

**THE SPECIAL SAFEGUARD MECHANISM IN THE DOHA DEVELOPMENT AGENDA:  
A CASE STUDY OF SOYBEANS**

Heather Weeks<sup>a</sup>

Jason Grant<sup>a,\*</sup>

Michael McConnell<sup>b</sup>

Karl Meilke<sup>c</sup>

<sup>a</sup> *Dept. of Agricultural & Applied Economics, Virginia Polytechnic Institute & State University, Blacksburg, VA, [haweeks@vt.edu](mailto:haweeks@vt.edu) and [jhgrant@vt.edu](mailto:jhgrant@vt.edu)*

<sup>b</sup> *Markets and Trade Economics Division, Economic Research Service, United States Department of Agriculture, 1800 M. Street N.W., Washington D.C., 22036, [MMCCONNELL@ers.usda.gov](mailto:MMCCONNELL@ers.usda.gov)*

<sup>c</sup> *Dept. of Food, Agricultural and Resource Economics, University of Guelph, Guelph, ON, Canada, [kmeilke@uoguelph.ca](mailto:kmeilke@uoguelph.ca)*

*Selected Paper prepared for presentation at the American Agricultural & Applied Economics Association Annual Meeting, Denver, CO, July 25-27, 2010.*

---

\* Corresponding author. The views expressed are those of the authors, and may not be attributed to the Economic Research Service or the U.S. Department of Agriculture.

## **Abstract**

The Special Safeguard Mechanism (SSM) proposed for developing countries has become a thorny issue in the Doha Development Agenda's (DDA) agricultural negotiations. Proponents of the mechanism argue that it is a necessary compromise to counter sharp price declines or rapid import surges in staple commodity markets of developing nations. Opponents of the SSM, which include many developed exporters, contend that the policy flexibility contained in current SSM proposals would severely limit market access if the mechanism is triggered. The impact of the SSM depends on a number of parameters: the number of times the SSM is triggered, whether the price or volume SSM is triggered, the size of current tariffs, the magnitude with which tariffs are reduced in the DDA, and the number of times a developing country will actually make use of the SSM. This study introduces a static, synthetic, global, partial equilibrium model of the world soybean complex to assess the preliminary aspects of the DDA's proposed tariff cuts. Future work on this project will extend the model to a stochastic framework from which to simulate the effects of an SSM combined with the DDA tariff cutting formulas for developing nations.

## Introduction

Negotiation over the Special Safeguard Mechanism for developing countries has proved to be a difficult issue among World Trade Organization (WTO) Members. When WTO Director-General Pascal Lamy announced the failure of the July 2008 ministerial meetings, he reported that out of a list of 20 topics, 18 had reached convergence but Members' views diverged on the 19<sup>th</sup> issue – the design and functioning of the SSM (Finger 2009). After trade ministers had invested so much time in resolving other issues such as tariff cutting formulas, reductions in agricultural domestic support, and curbing export subsidies, the fact that the DDA broke down over a few technical details surrounding the SSM came as quite a shock to economists and policy makers alike. As Grant and Meilke (2009) note – how could members walk away from the agricultural negotiations over a temporary tariff that would allow developing economies the right to raise applied tariffs in times of price declines or import quantity surges?

To say that the collapse of the DDA was the result of Members' divergence over the SSM is a bit misleading because many of the technical aspects over the design of the SSM have already been agreed (WTO 2008). At issue was something more fundamental: should developing countries be allowed to exceed their bound tariff levels agreed to in the Uruguay Round's Agreement on Agriculture (URAA)? Developing countries want the maximum amount of policy flexibility to levy additional SSM duties to protect small-scale farmers even if it means breaching pre-Doha bound tariffs whereas developed country exporters view the option of allowing developing countries to breach bound tariffs as a device for creating protection undermining decades of political and economic efforts to keep agriculture on a path toward liberalization.

However, the economics of agricultural policy in developing nations is complex. On the one hand low income countries want to fully integrate their economies into the world market which will increase the competitiveness of their producers and more importantly, provide export opportunities for their products. On the other hand, subjecting their producers to the international market place inevitably brings international market turbulence whereby temporary protection in the form of safeguards might be a necessary policy choice. For these reasons newly created SSM for developing countries has considerable appeal. First, similar to the current Special Agricultural Safeguard (SSG) that was developed during the URAA, the proposed SSM is an automatic mechanism meaning it does not require an injury test or the provision of compensation when it is used (Grant and Meilke 2006). Second, the SSM resolves current imbalances in the rules pertaining to the current SSG because tariffication is not a precondition for SSM application. The status quo (SSG) currently requires tariffication as a prerequisite for the application SSG duties. Because most developing countries set bound tariffs outside of the tariffication process, they have not been able to use the SSG.<sup>1</sup> Third, small scale producers in developing nations are vulnerable to market fluctuations. As Ruffer and Vergano (2002) point out, temporary shocks can have significant and persistent effects on producers in low income countries. With limited fiscal resources available to provide income support or safety-net measures in times of depressed prices or import surges, tariffs are often the only measure available to governments in developing nations.

