THE GREAT RECESSION AND IMPORT PROTECTION:
A LOOK BACK AT THE U.S. EXPERIENCE

CATPRN Commissioned Paper 2013-03
February 2013

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1. Introduction

The United States has long been among the most active seekers of contingent protection. This was true in the 1980s and 1990s and remains true in the first decade of the 2000s. While other policies such as 'Buy American' provisions and domestic content rules have received considerably more press attention during the economic crisis of 2007-9, the reality is that contingent trade policies remain the <u>primary</u> way for changing the relative cost and/or availability of imports. Under WTO rules contingent protection policies like antidumping, countervailing duty, China safeguard and global safeguard should be applied for a limited duration.[1] Consequently, the term 'temporary trade barriers' (TTBs) is a particularly apt description of the policies.

In this paper I discuss the trends in U.S. TTB activity since 1990. In order to provide a broad perspective on the issue, I examine the trends using alternative metrics of extent of protection – the number of TTB cases (the "case" metric) and the fraction of tariff lines involved in TTB cases (the "product" metric, trade weighted and unweighted).

My findings indicate that the U.S.'s use of TTBs is evolving. Some of the stylized facts of the past are no longer true. Although the U.S. continues to be a heavy user of TTBs (as compared to other countries), the number of new TTBs sought by U.S. industries has fallen markedly since 2004. Over 2005-9, the number of new requests for TTBs (case metric) by U.S. industries has fallen by about 60% compared to the late 1990s.

This decrease is especially noteworthy in light of the sharp decline in U.S. economic activity in 2007-9, a development which one would have expected to produce increased calls for protection. Interestingly, using any of the three metrics for TTB activity I find little evidence that the 2007-9 recession spurred a surge in U.S. protectionism, or at least protectionism in the form of TTBs.[2]

The U.S.'s current level of TTB activity is even more striking from a longer run perspective. During 2006-10, the U.S. initiated fewer cases than during any five-year span since 1960.[3] In fact, the two years with the fewest new TTB petitions, 2006 and 2010, have both occurred in this period.

The decline in new TTB activity, however, does not indicate that the U.S. has turned its back on TTBs. The U.S. continues to have a large stock of products under existing TTB orders. I find that the U.S. is now far more reluctant to remove existing orders than in the pre-Uruguay Round period. In this sense, U.S. TTBs are more onerous than those imposed previously. For example, I find that 75% (90%) of U.S. TTB orders were removed in the 1980s within five (ten) years; since 1995 only about 25% (50%) of TTB orders were removed within five (ten) years.

This trend in longer duration is seen in both antidumping and countervailing duty orders. TTB measures are far less likely to be removed (or what is referred to as being 'sunset') now than in the past. These trends are particularly noteworthy since the Uruguay Round agreement included a mandatory sunset provision for TTBs. Clearly, what was negotiated and what has happened in

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[1] What is meant by 'limited duration' is something I discuss later in the paper.

[2] Evenett (2010) presents evidence that other forms of protection have increased.

[3] Comprehensive data on worldwide use of antidumping prior to 1980 is not available (Bown, 2010a; WTO, 2010). The statistics presented in Irwin (2005) suggest that the U.S. has likely been a leading antidumping user since the 1950s.

practice are two different things.[4] The findings suggest that in the U.S., the term *temporary* trade barriers means something different today than it did previously. Perhaps the term 'semi-permanent' trade barrier is a more accurate description. It is certainly debatable whether the term 'temporary' is an accurate description when a trade barrier is imposed for 20 years.

At least as concerning is the discovery that the increased duration of TTBs is especially felt by developing countries. In the post-Uruguay Round period, at the initial sunset review stage, approximately 40% of AD measures against developed countries are revoked as compared with fewer than 25% of measures against developing countries. The difference between developed and developing countries is even starker for CVD measures. About 10% of CVD measures against developing countries are revoked at the initial review versus 40% of CVD measures against developed countries.

What do these trends mean for the stock of TTBs? The reduced flow of new TTBs should result in a smaller stock of TTBs. On the other hand, longer duration of existing TTBs means less attrition in existing TTBs and this, in turn, should increase the stock of TTBs. Using either the unweighted measure or trade-weighted measure, I find that the two effects essentially offset each other; as a result, the stock of U.S. TTBs is far more stable than the flow.

There have also been striking developments to the pattern of who is targeted by U.S. TTBs. In the 1980s and 1990s, the majority of TTBs was directed against imports from developed countries. Historically, somewhere between one-half to two-thirds of both the flow and the stock of TTBs were against developed countries. This is no longer the case. By 2009, only about one-third of the U.S. *stock* of TTBs is against developed countries. The change in the flow of TTBs is even more noticeable: more than 80% of the *flow* of TTBs is against developing countries.

While China is the main reason for the shift, China alone does not explain the changing pattern. Even if China were excluded there would still be a marked increase in the share of U.S. TTBs directed against developing countries. Non-China developing countries account for about half of U.S. TTBs by 2009; in comparison, in the mid-1990s, non-China developing countries accounted for about one-third of U.S. TTBs.

Although developing countries are getting greater attention, China is by far the major target of U.S. TTBs. As it does with many U.S. trade policy issues, China looms large in U.S. TTB activity. With respect to the stock of TTBs, the U.S. now has more TTBs in effect against China than against all developed countries taken together. China also dominates the flow of new TTBs.

When one accounts for the fact that antidumping and countervailing duty protection is often sought against multiple suppliers in a single investigation (*i.e.,* the U.S. industry alleges unfair behavior against more than one import supplier), it becomes apparent that the attention paid to China is even more intense. During 2006-10, China has been involved in about 85% of antidumping and countervailing duty investigations. By contrast, in the late 1990s, only about one-quarter of antidumping investigations involved China.

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[4] These findings are consistent with those in Moore (1999, 2002).

I also examine the distribution of TTBs by industry. Not surprisingly, the steel industry dominates U.S. activity throughout the period, consistently accounting for 30-50% of TTBs. The value of the trade-weighted measure of TTB protection is most apparent when examining the pattern of TTBs by industry. When the long-standing Canadian softwood lumber dispute was resolved, the wood product industry went from roughly 20% of all imports subject to TTBs to having less than 5% subject to TTBs. By contrast, when duties were imposed on over $1 billion of warmwater shrimp, the share of all seafood imports covered dramatically increased.

2.   Measuring TTB Protection

The case metric is the traditional way economists have measured the amount of TTB activity and protection (Baldwin, 1985).   The case metric has several advantages. First, it is consistent with how the U.S. and the WTO report TTB activity. Second, it is the most convenient metric for a long run perspective on TTB activity; given changes in product code definitions, it is quite difficult to construct long time series using the product metric.

On the other hand, the case metric also has some weaknesses; most notably, the case metric treats a relatively small case (e.g., plastic shopping bags) the same as a very large case (e.g., warmwater shrimp). If the type and size of cases vary over time, the case metric will not adequately capture the changing impact of TTBs on imports. The case metric does not allow the scope to vary by case. For example, under the case metric, five small cases would be considered to have five times the impact as one large case, even if the one large case covered billions in imports and the small cases involve a few million dollars of imports. Thus, it may be desirable to use a metric that captures the size of each case. Bown (2010b) argues that this alternative measure can be computed using information on the products involved in each case.[5] For more than 20 years the U.S. has used the Harmonized System (HS) to classify imports; these codes are reported for every TTB case and define the products involved in each dispute.

There are two key advantages of the product measure. First, cases rarely involve a single tariff line item. A case almost always involves a number of tariff lines. As a result, the scope of a case can be measured by the number of HS products involved (*i.e.,* an unweighted measure of products). Second, the dollar value of trade varies by product. Therefore, the breadth of trade affected by a case may be more accurately measured by the value of trade involved (*i.e.,* a weighted measure of products).

