TRIGGERS AND REMEDY FOR SPECIAL SAFEGUARD MECHANISM

By

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Abstract

The paper analyses the effectiveness of several alternative references for price and volume triggers in the context of the ongoing negotiations on the Special Safeguard Mechanism. The main conclusion on price trigger is that both the three-year moving averages (MA-3) and five-year moving averages (MA-5) are reasonable references in terms of criteria like the frequency of triggers and remedy (additional duties). Of the two references, the MA-5 is more effective in safeguarding against low prices when world market prices are persistently depressed. The MA-5 also provides for higher remedy. Historically fixed references such as the averages for 1992-94 or 1995-04 periods are not found to be appropriate. An Olympic average (the average price in a series after excluding extreme highs and lows) can be effective if properly designed but requires much longer historical price data to construct and thus is inferior to the moving averages. Similar conclusions were reached in the case of the volume trigger. The MA-3, the most common reference in the negotiating proposals, was found to trigger volume safeguards 47% of the time for a sample of 60 cases of import trends analysed. Where import trends are positive and marked, as is fairly common for the developing countries, any reference fixed for an historical period will trigger safeguards too frequently and thus is an inferior trigger. The analysis also assessed the role of alternative de minimis thresholds for triggering a safeguard, as suggested in the negotiating proposals. The overall conclusion is that a threshold somewhat higher than 5% would be desirable in the case of the volume trigger in order to prevent too many and continuous triggers, but this can not be more than about 15%. For price safeguard, 5% threshold appears reasonable for maintaining the effectiveness of the trigger. Lastly, the paper presents a theory-consistent method for objectively determining the level of remedy for given degrees of import surges. The method could be useful for fine-tuning negotiated remedy levels.

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I. INTRODUCTION

That import surges can disrupt domestic markets and hurt producers is no longer contested. There have been many reports of the developing countries, particularly lower-income food-deficit countries, experiencing increasing frequency of import surges, notably since the mid-1990s. Very often, these reports have associated the surge with negative effects on local production and economy.[1] The culmination of all these experiences has been a consensus in the WTO agricultural negotiations that there should be a simple-to-use special safeguard accessible to the developing countries for effectively responding to import surges and depressed import prices. This instrument is the Special Safeguard Mechanism or SSM.

Throughout the agricultural negotiations, discussions on the SSM revolved around its four key building blocks: country eligibility; product eligibility; triggers; and remedy. By the end of the Hong Kong WTO Ministerial in December 2005, agreement was reached on two aspects: that the SSM will be accessible to all the developing countries; and that the SSM will have both price and volume triggers. Negotiations have been continuing on other elements.

The focus of this paper is on two key building blocks - triggers and remedy.[2] The analysis of the price trigger including both the frequency of triggers and remedy is presented in Section II. This is followed in Section III by a similar analysis of the volume trigger. The main results are summarized in Section IV.

II. PRICE TRIGGER AND REMEDY

The group of the G-33 has been the main demandeur of the SSM and so its proposals on the SSM are of fundamental importance for analysis and discussions. Other proposals with detailed commentary on the SSM are those by the United States and by Argentina, Paraguay and Uruguay.[3] The formulae and triggers of the Special Safeguard (SSG) of the Uruguay Round Agreement on Agriculture (AoA) have influenced the thinking and discussions on SSM as well, as the general expectation from the start has been that the SSM would be similar to the SSG in terms of the overall approach and design. The analysis of the triggers in this paper attempts to encompass these proposals and ideas, and their variants.

Reference prices and triggers

Reference prices analysed and data

A price trigger mechanism involves three elements or parameters: current import price; reference price; and the trigger decision itself, i.e. what will determine the trigger. Reference price play the critical role here as the frequency of the triggers, as well as remedy, depends on it, given the current import price. The five reference prices analysed are as follows:

[1] A recent paper on import surges documents over 30 such reports and studies, mostly since the late 1990s. See Sharma (2005).
[2] Issues on the other two building blocks - country and product eligibility - are discussed in two other papers (FAO 2005; Sharma and Morrison 2005).
[3] These proposals are cited in the reference section of this paper as G-33 (2006), US (2006) and A-P-U (2006). The *Reference Paper on SSM* by the Chair of the Committee on Agriculture's Special Session summarizes the main ideas in various proposals as of April 2006 (see WTO 2006).

Fixed reference prices

- 1992-94 average
- 1995-04 average
- Olympic average based on 1986-04 price series

Rolling reference prices

- 3-year moving average (MA-3)
- 5-year moving average (MA-5)

The use of historical, fixed averages - typically three year averages – for the base period is fairly common in various pillars of the AoA, including for the SSG. Such a reference has also been discussed from time to time for the SSM. The second reference, 1995-2004 average, is meant to illustrate the pros and cons of a fixed, historical reference but based on a longer period. Such a base is much less influenced by short-term fluctuations in the commodity prices. Such a base is also being considered for some other pillars of the AoA, e.g. blue box and *de minimis* domestic support. The third reference, called Olympic average, is also a fixed base for the implementation period. It is an average of the historical prices after excluding too high and too low prices from the series. In this paper, the Olympic averages are based on the second lowest five year prices observed during the 1986-2004 period.[4] The MA-3 and MA-5 references are average prices for the preceding three and five years, respectively, of the year when a safeguard is triggered.[5] Thus, the MA-3 reference price for analysing a trigger in 2003 would be the average of 2000-02 prices. In some proposals, the mixed references are also proposed.[6] All analyses commence in 1986.[7]

The ten products for which world market prices are analysed are chicken, beef, skim milk powder, whole milk powder, raw sugar, white sugar, palm oil, soy oil, rice and wheat. These are the products for which import surges are reported to be widespread in recent years. The import prices used are well-known world market prices for the two sugars, two oils, rice and wheat, while unit export values (export value divided by export volumes) of a dominant world exporter are used as a proxy for the world price in the case of chicken, beef, and the two milk powders. Although it is anybody's guess how commodity prices will fluctuate in the future, the analysis covers a sufficiently long period of 19 years and so hopefully captures typical cycles of high and low prices in world markets and thus be valid for the coming years also. Lastly, the prices used in the analysis are world market prices while the prices that the SSM will use will be c.i.f. import prices. This could bias the results to some extent but most probably insignificantly.

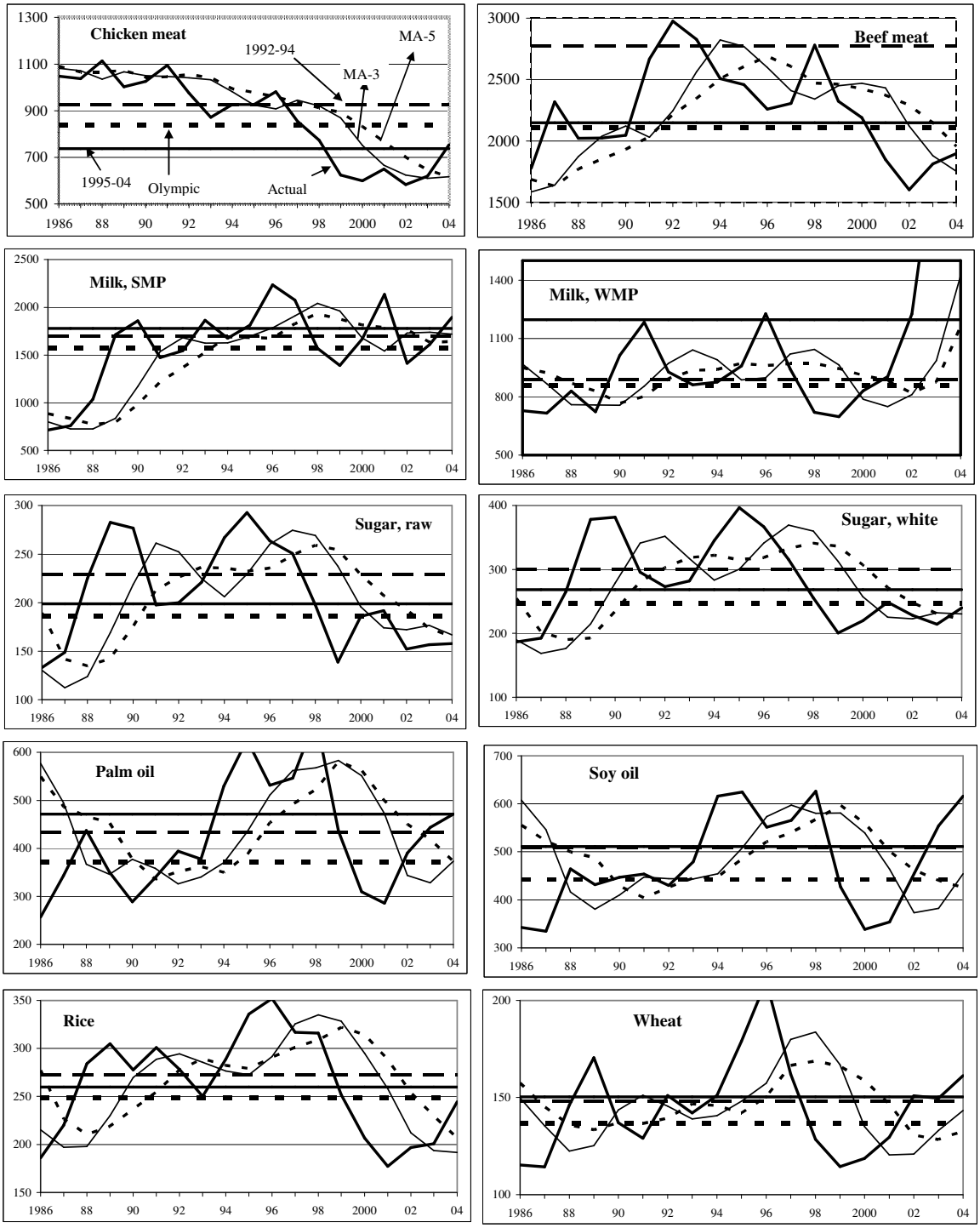
The results – frequency of triggers

Figure 1 shows trends in current world prices of the ten products along with the five reference prices. The underlying rule is that a safeguard is triggered in the year when the current import price falls below the reference price. Thus the figures provide a sense of the frequency of

