB was ultimately removed. Given the need for two years of data both prior to t and subsequent to T , we use the 1992-2008 period because of constraints imposed by the availability of the HS-06 import data. We also focus on antidumping alone (and not all TTB policies) as it is most frequently used TTB policy and one for which the decision to impose and remove barriers is undertaken on a trading-partner specific basis.⁹

The approach is to investigate the trade impact associated with a sample of 746 antidumping cases pooled across fourteen policy-imposing G20 member economies. We take information from the *Temporary Trade Barriers Database* regarding when the import restriction was imposed, when it was removed, and the product codes associated with the TTB, and we match this to annual HS-06 trade data available from UN Comtrade. We require sufficient time coverage in the trade data so as to trace out ten

⁹ We also clean the data set of instances in which a policy-imposing country may have removed an antidumping duty over a particular product h but left in place another TTB over the same product against the same trading partner.

years of information on the trajectories of exports. Of the 746 observations in the data sample, 399 of the antidumping cases are associated with policies *imposed by* high-income economies and 347 are associated with policies *imposed by* emerging economies. While we are most interested in the response of emerging market exporters, the 746 observations also include high-income country exporters so as to benchmark results against one particular control group. In all, 352 of the antidumping cases targeted high-income economy exporters, 126 targeted exporters from China, and 268 targeted exporters from other emerging economies (non-China).

We examine the trade response question through a descriptive exercise whereby we characterize what happens over time, on average, to export volumes and shares of export markets at various focal points associated with the antidumping imposition and removal process. We employ a simple linear regression framework that takes the form¹⁰

$$(1) \quad Exports_{hijk} = \sum_{l=t-2}^{l=t+2} \beta_l X_l + \sum_{m=T-2}^{m=T+2} \beta_m X_m + \varepsilon_{hijk}.$$

In general terms, let $Exports_{hijk}$ in equation (1) represent country j 's exports of TTB-affected product h to policy-imposing country i at year k . We ultimately examine and characterize results based on different definitions of $Exports_{hijk}$, including the log of the real value of bilateral exports and the change in the country j share of the export market for good h in the country i .¹¹ The covariates X_l and X_m are indicators for the five years around t (the year the TTB was first imposed) and T (the year the TTB was removed), respectively. Finally, we interact X_l and X_m with various sets of indicator variables depending on whether the policy-imposing economy i was high-income or emerging, and we consider different subsamples of data based on whether the exporter j was in a high-income economy, China, or another emerging economy (non-China). Finally, ε_{hijk} is the error term.

¹⁰ The first half of equation (1) most closely resembles the approach of Prusa (1997, 2001). However, these papers did not consider what happens to exports *after* the removal of the antidumping measure in T , i.e., the second half of equation (1).

¹¹ In Appendix A2, we also include robustness checks in which we define $Exports_{hijk}$ as export growth and the share of the bilateral export market.

4.2 Results

4.2.1 Do post-TTB export values reach pre-TTB levels?

Table 3 presents one set of results, in which we define $Exports_{hijk}$ as $\ln(1+real\ exports_{hijk})$.¹² Specification (1) uses the full sample of 746 antidumping cases and ten years of data. Specification (2) uses the subsample of 126 antidumping cases targeting China's exporters, while specifications (3) and (4) use the subsamples of 352 cases targeting high-income exporters and 268 cases targeting other emerging exporters (non-China), respectively. For each of the four specifications, the first column presents information on the average level of exports associated with a given year for antidumping imposed by high-income trading partners i , and the second column addresses antidumping imposed by emerging economy trading partners i . The superscripts denote whether average exports that year were statistically different from zero. The third column provides additional information from a t -test regarding whether the averages within a year across the two categories of policy-imposing countries are statistically different *from one another*.

Consider Table 3 specification (1) which covers the full sample of data. Overall, average annual exports are always statistically greater than zero, even during the years that the antidumping import restriction is in effect. Furthermore, average annual exports to high-income markets are always higher than exports to emerging markets. More importantly, the time trends across the two categories of policy-imposing countries are the same and they align with expectations. First, average exports increase considerably between $t-2$ and $t-1$ and then fall beginning when the TTB is imposed in year t , declining again in $t+1$ and $t+2$ while the TTB is in effect. While expected, this result is important as it confirms that the HS-06 import data is sufficiently disaggregated for this context so as to capture the trade-impacts of the antidumping policy which itself is sometimes applied at an even more disaggregated level.

Our main results begin by comparing what happens to annual exports once the TTB is *removed* in year T . In specification (1), average exports to both high-income markets and emerging markets

¹² First, we transform the data by adding 1 to real exports so we do not lose observations when taking logs. Application of antidumping could result in product-level exports going to zero, thus dropping observations for which trade flows disappeared would introduce sample bias. Second, we take logs because the distribution of export data is bounded below by zero but includes a handful of outliers at the high end that severely distort the mean, relative to the median. In light of these two issues, Appendix Table A2 presents summary statistics which confirm the basic pattern of results when focusing on medians as opposed to means. Third, we use the US consumer price index to deflate the product-level bilateral trade flows from UN Comtrade reported in current US dollars. Table 4 (discussed below) addresses this potential limitation by reporting estimates from changes in product-level export market shares for which no price deflators are required.

increase in year T , and then again in $T+1$ and $T+2$. While exports to high-income markets get closer (8.9 relative to 9.0 or 9.3) than exports to emerging markets (7.0 relative to 7.5 or 7.7), in neither case do average annual export volumes get back to their level before the TTB imposition.

Another way to characterize the average rate of export resumption success is to investigate the share of these antidumping cases that, within two years of the TTB being removed, have export volumes that have grown to be as high as export levels were before the TTB was imposed. In the full sample of specification (1), 64.7 percent of cases in which the antidumping was imposed by a high-income trading partner result in what we term “full export resumption.” This is opposed to only 62.0 percent of cases in which the antidumping was imposed by an emerging economy. Of course, our definition of “full export resumption” itself is extremely conservative as it only compares post-TTB to pre-TTB levels of real exports, it does not consider projected export growth that might take account of trading partner economic growth or any other increases to import demand over the many years between the policy imposition and removal.

Why do TTB-impacted exports to emerging markets end up, on average, at lower relative levels than TTB-impacted exports to high-income markets? The lowest row of Table 3 allows us to *rule out* one potential explanation. On average, the TTBs imposed by the high-income economies lasted 6.5 years, whereas TTBs imposed by the emerging economies lasted only 5.9 years. We expect it to be more difficult to resume exports to markets impacted by longer-duration TTBs, *ceteris paribus*, because of the need to invest additional resources to cover market-specific sunk and fixed costs.

Next consider the results of Table 3 specification (2), which describes the impact of TTB impositions and removals on the subsample of cases impacting China’s exports. Relative to the full sample of exporters, in the starting year ($t-2$) China’s exports to high-income markets start larger (9.5 versus 9.0) and China’s exports to emerging markets start smaller (7.0 versus 7.5). Nevertheless, annual exports associated with TTB impositions trends similarly – China’s exports are larger in $t-1$ than in $t-2$, and they decline once the TTB is imposed in year t , falling again in $t+1$ while the TTB is in effect. However, the main distinction is how TTB *removals* affect China’s exports. By the time the TTB is removed in T , China’s average exports have already increased to volumes at or above pre-TTB export levels, and then they continue to grow again in $T+1$ and $T+2$. Put differently, 83.1 percent of antidumping cases in which high-income economies imposed and removed TTBs against China result in “full export resumption,” as do 85.2 percent of cases in which other emerging economies imposed and removed TTBs against China. These levels are much higher than the averages for all exporters. Finally, the relative success of China’s exporters occurs *despite* them facing a much longer-than-average

duration of TTBs in effect – 6.8 years for antidumping cases imposed by high-income markets and 7.8 years for antidumping cases imposed by other emerging markets.

Specifications (3) and (4) of Table 3 describe the impact of TTB impositions and removals on average annual exports from high-income economies and other emerging economies (non-China), respectively. Here we highlight the other emerging economy (non-China) sample of exporters from specification (4). On average, emerging economy export volumes do not get back to pre-TTB levels regardless of the category of policy-imposing economy, though exports sent to high income markets get closer (8.0 compared to 8.6) than exports sent to other emerging economies (5.4 compared to 7.0). Furthermore, 63.8 percent of cases in which antidumping was imposed by high-income economies result in “full export resumption.” These trends are much less promising for emerging economy exports when the TTBs are imposed by other emerging economies. Only 57.8 percent of cases result in full export resumption, and the annual volume of exports even by $T+1$ or $T+2$ is still well below pre-TTB levels. This is especially worrisome given that emerging country antidumping against exporters from other emerging countries remains in effect for a much shorter duration (5.5 years) than the average.

4.2.2 Do post-TTB export market shares reach pre-TTB levels?

As a basic robustness check, our second approach is to characterize the trade response to TTB impositions and removals by defining $Exports_{hijk}$ as country j 's share of total world exports of TTB-affected product h to policy-imposing country i at year k .

Begin with Figure 3, which illustrates the time trend for this variable around the same five year windows of year t (TTB policy imposed) and T (TTB policy removed). The top left panel suggests the expected pattern of pre-TTB export market shares holds – prior to TTBs being imposed, market shares increase from 26.6 percent in $t-2$ to 28.4 percent in $t-1$, before falling to 25.2 percent when the TTB is imposed in t and then to 20.7 percent in $t+1$. On average, starting export market shares are higher for a TTB imposed by an emerging market than those imposed by high-income markets.¹³ Finally, as the TTB is removed in T , market shares begin to increase slightly. Nevertheless, on average, market shares fail to get back to the pre-TTB level. Overall, less than half of the 746 antidumping cases result in exporters having the full restoration of market shares back to pre-TTB levels within two years of the TTB being removed.

¹³ The formal regression results associated with Figure 3 are found in Appendix Table A4. This particular differential is statistically significant.

Next turn to Table 4, which presents results from a separate specification of equation (1) in which we redefine $Exports_{hijk}$ as the year-to-year *change* in the exporter i 's product h share of the TTB-imposing economy's import market. We use Table 4 to establish two important results to confirm what is visually apparent in Figure 3.

First, the average response of China's exporters in these antidumping cases is much different than the response of either of the other two categories of exporters. Specification (2) of Table 4 does confirm that China's exporters are experiencing more rapidly growing market shares before the TTB is imposed, and a relatively large reduction in market share in t and $t+1$. More importantly, relative to all other exporters, China's exporters are much quicker and more successful at *restoring* their market share once the TTB is removed in T . In the year of the removal of the TTB alone (year T), China's export share increases by 6.0 percentage points in high income markets and by 5.3 percentage points in other emerging economies. Market shares in both categories of trading partners increase again by statistically significant amounts in $T+1$ and $T+2$. As shown in Figure 3, by $T+2$, China's exports have market share that is *more than 2* percentage points above its pre-TTB level in high-income markets and nearly 8 percentage points above its pre-TTB level in other emerging markets. Furthermore, roughly 75 percent of antidumping cases involving China's exporters result in market share that, within two years, is as high as it was before the TTB was imposed.

Second, the export response of the other emerging economies reported in Table 4 specification (4) is not as promising. Whereas other emerging economy exports to high-income markets increase market share by 1.5 percentage points the year after the TTB removal ($T+1$), these exporters continue to lose another percentage point of market share in emerging economy import markets in $T+1$. The differential in the emerging economy export response across the two categories of import markets is statistically significant.