As discussed in the Bown (2010b), constructing a trade-weighted metric is not a trivial task since subject imports fall as a result of the measures. Suppose, for example, U.S. TTBs completely eliminate subject imports. Since no trade value is measured, a trade-weighted measure of TTBs would imply no trade is covered by TTBs; given what actually happened, this would be an odd interpretation of TTBs. Instead, I follow Bown's (2010b) approach and create a measure that adjusts for the trade distortion created by the TTB.

Despite the product metric's advantages, there are two drawbacks. Both highlight the difficulty in creating accurate time series trends with the product metric. First, the Harmonized

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[5] Until relatively recently such product information was not available but this information is now publicly available in Bown (2010a).

System was only implemented in 1989. While attempts have been made to concord the Harmonized System with the old tariff system, the reality is that measurement error becomes a serious concern if the product measure uses pre-1989 cases. As a result, I opt to look only at measures since 1989. Consequentially, because I exclude TTBs prior to 1989, my product metric will understate the true trade coverage of TTBs. This is likely to be especially problematic prior to the mid-1990s. It becomes less of a concern by the mid- to late 1990s as more and more of these pre-1989 TTBs were revoked. Consequently, in an attempt to reduce the impact of these pre-1989 codes, I report my results using HS-06 metrics only from 1995. Second, the Harmonized System has undergone regular revisions since it was instituted. As a result, the codes for about one-third of the products have changed since 1990. While I attempt to control for these product code changes, some lost coverage is inevitable. In an attempt to balance the desire to use disaggregated data with a desire to minimize the number of code changes, I opted to use the 6-digit level (HS-06) to measure products.[6]

3. Patterns in U.S. TTBs: Case Metric

3.1 General Discussion

In this section, I take an extended look at U.S. TTB activity using the traditional case metric. In Tables 1 and 2, I give statistics on antidumping (AD) and countervailing duty (CVD) activity since 1990 using the case metric. The data is drawn from Bown (2010a). The tables report activity against developed countries, developing countries, China, and finally against all targets (total cases). I list the number of cases initiated each year from 1990 through 2009.[7] The tables also report the number of measures taken, which are the cases that result in duties being levied. Finally, at the last column of each table I report the number of conducted investigations. The term 'case' refers to each individual country involved (e.g., warmwater shrimp from Thailand, warmwater shrimp from China) and 'investigation' refers to the set of countries involved (e.g., warmwater shrimp from all source countries). A single investigation often involves multiple countries. On average, a typical AD or CVD investigation involves two or three countries.[8]

As shown in Table 1, between 1990 and 2009 there were 741 AD cases; of these, 346 resulted in imposed measures. Table 2 gives similar statistics for CVD disputes: there were 187 CVD cases, 82 of which resulted in measures. Put differently, over the entire period about 45% of AD and CVD cases resulted in measures.

Figure 1 depicts the flow of new AD and CVD activity (petitions) using the case metric and provides visual evidence of a cycle to TTB filing patterns. Both AD and CVD cases increased

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[6] In most cases the products are identified at the 8- or 10-digit level. I opt to do my analysis at the 6-digit level because doing so reduces the number of product code changes over time. Code changes occur more frequently at more disaggregated levels. Given that I report the fraction of imports subject to TTBs rather than the absolute level of imports subject to TTBs I believe the cost of performing my analysis at the higher level of aggregation is small.

[7] One caveat when looking at the annual numbers is that investigations typically take 11-14 months, so usually the measure will not be taken until the following calendar year. This makes it quite possible that more measures can be imposed in a given year than new cases initiated.

[8] Distinguishing between a case and investigation has little impact on the later discussion in this paper. Nevertheless, it can potentially be important for other questions, *e.g.,* Hansen and Prusa's (1996) study of cumulation and Bown and Crowley's (2007) study of trade depression, diversion and deflection.

Table 1: US Antidumping Activity (by case), 1990-2009

|	Developed			Developing			China			Total cases			
	Cases initiated	Measures		Cases initiated	Measures		Cases initiated	Measures		Cases initiated	Measures		Total number of investigations
		Taken	In effect		Taken	In effect		Taken	In effect		Taken	In effect	
1990	16	11	100	12	3	47	8	7	11	36	21	158	18
1991	30	6	110	31	9	50	6	3	19	67	18	179	24
1992	62	24	116	27	12	57	5	3	21	94	39	194	25
1993	16	6	140	18	7	70	7	4	24	41	17	234	20
1994	17	7	144	22	13	75	12	7	28	51	27	247	23
1995	7	5	141	5	2	86	2	1	33	14	8	260	9
1996	5	2	140	9	4	85	6	6	34	20	12	259	13
1997	12	5	138	4	3	88	0	0	39	16	8	265	7
1998	19	11	139	18	9	92	1	1	39	38	21	270	12
1999	22	11	145	22	6	97	7	4	40	51	21	282	19
2000	19	9	139	23	17	88	7	5	42	49	31	269	12
2001	31	11	110	36	13	93	8	4	45	75	28	248	21
2002	11	3	118	15	2	104	9	7	46	35	12	268	15
2003	12	2	119	18	7	102	10	7	53	40	16	274	20
2004	7	4	120	14	7	108	6	5	59	27	16	287	12
2005	5	2	115	4	3	110	4	3	62	13	8	287	8
2006	1	0	87	3	0	102	4	2	59	8	2	248	5
2007	10	5	75	6	4	93	12	12	61	28	21	229	14
2008	2	1	71	5	4	94	11	10	72	18	15	237	12
2009	0	0	72	8	3	96	12	2	81	20	5	249	13
TOTAL	304	125		300	128		137	93		741	346		302
Share (average over period)*	41%	36%	29%	40%	37%	39%	18%	27%	33%				
Success rate		41%			43%			68%			47%		

Notes: * end of period share for 'measures in effect'.
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

Table 2: US Countervailing Activity (by case), 1990-2009

	Developed			Developing			China			Total cases			
	Cases initiated	Measures		Cases initiated	Measures		Cases initiated	Measures		Cases initiated	Measures		Total number of investigations
		Taken	In effect		Taken	In effect		Taken	In effect		Taken	In effect	
1990	2	0	18	5	2	46	0	0	0	7	2	64	4
1991	3	2	17	8	3	46	1	0	0	12	5	63	9
1992	32	13	17	12	6	46	1	0	0	45	19	63	9
1993	2	1	30	4	0	52	0	0	0	6	1	82	3
1994	5	2	30	2	0	51	0	0	0	7	2	81	5
1995	1	1	30	1	1	51	0	0	0	2	2	81	1
1996	1	0	27	0	0	23	0	0	0	1	0	50	1
1997	4	1	26	2	0	22	0	0	0	6	1	48	3
1998	9	5	27	4	1	20	0	0	0	13	6	47	7
1999	5	4	32	10	2	17	0	0	0	15	6	49	5
2000	5	4	31	6	6	15	0	0	0	11	10	46	4
2001	9	4	23	6	2	20	0	0	0	15	6	43	8
2002	5	2	30	0	0	22	0	0	0	5	2	52	5
2003	0	0	32	6	2	22	0	0	0	6	2	54	5
2004	1	0	32	3	0	24	0	0	0	4	0	56	3
2005	0	0	29	2	2	24	0	0	0	2	2	53	1
2006	1	0	20	1	0	21	1	0	0	3	0	41	1
2007	0	0	12	0	0	19	7	7	0	7	7	31	7
2008	0	0	10	1	1	19	5	5	7	6	6	36	6
2009	1	0	9	3	1	20	10	2	12	14	3	41	12
TOTAL	86	39		76	29		25	14		187	82		99
Share (average over period)*	46%	48%	22%	41%	35%	49%	13%	17%	29%				
Success rate		45%			38%			56%			44%		

Notes: * end of period share for 'measures in effect'.
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

significantly during the economic slowdown in 1991-2 and 2001-2. As discussed above, there was only a modest uptick in activity in the 2007-9 recession.