[4] For each product, there are 19 years of price data (1986 to 2004). The price data were first sorted from the lowest to the highest. The Olympic average was then computed based on the 6th to 10th lowest prices, i.e. after excluding the lowest five and the highest nine prices.
[5] MA-3 reference has been proposed by both G-33 and the US.
[6] The Argentina, Paraguay and Uruguay technical note (A-P-Y 2006) for example proposed that the base price shall be the lower of the MA-3 price or a fixed average reference based on three years like 2003 to 2005.
[7] Note that the MA-3 for the year 1986 requires statistics from 1983 while MA-5 from 1981.

Figure 1: Current world market prices along with five references prices

(Fluctuating lines: bold – current prices; thin – MA-3; dotted – MA-5;
horizontal lines: dashed – 1992-94 price; bold – 1995-04 price; dotted – Olympic)



triggers for each reference price, which are counted and shown in Table 1.[8] It is revealing to read the numbers in the table along with the graphs.

[8] In each case, a 5% *de minimis* level assumed, i.e. a safeguard is triggered when the current price falls below 5% of the reference price.

Table 1: Number of triggers during 1986-2004 for different reference prices

	------- Fixed reference prices -------			-- Moving reference prices --	
	1992-94	1995-04	Olympic	MA-3	MA-5
Chicken meat	9	5	7	9	11
Beef	15	7	5	7	8
Dairy, SMP	9	11	6	6	6
Dairy, WMP	7	14	5	7	8
Sugar, raw	11	7	6	9	10
Sugar, refined	12	8	6	8	10
Palm oil	10	13	7	7	9
Soya oil	12	12	4	6	7
Rice	9	7	6	8	7
Wheat	8	9	7	7	7
All total	102	93	59	74	83
% triggers	*54*	*49*	*31*	*39*	*44*

Note: The last row, % triggers, is the ratio (%) of the number of triggers to 190 (10 commodities times 19 years covered, 1986-2004). In all cases, a 5% *de minimis* level is assumed, i.e. a safeguard is triggered when current prices are below 95% of the reference price.
Source: Author.

In evaluating the references, some notion of the "effectiveness" of the triggers is needed. One criterion is the total number of triggers during the period covered (1986-2004). The other, and more important, would be the number of triggers when prices are really depressed, e.g. during 2000-2004 in most cases in Figure 1. A third criterion could be that a safeguard should not trigger too frequently. With these criteria in mind, it is straightforward to see that a fixed reference price works well only when the base period chosen happened to be the "right" one relative to the current price trends. Take the case of beef as an example. The 1992-94 reference triggers safeguards in 15 of the 19 years, which are obviously too many triggers. This occurred because 1992-94 "happened" to be the three-year period when beef prices were among the highest. Similar is the case with the two sugar prices and soy oil. A fixed reference like 1992-94 will also not be effective when prices are rising or falling throughout the period as with the chicken prices. In such cases, either the safeguard is not triggered at all in the subsequent years or is triggered too often.

A reference like 1995-04 based on several years of price data is much less vulnerable to short-term fluctuations in the data and so should give more balanced results. The overall number of triggers with the 1995-04 reference is fewer than with the 1992-94 reference. However, even here, as the case of the whole milk powder shows, the 1995-04 reference is placed rather high relative to current prices, resulting in too many (14) triggers. The outcome is somewhat similar also for skim milk powder, soy oil and palm oil. The reason for this was that prices were very high in some of the years during 1995-04 which raised the average considerably.

By design, a reference price based on an appropriate Olympic average avoids some of these flaws. This is obvious in Table 1 in terms of the number of triggers which are in the 5-7 range and thus neither very low like 2-3 triggers nor very high like 12-14 triggers as in the above two cases. Indeed, from the standpoint of effectiveness, the Olympic average could serve as the "benchmark" against which to assess other references, including the moving averages.

In contrast to fixed reference prices, the MA prices incorporate information on the recent movement of commodity prices and thus do not wander off too far from current prices. The

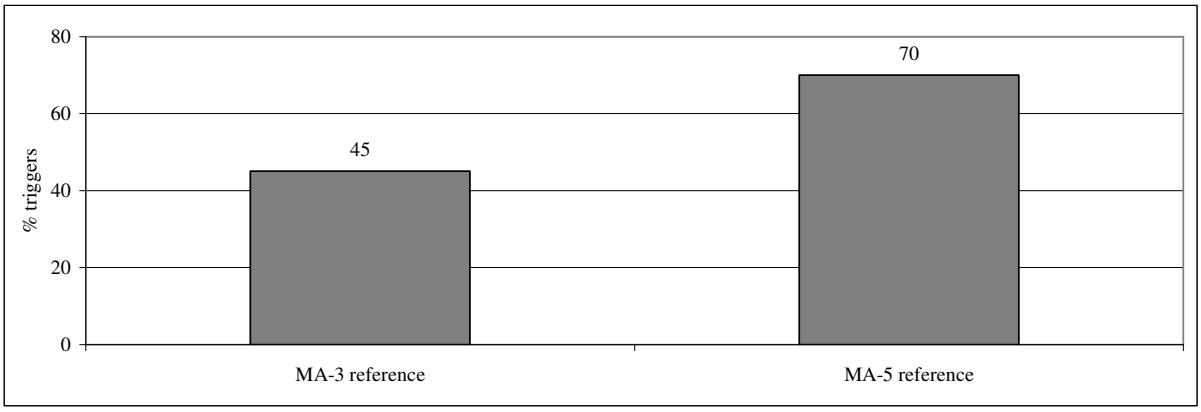
longer the memory (e.g. MA-5) the less sensitive is the trend to sharp but short deviations in prices. The basic idea of using a MA for the purpose of a safeguard is sound. When current import prices are trending down, the MA prices also trend down but remain above the actual prices most of the time, thus triggering safeguards.[9] Table 1 shows that the MA-3 triggers 39% of the time and MA-5 44% of the time. These are 25% and 44% more respectively than the Olympic reference. Based on this, one could conclude that the MA-3 gives a reasonable number of triggers, but not necessarily so for the MA-5.

MA-3 versus MA-5 references

Because of the longer period averaged, the MA-5 lies above MA-3 when prices are falling. As a result, the MA-5 triggers more frequently than MA-3. This can be seen in Figure 1. Two features in particular make the MA-5 reference relatively more attractive. First, it often triggers safeguards also towards the "end" of a "persistently depressed" price phase when the MA-3 can miss out. One of the defining features of primary agricultural commodity prices is the "persistence" of the slump (low prices) for an extended period (up to 2-3 years) following a spike (Cashin et al 1999). In Figure 1 also, this behaviour can be seen for several products, notably during the 2000-2004 period. At the very end of this phase, when the actual price begins to trend up but is still very low – and hence a period when the safeguard is needed – the MA-3 can miss out while the MA-5 provides the coverage, because of the five-year averaging. The second desirable feature of the MA-5 reference relative to MA-3 is the higher level of remedy – which is discussed below.

The above feature is demonstrated in Figure 2 by focussing the analysis on the period when prices were persistently depressed. It shows that for the 2001-04 period, and for five commodities for which the persistence feature is most pronounced (poultry meat, beef, raw sugar, white sugar and rice), the MA-3 triggers 45% of the time versus 70% by MA-5. This difference is even more marked (53% versus 93%) for the 2001-03 period as commodity prices in general had trended up notably in 2004. The major disadvantage of the MA-5 could be that it triggers too frequently relative to MA-3 and that it requires more statistics.

Figure 2: Percentage triggers during 2001-2004 when world prices were persistently depressed



Note: The % triggers in this figure is calculated for five products (poultry meat, beef, raw sugar, white sugar and rice) and 2001-04 period. The figures show the number of triggers during this period for all five products taken together as percentage of total potential triggers, which is 20 (5 products times 4 years).

[9] When current prices are rising, the MA prices also rise but remain below the rising actual prices. But a safeguard is not needed for this phase.