This last result, alongside the results presented in Table 3, highlight a final concern regarding South-South protectionism. Not only do more emerging economy exporters have an economically sizeable share of their exports impacted by TTBs imposed by other emerging economies, but such barriers may have effects that long outlive the duration of the imposed barrier. For even once the *temporary* barriers are removed, emerging economy exporters experience greater relative difficulty in *resuming* their exports – whether measured in volumes or in market shares – to other emerging economy trading partners.

5 Conclusions

Given the increasing relevance of South-South protectionism, this paper investigates the export response to removals of import protection under antidumping. We provide evidence that China's exporters respond quickly and aggressively to the market access opening embodied in the removal of such import restrictions. Nevertheless, this response differs substantially from the experience of *other* emerging economy exporters. In particular, when the import protection had been imposed by another emerging economy trading partner, the emerging economy export response is quite slow and weak.

This evidence raises a number of questions for future research. First and foremost is a better understanding of the potential source underlying the heterogeneous performance of exporting firms across different countries. Does South-South trade fail to resume because of particular attributes of the impacted products that emerging economies are more likely to export? Is it associated with features of the applied policy – e.g., the size of the antidumping duty, or whether it was imposed as a price undertaking – that has just been removed? Are emerging economies scared off by the antidumping experience and less likely to re-invest in the market specific costs? Is the response affected by whether the exporter was originally able to “deflect” trade (Bown and Crowley 2007, 2010) to third markets in response to the imposed antidumping barrier?

Understanding the causes is critical for any potential policy response. Nevertheless, the importance of this issue is only likely to increase given global economic trends. As emerging markets continue to make outsized contributions to global economic growth and exporting firms reorient trade flows toward their markets in the face of global rebalancing, political-economic pressure to impose economically important import protection through TTBs to deal with the adjustment pressure increases. While the future may also (hopefully) be characterized by an increasing number of TTB *removals*, the long-run costs of TTBs relative to some of the proposed benefits of including such policies in trade agreements (Bagwell and Staiger, 1990; Bown and Crowley, forthcoming) may require a reexamination if such removals fail to result in the resumption of exports.

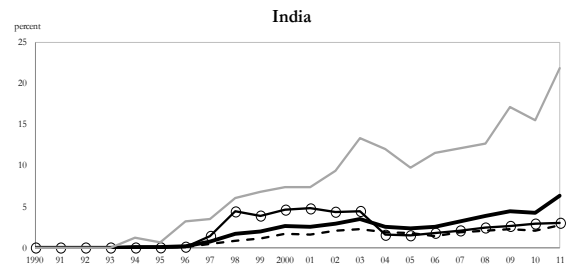
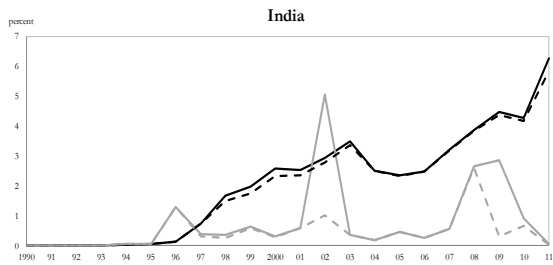
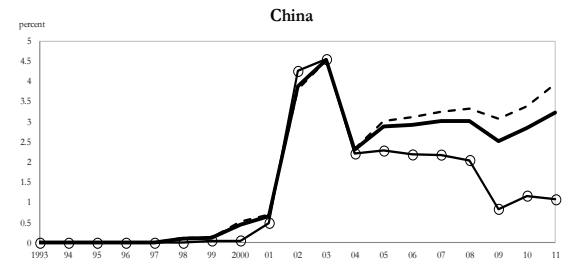
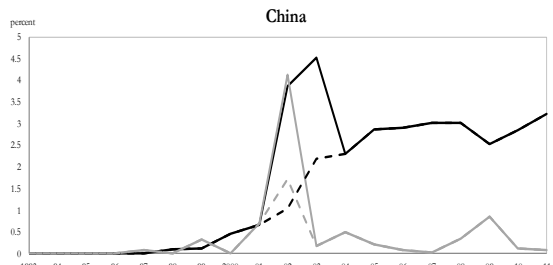
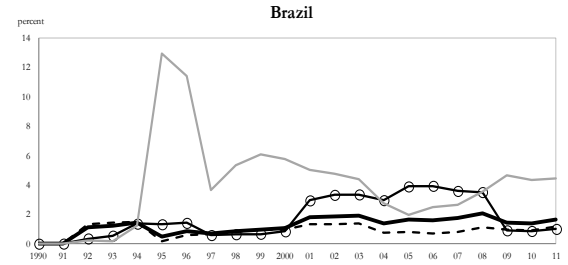
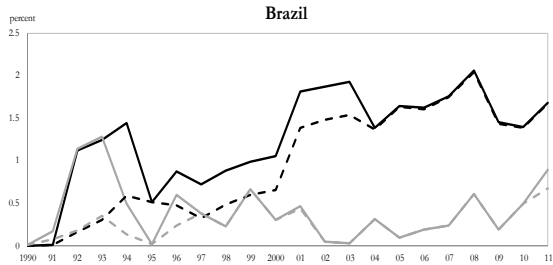
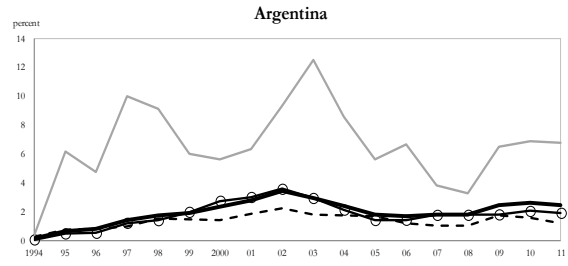
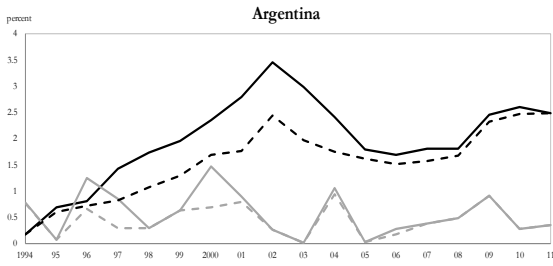
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Figure 1. Emerging Economy Imports Affected by TTBs through 2011

a. By policy

b. By category of affected trading partner



- Stock: imports subject to any imposed TTB in effect
- - Stock: imports subject to AD only in effect
- Flow: imports subject to any newly initiated TTB investigation
- - Flow: imports subject to newly initiated AD investigation only

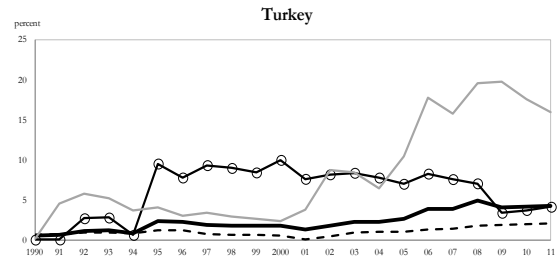
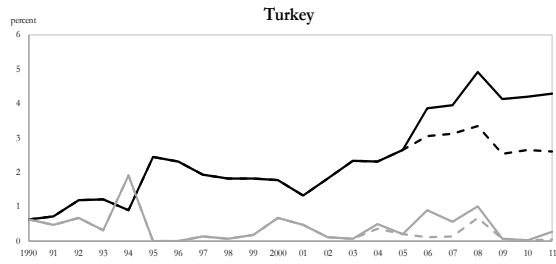
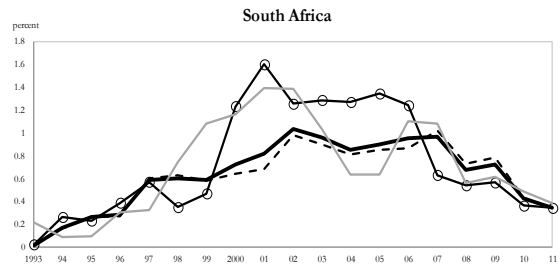
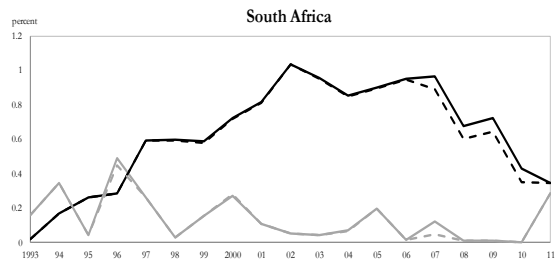
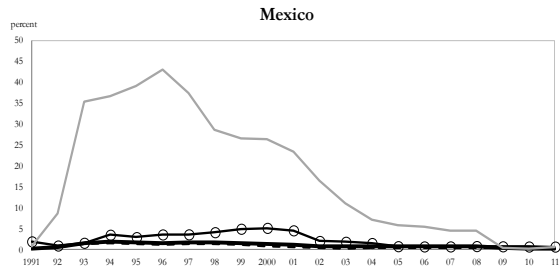
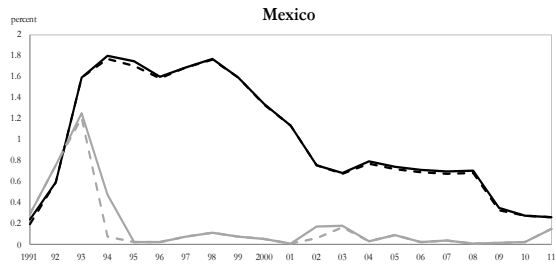
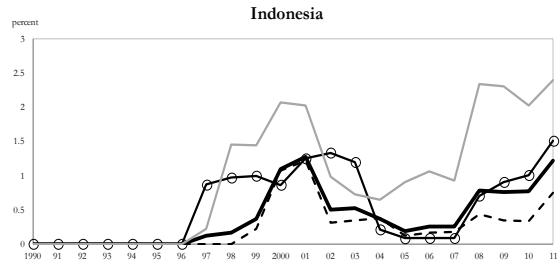
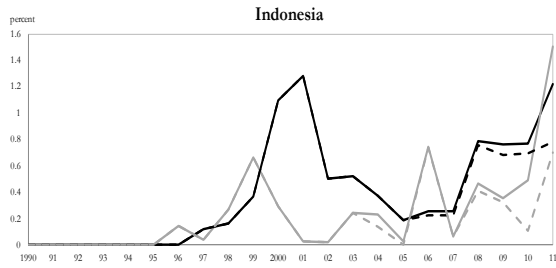
- All trading partners' exports under any TTB in effect
- China's exports under any TTB in effect
- Other emerging economies' (non-China) exports under any TTB in effect
- - High income countries' exports under any TTB in effect

Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 1. Emerging Economy Imports Affected by TTBs through 2011 (cont.)

a. By policy

b. By category of affected trading partner



— Stock: imports subject to any imposed TTB in effect
 - - Stock: imports subject to AD only in effect
 — Flow: imports subject to any newly initiated TTB investigation
 - - Flow: imports subject to newly initiated AD investigation only