Tables 1 and 2 also list the number of measures in effect during each year. If more measures are revoked than imposed in a given year, then the aggregate number of measures in effect will fall. For example, as shown in Table 1, the United States had 269 AD measures in effect during 2000 and 248 measures in effect during 2001. The United States imposed 28 new AD measures in 2001. This implies that 49 AD measures were 'sunsetted' in 2001.

Figure 1: US AD and CVD Case Initiations
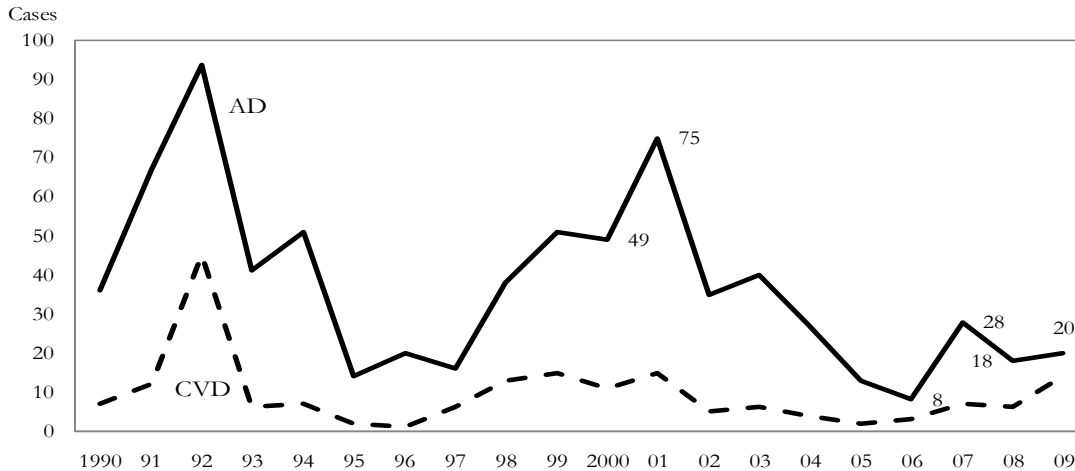
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

When using the case metric, 'measures in effect' give the stock of TTB activity. The trends are depicted Figure 2. As seen, there have always been far more AD measures than CVD measures, but the differential has grown since 1990. CVD measures have declined modestly while AD measures have grown significantly over the period and consequently the relative importance of the two TTBs has widened: in 1990 the ratio of AD to CVD measures was 3:1 and by 2009 it was 5:1.

Figure 2: US AD and CVD Measures in Effect
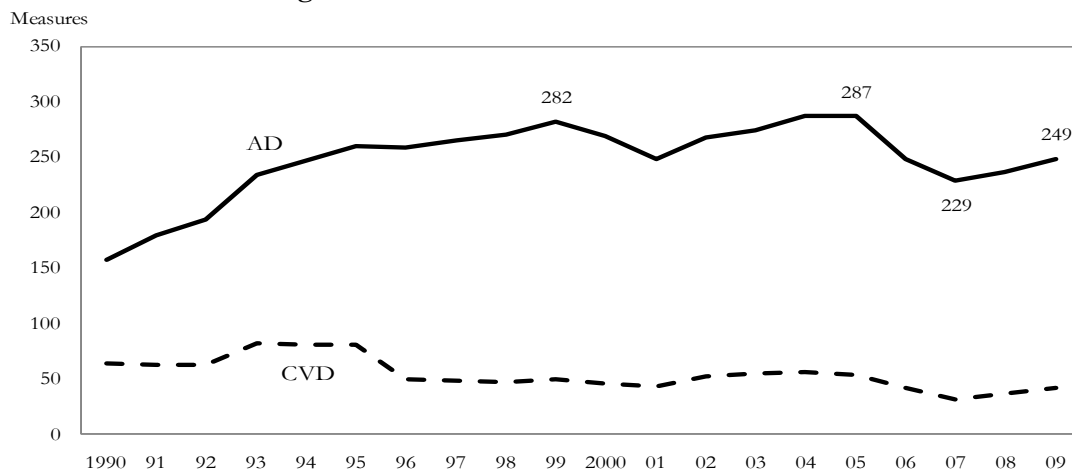
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

Figure 2 also provides some evidence of the impact of the inclusion of the mandatory sunset provision in the Uruguay Round. In the first two years of its use (1999-2000), mandatory sunset reviews had an appreciable impact on measures in effect; the U.S. revoked almost 100 orders.[9] Since that initial trove of sunset cases, however, the U.S. has been disinclined to remove orders (Moore 1999, 2002). I return to this issue below in Section 6.

The number of CVD measures in effect has been relatively stable. As seen in Figure 2, CVD measures declined in the mid-1990s but have since remained nearly constant at 40-50 measures in effect. The impact, if any, of mandatory sunset reviews is not seen in the stock of CVD measures. Table 2 reveals that the main development with respect to CVDs is the decrease in the flow. About one-tenth as many CVD cases were initiated during 2000-2009 as during the 1980s.

3.2   Target Countries

It is also interesting to examine TTB patterns after dividing the target countries into development groupings: developed, developing (not including China), and China. China is separated from other developing countries because of the intense trade scrutiny to which it is subject within the U.S. There are several important insights gleaned by looking at the targets by development status.

First, developed countries were targeted far less frequently by either AD or CVD actions over the 2000s relative to the preceding two decades. In the 1980s, about two-thirds of U.S. AD and CVD cases targeted developed countries. The share of cases targeting developed countries fell throughout the 1990s and even more dramatically over the first decade of the 2000s. Since 2004, the number of cases against developed countries has dropped sharply; during 2005-9, fewer than 10 cases in any year were aimed at developed countries. Averaging over the 1990-2009 period, 42% of the initiated cases targeted developed countries; but over 2005-9, only 20% of the cases targeted developed countries. The decline in cases against developed countries is even sharper for CVD. Over 2003-9, only three CVD cases involved developed countries and none resulted in measures. By the end of 2009, only nine CVD measures were in effect against developed countries.

Second, the trends against developing countries are more stable. For most of the period, about 40% of U.S. AD and CVD cases have targeted developing countries.[10] The total number of AD and CVD measures in effect against developing countries has also remained fairly stable during the 1995-2009 period, with 90-100 AD measures and 20-25 CVD measures in effect in most years.

Third, and very importantly, China has emerged as the singularly most prominent target of U.S. TTBs over the 2000s. Table 1 indicates that the absolute number of AD cases against China is about the same over the 2000s as during the 1990-5 period. However, given that the number of TTBs targeting all other countries has fallen so sharply, China has emerged as the leading target. In a sense, other targets have taken two steps back while China stood still.

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[9] Moore (1999) points out that the majority of the initial trove of sunset orders involved measures that had been in place for more than 10 years.

[10] There is more volatility in the CVD trends due to the relatively small number of cases in any one year.

Perhaps the most startling statistic is the growth in the number of measures in effect against China. Over the first decade of the 2000s, the number of U.S. AD measures in effect against China's exporters increased from 40 to 81. As a result, as of 2009, a full one-third of all U.S. AD measures in effect are against China.

In addition, China now finds itself under unprecedented CVD scrutiny. Prior to 2007, no U.S. CVD case against China had ever successfully resulted in a measure. This is largely because the U.S. rules made it impossible to levy a CVD against a non-market economy. In 2007, the U.S. changed its rules and broadened its interpretation of CVDs. Under the new rules, CVDs could be levied on non-market economies like China. Subsequent to this rule change, a remarkable 23 of 30 U.S. CVD cases have involved China.

Figure 3 depicts the yearly share of AD and CVD measures in effect, grouped by development status. The figure highlights the growing importance of China. As seen, over 1990-2009, developing countries have accounted for about 40% of all measures. The big difference is the diminished role of developed countries and the growing role of China. By the end of the sample period, China accounts for almost one-third of all TTB measures in effect.