The role of the de minimis threshold

The above results were based on a *de minimis* level of 5%, i.e. a safeguard is triggered when current prices are depressed by more than 5% of the reference price. A 5% *de minimis* level is often seen as the most basic and plausible threshold level. However, this is a matter for negotiations and there could be alternative proposals also.[10] In view of this, Table 2 provides an idea of the likely implications of various *de minimis* levels in the range of 0% to 30%. The illustration is limited to the MA-3 reference and to one indicator, the total number of triggers. As one would expect, the number of triggers falls sharply as the *de minimis* threshold is increased. A 30% threshold for example would trigger price safeguards only 7% of the time, which indeed is a very low level of protection. Such an instrument also runs the risk of being labelled "*un*-safeguard" rather than a safeguard!

Table 2: Total number of triggers during 1986-2004 period for various *de minimis* levels
(all results for MA-3 reference price)

	---------- Number of triggers by de minimis level ----------						
Commodities	0%	5%	10%	15%	20%	25%	30%
Chicken meat	13	9	4	4	2	1	0
Beef	11	7	6	2	2	0	0
Dairy, SMP	8	6	4	3	2	1	0
Dairy, WMP	9	7	6	5	3	2	1
Sugar, raw	10	9	6	4	4	2	1
Sugar, refined	9	8	7	3	3	2	1
Palm oil	8	7	6	6	6	5	4
Soya oil	8	6	5	5	5	4	3
Rice	9	8	5	3	3	2	1
Wheat	8	7	6	4	3	2	2
Total	93	74	55	39	33	21	13
% triggers	*49*	*39*	*29*	*21*	*17*	*11*	*7*

Note: The total number of potential triggers for each product is 19 (1986 to 2004). The last row, % triggers, indicates total number of triggers shown as percentage of potential total number of triggers, which is 190 (10 commodities times 19 years covered). A safeguard is triggered when current import price is below the MA-3 reference price for the respective *de minimis* levels.
Source: Author.

Remedy for price safeguard

The word "remedy" refers to the nature or type of a measure taken and its level following a decision to trigger a safeguard, as well as other aspects like duration of the safeguard. The type of the measure taken could be for example additional tariff or quantitative restriction. In each case, the important question is one of how much, e.g. how much additional tariff. The three WTO general trade remedy measures apply only to a volume surge and not to import price depressions. Of the three, the level of remedy is grounded on some objective basis in the case of anti-dumping and countervailing measures, namely that the remedy should not exceed the margin of dumping and the level of subsidy, respectively. On the other hand, the remedy is prescribed in a general manner in the case of the Safeguards Agreement where it is said in Article 5.1 that a safeguard measure will be applied *only to the extent necessary* to prevent or remedy serious injury and to facilitate adjustment (emphasis added). In the case of the AoA's

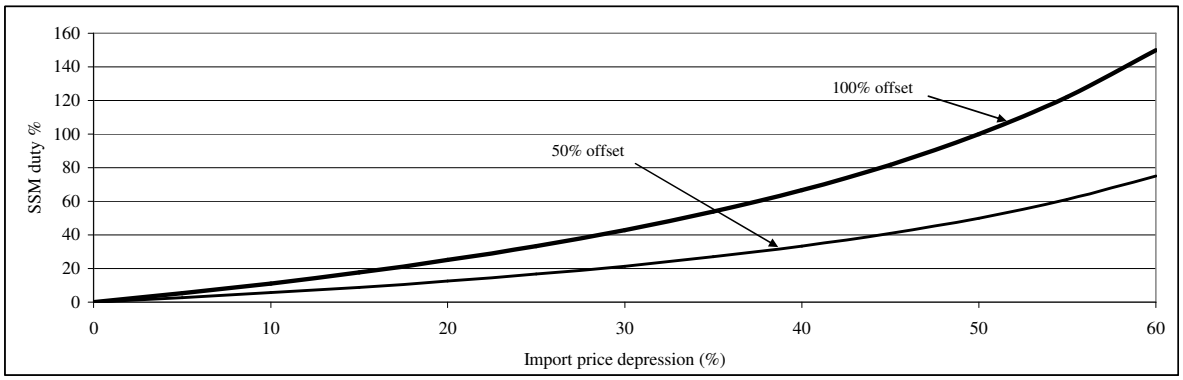
[10] A 30% *de minimis* threshold has been suggested in both the Argentina, Paraguay and Uruguay and the US proposals.

SSG, the level of the remedy is variable additional duties linked to the degree of price depression in the case of price trigger and additional duties *up to* a maximum of 1/3rd of current duty in the case of the volume trigger.

In the context of the SSM also, the key question asked is the same – what level of remedy is appropriate to remedy the problem of market disruption due to depressed import prices and import surges. What follows discusses basic approaches and remedy levels in three negotiating proposals: those by G-33; the US; and Argentina, Paraguay and Uruguay.

The basic idea behind the G-33 proposal on remedy is similar to that of the SSG, i.e. the remedy should be linked to the depth of the price depression. While the SSG had an explicit and elaborate schedule for determining additional duties for given levels of price depressions, the G-33 proposal is very simple which is to apply an additional duty to the c.i.f. import price (the current, depressed price) which could make up for all the difference between the import price and the trigger price. In other words, the remedy would offset 100% of the depression so that the new, SSM duty-inclusive import price is equal to the reference price. Thus, if current (depressed) import price is P_w and reference price is P_{ref}, additional tariff is $(P_{ref}/P_w - 1)$ *100%. If for example P_{ref} = \$100/tonne and P_w = \$70/tonne (i.e. price depression of 30%), the SSM duty is 43%. Figure 3 provides an idea of additional duties for different levels of price depressions (also shown is additional duties for 50% offset).

Figure 3: Remedy: additional duties required for offsetting price depressions



Note: SSM duties are computed as $(P_{ref}/P_w - 1)*100$ for 100% offset and $1/2(P_{ref}/P_w - 1)*100$ for 50% offset.
Source: Author.

Table 3 shows these estimates for the 10 world price series discussed above. The first three columns show the levels of the maximum price depression observed for any year during 1986-2004 for three references.[11] Note that these are maximum depressions observed in any one year during 1986-2004; for other years, price depressions would obviously be lower (as can be seen in the graphs in Figure 1). Most of the maximum depressions are in the 30-50% range, and in no case over 60%. The last three columns show additional or SSM duties required to fully offset the maximum depressions shown in the first three columns. The additional duty for both the MA-3 and MA-5 references is about 60% on average for the 10 products, and 43% for the Olympic average. There is obviously a wide variation in the remedy rates for various products and references, which follow from the trends and

[11] Results are not shown for the two fixed references; these are similar to others. For the 1992-94 fixed reference, the maximum depression ranges from 23% for wheat to 58% for dairy, SMP, with an overall average of 37%; for the 1995-2004 reference, the range is 21% for chicken meat to 60% for dairy, SMP, with an overall average of 35%.

Table 3: Additional tariffs required to *fully* offset maximum price depressions observed during 1986-2004 for 10 commodities

	Maximum price depressions (%)			Additional tariffs (%) for 100% offset		
Commodities	MA-3	MA-5	Olympic	MA-3	MA-5	Olympic
Chicken meat	28	30	30	39	43	44
Beef	24	30	24	32	43	32
Dairy, SMP	29	26	55	41	35	121
Dairy, WMP	31	26	19	45	35	23
Sugar, raw	42	45	28	71	83	40
Sugar, refined	36	40	24	56	68	32
Palm oil	55	53	31	124	114	44
Soya oil	44	39	24	77	65	32
Rice	31	39	29	46	63	40
Wheat	31	31	16	46	45	20
Simple average	35	36	28	58	59	43

Note: These are the same 10 commodities whose world market prices were graphed in Figure 1. The last three columns are additional duties required for fully (100%) offsetting the price depressions shown in the first three columns.
Source: Author.

fluctuations in the price series. The highest SSM tariff reaches as much as 124% for palm oil with MA-3 and 121% for skim milk powder with Olympic average.

It is very difficult – indeed impossible – to determine in an objective way the most desirable "offset-rate" without being context-specific, i.e. without considering the vulnerability of the import-competing sector. And this is country specific also. For example, the LDCs may be more vulnerable than non-LDCs and so may require a higher level of the remedy. In practice, however, such a differentiated approach is not feasible. Therefore, the most that could be done for the SSM would be to agree to an offset-rate that applies to all products and countries. The G-33 proposal is for up to 100% offset. It is possible that during the negotiations, alternative proposals could be tabled, e.g. 75% or 50% offset. It is straightforward to determine remedy rates for different offset rates (Figure 3 for example also shows remedies for 50% offset).

In the previous section it was noted that in a period of persistently depressed price phase the MA-5 reference does better (in terms of the frequency of triggers) than the MA-3 reference because the MA-5 reference lies above the MA-3 reference during this phase. For the same reason, the MA-5 also gives a higher level of remedy than MA-3.

As a final point on remedy, note that the SSG formula of the Uruguay Round provides much lower levels of remedy, especially for the much more common lower ranges of the price depression, i.e. up to 30 or 40% depression, after which the duties escalate.[12] For example, additional tariff is only 4% of the bound tariff for a price depression of 20%, 28% additional duty for a depression of 50% and 170% additional duty for a depression of 80%. And in no case the extra duty fully offsets the fall in the import price. Given that maximum observed price depressions are typically in the 30-50% range, the SSG remedy appears very much on the lower side.