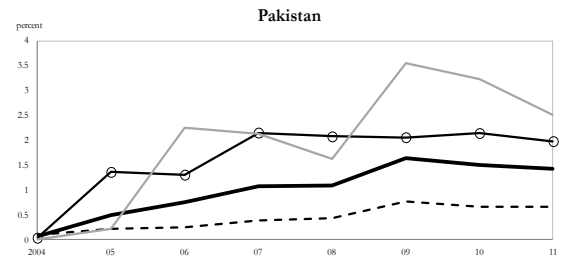
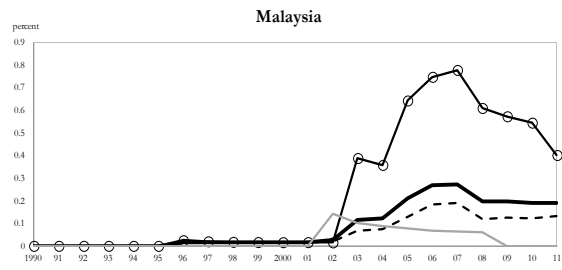
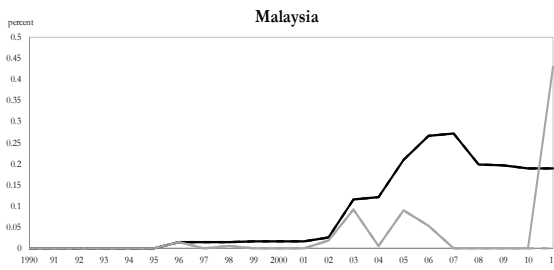
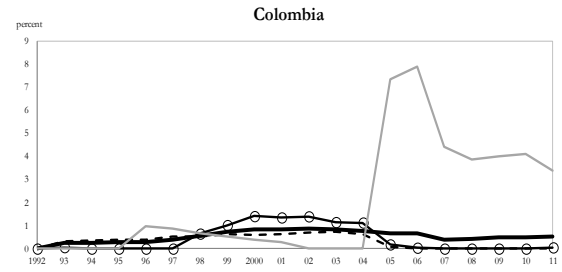
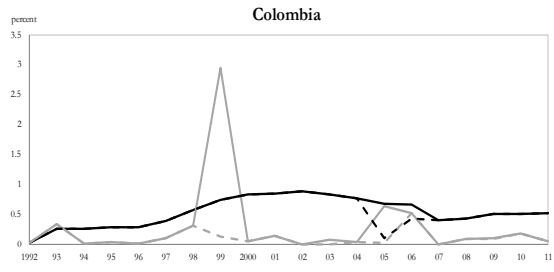
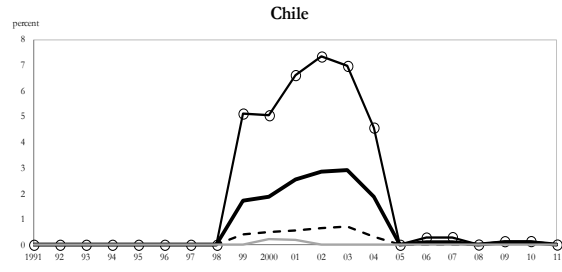
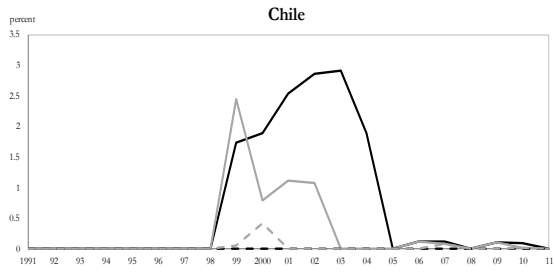
— All trading partners' exports under any TTB in effect
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 — Other emerging economies' (non-China) exports under any TTB in effect
 - - High income countries' exports under any TTB in effect

Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 1. Emerging Economy Imports Affected by TTBs through 2011 (cont.)

a. By policy

b. By category of affected trading partner



- Stock: imports subject to any imposed TTB in effect
- - - Stock: imports subject to AD only in effect
- Flow: imports subject to any newly initiated TTB investigation
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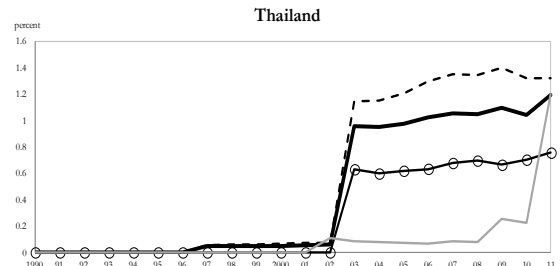
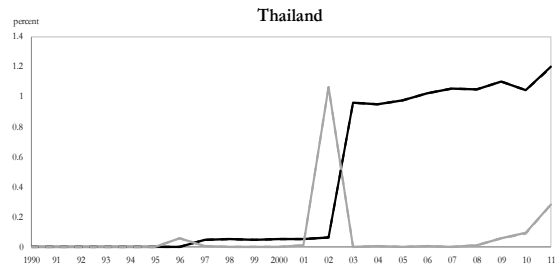
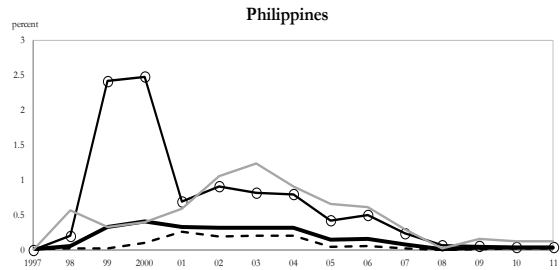
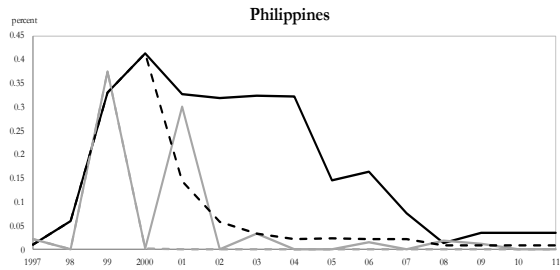
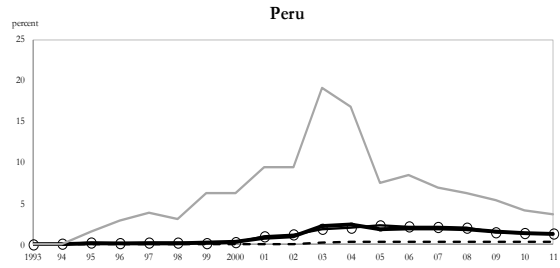
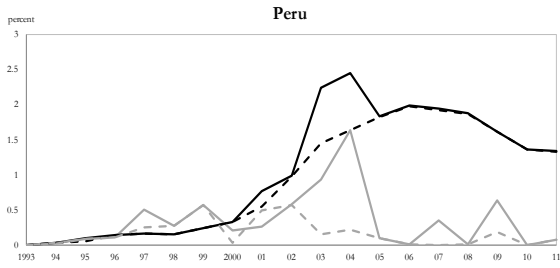
- All trading partners' exports under any TTB in effect
- China's exports under any TTB in effect
- Other emerging economies' (non-China) exports under any TTB in effect
- - - High income countries' exports under any TTB in effect

Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 1. Emerging Economy Imports Affected by TTBs through 2011 (cont.)

a. By policy

b. By category of affected trading partner

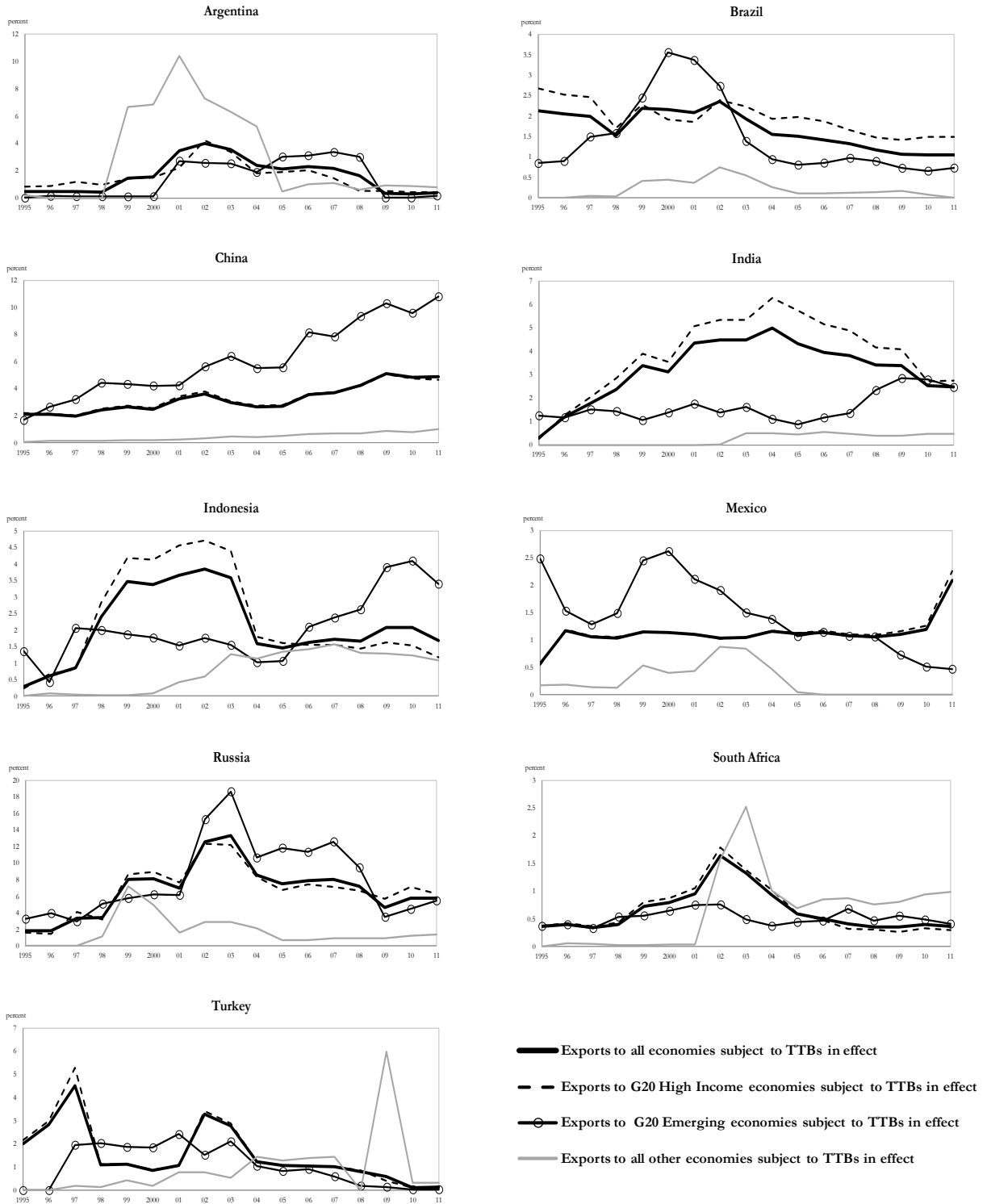


- Stock: imports subject to any imposed TTB in effect
- - Stock: imports subject to AD only in effect
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- All trading partners' exports under any TTB in effect
- China's exports under any TTB in effect
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- - High income countries' exports under any TTB in effect