Figure 3: Share of US AD and CVD Measures, by Development Status and China
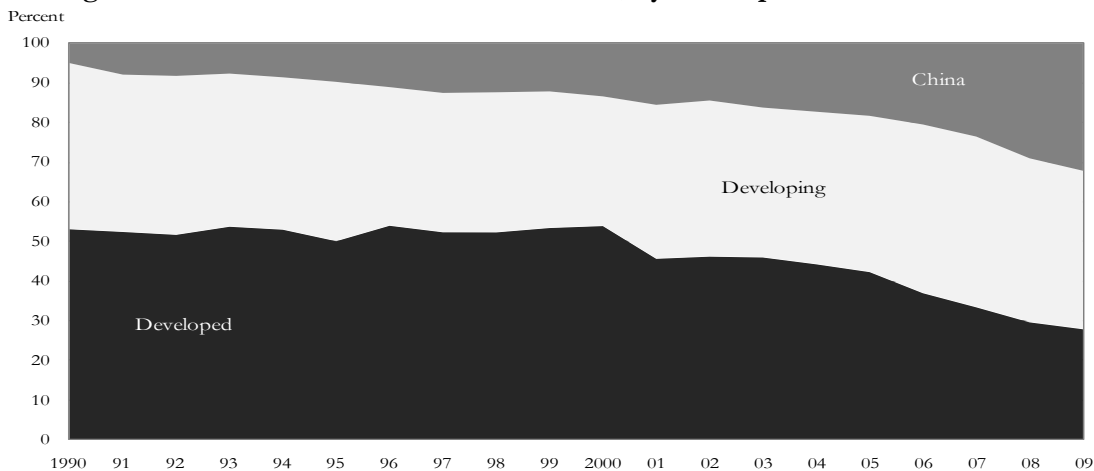
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

While the above trends indicate the growing prominence of China for U.S. TTBs, the focus on China is arguably even greater. As mentioned above, often domestic industries initiate cases against multiple import sources and these cases are almost always considered within a single investigation. While China accounts for a big share of cases, its influence on investigations is even greater. Consider the information in Table 3. In Panel a, I tally information for AD cases and in Panel b, I look at CVD cases.

Table 3: US Contingent Protection against China (number of cases)

a. China's share of US AD actions

	Cases Initiated (%)	China Involved (%)	Only China (%)
1980s	4	7	4
1990-94	13	34	16
1995-99	12	27	15
2000-04	18	50	21
2005-09	49	83	42

b. China's share of US CVD actions

	Cases Initiated (%)	China Involved (%)	Only China (%)
1980s	0	1	0
1990-94	3	7	7
1995-99	0	0	0
2000-04	0	0	0
2005-09	72	85	78

Source: Author's calculations using the Temporary Trade
Barriers Database (Bown, 2010a).

In the first column of Panel a, I report China's share of AD cases. China accounted for less than 20% of AD cases through 2004. During 2005-9, however, China's share has jumped to almost 50% of all cases.

Yet, as argued by Bown (2010c) and Prusa (2010), this case statistic probably does not capture the true extent to which China dominates current use of administrative protection. To see why, some clarifying language is needed. As mentioned above, by the term "case" I mean an AD or CVD petition seeking duties on a particular country (e.g. Ball-bearings from China). Oftentimes, however, a single petition will seek duties against multiple countries (e.g, Ball-bearing from Brazil, China, and Japan). When multiple countries are named in the same petition the U.S. bundles the countries together in a single *investigation*. A single *investigation* can be comprised of three (or often more) *cases*. As Bown (2010c) and Prusa (2010) discuss, for some discussions thinking of activity against China as a fraction of all cases is more appropriate while in other contexts thinking of how often activity against China as a fraction of investigations is more appropriate. For instance, one wonders how often China is involved in a U.S. AD or CVD probe, the investigation metric is more illuminative.[11]

In the second column, I give the fraction of *investigations* where China was involved. China has been a major target since the early 1990s. From 1990-9, China was involved in no more than one-third of all AD investigations. During 2000-2004, China's AD participation rate

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[11] The U.S. will bundle will bundle all the subject countries into a single probe.

jumped to 50%; a remarkable 82% of AD investigations have involved China since 2005. In the final column, I report the fraction of investigations that involve only China. Amazingly, over 40% of U.S. investigations target only China. The ascent of China is even more startling for CVDs (Panel b in Table 3). China went from zero CVD activity prior to 2005 to account for 85% of all CVD investigations in 2005-9. To a large extent, U.S. TTB policies have become 'stop China' policies.

4. Patterns in U.S. TTBs: Product (HS-06) Metric

4.1 *General Discussion*

I now turn to examination of TTBs using the product metric. In Figures 4 through 6, I present unweighted and trade-weighted measures. Figure 4 summarizes the overall trends. In this figure, the solid line depicts the fraction of HS-06 products (unweighted) subject to AD/CVD orders; the dashed line illustrates the fraction of HS-06 import *value* subject to AD/CVD orders. In terms of overall picture, the two measures are broadly consistent: both measures indicate that 4-6% of all U.S. imports are subject to TTBs. However, the two metrics differ when it comes to the trends in TTB coverage. The unweighted metric indicates that TTB coverage has increased fairly consistently over 2003-9, and especially over 2006-9. On the other hand, the weighted metric implies that TTB protection has fallen since 2003 and only risen modestly in 2007-9. The difference in the trends reflects the impact of the removal of TTBs on several large import value products such as galvanized sheet steel and softwood lumber.

Figure 4: Percentage of HS-06 Lines under US AD/CVD Measures (All Suppliers)
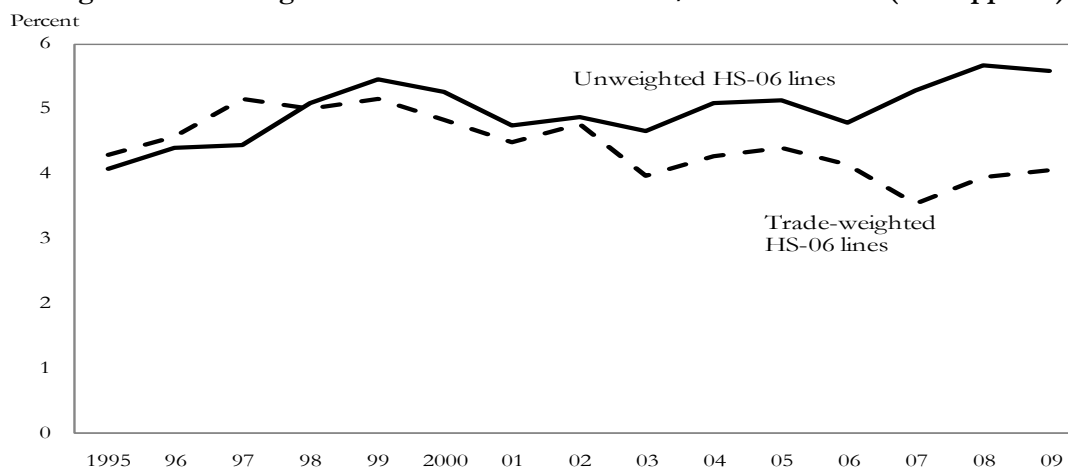
Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a) and COMTRADE.
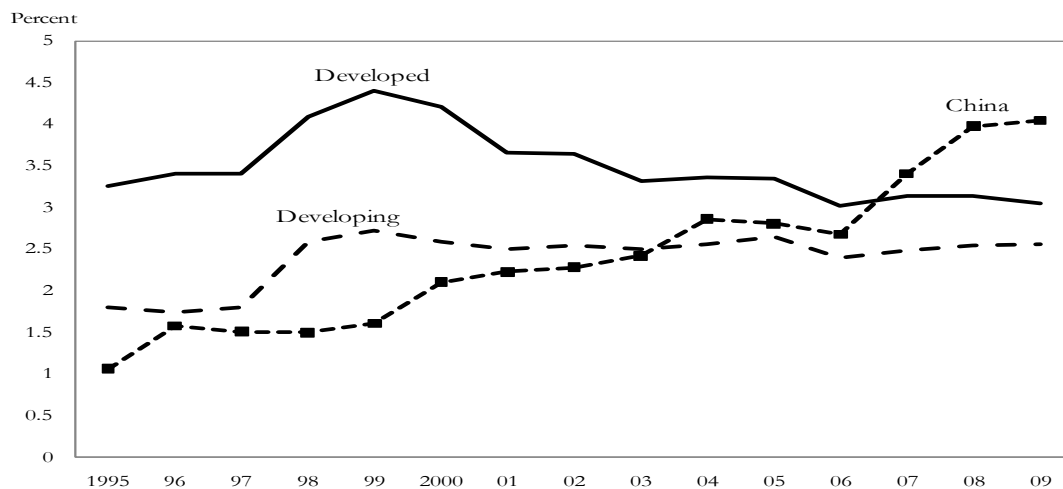
4.2 *Unweighted Measure*

Figure 5 partitions the subject countries by development status. In Figure 5, the products covered are measured relative to the entire universe of products (e.g., the number of Chinese products subject to TTBs relative to all U.S. imports of all products from China, the number of

developed country products subject to TTBs relative to all U.S. imports from developed countries, etc.).