[12] The SSG remedy is analysed in depth in the paper by Sharma and Morrison (2005).

Alternative proposals: the Argentina-Uruguay-Paraguay and the US proposals

Two other proposals can be analysed and compared with the above results. The proposal by Argentina, Uruguay and Paraguay (A-P-U 2006) is also to relate the level of the remedy to the depth of price depression (Table 4). However, what is being said is not very clear in the technical note. Although the heading of the second column says "remedial duty", which might be interpreted as being the additional or SSM duty, the sentence just before the table in the A-P-U technical note reads as "The remedial duty arising from the application of the price trigger shall not exceed a percentage of the difference between the import price and the base price, as follows." This seems to suggest that the percentages in the second column in Table 4 are multiples to be applied to the difference between the import price and the base price.

Table 4: Remedy proposal in the Argentina, Paraguay, Uruguay technical note

Price depression (%)	Remedial duty 1/
0% - 20%	0%
20% - 30%	15%
30% - 40%	20%
40% - 50%	25%
more than 50%	30%

1/ The remedial duties will be subject to caps; see text.
Source: A-P-U (2006)

If the numbers in the second column are indeed additional tariffs, these are significantly lower than those required for 100% offset, and are even lower than for 50% offset, especially for import depressions of 40% or more (this can be compared with reference to Figure 3).

On the other hand, if these numbers are multiples to be applied to the difference between the import price and the base price, as the above quote seems to imply, actual additional tariffs would be much lower than these numbers.

The A-P-U proposal also calls for capping the computed SSM duties, as in the US proposal discussed below.[13] How exactly this is to be done is not clear in the technical note. The cap is explained clearly in the case of volume trigger, according to which the total duty, including SSM remedial duty, shall not exceed a reference point which will be established between the Doha bound rate for the year in question and the bound rate prior to the Doha Round (i.e. the Uruguay Round final bound rate).

In contrast to the G-33 and A-P-Y proposals, as well as the SSG formula, the US proposal does not relate (perhaps not as yet) additional duties to the degree of price depression. The only proposed made is for capping SSM duties, which "shall no be no greater than 50% of the difference between the Uruguay Round bound rate and the current bound rate". The "current" refers to one of the Doha implementation years. Thus, the size of the SSM duty will depend on the difference between the bound rates, which in turn is determined by the extent of the tariff cut implemented.

[13] The relevant text reads as follows: "The argument that the SSM additional duty may be greater than existing bindings is fundamentally flawed ... it is out of question to go beyond current tariff bindings ... consequently, a cap must be established in order to guarantee that, at least, current tariff bindings (previous to the implementation period of the Doha Round) would be preserved".

Table 5 illustrates how the proposal works. Given a range of UR bound rates (column 1) and tariff reduction rates (column 2),[14] column 3 shows resulting Doha bound rates. It is straightforward then to compute the maximum SSM duties as the difference between the two bound rates divided by 2 (next three columns). The first of these columns, i.e. "in year 10", shows SSM duties in 10th year of the Doha implementation period (assuming it is 10 years) and the other two columns show the duties for 5th and 1st year, assuming that the full tariff cut is implemented linearly from year 1 to year 10 (thus, tariff reduction in year 1 is only 1/10th of the full reduction).

Table 5: An illustration of the maximum SSM tariffs resulting from the caps suggested in the US proposal on SSM

Uruguay Round bound tariff (%)	Tariff reduction rate (%)	Doha bound tariff (%)	-------- Maximum SSM duty (%) ---------		
			In year 10	In year 5	In year 1
0	0	0	0	0	0
10	25	8	1	1	0
20	25	15	3	1	0
30	25	23	4	2	0
40	30	28	6	3	1
50	30	35	8	4	1
60	30	42	9	5	1
70	30	49	11	5	1
80	30	56	12	6	1
90	35	59	16	8	2
100	35	65	18	9	2

Note: The numbers in the table are maximum SSM duties in percent that result from the application of the reduction rates in the G-20 and US tariff-cutting formulae. The maximum SSM tariffs are the differences between the Uruguay and Doha bound rates, divided by two. Results are shown for three periods or years during the Doha implementation period (assuming 10 years). It is assumed that the full tariff cut will apply only in the 10th year.
Source: Author.

Two observations are worth noting. One, the resulting SSM duties are very low, both in an absolute sense and relative to the numbers discussed previously. For example, half way through the implementation period, the SSM tariff is no more than 3% for all products for which the UR bound tariff is 40% or less. These are the products that deserve more safety in view of their lower bound rates. Two, the SSM duty is zero for all products for which the UR tariff is zero percent (because the difference between two zeros is also zero). Again, there is no rationale why the products that are imported duty free should have no safeguard at all.

III. VOLUME TRIGGER AND REMEDY

Reference prices and triggers

Unlike with the fixed reference for price trigger, the Uruguay Round's SSG volume trigger was based on variable or moving reference import levels. This makes sense because unlike the world market prices which tend to be cyclical, import levels typically rise over time and

[14] The tariff reduction rates used here are those proposed by G-20 for developing countries.

therefore a reference based on a fixed, historical import level would not be appropriate for volume trigger. This view, i.e. the reference should be variable, has also dominated the thinking for the SSM.

Expressions (1) and (2) below show the formulae for the SSG and G-33 proposed trigger import levels. A safeguard is triggered when current import level exceeds the trigger level:

SSG formula: $M_{trigr} = x * M_{MA-3} + \Delta C$ ..... (1)

where M_{trigr} is the trigger level of import, M_{MA-3} is MA-3 import, x is like a *de minimis* factor that varies from 1.05 to 1.25 depending on import penetration (share of import in domestic consumption), and ΔC is absolute volume change in domestic consumption of the product concerned between the most recent two years for which data are available. If t is the current year, ΔC is typically $C_{t-1} - C_{t-2}$.

G-33 proposal for SSM: $M_{trigr} = 1.05 * M_{MA-3}$ ..... (2)

Aside from the *de minimis* factor, the important difference between (1) and (2) is that consumption change does not play any role in (2). A change in current consumption should ideally play a role in the decision to trigger a safeguard in order to avoid some anomalies that result from a formula based on import levels only although the way the consumption was specified in the SSG formula is somewhat flawed.[15] Although desirable, there is the practical problem that accurate and updated consumption statistics are very difficult to assemble at a disaggregated level such as at the HS 6 level. For this reason alone, it is probably desirable that a change in consumption is not taken into account in the trigger formula. The trade-off here is between effectiveness of a safeguard instrument and simplicity.

Reference import levels analysed and the data used

The rest of this section evaluates the effectiveness of the following three import references that encompass all the main proposals on the table.

- Moving average reference: three-year moving average (MA-3)
- Fixed period reference import level: 1992-94 average
- Trigger based on "higher of the two" references

All negotiating groups have proposed MA-3 references, and thus this is the most important reference for the analysis. The other two references are also analysed as some proposals have tabled the idea of "higher of the two" references, i.e. the reference to be used for triggering a safeguard would be higher of either the MA-3 import level or the average import level for a fixed period. The US proposal mentions 2002-04 average while the A-P-U proposal is for 2003-05 average. The intention is obviously to use a fixed base period prior to the implementation of an agreement. For this paper, the analysis is based on import data for 1995 to 2004 and hence the appropriate three year period (prior to 1995) would be 1992-94 (using 2002-04 or 2003-05 references for the analysis here would require trade data for future years!).

[15] Various shortcomings of the SSG volume formula, in large part on account of consumption, are discussed in FAO (2005) and Sharma and Morrison (2005).

The analysis is based on a sample of 60 cases, i.e. 60 cases of import data (volumes in tonnes) covering 10 countries and 9 products (see Table 6 for the countries and commodities covered). The selection of the countries and products is to a large extent informed by many reported cases of import surges in recent years. Many of these cases are also covered in the FAO multi-country case studies on import surges.

The results

Figure 4 illustrates the critical role that a particular pattern of import trend plays in determining the number of triggers. In the top two figures, a safeguard is triggered only once in the case of Barbados SMP (for all there references) and 1-2 times in case of Tanzania soy oil. The reason is simple: the import trends are essentially flat or falling, with only one or two spikes. In the middle two cases, there are 3-4 triggers. These are due to several marked fluctuations in import trends. The bottom graphs display strong and steady increases in imports. In such cases, the MA-3 import levels lie below the actual imports almost all the time and thus safeguards are triggered almost continuously.