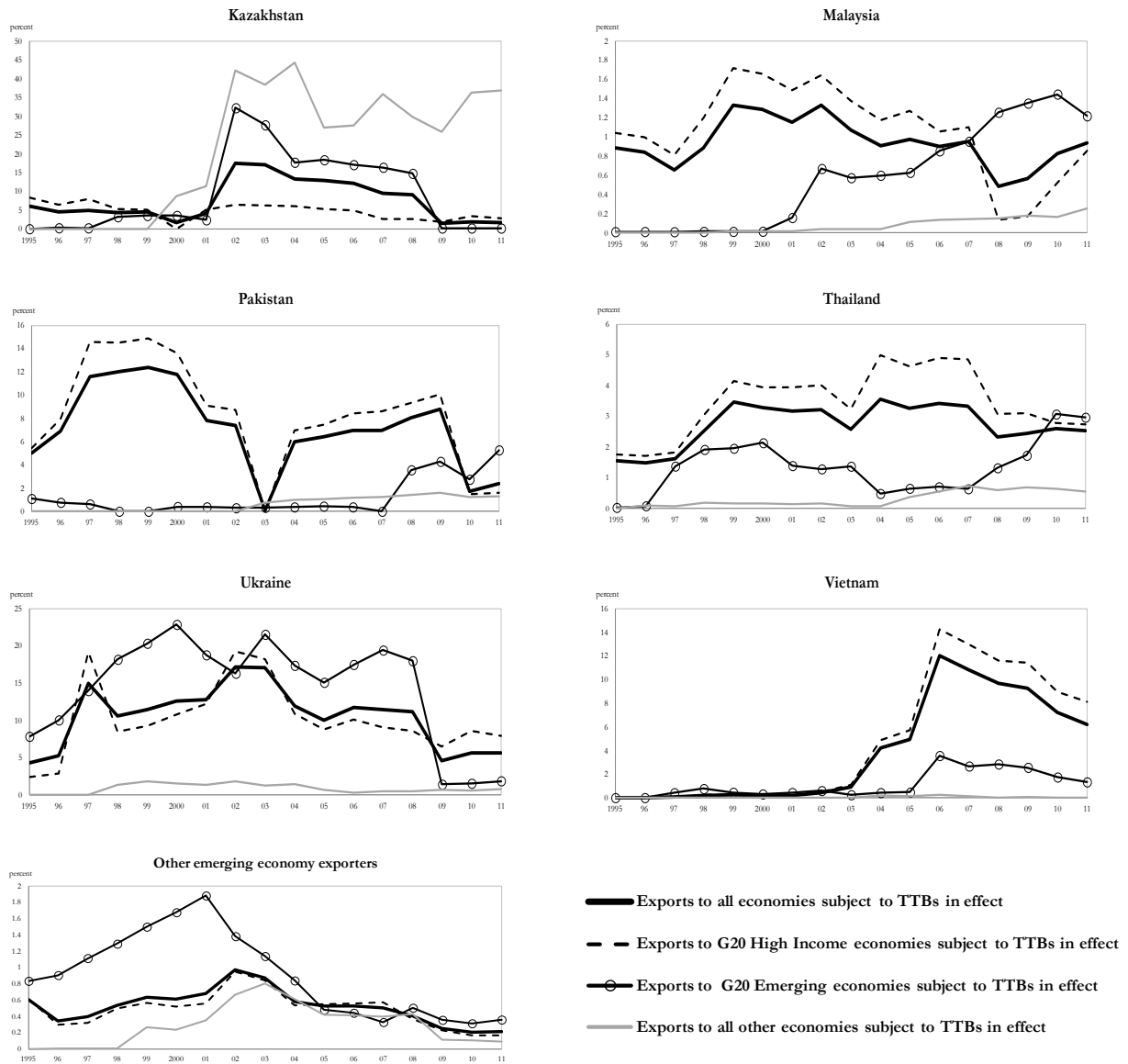
Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 2. Emerging Economy Exports Affected by Foreign-Imposed TTBs, 1995-2011



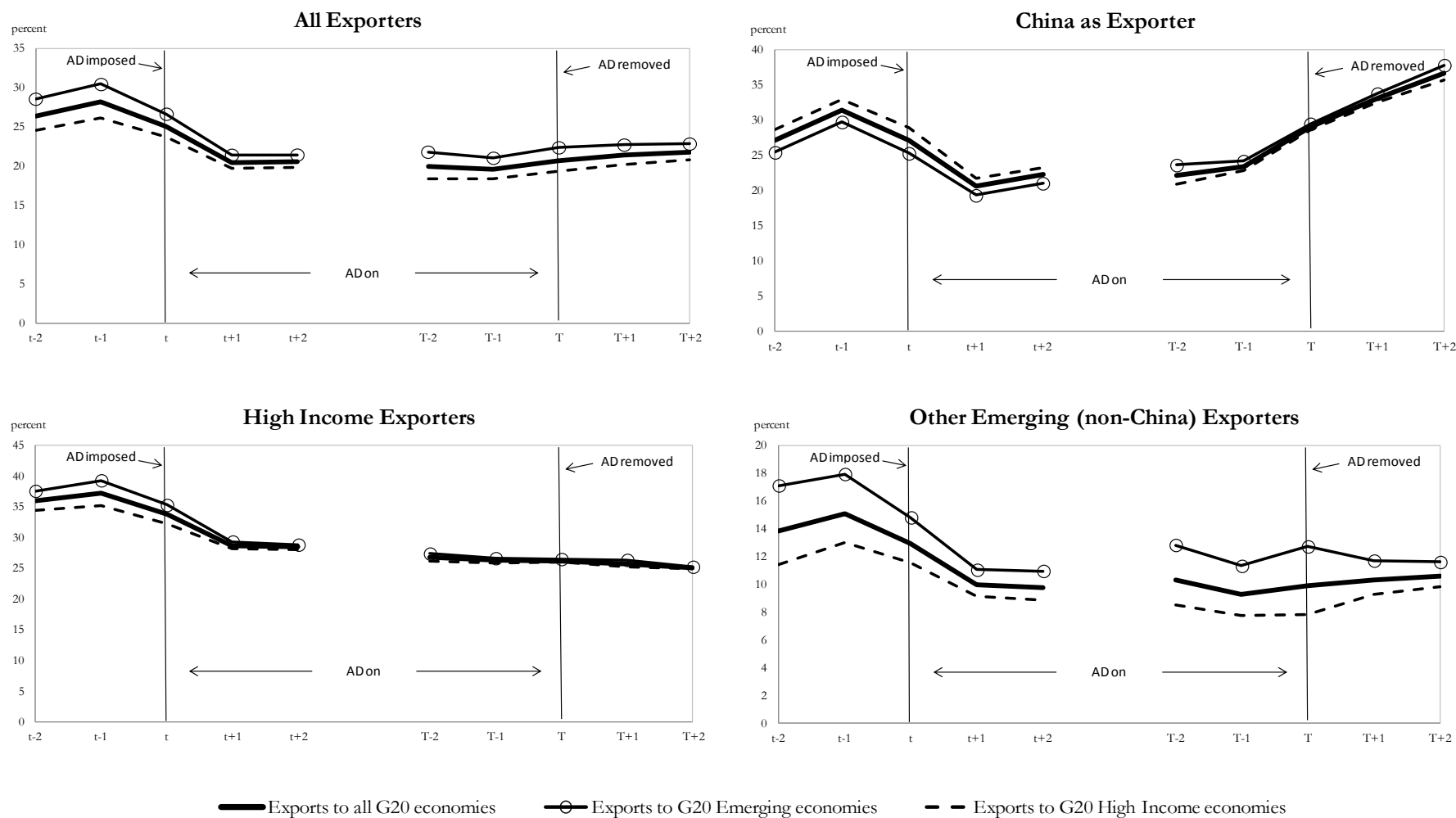
Notes: Shares of nonoil exports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 2. Emerging Economy Exports Affected by Foreign-Imposed TTBs, 1995-2011 (cont.)



Notes: Shares of nonoil exports, constructed by the author with policy data from Bown (2012) and trade-weighting with HS-06 import data from UN Comtrade via WITS, following Appendix equation (A2).

Figure 3. The Export Response to Antidumping Imposition and Removals: Share of the Export Market



Notes: $Exports_{hijk}$ defined here as country j 's share of total world exports of product h to policy-imposing country i at year k , for years k around the imposition (year t) and removal (year T) of country j 's antidumping import restriction. Constructed by the author with policy data from Bown (2012) and HS-06 import data from UN Comtrade via WITS.

Table 1. TTB Policy-Imposing Economies and Affected Imports in 2011

	<i>Product line share of imports</i>		<i>2011 Trade-weighted share of imports</i>				
	<i>...subject to all TTBs in 2011</i> (1)	<i>...subject to all TTBs in 2001</i> (2)	<i>...subject to all TTBs</i> (3)	<i>...subject to AD only</i> (4)	<i>...from China subject to all TTBs</i> (5)	<i>...from other emerging economies subject to all TTBs</i> (6)	<i>...from high-income economies subject to all TTBs</i> (7)
<i>G20 emerging economies</i>	3.2*	1.5*	3.3*	3.0*	10.8†	2.3†	1.7†
1. India	6.9	2.8	6.3	5.8	21.9	3.0	2.7
2. Turkey	6.9	1.5	4.3	2.6	16.0	4.2	2.1
3. China	1.4	0.3	3.2	3.2	.	1.1	3.9
4. Argentina	3.3	2.4	2.5	2.5	6.8	1.9	1.2
5. Brazil	1.9	1.2	1.7	1.7	4.4	1.0	1.2
6. Indonesia	1.8	0.9	1.2	0.8	2.4	1.5	0.8
7. South Africa	0.6	1.3	0.3	0.3	0.4	0.3	0.3
8. Mexico	1.1	23.4	0.3	0.3	0.5	0.7	0.2
<i>Other emerging economies</i>							
1. Pakistan	0.3	.	1.4	1.4	2.5	2.0	0.7
2. Peru	2.5	0.8	1.3	1.3	3.6	1.3	0.3
3. Thailand	0.6	<0.1	1.2	1.2	1.2	0.8	1.3
4. Colombia	0.9	0.4	0.5	0.5	3.4	0.1	<0.1
5. Malaysia	<0.1	<0.1	0.2	0.2	<0.1	0.4	0.1
6. Philippines	0.1	0.3	<0.1	<0.1	0.1	<0.1	<0.1
7. Chile	<0.1	0.8	<0.1	<0.1	0.0	<0.1	<0.1
<i>G20 high-income economies</i>	1.9	1.8	2.2	2.1	4.7	1.9	1.0
1. United States	5.8	4.6	4.0	3.9	8.3	3.6	2.1
2. European Union	3.1	2.3	1.8	1.7	4.2	1.2	0.8
3. Canada	1.1	2.2	0.7	0.7	2.1	0.5	0.4
4. Australia	0.7	0.6	0.5	0.4	1.2	0.1	0.3
5. South Korea	0.6	0.6	0.4	0.4	0.6	0.9	0.1
6. Japan	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Other high-income economies</i>							
1. New Zealand	0.4	0.1	1.1	1.1	0.4	0.3	1.4
2. Israel	0.3	0.1	0.3	0.3	1.7	0.1	0.1
3. Taiwan, China	0.4	0.1	0.2	0.2	0.8	<0.1	<0.1

Notes: Shares of nonoil imports. Ranked by column (3) within each category of policy-imposing economy. TTB=temporary trade barriers, AD=antidumping. *Aggregation does not include Mexico as policy-imposing economy, for reasons discussed in the text. †Aggregation does not include China or Mexico as policy-imposing economies.