Figure 5 echoes the trends found using the case metric. First, TTBs against developed countries peaked in about 1998 (solid line) and declined thereafter. At the peak, about 4.5% of imported products from developed countries were subject to U.S. TTBs. Beginning in 1998, the U.S. conducted its initial trove of sunset determinations, and these early sunset reviews involved a large share of products from developed countries. As shown, these revocations resulted in a big decline in TTB coverage. The reduced flow of new TTBs over the 2000s has resulted in the coverage ratio steadily declining to about 3% by 2009. Second, TTBs against developing countries (dashed line) rose in the mid-1990s but have remained quite stable at about 2.5% for more than a decade. Third, TTB coverage against China has nearly quadrupled over the 1995-2009 period. In 1995 about 1% of China's products were subject to TTBs; by 2009 China's TTB coverage had risen to more than 4%. As also seen when using the case metric, when it comes to TTBs, China is wearing the 'bulls-eye'.

Figure 5: Percent of HS-06 Lines under US AD/CVD Measures by Development Status and China
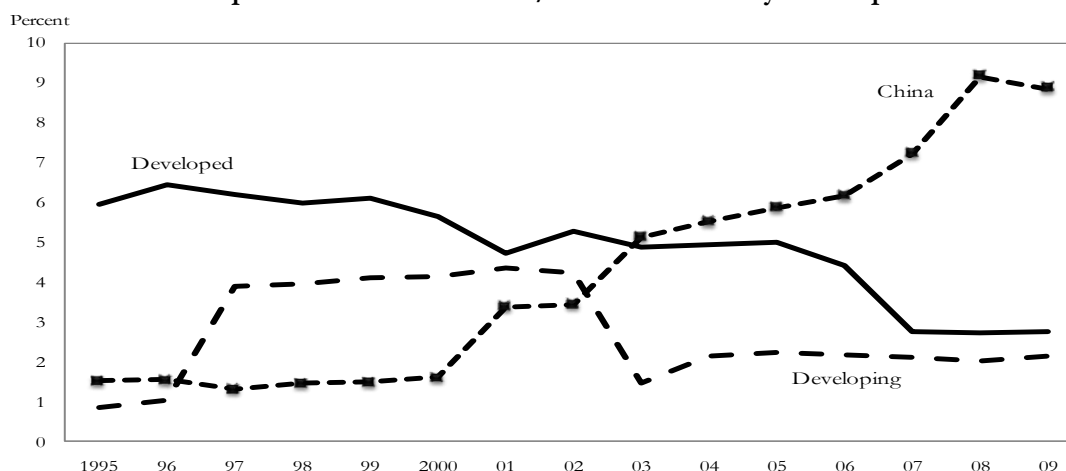

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a) and COMTRADE.

4.3   Trade-weighted Measure

Figure 6 is similar to the previous figure but relies on the trade-weighted metric. While the trends are consistent across the two metrics, the changing incidence of TTBs is much starker under the trade-weighted metric. Using the unweighted metric (Figure 5), developed countries' TTB coverage fell from about 4.5% to 3% by 2009; using the trade-weighted metric (Figure 6), developed countries' TTB coverage fell substantially faster, from about 6% to under 3%. The difference is even more pronounced for China. Using the unweighted metric, China's TTB coverage rose from about 1% to 4% by 2009; under the trade-weighted metric, China's TTB coverage rose from about 1.5% to about 9%.

Figure 6: Percent of Import Value under US AD/CVD Measures by Development Status and China

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a) and COMTRADE.

Taking the two figures together, not only are a very large number of products from China under TTB protection, but as compared to other countries, the TTBs against China (on average) involve larger trade volume than those against other countries.

5.   Industry Patterns

I next turn to the question of whether the U.S. industries seeking TTB protection have changed over 1990-2009. I begin by examining the flow of TTBs. In Table 4, I use the case metric and report each industry's share of new cases as five-year averages.[12] What is remarkable is how TTB activity is dominated by just a few industries. Very few cases involve food, vegetables, minerals, and textiles.

As seen, in every sub-period the U.S. steel industry has been the leading seeker of TTB protection. The steel industry was a particularly heavy user during the 1995-2004 period when a large number of firms went through bankruptcy and restructuring. In this 10 year period the industry accounted for more than half of all TTB cases. Throughout the entire 1990-2009 period chemicals and plastics are the second and third most active industries respectively.

I also report filings during the 2007-9 period to examine whether there is any evidence the recession spurred a significant change in the industry filing patterns. The short-answer is 'no'; the same handful of industries that account for most U.S. TTB activity prior to the crisis are the same industries that account for most TTB activity during the recession.

The stock of TTBs is probably a more revealing metric when considering industry patterns of protection. The lack of new TTB requests (small flow) for a given industry may simply reflect that it already has a large fraction of its import competition subject to TTBs; this pre-existing coverage will be evident when looking at the stock measure. When examining the

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[12] Reporting annual filings would produce extremely volatile patterns from year-to-year.

stock of TTBs by industry, I use the trade-weighted product metric and compute the fraction of each industry's trade value subject to TTBs. The results are given in Figure 7 and Table 5.

Table 4: Distribution of New US AD/CVD TTB Initiations (case basis, flow)

	1990-94 (%)	1995-99 (%)	2000-04 (%)	2005-09 (%)	2007-09 (%)
Animal & Animal Products	0.7	4.9	5.3	0.0	0.0
Vegetable Products	1.3	3.5	3.3	0.0	0.0
Foodstuffs	1.6	8.3	4.1	3.2	0.0
Mineral Products	5.9	0.0	1.2	0.0	0.0
Chemicals & Allied Industries	17.4	4.9	16.3	24.2	27.0
Plastics / Rubbers	1.3	11.1	9.0	8.4	10.8
Wood & Wood Products	3.0	0.0	1.6	11.6	6.8
Textiles	5.3	2.1	0.0	6.3	5.4
Stone / Glass	0.0	0.0	0.8	2.1	2.7
Metals	48.4	55.6	50.6	30.5	29.7
Machinery / Electrical	4.9	6.3	3.7	8.4	10.8
Transportation	6.3	1.4	0.8	0.0	0.0
Miscellaneous	3.9	2.1	3.3	5.3	6.8