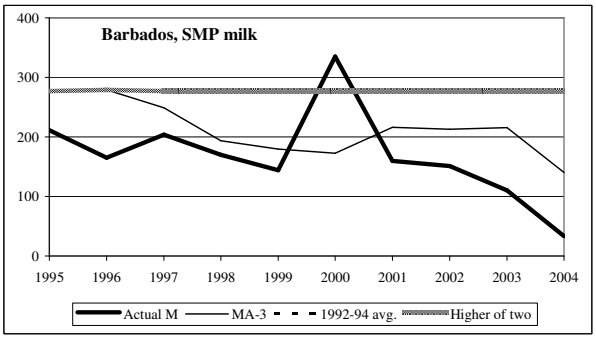
The figures also help to understand the limitation of a fixed reference like 1992-94 average. Where current imports fluctuate around a flat or declining trend, the 1992-94 average import could be anywhere in relation to current imports. As a result, one often finds anomalies in the way safeguards are triggered, e.g. none or too few or too many triggers. Where imports rise strongly and steadily, as in the bottom two cases in Figure 4, the 1992-94 average is lower than actual imports in all subsequent years. As a result, safeguards are triggered continuously – 10 out of 10 times in those cases in the figure. Thus, such fixed references are obviously inappropriate when a series trends up strongly.

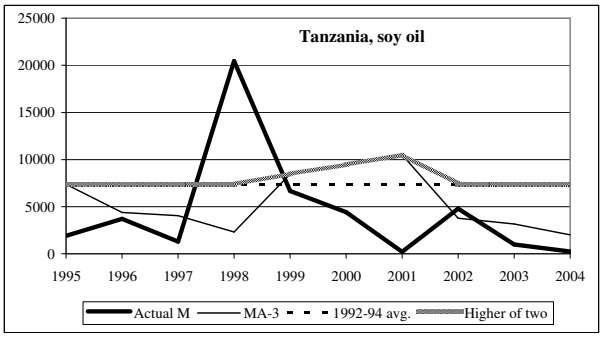
Table 6 shows for all 60 cases the actual number of triggers for the three references (in each case, 5% *de minimis* threshold assumed). For these 60 cases taken together (last row in the table), safeguards are triggered 47% of the time by MA-3 reference, 60% by 1992-94 fixed reference and 41% by the "higher of the two" reference. These correspond to 4.7, 6.0 and 4.1 triggers on average for the 10 years covered. It is obvious that MA-3 is the effective or operative reference bulk of the time in the case of the "higher of the two" reference. The table shows a wide dispersion in the frequency of the triggers, from none, i.e. 0, to always, i.e. 10. However, for MA-3 – which is the prime candidate for SSM – the number of triggers for about 70% of the 60 cases covered is in the range of 4 to 6. Triggers in excess of 6 times occur only in 10% of the cases.

One insight the above results provide is that given the diverse patterns of import trends across products and countries, there is no way of fully constraining the number of triggers to some "desirable" level. The "higher of the two" reference is found to be useful in some cases but in others. For example, in the case of the beef imports in Cote d'Ivoire, the MA-3 triggered four times, which is not unreasonable, but no safeguard was triggered by the "higher of the two" reference because the fixed 1992-94 reference was operative here. What has happened is that actual 1992-94 import of beef "happened" to be very high relative to imports in subsequent years. Several such cases can be found in the table, but also with similar biases on the other side (i.e. "higher of the two" reference triggers too many safeguards).

Figure 4: Illustration of selected import trends and triggers with various references

Examples of 1-2 triggers

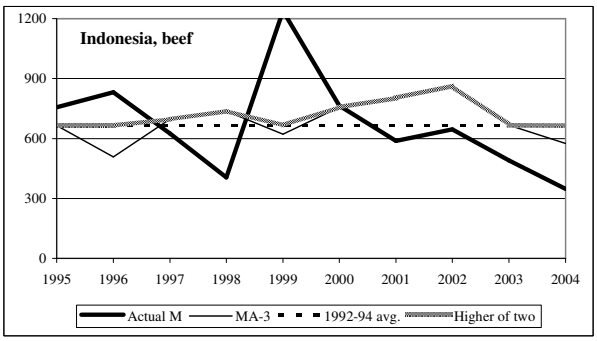


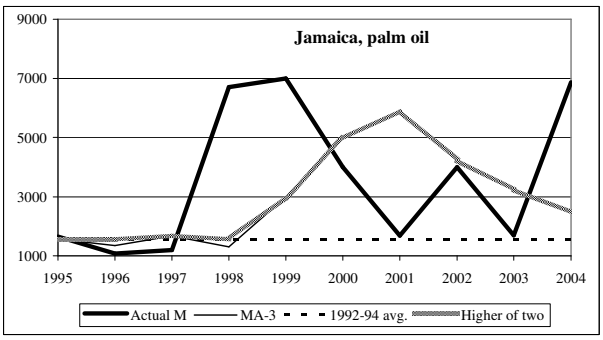


Barbados, SMP milk	MA-3	1992-94 average	Higher of the two
Number of triggers	1	1	1

Tanzania, soy oil	MA-3	1992-94 average	Higher of the two
Number of triggers	2	1	1

Examples of 3-4 triggers

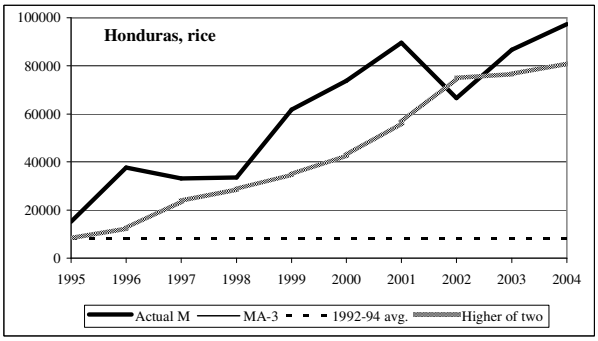


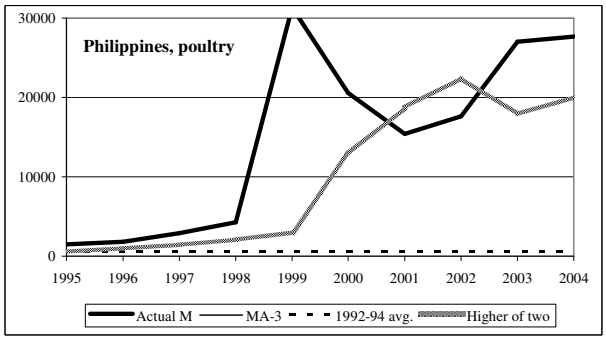


Indonesia, beef	MA-3	1992-94 average	Higher of the two
Number of triggers	3	4	3

Jamaica, palm oil	MA-3	1992-94 average	Higher of the two
Number of triggers	4	8	4

Examples of 8-9 triggers





Honduras, rice	MA-3	1992-94 average	Higher of the two
Number of triggers	9	10	9

Philippines, poultry	MA-3	1992-94 average	Higher of the two
Number of triggers	8	10	8

Note: These are six selected cases out of the total of 60 cases covered in the analysis (Table 6). The three pairs of figures (top, middle and bottom) exhibit different patterns of import trends, and hence different frequencies of triggers. Note that in many places, the graph for MA-3 in particular but also 1992-94 average is not visible because the "higher of the two" reference overrides (i.e. is identical to).
Source: Author, based on the FAOSTAT trade data.

Table 6: Number of triggers during 1995-2004 for 60 commodity-country cases analysed
(5% *de minimis* threshold assumed for all three references)

Country	Commodity	MA-3 reference	1992-94 fixed avg. reference	Higher of the two reference
Barbados	Beef and veal	2	3	2
Côte d'Ivoire	Beef and veal	4	0	0
Indonesia	Beef and veal	3	4	3
Jamaica	Beef and veal	5	9	5
Philippines	Beef and veal	4	9	4
Barbados	Poultry meat	4	5	3
Côte d'Ivoire	Poultry meat	8	10	8
Indonesia	Poultry meat	5	5	4
Jamaica	Poultry meat	4	6	4
Philippines	Poultry meat	8	10	8
Senegal	Poultry meat	6	4	4
Côte d'Ivoire	Palm oil	6	9	6
Indonesia	Palm oil	1	0	0
Jamaica	Palm oil	4	8	4
Kenya	Palm oil	5	7	5
Philippines	Palm oil	5	8	5
Senegal	Palm oil	6	2	2
Côte d'Ivoire	Soy oil	4	1	1
Honduras	Soy oil	6	7	5
Indonesia	Soy oil	5	10	5
Kenya	Soy oil	5	6	5
Philippines	Soy oil	4	5	3
Tanzania	Soy oil	2	1	1
Zambia	Soy oil	4	3	3
Barbados	Oranjuice conctrd.	6	7	6
Honduras	Oranjuice conctrd.	5	9	5
Indonesia	Oranjuice conctrd.	8	9	8
Jamaica	Oranjuice conctrd.	4	5	4
Barbados	Rice	6	3	3
Côte d'Ivoire	Rice	7	9	7
Total triggers (60 cases)		**284**	**357**	**243**
% trigger (60 cases)		***47***	***60***	***41***

Country	Commodity	MA-3 reference	1992-94 fixed avg. reference	Higher of the two reference
Honduras	Rice	9	10	9
Indonesia	Rice	5	8	5
Jamaica	Rice	3	2	2
Kenya	Rice	7	5	5
Philippines	Rice	6	10	6
Tanzania	Rice	5	7	5
Zambia	Rice	4	9	4
Barbados	Milk, SMP	1	1	1
Côte d'Ivoire	Milk, SMP	5	0	0
Honduras	Milk, SMP	5	8	5
Indonesia	Milk, SMP	4	8	4
Jamaica	Milk, SMP	5	6	4
Kenya	Milk, SMP	2	1	1
Philippines	Milk, SMP	5	9	5
Senegal	Milk, SMP	1	0	0
Tanzania	Milk, SMP	3	4	2
Zambia	Milk, SMP	4	1	1
Barbados	Sugar, refined	4	8	4
Côte d'Ivoire	Sugar, refined	6	9	6
Indonesia	Sugar, refined	6	10	6
Kenya	Sugar, refined	6	10	6
Senegal	Sugar, refined	6	8	6
Tanzania	Sugar, refined	6	10	6
Zambia	Sugar, refined	5	7	5
Côte d'Ivoire	Milk, WMP	5	10	5
Indonesia	Milk, WMP	6	8	6
Philippines	Milk, WMP	4	4	3
Senegal	Milk, WMP	3	3	3
Tanzania	Milk, WMP	2	0	0
Zambia	Milk, WMP	5	7	5

Note: The maximum potential trigger in each case is 10 (i.e. 10 years from 1995 to 2004). The % trigger in the very last row is the total number of triggers (for the 60 cases together) as percentage of 600 (10 years times 60 cases).
Source: Author, based on FAOSTAT trade data.