Table 2. Economies with Significant Exports Subject to Foreign-Imposed TTBs: 2011 vs. 2001

	<i>TTB-affected share of exports in 2011 to...</i>				<i>TTB-affected share of exports in 2001 to...</i>			
	<i>...All (1)</i>	<i>... G20 high- income (2)</i>	<i>... G20 emerging (3)</i>	<i>...Other* (4)</i>	<i>...All (5)</i>	<i>...G20 high- income (6)</i>	<i>...G20 emerging (7)</i>	<i>...Other* (8)</i>
<i>Emerging economy exporters</i>	3.0	3.3	3.3	0.7	2.5	2.6	2.9	0.6
1. Vietnam	6.2	8.1	1.3	<0.1	0.2	0.2	0.4	<0.1
2. Russia	5.8	6.3	5.5	1.4	7.0	7.6	6.2	1.6
3. Ukraine	5.7	7.9	1.8	0.7	12.8	12.2	18.8	1.3
4. China	4.9	4.7	10.8 [†]	1.0	3.2	3.4	4.2	0.2
5. India	2.5	2.8	2.5	0.5	4.4	5.1	1.8	<0.1
6. Thailand	2.5	2.7	3.0	0.5	3.2	3.9	1.4	0.1
7. Pakistan	2.4	1.6	5.3	1.3	7.8	9.1	0.4	<0.1
8. Mexico	2.1	2.3	0.5	<0.1	1.1	1.1	2.1	0.4
9. Kazakhstan	1.7	2.8	0.2	36.9	4.1	5.0	2.4	11.4
10. Indonesia	1.7	1.2	3.4	1.1	3.7	4.6	1.5	0.4
11. Brazil	1.1	1.5	0.7	<0.1	2.1	1.9	3.4	0.4
12. Malaysia	0.9	0.9	1.2	0.3	1.2	1.5	0.2	<0.1
13. South Africa	0.4	0.3	0.4	1.0	1.0	1.1	0.8	<0.1
14. Argentina	0.4	0.4	0.2	0.8	3.5	2.2	2.7	10.4
15. Turkey	0.1	0.1	<0.1	0.3	1.1	1.0	2.4	0.8
16. <i>Other emerging</i>	0.2	0.2	0.4	0.1	0.7	0.6	1.9	0.3
<i>High-income economy exporters</i>	1.6	1.0	2.8	0.4	3.1	4.3	0.8	0.1
1. South Korea	4.4	3.0	6.2	0.5	2.7	3.6	1.9	0.3
2. Taiwan, China	2.9	2.9	3.4	0.4	9.6	13.9	0.3	0.3
3. Japan	2.2	1.5	3.8	1.0	7.1	10.1	1.3	0.2
4. European Union	1.4	1.4	1.6	0.3	2.0	2.8	0.8	0.2
5. United States	1.3	0.6	3.1	0.1	0.6	0.7	0.5	0.1
6. <i>Other high- income</i>	0.3	0.2	0.5	<0.1	2.5	3.0	0.6	0.1

Notes: Shares of nonoil exports. Ranked by column (1) within each category of exporting economy. "All" is the 24 policy-imposing economies described in Table 1. *"Other" policy-imposing economies includes Pakistan, Peru, Thailand, Colombia, Malaysia, Philippines, Chile, New Zealand, Israel, and Taiwan, China. [†]To be consistent with Table 1, this does not include exports to Mexico; including exports to Mexico changes the value to 8.1.

Table 3. The Export Response to Antidumping Imposed by High Income versus Emerging Markets: Real Exports

Year	<i>Exports_{hijk} ≡ ln(1+ real exports_{hijk})</i>											
	Full Sample (total AD cases=746)			Exporter <i>j</i> = China (total AD cases=126)			Exporter <i>j</i> = High Income (total AD cases=352)			Exporter <i>j</i> = Other Emerging (total AD cases=268)		
	High income import market <i>i</i>	Emerging import market <i>i</i>	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i>	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i>	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i>	<i>Test</i>
	(1)		(2)		(3)		(4)					
<i>t</i> - 2	9.0 ^a	7.5 ^a	a	9.5 ^a	7.0 ^a	a	9.6 ^a	8.2 ^a	a	8.1 ^a	6.8 ^a	a
<i>t</i> - 1	9.3 ^a	7.7 ^a	a	9.8 ^a	7.4 ^a	a	9.7 ^a	8.3 ^a	a	8.6 ^a	7.0 ^a	a
<i>t</i> = year AD measure imposed	8.9 ^a	7.1 ^a	a	9.5 ^a	6.9 ^a	a	9.3 ^a	7.9 ^a	a	8.1 ^a	6.2 ^a	a
<i>t</i> + 1	8.2 ^a	6.5 ^a	a	8.9 ^a	6.2 ^a	a	8.8 ^a	7.4 ^a	a	7.2 ^a	5.3 ^a	a
<i>t</i> + 2	8.2 ^a	6.4 ^a	a	9.0 ^a	6.3 ^a	a	8.8 ^a	7.4 ^a	a	7.1 ^a	5.1 ^a	a
<i>T</i> - 2	8.3 ^a	6.5 ^a	a	9.0 ^a	6.9 ^a	a	8.9 ^a	7.3 ^a	a	7.4 ^a	5.0 ^a	a
<i>T</i> - 1	8.3 ^a	6.5 ^a	a	9.2 ^a	7.0 ^a	a	9.0 ^a	7.3 ^a	a	7.2 ^a	5.1 ^a	a
<i>T</i> = year AD measure removed	8.6 ^a	6.8 ^a	a	9.8 ^a	7.8 ^a	a	9.2 ^a	7.5 ^a	a	7.5 ^a	5.3 ^a	a
<i>T</i> + 1	8.9 ^a	7.0 ^a	a	10.1 ^a	8.0 ^a	a	9.3 ^a	7.5 ^a	a	7.9 ^a	5.7 ^a	a
<i>T</i> + 2	8.9 ^a	7.0 ^a	a	10.2 ^a	8.2 ^a	a	9.2 ^a	7.6 ^a	a	8.0 ^a	5.4 ^a	a
Total observations		7,460			1,260			3,520			2,680	
R ²		0.85			0.90			0.89			0.78	
AD cases by importer <i>i</i>	399	347		65	61		182	170		152	116	
Share of AD cases with full export resumption*	64.7	62.0		83.1	85.2		58.8	56.5		63.8	57.8	
Mean years between AD imposed and removed	6.5	5.9		6.8	7.8		6.3	5.6		6.6	5.5	

Notes: Country *j*'s exports of product *h* to policy-imposing country *i* at year *k*. AD=antidumping. *The definition of an AD case resulting in export resumption is $\max\{Exp_{hijT+1}, Exp_{hijT+2}\} \geq \min\{Exp_{hijT-1}, Exp_{hijT-2}\}$, where Exp_{hijk} here are defined as $\ln(1+ real\ exports_{hijk})$. Superscripts a, b, and c indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. "Test" is the statistical test for whether the year's estimated coefficient on the high income import market is statistically different from the coefficient on the emerging import market.

Table 4. The Export Response to Antidumping Imposed by High Income versus Emerging Markets: Change in Export Market Share

Year	<i>Exports_{hijk} ≡ Change in export market share</i>											
	<i>Full Sample</i> (total AD cases=746)			<i>Exporter j = China</i> (total AD cases=126)			<i>Exporter j = High Income</i> (total AD cases=352)			<i>Exporter j = Other Emerging</i> (total AD cases=268)		
	High income import market <i>i</i>	Emerging import market <i>i</i> (1)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (2)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (3)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (4)	<i>Test</i>
<i>t - 1</i>	1.6 ^a	1.9 ^b		4.5 ^a	4.3 ^b		0.7	1.7		1.6 ^a	0.8	
<i>t = year AD measure imposed</i>	-2.6 ^a	-3.8 ^a		-4.2 ^a	-4.5 ^b		-2.8 ^a	-4.0 ^a		-1.6 ^a	-3.1 ^a	
<i>t + 1</i>	-4.0 ^a	-5.2 ^a		-7.3 ^a	-6.0 ^a		-4.1 ^a	-6.0 ^a		-2.4 ^a	-3.8 ^a	
<i>t + 2</i>	0.1	0.0		1.6	1.7		-0.1	-0.5		-0.3	-0.1	
<i>T - 1</i>	-0.1	-0.8		1.9	0.6		-0.3	-0.7		-0.8	-1.5	
<i>T = year AD measure removed</i>	1.0 ^b	1.3 ^c		6.0 ^a	5.3 ^a		0.1	-0.1		0.1	1.4	
<i>T + 1</i>	0.9 ^b	0.3		4.1 ^a	4.3 ^b		-0.7	-0.1		1.5 ^a	-1.0	b
<i>T + 2</i>	0.6	0.1		2.9 ^b	4.1 ^b		-0.2	-1.1		0.6	-0.1	
Total observations		5,968			1,008			2,816			2,144	
R ²		0.03			0.11			0.03			0.03	
AD cases of importers	399	347		65	61		182	170		152	116	
Share of AD cases with full export resumption*	45.4	48.7		72.3	77.0		33.0	35.3		48.7	53.4	
Mean years between AD imposed and removed	6.5	5.9		6.8	7.8		6.3	5.6		6.6	5.5	

Notes: The annual change in country *j*'s share of total world exports of product *h* to policy-imposing country *i* at year *k*. AD=antidumping. *The definition of an AD case resulting in export resumption is $\max\{Exp_{hijT+1}, Exp_{hijT+2}\} \geq \min\{Exp_{hijT-1}, Exp_{hijT-2}\}$, where Exp_{hijk} here is the *level* of export market share. Superscripts a, b, and c indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. "Test" is the statistical test for whether the year's estimated coefficient on the high income import market is statistically different from the coefficient on the emerging import market.

Appendix

A1. Temporary Trade Barriers through 2011

This section updates and extends the approach and results of Bown (2011) to examine, across countries and over time, the incidence of import protection through the use of temporary trade barriers.

A1.1 Review of methodology and data

There are two distinct measures that we re-introduce here for clarity; a more complete discussion of the relative merits and the caveats associated with each measure can be found in Bown (2011, pp. 1992-97). The first measure – of the share of import product lines subject to TTBs – is a simple, data-driven measure that requires no assumptions for construction. The second measure – the trade-weighted share of imports subject to TTBs – is mostly data driven; however, it does require one assumption regarding the counterfactual growth rate for TTB-affected imports in the absence of any TTB being imposed.

Consider the first measure. For concreteness and following the notation in Bown (2011), here let k be the policy-imposing (importing) economy and let $m_{i,t}^k \in \{0,1\}$ 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_t^k . Next let $b_{i,t}^k \in \{0,1\}$ be an indicator for whether the importing economy k “applies” a temporary trade barrier on imports of product i in year t . The application below considers two primary interpretations of “applies” – i) the initiation of new investigations, generally at the request of domestic industries seeking additional import protection (the “flow” of potential new barriers), and ii) the imposition of a temporary trade barrier, whether imposed for the first time that year or having been imposed in a prior year and not yet removed (the “stock” of barriers).

Define the measure of the share of annual economy k import product lines over which a TTB is applied in year t as

$$\frac{\sum_{I_t^k} b_{i,t}^k m_{i,t}^k}{\sum_{I_t^k} m_{i,t}^k}. \quad (\text{A1})$$

The second measure refines Appendix equation (A1) by applying bilateral trade-weights. First, redefine the product-specific, time-varying temporary trade barrier indicator so that it is at the *bilateral* level: let $b_{i,j,t}^k \in \{0,1\}$ be an indicator for whether a temporary trade barrier applies to the economy k imports of product i from exporter j in year t . Second, replace the binary indicator variable for imports, $m_{i,t}^k$, with product-level value of import data and thus *trade-weight* the $b_{i,j,t}^k$ indicator by the HS-06 product-level value of imports, $v_{i,j,t}^k$. Third, decompose the set of economy k import products I^k into two subsets. Define the first subset as I^{*k} ; allow it to contain all imported HS-06 products i which were never subject to an imposed TTB and for which one does *not* need to construct counterfactual import values, and thus for which one can rely on the observable import data $v_{i,j,t}^k$. The second subset of products is defined as \hat{I}^k and allow it to contain those HS-06 products i subject to a TTB that was imposed during the sample and for which one needs to construct *counterfactual* import values, defined as $\hat{v}_{i,j,t}^k$, for all years that the temporary trade barrier is in effect. We construct the counterfactual import levels ($\hat{v}_{i,j,t}^k$) for the products in \hat{I}^k in year t by making the conservative assumption that such imports grow at the same rate as the mean annual growth rate of products from the set I^{*k} in t .