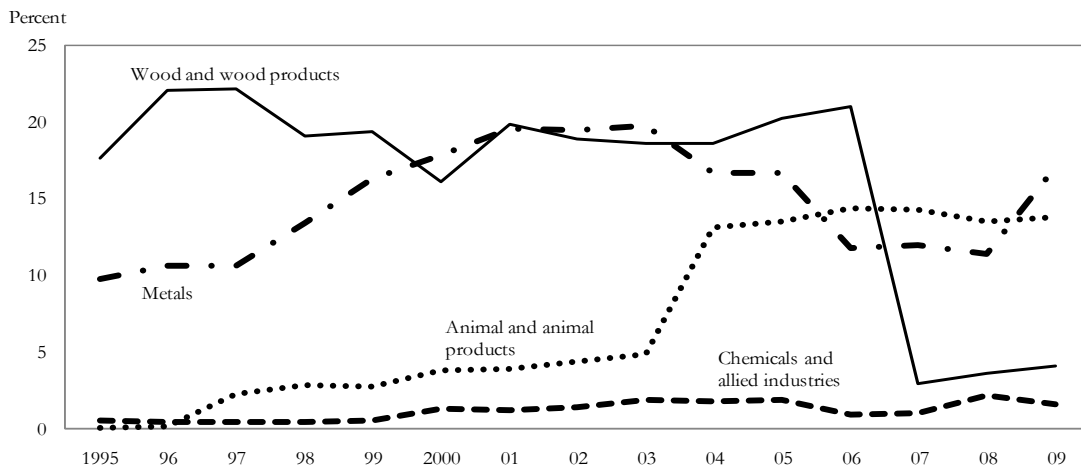Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

Table 5: Trade Impact of US AD/CVD Measures in Effect (trade weighted)

	1995-99 (%)	2000-04 (%)	2005-09 (%)	2007-09 (%)
All Suppliers	4.9	4.5	4.0	3.8
By Development Status				
Developed	6.1	5.1	3.6	2.8
Developing	2.9	3.3	2.1	2.1
China	1.5	4.1	7.5	8.4
By Industry				
Animal & Animal Products	1.7	6.2	13.9	13.9
Vegetable Products	0.7	1.2	0.9	0.4
Foodstuffs	2.6	3.8	6.5	6.5
Mineral Products	3.1	2.8	2.5	2.6
Chemicals & Allied Industries	0.5	1.6	1.5	1.6
Plastics / Rubbers	5.3	3.1	3.9	5.1
Wood & Wood Products	20.1	18.4	11.7	3.5
Metals	12.3	18.5	13.4	13.0
Machinery / Electrical	6.8	4.2	2.5	2.6
Transportation	3.9	3.6	4.6	4.9

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a) and COMTRADE.

First, consider that over all industries and suppliers the U.S. has about 4-5% of total imports subject to TTBs (Figure 4, top row of Table 5). The average misrepresents the impact at an industry level. For example, the steel industry's persistent use of TTBs has resulted in large coverage. For much of the period the steel industry had more than 15% of all competing imports subject to TTBs. The industry's coverage peaked at almost 20% during the steel crisis of 1999-2002.[13] It should be noted that a large fraction of steel trade is intra-firm trade; one would not expect this trade to be threatened with TTBs. Hence, the industry's TTB coverage on non-affiliated trade is even more impressive. For instance, if one-third of U.S. steel imports is intra-firm trade, then 30% of all unaffiliated imports are covered by TTBs.

Figure 7: Percentage of Import Value under US AD/CVD Measures by Industry

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a) and COMTRADE.

Second, other industries have experienced large changes in their stock of imports subject to TTBs. Until 2006, the wood and wood products industry had about 20% of its import competition subject to TTBs. Despite the fact that this industry filed few cases over the period (Table 4) it was able to maintain TTBs on a large share of its competition. This was possible because softwood lumber dominates U.S. wood imports and Canada accounts for nearly all of U.S. softwood lumber imports. For this industry, a single dispute against a single supplier can create high coverage. The U.S. and Canada litigated this dispute for over 20 years. Given the amount of trade involved, neither side was willing to compromise. Finally, after numerous NAFTA Panel and WTO Appellate Body decisions, the U.S. and Canada agreed to settle the dispute in 2006. The U.S. revoked the countervailing duties on softwood lumber and Canada agreed to limit how much softwood lumber it would export to the U.S. As seen, the removal of this order reduced the coverage ratio from over 20% to below 5%.

The 'animal products' industry is an interesting comparison to the wood industry. Akin to the wood products industry the animal and animal products industry has not filed a large number

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[13] TTB coverage would be even larger in 2002-3 if I had included the trade effects of the steel safeguard action.

of TTB cases (Table 4). However, the cases that have been pursued have been large. Most notably, in 2004 the U.S. imposed antidumping duties on shrimp from six developing country suppliers, resulting in over $2 billion of trade to be covered in a single TTB. This single case increased industry coverage from about 5% to about 14%.

Wainio, Young, and Meilke (2003) discuss the changing pattern of administered protection in the agricultural sector by the U.S., Canada, and Mexico pre- and post-NAFTA. Waison et al. show that while agricultural disputes are a small share as measured by number of disputes, the intra-NAFA trade effects can be large. A huge amount of agricultural products cross NAFTA borders and even a small number of cases (e.g., cattle, swine, lumber, rice and grain) can have a disproportionate effect on NAFTA producers.

6.   Duration of TTBs

The length of the period that measures remain in effect is vital for understanding the protection afforded by US TTBs. A mandatory sunset provision for AD and CVD measures was included in the Uruguay Round because developing countries were frustrated by the challenge involved in getting orders removed.[14] As part of the grand bargain to conclude the Uruguay Round, developing countries were able to insert language that required a mandatory sunset review for each TTB every five years. As Moore (1999, 2002) discusses, some users interpreted the language to mean that TTBs were to be removed after five years while others, including the US, interpreted the provision to mean that only a mandatory sunset *review* was required. Under US law the presumption is that the order will be removed unless doing so would lead to a resumption of unfair trade and injury.

The extent to how much the new provision matters depends on the basis for determining the likelihood of resumed unfair trade and injury. Moore (1999, 2002) documents that the US procedures make revocation via the sunset review a difficult proposition. With respect to the question of whether there would be a resumption of unfair trade if the order was removed, Moore documents that the US has *always* found that there would be a return to unfair trading. In every case, no matter how long the order has been in effect, no matter how much evidence administrative reviews have revealed about the changed pricing, the US always concludes that the affected countries will trade unfairly. With respect to the reoccurrence of injury, the US has become far more hesitant to remove orders as it has gained more experience with sunset reviews. In the initial set of reviews covering measures that were in place prior to the 1995, the US revoked about 50% of the orders.[15] Once these transition orders were finished, the US adopted a much harder line towards revocation. Only about one-third of the post-Uruguay Round cases have been revoked.

I quantify the duration of TTBs by computing the number of measures that are revoked as a fraction of the total number of measures that are in effect each month/year. I convert each

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[14] While a higher proportion of cases were against developed countries pre-1990, developing countries pushed the sunset provision. To begin with, many of the TTB cases against developed countries in the 1980s were 'settled'. Second, the accounting requirements to get TTBs were particularly difficult for developing countries to master. Hence, developing countries felt there was a lot to gain by mandatory sunset reviews.

[15] Some of these transition orders were so old that there was no domestic interest in continuing them.

measure's key calendar dates (date the measure went into effect, date of revocation) into a duration basis. For instance, a measure that went into effect in January 2000 and was revoked in January 2005 would have a duration of 60 months.

Statistically, duration is estimated using the non-parametric Kaplan-Meier survival function. In Figures 8 and 9, I report the survival estimates for AD and CVD measures, respectively. Both figures are based on the case metric. Begin by examining the Panel a of each figure. I have graphed three lines: the short-dashed line is the survival experience for cases filed pre-mandatory sunset; the long-dashed line is the survival experience for transition cases; and the solid line is the survival experience for cases initiated post-mandatory sunset reviews. I note that these figures use TTB information on cases prior to 1990. Because I am using the case metric for the duration analysis, I am not hindered by the fact that the Harmonized System codes are unavailable for these early cases.

The lines depict the fraction of cases that survive through a given time period. As seen, within 36 months more than half of both AD and CVD cases during the pre-Uruguay Round period were revoked (short-dashed line). By contrast, in the post-Uruguay Round period, less than 10% were revoked (*i.e.,* more than 90% were still in effect). In the pre-mandatory sunset era cases ended more or less continuously. In the post-Uruguay Round period, the survival curve is almost constant until the sunset review, and then it drops sharply. About 25-33% of initial sunset reviews result in the order being revoked.[16] In the post-Uruguay Round period, almost all revocations occur during the sunset review.