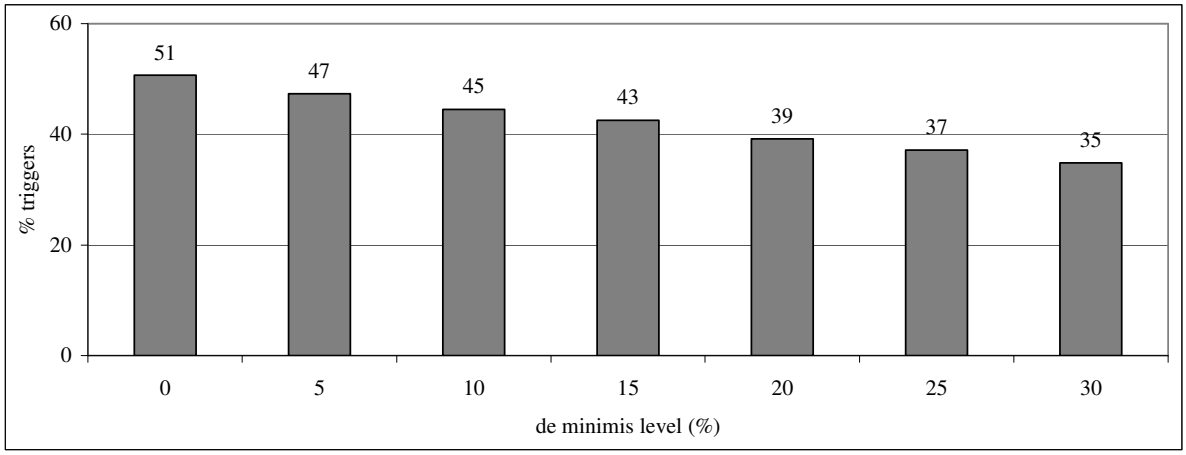
Finally, Figure 5 shows how the frequency of triggers is affected by assumptions about the *de minimis* threshold used. The results are shown only for the MA-3 reference. A 30% *de minimis* threshold reduces the frequency of triggers to 35%, from 47% with a 5% *de minimis* level. This reduction is not as striking as was the case with price trigger where the corresponding frequencies were 39% and 7%. This suggests that a higher *de minimis* level could still provide adequate safety in the case of the volume trigger. Note that the main reason why the *de minimis* levels did not play much role here is the rapidity with which imports rose from one period to the next. In those cases, the gaps between the actual and the MA-3 reference tend to be rather large, and hence a safeguard is triggered irrespective of the *de minimis* levels within the range analysed. If, on the other hand, import trends are not as strong but fluctuate around some level with occasional surges, a higher *de minimis* level would markedly reduce the frequency of the trigger, and hence reduce the effectiveness of the SSM.

Remedy for volume safeguard

The maximum remedy in the SSG volume trigger was fixed at the level of up to 1/3rd of the ordinary customs duty in effect at the time a safeguard is triggered.[16] This is different from the price SSG remedy which varied with the depth of the price depression. The rationale for the SSG's 1/3rd maximum is not known. For the SSM, the G-33 proposed an approach that is

[16] The language in the text is not specific, but presumably this refers to the bound rate in effect at that time, and not the applied rate.

Figure 5: Frequency of volume safeguards during 1995-2004 for alternative *de minimis* levels (MA-3 import reference)



Note: These are percentage of triggers, calculated as total triggers during 1995-2004 for all 60 cases analysed over the total number of potential triggers, which is 600.
Source: Author.

similar to the price SSG, i.e. the SSM duty varies with the intensity of the import surge (Table 7). This is an improvement over the fixed 1/3rd rule of the SSG.

Table 7: G-33 proposal on additional duty for different intensities of import surge

Band	Surge of: [1/]	Maximum additional duty
1	< = 5%	No duty (*de minimis*)
2	>5% to = <10%	Higher of {50% of the bound rate or 40 percentage points tariff}
3	>10% to = <30%	Higher of {75% of the bound rate or 50 percentage points tariff}
4	>30%	Higher of {100% of the bound rate or 60 percentage points tariff}

[1/] The extent to which the current import level exceeds the MA-3 import level.
Source: Based on the G-33 proposal (G-33, 2006).

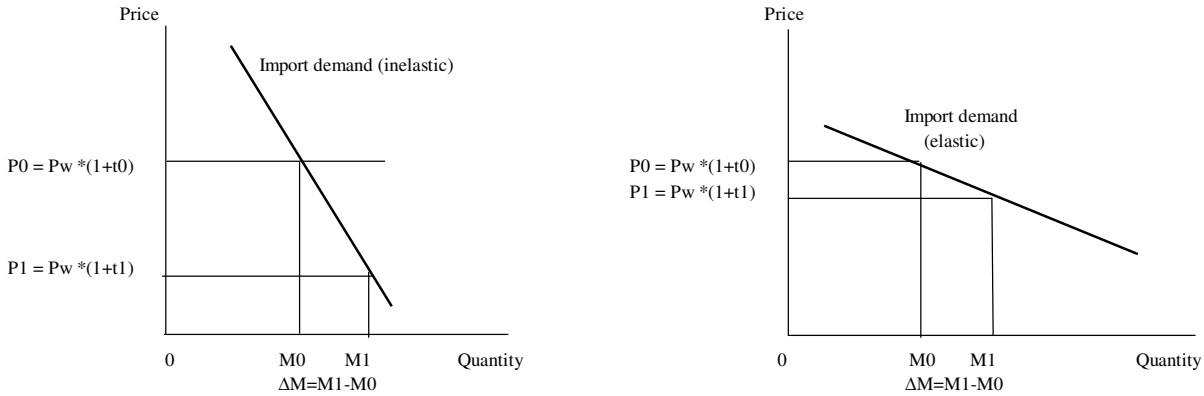
Indeed, there is no simple basis for determining how much additional duty is required for a given level of an import surge. This is also a problem commonly faced by panels in the WTO disputes involving the Safeguards Agreement. The guidance the Agreement provides is rather subjective – the remedy should be *only to the extent necessary* to take care of the problem. This is hardly helpful for determining, objectively, remedy levels.

In trade theory and analysis, however, there is a way of establishing a relationship between a change in import volume and a change in import tariff. Although such a formal method may not be practical in a negotiating context, the insights that the approach and the method provide could assist trade negotiators to make more informed decisions on the remedy. Briefly, the relationship between a change in import level (or surge) and tariff is assumed to be defined by import demand curve as shown in Figure 6. The formula for the relationship, derived in Annex 1, is as follows: [17]

$$\Delta t/t_0 = - [(1+t_0)/t_0)]*[1/ \eta_m] * \Delta M/M_0$$

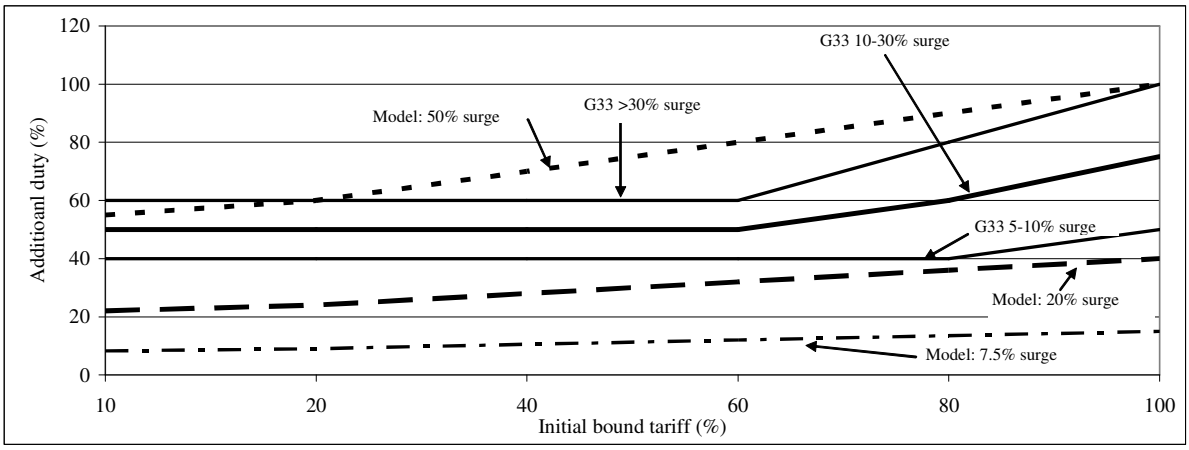
[17] See Annex 1 for details. This is based on Sharma (2006).