The second measure of the share of annual economy k imports over which a TTB is applied in year t , reflecting these modifications to Appendix equation (A1) and thus trade-weighted by the value of imports, is defined as

$$\frac{\sum_{I_t^k} b_{i,j,t}^k \hat{v}_{i,j,t}^k}{\sum_{\hat{I}_t^k} \hat{v}_{i,j,t}^k + \sum_{I_t^{*k}} v_{i,j,t}^k} . \quad (A2)$$

The policy data used to construct these variables is taken from Bown (2012). The 6-digit Harmonized System (HS-06) import data is taken from UN Comtrade made available via WITS.

A1.2 Results: G20 import protection and the Great Recession

Has the Great Recession led to more import protection through temporary trade barriers? Bown (2011, Figure 3) used Appendix equation (A1) and constructed a sample of G20 economies and compared TTB policy use from the benchmark year of 2007 – the last year before the global economic crisis took hold – with policy use through 2009.¹⁴ The sample of G20 emerging economies increased the share of import product lines covered by TTBs by roughly 40 percent, whereas G20 high-income economies had increased their share of product coverage by less than 10 percent. Figure A1a updates, refines, and extends these estimates based on Appendix equation (A1) with newly available data through 2011.¹⁵ Figure A1b illustrates the trade-weighted measure of Appendix equation (A2). The two grey lines in each figure refer to the “flow” of demands for new import protection – i.e., the share of import product lines becoming subject to new TTB investigations each year. The two black lines refer to the accumulating “stock” of import product lines subject to TTBs in effect, taking into account new impositions of import protection that year and TTB removals of the previous year. Solid lines refer to G20 emerging economies and dashed lines refer to G20 high-income economies.

Consider first Figure A1a and the collective activity of the G20 *emerging* economies in the sample. Through 2011, emerging economies had collectively increased the share of HS-06 import product lines subject to TTBs by 66.6 percent compared to 2007; the share of import products subject to TTBs in 2011 reached 3.2 percent, up from 1.9 percent in 2007 and 2.9 percent in 2009. Thus even while the “flow” of import product lines subject to new TTB investigations (the grey solid line) has decreased from a local peak of 0.6 percent in 2008 in each of the subsequent years to only 0.2 percent in 2011, the “stock” of coverage of import protection has continued to increase because impositions of new TTBs have outpaced removals of previously-imposed (and potentially expiring) TTBs.

Figure A1b presents this same basic information but it trade-weights the TTBs by the value of bilateral imports as under Appendix equation (A2). After trade-weighting, there is a 16.3 percent

¹⁴ We follow Bown (2011) and do not include Mexico in the aggregate analysis. In late 2008, Mexico eliminated antidumping duties against imports from China that had covered roughly 20 percent of its HS06 import product lines since 1993; including Mexico in the aggregation changes the results considerably.

¹⁵ While the qualitative pattern to the results is unchanged, some of the data used in the figures originally presented in Bown (2011) have been revised due to updates in government policy reporting collected in Bown (2012) as well as the underlying trade data. For example, the 2009 versus 2007 G20 high income economy product coverage is now a 7.4 percent increase (revised up from 4.9 percent).

increase between 2007 and 2011 in the share of G20 emerging economy imports subject to TTBs, from 2.8 percent in 2007 to 3.3 percent in 2011. The explanation for the difference in the two panels of the figure (a larger increase in share of import product lines in Figure A1a, a smaller increase in the trade-weighted share of the value of imports in Figure A1b) is due to the underlying policy churning taking place. While a significantly larger share of import product lines became subject to new TTBs than were removed between 2007 and 2011, the TTB removals during this period (on net) had significant import coverage (as a share of total imports) relative to the new TTBs being imposed.

Consider next the high-income G20 member economies; collectively these economies are represented by the dashed lines. Figure A1a extends the results first presented in Bown (2011) by illustrating a much slower increase in the stock of import product lines that high income economies have subject to TTBs after 2007. Despite much weaker economic growth during the Great Recession, high income economies collectively increased the share of HS-06 import products subject to TTBs by only 12.9 percent between 2007 and 2011, from 1.7 percent to 1.9 percent. Furthermore, on a trade-weighted basis (Figure A1b), the coverage of imports impacted by G20 high-income economies has actually *declined* by 22.7 percent between 2007 and 2011, from 2.8 percent of imports to 2.2 percent. The explanation for the qualitative difference in the results for high-income economies in the two panels of the figure (a small increase in Figure A1a, a small decrease in Figure A1b) is again due to the trade coverage of the TTBs being removed during this period is estimated to be larger than the trade coverage of the new TTBs being applied.¹⁶

Finally, this common feature to emerging economy and high-income economy imposers of TTBs – i.e., that TTB removals cover a larger share of the value of imports relative to HS-06 product line than do the newly imposed TTBs – does *not imply* that exports for previously TTB-restricted products automatically resume once the TTB has been removed. Indeed, this feature of the data is one of the motivations leading to the empirical examination in Section 4. Furthermore, the results of that section indicate evidence of substantial heterogeneity in the export response to the removal of TTBs across exporting *and* policy-imposing countries, and in many instances – e.g., for emerging economy exports to other emerging economies especially – exports do not substantially resume once the TTBs are removed.

¹⁶ While trade-weighting shifts down the level in growth of TTB-impacted imports for both the G20 emerging and G20 high-income economies, the scale of the relative difference between the G20 emerging and the G20 high-income economies is still preserved. I.e., there is a 54 percentage point difference in growth for the product-line measure (67 percent compared to 13 percent) and a 39 percentage point difference in growth for the trade-weighted measure (16 percent increase compared to 23 percent decrease).

A1.3 Economy-by-economy results for the Great Recession

Appendix Table A1 summarizes this information for 24 individual, policy-imposing economies in the *Temporary Trade Barriers Database* for which there is detailed time series of product-level import statistics available via WITS from UN Comtrade. The table presents economy-by-economy summaries of the measures from Appendix equation (A1) and Appendix equation (A2). The first four columns report the annual TTB coverage of import product lines, and the second four columns report the annual TTB coverage by trade-weighted import values. For interpretation, consider the case of India. Between 2007 and 2011, India increased by 108.5 percent the share of imported HS-06 product lines over which it had imposed a TTB – from 3.3 percent in 2007 to 6.9 percent in 2011. On a trade-weighted basis using Appendix equation (A2), India’s increase was 95.4 percent, from a trade-weighted share of 3.2 percent of imports in 2007 to 6.3 percent of imports in 2011.

Table A1 reveals a heterogeneous impact of the Great Recession period on TTB import protection coverage across countries. Of the 24 economies with data reported in the table, according to the product line measure of Appendix equation (A1), 14 economies have seen an increase in product line coverage of TTBs between 2007 and 2011, and 10 have seen a decrease. According to the trade-weighted measure of Appendix equation (A2), 12 economies have seen an increase in TTB coverage and 12 economies have seen a decrease.

The strongest evidence of an increase in TTB import protection between 2007 and 2011 arises from a number of major emerging economy G20 members, a result that is not surprising given the trends summarized in Figure A1a and A1b. Six of the eight G20 emerging economies in Table A1 had the share of import product lines subject to TTBs increase between 2007 and 2011, and five of the eight also experienced an increase in the trade-weighted share of imports subject to TTBs. India, Turkey, China, Argentina and Indonesia had import protection rise according to both measures, while Brazil’s protection increased on a product-line basis but declined slightly on a trade-weighted basis. Two economies – South Africa and Mexico – had import protection decline substantially according to both measures over the period.

Among the G20 high income economies reported in Table A1, only the United States had import protection increase according to both measures between 2007 and 2011 – by 32.0 percent on a product-line basis and 21.9 percent on a trade-weighted basis. Three economies – Canada, South Korea and Japan – had import protection decline according to both measures over the period. Protection for

Australia and the European Union increased slightly on a product-line basis but declined on a trade-weighted basis.

For the ten non-G20 economies reported in Table A1, the overall change in import protection between 2007 and 2011 was relatively flat. According to the product-line measure, five countries had protection increase, and five saw it decrease. According to the trade-weighted measure, there were six increases and four decreases. Nevertheless, each of these ten non-G20 economies had a relatively small share of imports (under both measures) subject to TTBs during this period, so even among the countries whose TTB measures increased, there is not a substantial overall impact on trade flows.

A1.4 Aggregate results: How has the trading partner incidence of import protection evolved?

Which trading partners are affected by G20 emerging and G20 high income economy imposition of TTB import protection? Figure A2a and A2b take the trade-weighted share of imports subject to TTBs each year (from Appendix equation (A2), the black solid and black dashed lines of Figure A1b) and decomposes each measure based on whether the foreign export source was i) China, ii) a different emerging economy (non-China), or iii) a high-income economy.

Against whom do emerging markets tend to impose TTBs? Consider first Figure A2a, which is the collective coverage of TTBs imposed by the G20 emerging economies in the sample. As a benchmark, the solid black line represents the average from all trading partners and is thus the same as the solid black line in Figure A1b. The first result is the striking upward trend on TTB coverage of imports from China. By 2011, the solid grey line indicates 10.8 percent of the G20 emerging economy's total imports from China were subject to a TTB, this was up from 5.5 percent in 2004 and 4.2 percent at the time of China's accession to the WTO in 2001. Second, G20 emerging economy imports from high-income exporting economies tracks the overall trend quite closely: 3.2 percent of imports from high-income trading partners in 2011 were subject to an imposed TTB, up from 2.5 percent of imports in 2007. Finally, G20 emerging economy imports from other emerging economies (non-China) have shown substantial fluctuation in this time period – from 1.7 percent in 1998 to a peak of 4.3 percent in 2003 to a plateau of 2.7 percent by 2008. Much of the recent decline to the 1.6 percent for 2011 took place sharply in 2009 and thus reflects that a number of emerging economies removed TTBs that covered significant share of imports from other emerging markets in 2008.

Consider TTB import restrictions imposed by high-income economies: Figure A2b presents the same trading partner decomposition. Overall, recall from Figure A1b that the share of G20 high-income imports covered by TTBs had declined steadily over the first decade of the 2000s, to only 2.2 percent by 2011. First, the grey line in Figure A2b indicates that high-income imports from China have been a major target – by 2011, 4.7 percent of imports from China was subject to a TTB. Nevertheless, this level had declined slightly from its 2009 peak of 5.0 percent, and it was less than half as large as the share of the level of G20 emerging market imports from China that were subject to TTBs, as noted above. The share of high-income economy imports from other emerging economies (non-China) subject to TTBs was 1.9 percent in 2011; this has been relatively flat during the Great Recession and down slightly overall from its 2006 peak of 2.4 percent. Finally, high-income economy imports from other high-income economies are significantly less impacted by TTBs than in the past – the black dashed line in Figure A2b put it at 1.0 percent in 2011 – down steadily from 3.2 percent in 2006 and 4.3 percent in 2001.