Mandatory sunset reviews appear to have had two effects on the removal of orders. First, it appears that foreign firms do not seek to have the orders removed via demonstrating multiple years of zero margins. This is not that surprising given the large expense associated with each administrative review. Also, given that the probability of revocation is small (zero unless several prior reviews already demonstrated zero margins), foreign firms seem to have decided to preserve resources for the sunset review.[17]
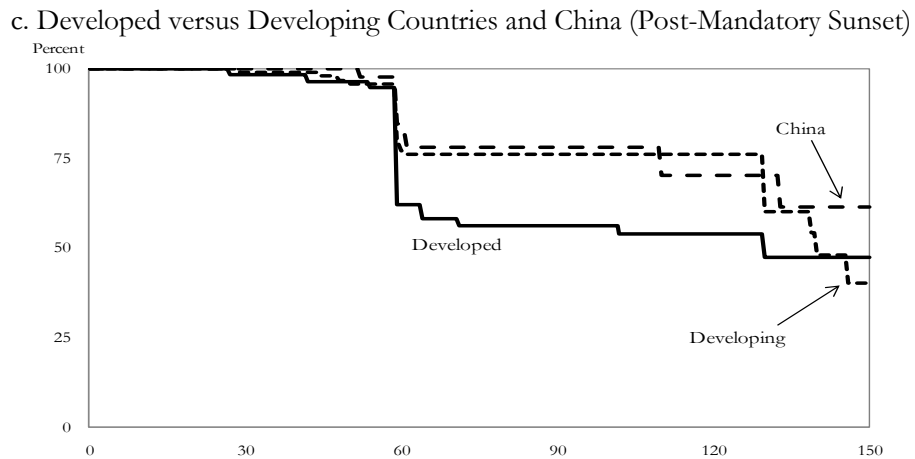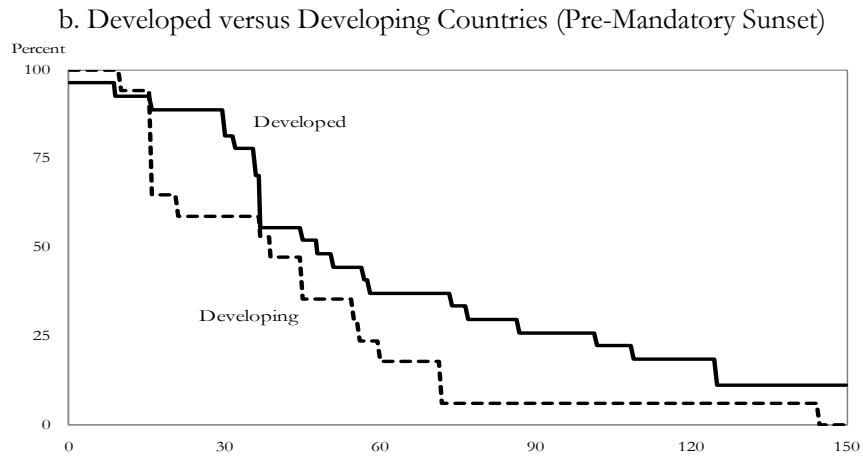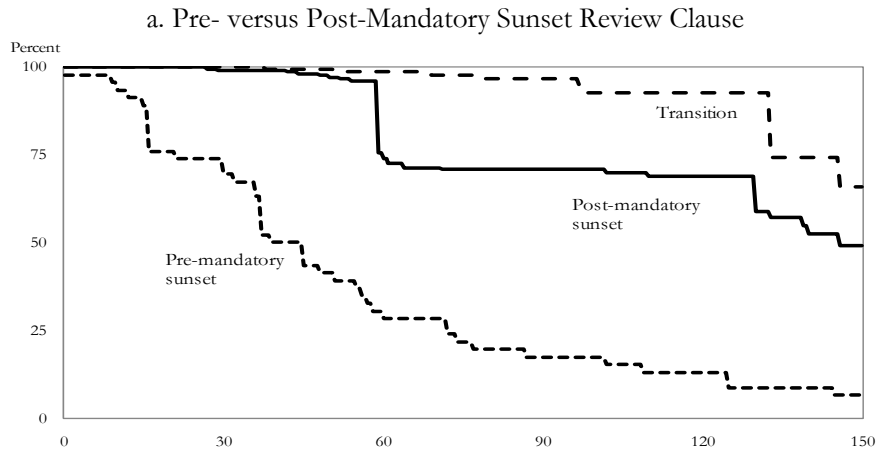
To get a sense as to why they might do so, suppose a TTB was imposed on three firms exporting from a given target country. Each administrative review can cost *each* firm over $1 million. Thus, if all three firms were to pursue an administrative review sunset, they could jointly spend $9 million. By contrast, pursuing a sunset review is a decision common to all three firms and would likely be jointly funded. A sunset review might cost a total of $1 million, about one-ninth the cost of the sunset via the administrative review process.

Second, if countries thought the Uruguay Round's sunset review language would appreciably lower the duration of AD and CVD orders they were mistaken. The US implementation of sunset review has produced the opposite effect – measures are now in place

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[16] Due to the time required for the sunset review investigation, the initial sunset review often occurs between 60-72 months after the initial order is imposed.
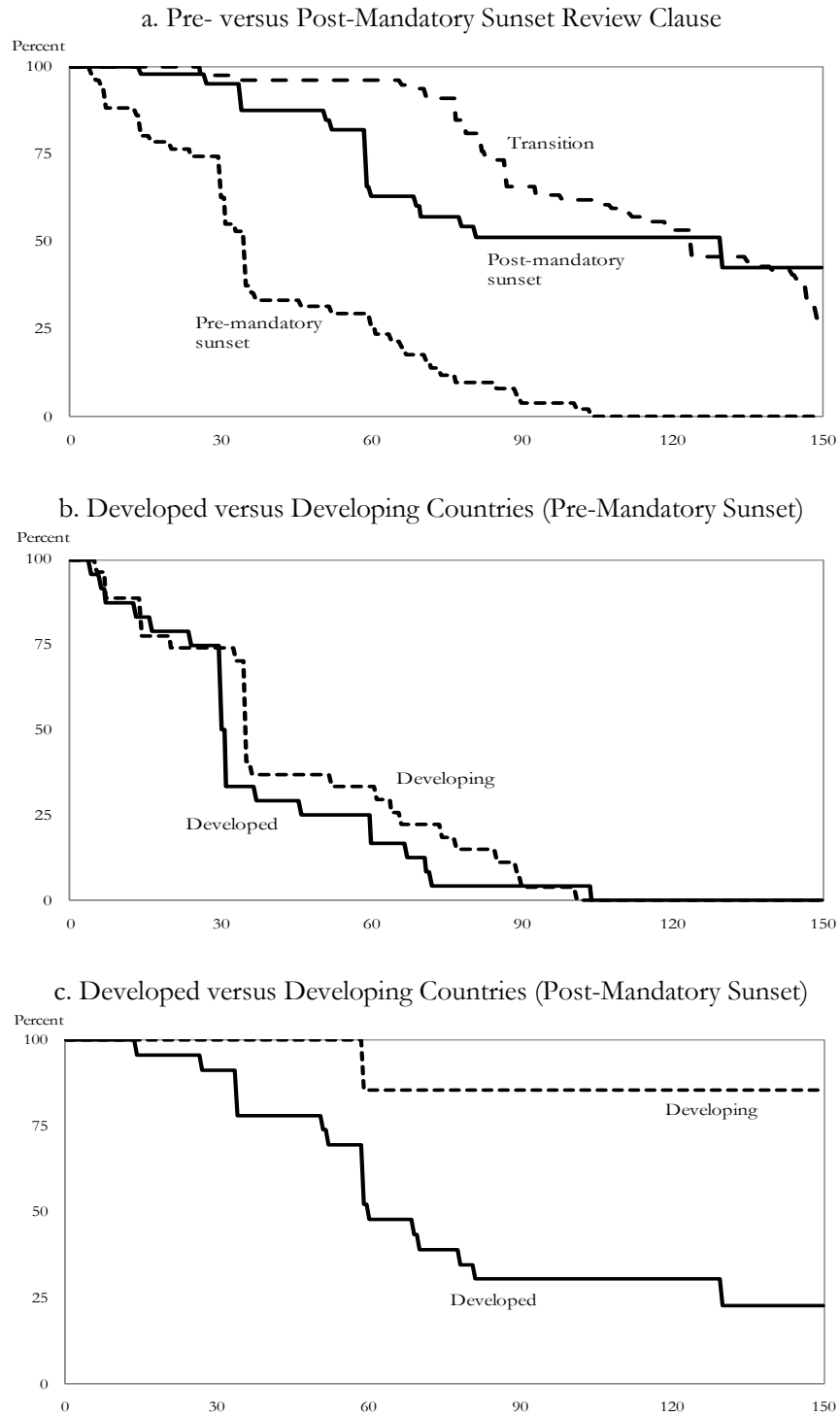
[17] The foreign firms' reluctance to pursue administrative reviews is also possibly due to the 'zeroing' procedures used by the Department of Commerce. We could see more effort on administrative reviews once the US changes its zeroing policy (Bown and Prusa, 2011).