Figure 6: Relationship between changes in import levels and domestic prices (via changes in tariffs)



For a given percentage change in import ($\Delta M/M_0$), the remedy in terms of a percentage change in tariff ($\Delta t/t_0$) is determined by two factors: the initial tariff (t_0); and import demand elasticity (η_m). The $\Delta t/t_0$ varies inversely with the base period tariff which means that the current tariff plays a role in the remedy determination. Second, $\Delta t/t_0$ also varies inversely with η_m, which is obvious from the figure. Estimated additional tariffs required for containing import surges of different intensities, given various initial tariffs and alternative values of the η_m, are shown in Annex Table 1. One set of those estimates is graphed in Figure 7, along with the remedy levels proposed by G-33.

Figure 7: Additional duties for volume safeguard as derived from a model and as proposed by G-33



Source: The G-33 remedy proposals are from the previous table. Model results are from Annex Table 1 (all results are based on import demand elasticity of -1).

The figure shows that the model-based additional duties rise with the level of the initial bound tariff. This could be misleading – as Annex Table 1 shows these are additional duties and not the percentage change in the initial tariffs which are higher for lower current tariffs. As an example, for a 7.5% surge and a η_m of -1, the percentage change in tariff ($\Delta t/t_0$) is 83% which translates, for the initial tariff of 10%, into an additional duty of 8%. On the other hand, for the same parameters, $\Delta t/t_0$ is 20% only for the initial tariff of 60%, which translates into an additional duty of 12%. In the G-33 proposal, additional duties are fixed at a certain level (e.g. 40 percentage points) for initial tariffs up to some level after which the extra tariffs rise. In the case of the model-based estimates, additional tariffs rise steadily from the start.

A second point to note in Figure 7 is the overall discrepancy between the G-33 remedy and that derived from the model. The discrepancy is least, indeed very small, for import surges exceeding about 30%, but the gaps are markedly wider for the other two cases. The two numbers can be reconciled if a different value of η_m is assumed, because the lower the value of η_m the higher is the remedy, and vice versa. However, there is no such thing as universally agreed estimates of import demand elasticities despite the fact that trade analysts use these values so routinely in their models. In view of this, the value of the analysis reported here is rather limited in a trade negotiating context, but the results – and the insights - can be very useful for double-checking the levels of the remedy proposed by negotiators because the model results are at least consistent with trade theory.

Before closing the section, some comments on the two other proposals on remedy (the Argentina, Paraguay, Uruguay proposal and the US proposal) would be useful. The A-P-U suggestion, if this is indeed what is meant in the English text of the technical note, is to limit the SSM duty to 20% of the Doha bound rate in the year in question[18], subject to a cap such that the total duty, including the SSM duty, shall not exceed a reference point which will be established somewhere between the Doha bound rate for the year in question and the bound rate prior to the Doha Round (which must be the Uruguay Round final bound rate). The proposal is illustrated in Table 8 using G-20 reduction rates for assumed UR bound tariffs in the range of 0 to 100%.

Table 8: An illustration of the SSM remedy for volume safeguard as proposed by Argentina, Paraguay and Uruguay (all numbers are tariffs in %)

UR bound tariff	Tariff reduction rate	Doha bound tariff	SSM duty = 20% of Doha tariff	Total duty applied = SSM+Doha	Tariff cap in A-P-U proposal
0	0	0	0.0	0	0
10	25	8	1.5	9	9
20	25	15	3.0	18	18
30	25	23	4.5	27	26
40	30	28	5.6	34	34
50	30	35	7.0	42	43
60	30	42	8.4	50	51
70	30	49	9.8	59	60
80	30	56	11.2	67	68
90	35	59	11.7	70	74
100	35	65	13.0	78	83

Note: The SSM duty, total duty, caps etc. are for the end of the Doha implementation period (assumed to be 10 years). The tariff reduction rates are based on the G-20 proposal. The tariff cap (last column) is assumed to be the mid-point or average of the UR and Doha bound tariffs (the A-P-U proposal says "somewhere" between the two bound rates).
Source: Author.

First, compared with the G-33 proposal, the SSM duties - being only 20% of the Doha bound tariffs - are very much on the lower side, especially for the UR bound tariffs up to 70-80%. These remedies are also on the lower side when compared with those derived from the model presented in Annex 1. Second, the proposed tariff caps do not constrain the application of the

[18] This is similar to the remedy for volume surge in SSG where the maximum SSG duty was fixed at 33% of the tariff.

SSM duty in full (i.e. the full amount of the SSM+bound tariff). But this is true only for the end of the implementation period; further calculations for earlier years showed that the caps are indeed binding from the first year until the 8th year of the implementation period. From this standpoint, for all these years, the full amount of the proposed SSM duties can not be applied.

Lastly, the US proposal for remedy for volume safeguard is identical to that for price safeguard (discussed previously, Table 5). The main observation made there that the resulting SSM duties are very low (both in an absolute sense and relative to those from other proposals and model) remains valid here too.

IV. CONCLUSIONS

As a contribution to the discussion on the technical aspects of the Special Safeguard Mechanism or SSM, this paper analysed the performance of several references for triggering the price and volume safeguards. The references assessed are three fixed references (1992-94 average, 1995-04 average and Olympic average) and two moving references (3-year moving average or MA-3 and 5-year moving average or MA-5). These references encompass all the main ideas either formally proposed for the negotiations or being discussed in various fora. The discussion on price trigger and remedy was based on the analysis of world market prices of ten prominent food products. The volume trigger analysis likewise was based on 60 cases of import trends for various products and countries. The effectiveness of the references was assessed on the basis of the number of triggers and the level of remedy (additional tariff).

In the case of the **price trigger**, the following were the main results.

First, fixed reference prices were not found to be appropriate for a safeguard like the SSM except only by chance, i.e. only when the base period chosen happened to be the “right” one relative to current price trends. Very often this was not the case, both with the 1992-94 and 1995-04 references. Also for this reason, the conditional reference suggested in some proposals, namely “higher of the two” references (e.g. MA-3 and fixed average) can give anomalous results. By design, a reference price based on an appropriate Olympic average (the average price in a series after excluding extreme highs and lows) avoids the flaws of these two other fixed references and triggered safeguards much more reasonably, about 33% of the time.

Second, both MA-3 and MA-5 were found to be basically reasonable references. When current import prices are trending down, the MA prices also trend down but remain above the actual prices, thus triggering safeguards. The MA-3 reference triggered some 39% of the time versus 44% by the MA-5. Although the MA-5 triggered perhaps too frequently, some other considerations favour MA-5. First, the MA-5 triggers safeguards also towards the "end" of a persistently depressed price phase when the MA-3 misses out generally. Second, MA-5 provides higher remedy (additional duty) as the gap between the current and MA-5 prices is higher than between the current and MA-3 prices. Given that commodity prices generally tend to remain depressed persistently (for 2-3 years) during the phase when world prices are on the downside, and that this is the period when a safeguard is most needed, the MA-5 reference is obviously more effective.

Third, the above analyses were based on a *de minimis* level of 5%, i.e. a safeguard is triggered when current prices are depressed by more than 5% of the reference price. Assessments were made of the impact of alternative *de minimis* thresholds. For MA-3, the results showed that the total number of triggers falls sharply as the *de minimis* threshold is increased to the extent that a 30% threshold for example triggered price safeguards only 7% of the time. While there is a case for preventing too frequent triggers by raising the *de minimis* level, any level beyond 10% or so will compromise with the effectiveness of the reference, for both the triggers and remedy.

Fourth, in addition to most of the above analyses that were closer to the G-33 proposal, some components of two other proposals were also analysed - the Argentina, Paraguay and Uruguay proposal and the US proposal. On the whole, relative to the above results, these proposals reduce considerably both the frequency of the triggers and remedy. To a large extent these were due to higher *de minimis* thresholds proposed as well as the caps placed on the SSM duty (or to the combined total of the bound tariff and SSM duty).

In the case of the **volume trigger**, the following were the main observations.

First, the analysis showed very clearly that historically fixed reference import levels are not appropriate as triggers for a volume safeguard, except by chance.

Second, for the 60 cases of import trends analysed taken together, it was found that the MA-3 reference triggered safeguards 47% of the time during 1995-2004. The alternative reference analysed, "higher of the two" (between MA-3 and 1992-94 average), triggered 41% of the time. There is no easy way of determining in an objective manner the level of safety that is most appropriate when so many developing countries and commodities are involved and for the reason that injury due to a surge depends on the vulnerability of the import-competing sector.