A2. Additional Regression Results from the Export Response Estimation

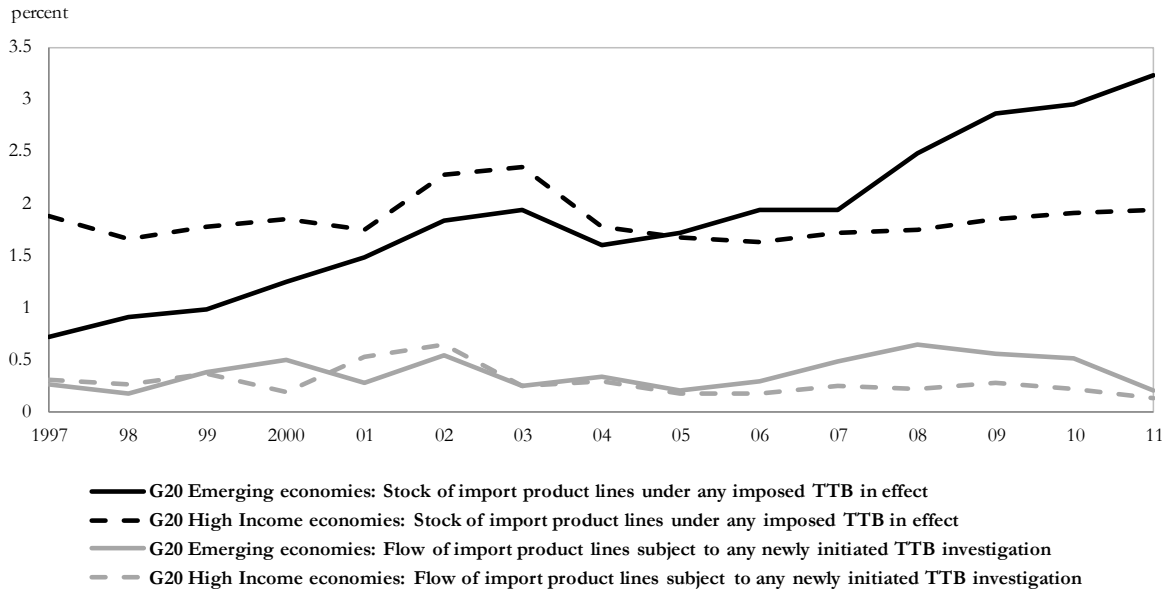
This section briefly reports additional results building from those presented in Section 4. First, Appendix Table A2 presents summary statistics – means and medians – of the data used in the regression results reported in the text and here.

Appendix Table A3 uses regression equation (1) from the text but redefines the dependent variable as the growth in annual exports of product h in each year. The time trend is as expected, as are the cross-country differentials. Exports grow strongly before the TTB is imposed, fall sharply in response to the TTB, and begin growing again after the TTB is removed. Specification (2) indicates growth is much stronger and earlier (in anticipation of TTB removal) for China's exporters than all others. Other emerging exporters (non-China) of specification (4) are the slowest to respond to the TTB removal; there is not a statistically significant increase in export growth until $T+1$.

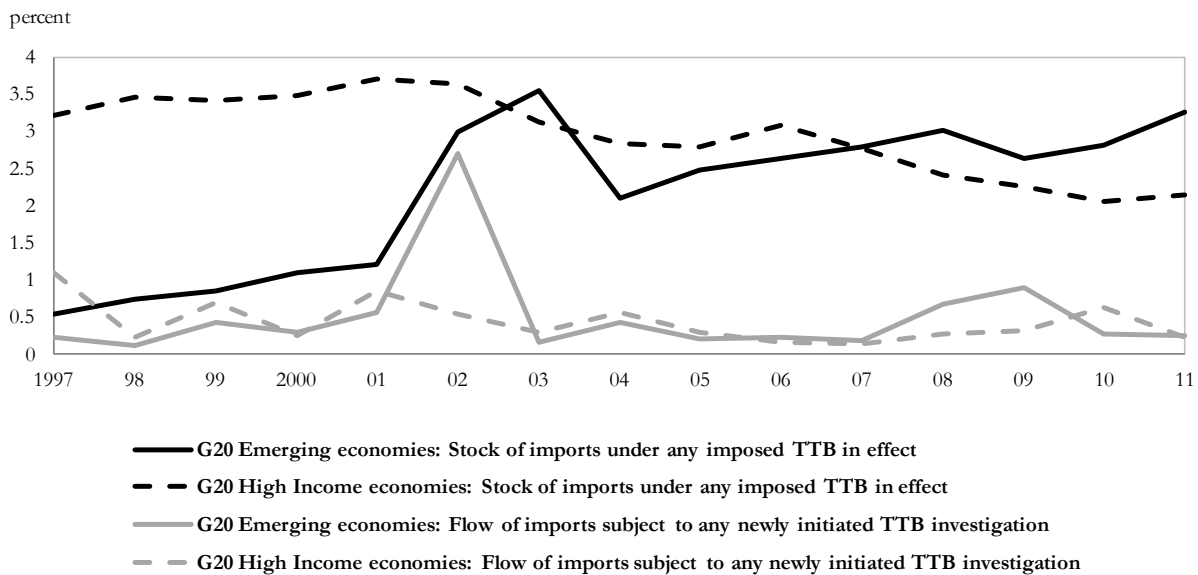
Appendix Table A4 uses regression equation (1) from the text but redefines the dependent variable as the annual export market share of product h in each year. The regression results are estimates that functionally serve to confirm the visual evidence presented in Figure 3. In specification (1) in particular, in a number of years, there is a statistically significant differential in export market shares associated with antidumping cases in emerging markets that are higher than export shares in high-income markets.

Appendix Figure A1. G20 Imports Affected by Formal Temporary Trade Barriers, 1997-2011

a. By count of import products



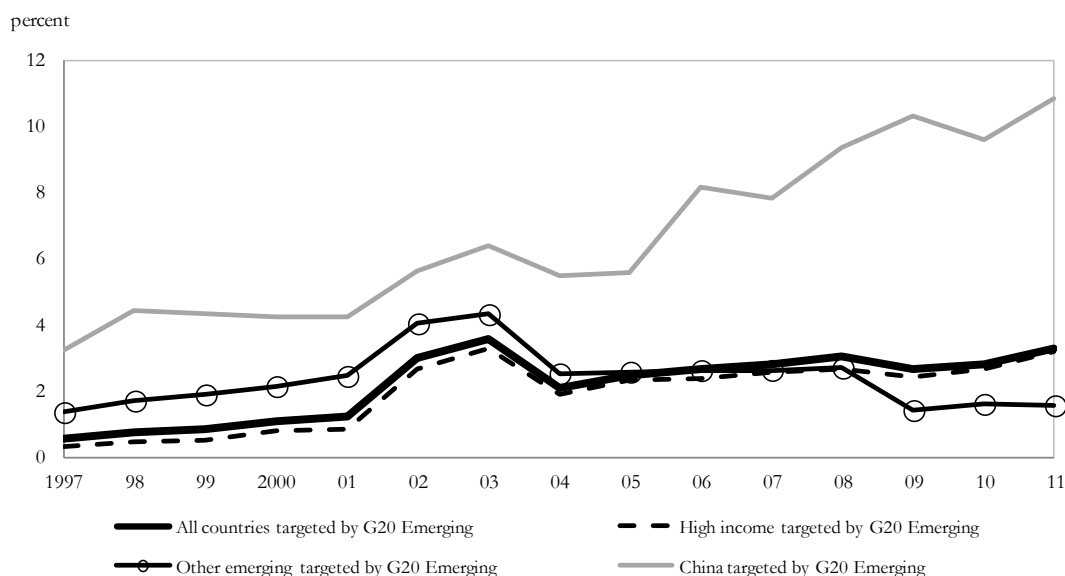
b. By value of imports (trade-weighted)



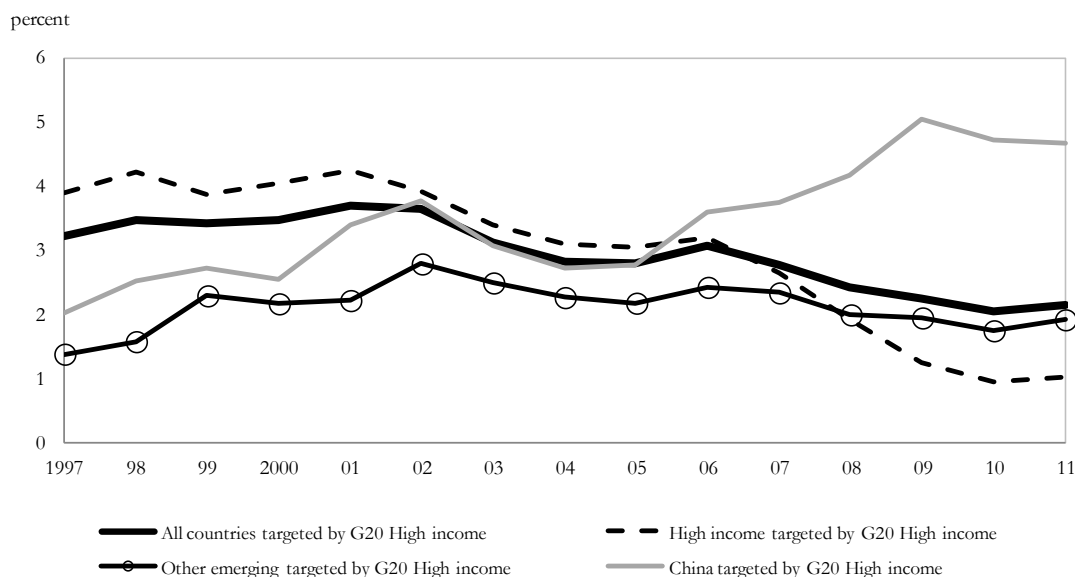
Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and HS-06 import data from UN Comtrade via WITS; panel (a) based on Appendix equation (A1) and panel (b) based on Appendix equation (A2). TTB=temporary trade barrier. G20 high income economies include Australia, Canada, European Union, Japan, South Korea, and the United States. G20 emerging economies include Argentina, Brazil, China, India, Indonesia, South Africa and Turkey. Mexico omitted for reasons discussed in the text.

Appendix Figure A2. Trading Partners Affected by G20 Temporary Trade Barriers, 1997-2011

a. TTBs imposed by G20 Emerging economies



b. TTBs imposed by G20 High-Income economies



Notes: Shares of nonoil imports, constructed by the author with policy data from Bown (2012) and HS-06 import data from UN Comtrade via WITS, based on Appendix equation (A2). TTB=temporary trade barrier. G20 High Income economies include Australia, Canada, European Union, Japan, South Korea, and the United States. G20 Emerging economies include Argentina, Brazil, China, India, Indonesia, South Africa and Turkey. Mexico omitted for reasons discussed in the text.

Appendix Table A1. Has Import Protection through TTBs Increased During the Great Recession?