Figure 8: Percentage of US AD Measures in Effect by Duration (in months)

a. Pre- versus Post-Mandatory Sunset Review Clause

b. Developed versus Developing Countries (Pre-Mandatory Sunset)

c. Developed versus Developing Countries and China (Post-Mandatory Sunset)

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

Figure 9: Percentage of US CVD Measures in Effect by Duration (in months)

a. Pre- versus Post-Mandatory Sunset Review Clause

b. Developed versus Developing Countries (Pre-Mandatory Sunset)

c. Developed versus Developing Countries (Post-Mandatory Sunset)

Source: Author's calculations using the Temporary Trade Barriers Database (Bown, 2010a).

longer than they were pre-Uruguay Round. That is, the fraction of measures revoked in 2, 3, 4, and 5 years in the pre-Uruguay Round era far exceed the fraction of measures revoked by 4 years in the post-Uruguay Round era.

In Panels b and c of Figures 8 and 9, I compare developed and developing countries' sunset experiences. In Panel b, I examine the duration of orders prior to mandatory sunset. In this period there were sufficiently few cases against China that I opted to not report China separately. Both Figures 8 (AD) and 9 (CVD) show that in this early period developed and developing countries had very similar experiences. The two survival curves are very similar. A log-rank test of equality of the curves cannot reject that they have the same survival experience.

A very different story emerges for the post-Uruguay Round period. TTBs against developing countries are far longer lived than those against developed countries. With AD, developed and developing countries have a similar experience during the first five years. However, at the initial sunset review stage about 40% of measures against developed countries are revoked as compared to less than 25% of measures against developing countries. Moreover, the difference persists for years. About as many cases are revoked against developing countries after 11 years as are against developed countries after 5 years. This is a remarkable result that is especially surprising given that it was developing countries that pushed hardest for mandatory sunset. I note that in Figure 8c where I separate China from other developing countries as the activity against China becomes significant in the mid-1990s.

The difference between developed and developing countries is even starker when I look at CVDs. As seen, US CVDs imposed against developing countries are rarely revoked. The data indicate that more than 90% of measures against developing countries remain in effect after the initial review. By contrast, measures against developed countries have been removed fairly consistently throughout the period. By year 5, about 40% of the orders have been removed and by year 10, about 75% of the orders have been removed. The gap in duration is large.

The difference in duration is a serious issue for developing countries. The data indicate that the US is much more likely to keep an order in place against a developing country than it is against a developed country. This policy issue certainly warrants further analysis.

7.   Concluding Comments

This review of US TTB activity has revealed a number of interesting insights. One important finding is methodological – what insights are sensitive to the metric for measuring TTBs. I find that the different metrics (case, unweighted product, trade-weighted product) all portray similar qualitative results with respect to the flow of new activity. However, the stock of TTBs is sensitive to choice of metric. While the merits of each metric can be debated, it is clear that the weighted metric reveals details on the scope and depth of TTBs that the easier-to-use metrics miss.

A second key finding is the extraordinary extent that US TTBs are focused on a single supplier: China. Depending exactly how the question is framed, the data show that China now accounts for 50-85% of new US TTB activity. China now has a higher fraction of its trade under

US TTB measures than all developing countries put together and all developed countries put together. This would be remarkable under any circumstances, but it is even more striking when one realizes that China was subject to very few TTBs just a decade ago.

The relative lack of TTB surge during (and following) the 2007-9 recession is also a key finding. While antidumping and countervailing duty filings did increase, the overall level of activity was modest by historical standards. The recession also seemed to have influenced the first (and only) China safeguard measure, but one action cannot reasonably be called a surge.

Why wasn't there a sharp increase in new petition filings in the 2007-9 recession that has been typical in past recessions? I suggest four contributing explanations. First, the single biggest user of TTBs in the US – the steel industry – already had TTB measures on most of its key products. The efforts by the steel industry to pressure US authorities to not sunset cases meant that most of the usual suspects were already subject to large TTB tariffs. For example, key products such as hot-rolled steel, plate, ball bearings, and pipe fueled the surge in TTB activity in the early 1980s, early 1990s, and early 2000s.[18] In the 2007-9 recession, the key foreign suppliers of each of these products (and many other steel products) were already subject to TTBs.

Second, in earlier recessions, the decline in imports appears to have been roughly proportional to the decline in US manufacturing activity. In the 2007-9 recession, imports fell by a greater amount than the decline in US manufacturing activity (Levchenko *et al*, 2010). US imports declined by more than 25% in 2009. In earlier recessions, imports declined by about one quarter that amount. This unusually severe contraction meant that there were not a lot of products where imports were *increasing* either absolutely or relative to domestic production or consumption. On average, the fall in import market share makes it more difficult to allege that imports 'cause' the domestic industry's injury. In such circumstances, the recession is a more apparent cause of the downturn.

Despite the evidence, I stress that the role of the decline in imports is speculative. Trade cases are filed on specific products that usually make up a very small share of total industry imports, so extrapolating from industry-wide data to a conclusion as to why a particular product within that industry did not seek TTB protection involves a leap of faith that may or may not be warranted. In addition, there is clear evidence that cases were filed and received TTB protection despite large falls in import volume and market share. At least some industries were able to take advantage of the demand fall. Three cases adjudicated in 2010 – oil country tubular goods (OCTG), drill pipe, and coated paper – all experienced huge declines in imports. Moreover, in each case the domestic industry was able to remain profitable despite the recession. Consequently, in each case the domestic industry claimed the recession made it vulnerable to imports. The US was apparently sympathetic to this claim. In each case the US imposed the TTB measure not because the industry was injured but because it was threatened with injury.

Third, the changing role of manufacturing in the US economy might also be influencing trends. Trade remedy laws like antidumping and countervailing duty only apply to goods, not to

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[18] Moore (1996) discusses the steel industry's surge of cases during the recessions of the early 1980s and early 1990s.

services. Yet the US economy continues to shift from manufacturing to services. Moreover, an increasing portion of that manufacturing takes place in segments where there is some unique US advantage, or where the industry is highly globalized so that intra-industry trade occurs and each involved country is necessary to the overall functioning. The traditional users of trade remedy laws – industries with large capital costs, and large investments in fixed assets – are a smaller and smaller part of the overall economy.

Fourth, as documented by Knetter and Prusa (2003), the exchange rate plays an even larger role in driving new TTBs than changes in GDP. Since 2001, the US dollar has depreciated relative to other currencies (except the Chinese yuan). This tends to put a damper on import levels, as stronger foreign currencies makes exports to the US less competitive in US dollar terms. Similarly, China's fixed exchange rate is likely a key contributing factor behind many of US TTBs targeting Chinese exporters.

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