Third, although MA-3 (or MA-5) comes out as a superior reference relative to fixed period or conditional ("higher of the two") references, MA-3 also has some drawbacks. In particular, it was found that when imports are rising strongly and steadily, the MA-3 triggers safeguards almost continuously for several years. One way to address this flaw would be to use higher *de minimis* level such that while safety is assured for relatively sharp trends in import, frequent triggers are avoided. The analysis showed that higher *de minimis* levels in the range of 15-20% still provide good safety (in terms of frequency of triggers). This of course is the case when imports rise strongly and steadily. In other cases, such as when imports fluctuate around flat trends, higher *de minimis* levels compromise on the effectiveness of the SSM.

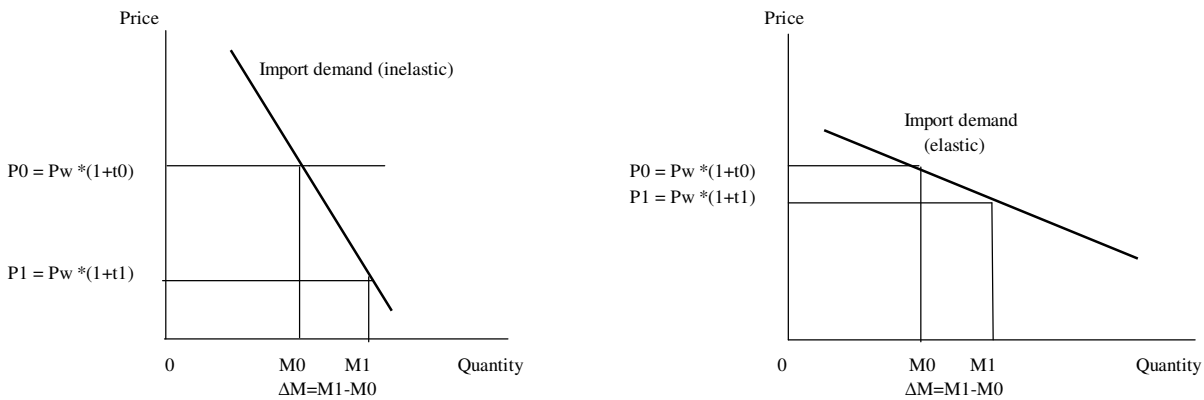
Fourth, it is not as straightforward to quantify additional or SSM duties for volume safeguard as it is with price safeguard, because in this case the gap between the current and reference price provides an objective basis. What has been done in the paper is to estimate these duties, for given intensities of import surges, using a method that is consistent with trade theory and compare these estimates with those suggested in various negotiating proposals. However, the method requires a parameter, import demand elasticity, on which a consensus on the value of the parameter does not exist, and hence the method is not practical enough for trade negotiations. Nevertheless, the analysis is useful for informing in an objective manner the negotiations on appropriate additional duties for import surges of different intensities.

Lastly, as was the case with price trigger, the proposals by Argentina, Paraguay and Uruguay and by the US reduce considerably both the frequency of the triggers as well as the remedy, mainly due to the use of higher *de minimis* levels for triggers and caps on maximum SSM duty (or on total duty applied, i.e. bound rate plus SSM duty).

Annex 1: An analysis of additional tariff required for containing a given level of import surge

In trade analysis, the relationship between import volume and domestic price is determined by elasticity of import demand (Figure 1). As the domestic price of a tradable is determined by tariff, the relation also applies to import and tariff. For a given change in the import volume, A given change in import is associated with a larger change in tariff when import demand for a product is inelastic (left-panel in Figure 1) and lower tariff when the demand is elastic (right-panel). This argument can be reversed to state that higher tariff is required to contain an import surge of an inelastic product than of an elastic product. In what follows, an expression is derived for quantifying such a relationship.[19]

Annex Figure 1: Relationship between changes in domestic price (or tariff) and import



The relationship between changes in import and domestic price is given by expression (1)

$$\eta_m = -(\Delta M/M_0)/(\Delta P/P_0) \quad \text{.....} \quad (1)$$

where η_m is import demand elasticity and $\Delta M/M_0$ and $\Delta P/P_0$ are percentage changes in import and domestic price. ΔM and ΔP are absolute changes in the two variables while M_0 and P_0 are their base period values.

For an importable product, domestic price is determined by world market price and tariff, namely $P_0 = P^w * (1+ t_0)$, where P^w is world price and t_0 is tariff rate. Assuming that the world market price does not change for a country applying a safeguard, the percentage change in the domestic price for a change in tariff between the two periods is given by expression (2).

$$\Delta P/P_0 = \Delta t/(1+ t_0) \quad \text{.....} \quad (2)$$

where Δt is change in tariff between two periods.

For the purpose of the remedy, i.e. determining additional tariff required to contain an import surge, what is needed is the relationship between percentage change in tariff ($\Delta t/t_0$) and percentage change in import ($\Delta M/M_0$). This comes by substituting price (expression 2) with tariff in expression (1):

From (1), $\Delta P/P_0 = -(\Delta M/M_0)/\eta_m$

Thus, $\Delta t/(1+ t_0) = -(\Delta M/M_0)/\eta_m$

As with price and import, a percentage change in tariff is expressed as $\Delta t/t_0$. By multiplying and dividing the left side of the above expression by t_0,

[19] This analysis is discussed in more detail in Sharma (2006).

$$\Delta t/t_0 * t_0/(1+ t_0) = - (\Delta M/M_0)/\eta_m$$

Rearranging this expression for a percentage change in tariff:

$$\Delta t/t_0 = - [(1+t_0)/t_0)]*[1/ \eta_m] * \Delta M/M_0 \text{ ..... } (3)$$

Expression (3) provides a basis for discussing the remedy for import surges. Note that the relationship between the level of the remedy ($\Delta t/t_0$) and the intensity of a surge ($\Delta M/M_0$) is not one-to-one but is conditioned by two factors – initial bound tariff and import demand elasticity.

First, it shows that the level of the remedy ($\Delta t/t_0$) varies inversely with the base period tariff. As an example, if current tariff (t_0) is 0.1 (i.e. 10%), the value of $(1+t_0)/t_0$) is 11. With a value of η_m of, say, -1, a 110% increase is needed of the tariff to contain an import surge of 10% (the additional duty here is 11% for a total tariff of 21%). If t_0 is 100%, then the percentage change in tariff is only 20% for a surge of 10%. Thus, the current bound tariff plays a marked role.

Second, $\Delta t/t_0$ also varies inversely with η_m. This makes an intuitive sense. Take salt as an example of a highly inelastic product (small η_m). Consumers do not easily react to a change in the price of salt and only a very large change in price (tariff) would have some impact on the import level. In contrast, only a small change in tariff is needed to contain a large import surge in the case of a highly elastic product, say wine in many developing countries where the "wine culture" is becoming popular. Thus, treating all products similarly in terms of the level of the remedy would not be consistent with market behaviour.

Although writing formula (3) into legal text for the purpose of the SSM's remedy is not practical in the WTO context, the formula could be helpful for some insights. For example, the fixed "1/3rd remedy" of the SSG's volume trigger meant for all products and all levels of a surge is clearly inconsistent with the above insights.

The G-33 proposal to link the level of remedy to the depth of the surge, on the other hand, is an improvement. So was the case with the SSG's remedy for price trigger which varied according to the depth of price depression. The key issue is to what extent is it practical to follow the above expression in determining the levels of remedy? This was the same question asked in another paper on tariff-quota equivalency in the context of the sensitive product, cited in the footnote earlier.

Annex Table 1 illustrates formula (3) by showing percentage changes in tariffs required to contain import surges of various intensities and initial bound tariffs.

Annex Table 1
Percentage change in tariff required for containing import surges of various intensities, given different initial bound tariffs and import demand elasticities

Elasticity of import demand	Initial bound tariff (t0)	% change in tariff, for an --- import surge of (%) -- 7.5	20	50	Additional tariff required (%) for an --- import surge of (%) -- 7.5	20	50
0.5	**10**	165	440	1100	17	44	110
	20	90	240	600	18	48	120
	40	53	140	350	21	56	140
	60	40	107	267	24	64	160
	80	34	90	225	27	72	180
	100	30	80	200	30	80	200
1	**10**	83	220	550	8	22	55
	20	45	120	300	9	24	60
	40	26	70	175	11	28	70
	60	20	53	133	12	32	80
	80	17	45	113	14	36	90
	100	15	40	100	15	40	100
2	**10**	41	110	275	4	11	28
	20	23	60	150	5	12	30
	40	13	35	88	5	14	35
	60	10	27	67	6	16	40
	80	8	23	56	7	18	45
	100	8	20	50	8	20	50
3	**10**	28	73	183	3	7	18
	20	15	40	100	3	8	20
	40	9	23	58	4	9	23
	60	7	18	44	4	11	27
	80	6	15	38	5	12	30
	100	5	13	33	5	13	33

Note:
1) The first three columns are computed with the formula (3) above, i.e.

$$\Delta t/t_0 = - [(1+t_0)/t_0)]_*[1/ \eta_m] _* \Delta M/M_0$$

2) The last three columns are additional tariffs, given the initial bound tariff and the percentage changes calculated with the formula.
Source: Author.

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