	Share of import product lines subject to TTBs in...				Share of imports (trade-weighted) subject to TTBs in...			
	<i>Percent change between 2007 and</i>				<i>Percent change between 2007 and</i>			
	<i>2011</i>	<i>2011</i>	<i>2009</i>	<i>2007</i>	<i>2011</i>	<i>2011</i>	<i>2009</i>	<i>2007</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>G20 emerging economies*</i>	66.6	3.2	2.9	1.9	16.3	3.3	2.6	2.8
1. India	108.5	6.9	6.1	3.3	95.4	6.3	4.5	3.2
2. Turkey	59.8	6.9	6.5	4.3	8.2	4.3	4.1	4.0
3. China	16.1	1.4	1.1	1.2	6.8	3.2	2.5	3.0
4. Argentina	71.1	3.3	3.2	1.9	36.9	2.5	2.5	1.8
5. Brazil	36.5	1.9	1.7	1.4	-4.5	1.7	1.4	1.8
6. Indonesia	597.8	1.8	0.5	0.3	378.4	1.2	0.8	0.3
7. South Africa	-48.1	0.6	1.1	1.2	-64.0	0.3	0.7	1.0
8. Mexico	-95.1	1.1	1.2	22.8	-62.5	0.3	0.3	0.7
<i>Other emerging economies</i>								
1. Pakistan	-8.6	0.3	0.4	0.4	32.8	1.4	1.6	1.1
2. Peru	-6.4	2.5	2.6	2.7	-31.1	1.3	1.6	1.9
3. Thailand	44.5	0.6	0.5	0.4	13.5	1.2	1.1	1.1
4. Colombia	33.8	0.9	0.8	0.7	26.6	0.5	0.5	0.4
5. Malaysia	-74.3	<0.1	<0.1	0.2	-30.7	0.2	0.2	0.3
6. Philippines	-26.9	0.1	0.1	0.1	-54.7	<0.1	<0.1	0.1
7. Chile	-88.9	<0.1	0.1	0.2	-97.6	<0.1	0.1	0.1
<i>G20 high-income economies</i>	12.9	1.9	1.8	1.7	-22.7	2.2	2.3	2.8
1. United States	32.0	5.8	5.1	4.4	21.9	4.0	3.7	3.3
2. European Union	4.4	3.1	2.7	3.0	-52.5	1.8	1.9	3.8
3. Canada	-4.7	1.1	1.4	1.2	-11.0	0.7	0.9	0.7
4. Australia	0.7	0.7	0.7	0.7	-7.5	0.5	0.5	0.5
5. South Korea	-23.7	0.6	0.9	0.8	-23.1	0.4	0.5	0.5
6. Japan	-33.0	<0.1	<0.1	<0.1	-99.2	<0.1	1.2	1.1
<i>Other high-income economies</i>								
1. New Zealand	6.3	0.4	0.4	0.4	6.4	1.1	1.1	1.0
2. Israel	8.9	0.3	0.4	0.3	7.5	0.3	0.7	0.3
3. Taiwan, China	25.7	0.4	0.3	0.3	27.1	0.2	0.1	0.1

Notes: Ranked by column (6) within each category of policy-imposing economy. Share of nonoil imports, constructed by the author from Bown (2012) and HS-06 import data from UN Comtrade via WITS. TTB = temporary trade barrier which includes all use of antidumping, safeguards, and countervailing duties. *Mexico omitted for reasons discussed in the text.

Appendix Table A2. Summary Statistics for Export Response and Antidumping

Year	$\ln(1 + \text{real exports}_{hijk})$		<i>Exports</i> _{hijk} <i>defined as</i>					
	mean	median	<i>Export growth</i> _{hijk} %		<i>Export market share</i> _{hijk} %		<i>Change in export market share</i> _{hijk}	
			mean	median	mean	median	mean	median
<i>t</i> - 2	8.3	8.7	--	--	26.6	16.3	--	--
<i>t</i> - 1	8.5	8.9	13.1	7.9	28.4	20.1	1.7	0.5
<i>t</i> = year AD measure <u>imposed</u>	8.1	8.5	-31.5	-20.8	25.2	14.7	-3.1	-1.4
<i>t</i> + 1	7.4	8.0	-35.5	-17.2	20.7	9.1	-4.6	-1.1
<i>t</i> + 2	7.4	8.0	-0.6	0.0	20.7	9.7	0.1	-0.0
<i>T</i> - 2	7.5	8.1	--	--	20.1	9.2	--	--
<i>T</i> - 1	7.5	8.1	3.7	0.9	19.7	8.6	-0.4	-0.0
<i>T</i> = year AD measure <u>removed</u>	7.8	8.3	18.5	10.4	20.9	9.4	1.2	0.0
<i>T</i> + 1	8.0	8.6	12.8	5.4	21.5	10.5	0.6	0.0
<i>T</i> + 2	8.0	8.7	2.9	3.5	21.9	9.2	0.4	0.0
Total observations		7,460		5,968		7,460		5,968
AD cases		746		746		746		746
Share of AD cases with full export resumption*		63.4		--		46.9		--

Notes: Country *j*'s exports of product *h* to policy-imposing country *i* at year *k*. AD=antidumping. *The definition of an AD case resulting in export resumption is $\max\{Exp_{hijT+1}, Exp_{hijT+2}\} \geq \min\{Exp_{hijT-1}, Exp_{hijT-2}\}$, where Exp_{hijk} is defined by the relevant column heading.

Appendix Table A3. The Export Response to Antidumping Imposed by High Income versus Emerging Markets: Export Growth

Year	<i>Exports_{hijk} ≡ Export growth_{hijk}%</i>											
	<i>Full Sample</i> (total AD cases=746)			<i>Exporter j = China</i> (total AD cases=126)			<i>Exporter j = High Income</i> (total AD cases=352)			<i>Exporter j = Other Emerging</i> (total AD cases=268)		
	High income import market <i>i</i>	Emerging import market <i>i</i> (1)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (2)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (3)	<i>Test</i>	High income import market <i>i</i>	Emerging import market <i>i</i> (4)	<i>Test</i>
<i>t - 1</i>	16.7 ^a	9.0 ^c		24.2 ^a	31.7 ^a		8.6 ^c	4.5		23.3 ^a	3.6	^c
<i>t = year AD measure imposed</i>	-28.1 ^a	-35.5 ^a		-19.1 ^b	-31.7 ^a		-28.8 ^a	-30.5 ^a		-31.1 ^a	-44.8 ^a	
<i>t + 1</i>	-32.6 ^a	-38.8 ^a		-37.5 ^a	-49.9 ^a		-24.7 ^a	-31.9 ^a		-40.0 ^a	-43.0 ^a	
<i>t + 2</i>	0.8	-2.2		12.0	9.7		1.3	0.0		-4.7	-11.7	
<i>T - 1</i>	3.2	4.3		23.5 ^a	4.6		6.2	2.8		-9.1	6.5	
<i>T = year AD measure removed</i>	17.3 ^a	20.0 ^a		40.3 ^a	49.3 ^a		16.1 ^a	13.1 ^b		8.9	14.6	
<i>T + 1</i>	16.0 ^a	9.1 ^b		20.8 ^a	16.8		4.4	1.0		27.8 ^a	16.9 ^c	
<i>T + 2</i>	3.6	2.1		23.5 ^a	4.6		0.0	0.0		5.4	-5.8	
Total observations		5,968			1,008			2,816			2,144	
R ²		0.06			0.13			0.05			0.06	
AD cases by importer <i>i</i>	399	347		65	61		182	170		152	116	
Share of AD cases with full export resumption*	64.7	62.0		83.1	85.2		33.0	35.3		48.7	53.4	
Mean years between AD imposed and removed	6.5	5.9		6.8	7.8		6.3	5.6		6.6	5.5	

Notes: Country *j*'s annual export growth of product *h* to policy-imposing country *i* at year *k*. AD=antidumping. *The definition of an AD case resulting in export resumption is $\max\{Exp_{hijT+1}, Exp_{hijT+2}\} \geq \min\{Exp_{hijt-1}, Exp_{hijt-2}\}$, where Exp_{hijk} here are defined as $\ln(1 + \text{real exports}_{hijk})$. Superscripts a, b, and c indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. "Test" is the statistical test for whether the year's estimated coefficient on the high income import market is statistically different from the coefficient on the emerging import market.

Appendix Table A4. The Export Response to Antidumping Imposed by High Income versus Emerging Markets: Export Market Share

Year	Exports _{hijk} ≡ Export market share _{hijk} %											
	Full Sample (total AD cases=746)			Exporter j = China (total AD cases=126)			Exporter j = High Income (total AD cases=352)			Exporter j = Other Emerging (total AD cases=268)		
	High income import market <i>i</i>	Emerging import market <i>i</i> (1)	Test	High income import market <i>i</i>	Emerging import market <i>i</i> (2)	Test	High income import market <i>i</i>	Emerging import market <i>i</i> (3)	Test	High income import market <i>i</i>	Emerging import market <i>i</i> (4)	Test
<i>t</i> - 2	24.9 ^a	28.6 ^a	c	29.3 ^a	25.4 ^a		34.4 ^a	37.6 ^a		11.5 ^a	17.1 ^a	b
<i>t</i> - 1	26.5 ^a	30.5 ^a	b	33.8 ^a	29.8 ^a		35.1 ^a	39.3 ^a		13.1 ^a	18.0 ^a	b
<i>t</i> = year AD measure imposed	23.9 ^a	26.7 ^a		29.5 ^a	25.3 ^a		32.3 ^a	35.3 ^a		11.5 ^a	14.8 ^a	
<i>t</i> + 1	20.0 ^a	21.5 ^a		22.2 ^a	19.3 ^a		28.3 ^a	29.4 ^a		9.1 ^a	11.1 ^a	
<i>t</i> + 2	20.1 ^a	21.5 ^a		23.8 ^a	21.0 ^a		28.1 ^a	28.9 ^a		8.8 ^a	11.0 ^a	
<i>T</i> - 2	18.6 ^a	21.9 ^a	c	21.3 ^a	23.6 ^a		26.2 ^a	27.4 ^a		8.4 ^a	12.8 ^a	b
<i>T</i> - 1	18.5 ^a	21.1 ^a		23.2 ^a	24.2 ^a		25.9 ^a	26.6 ^a		7.7 ^a	11.3 ^a	
<i>T</i> = year AD measure removed	19.5 ^a	22.4 ^a		29.2 ^a	29.5 ^a		25.9 ^a	26.5 ^a		7.7 ^a	12.7 ^a	b
<i>T</i> + 1	20.4 ^a	22.8 ^a		33.3 ^a	33.8 ^a		25.2 ^a	26.4 ^a		9.2 ^a	11.7 ^a	
<i>T</i> + 2	21.1 ^a	22.9 ^a		36.2 ^a	37.9 ^a		25.0 ^a	25.3 ^a		9.8 ^a	11.6 ^a	
Total observations	7,460			1,260			3,520			2,680		
R ²	0.43			0.53			0.53			0.29		
AD cases by importer <i>i</i>	399	347		65	61		182	170		152	116	
Share of AD cases with full export resumption*	45.4	48.7		72.3	77.0		58.8	56.5		63.8	57.8	
Mean years between AD imposed and removed	6.5	5.9		6.8	7.8		6.3	5.6		6.6	5.5	

Notes: Country *j*'s share of total world exports of product *h* to policy-imposing country *i* at year *k*. AD=antidumping. *The definition of an AD case resulting in export resumption is $\max\{Exp_{hijT+1}, Exp_{hijT+2}\} \geq \min\{Exp_{hijT-1}, Exp_{hijT-2}\}$, where Exp_{hijk} here is the level of export market share. Superscripts a, b, and c indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. "Test" is the statistical test for whether the year's estimated coefficient on the high income import market is statistically different from the coefficient on the emerging import market.