In theory, the SSM is a relatively simple policy instrument. The SSM is composed of a volume and price trigger from which additional safeguard duties are allowed if import prices fall

---

<sup>1</sup> Tariffication refers to the process agreed to during the URAA that converts all non-tariff barriers into bound tariff equivalents.

below, or import quantities rise above the price or quantity triggers, respectively. The economics of tariffs are well known. Exporters favor their elimination while importers lower them with great reluctance despite the fact that there are welfare gains from tariff elimination (Grant and Meilke 2006). In practice however, the SSM contains a number of parameters that have raised several red-flags in the negotiations. First, at what level should the price and quantity triggers be set? Second, what is the appropriate base year from which to calculate the trigger levels? Third, what safeguard duty levels should be permitted when the price or volume SSM is triggered? Should the SSM be completely flexible such that developing countries could choose the level of safeguard tariffs to suit their particular policy needs? Or should the SSM be modeled after the current SSG where the additional price-based safeguard duties are an increasing function of the degree to which prices fall and the volume-based duties are fixed at one-third of the level of a the country's current most favored nation applied tariff? Finally, if the SSM is triggered and used, should developing countries be allowed to exceed their pre-Doha bound tariff ceilings?

Though not always stated explicitly, the SSM has the implied objective of stabilizing domestic markets during periods of market turbulence. Whether the proposed SSM is an effective policy tool to help low income nations stabilize markets is clearly an empirical issue that depends on the trigger levels, the frequency with which the SSM is triggered and the size of the additional safeguard duties, the latter of which is dependent on whether developing nations will be allowed to exceed their existing bound tariffs. To address these issues, we adopt a case-study approach focusing on world soybean markets. Specifically, we are working towards the development and calibration of a stochastic, synthetic, global partial equilibrium

model of the world soybean market to evaluate the potential welfare implications of the proposed SSM when it is combined with the DDA tariff cuts according to the July Package (WTO 2008). Soybeans are a highly traded commodity and, like many agricultural sectors, are characterized by joint products of meal and oil. Crushing demand provides the price and quantity link between the seed market and the oil and meal markets. Thus the triggering of an SSM can have important feedback effects in a multi-product model.

As of this writing, however, the stochastic version of the model which is an essential ingredient to modeling the likely impacts of the SSM, has not been completed. However, we provide an overview of the results from the global static model in response to the proposed DDA tariff cuts. The remainder of this paper is organized as follows. The next section reviews the proposed DDA tariff cuts and the operation of the price and volume SSM. Section three describes the static partial equilibrium model of the world soybean market. Section four presents the results from a DDA tariff cutting scenario. Finally, section five concludes and discusses future work.

### **Tariff Cuts and the SSM in the DDA**

Since the agricultural negotiations began in 2001, the consensus among WTO Members is that tariff cuts should follow a tiered or banded approach which penalizes higher bound tariffs relatively more. The proposed tariff cuts under the July Package (2008) formula are illustrated in table 1. Developed countries face four tiers: less than or equal to 20 percent; greater than 20 percent but less than or equal to 50 percent; greater than 50 percent but less than or equal to 75 percent; and greater than 75 percent. The tariff cuts in these bands correspond to 50, 57, 64, and 66 or 73 percent, respectively (WTO 2008). Developing countries also have four tiers of:

zero to less than or equal to 30 percent; greater than 30 percent but less than or equal to 80 percent; greater than 80 percent but less than 130 percent; and greater than 130 percent.

Developing country tariff cuts are equal to two-thirds of the developed country cut within the respective bands. Least-developed countries are exempt from tariff cuts. The July Package also distinguishes Small Vulnerable Economies (SVEs) from that of developing countries (WTO 2008). SVEs are required to undertake the same percentage tariff reductions as developing countries but are entitled to moderate their tariff cuts by a further 10 percentage points in each band or meet an overall average cut of 24 percent, as explained in the footnote to Table 1.

Having illustrated the DDA's proposed tariff cuts, we now turn to the operation of the price and volume SSM. A review of the July Package SSM proposal illustrates some of the difficulties Members had in bridging their differences over the technical details of the mechanism. An SSM is a temporary tariff that gives low-income countries the right (but not the obligation) to apply an additional duty to protect small-scale producers from rapid import surges or sharp price declines. Price and volume trigger levels determine when the SSM can be applied. The volume trigger is equal to the average level of imports over the most recent three year period for which import data are available. The price trigger is defined analogously and is equal to the average of the most recent three year *monthly cif* import prices (WTO 2006; WTO 2008). Because of the disagreement over the additional duties concerning the volume trigger, we start by discussing its operation first.

#### *Volume SSM*

The mechanics of the volume trigger are illustrated in Table 2. The magnitude of the volume-based SSM duty depends on the size of the surge in imports. Table 2 illustrates the potential

size of the additional SSM duties under the July Package SSM proposals for a representative importer, Thailand, using the most recent applied and bound tariff data for soybeans, meal and oil (see footnote to Table 2). The additional duties under the volume SSM follow a tiered approach, where the additional safeguard duty allowed by the volume trigger is an increasing function of the import surge. For import surges less than 110% of the volume trigger ( $M$ ), no additional duty is allowed. Import surges falling in the bands (110%, 115%], (115%, 135%] and (> 135%) trigger a duty level equal to 25 percent of a member's bound tariff ( $T^b$ ) or 25 ad valorem percentage points, whichever is greater, 40 percent of a country's bound tariff ( $T^b$ ) or 40 ad valorem percentage points, whichever is greater, or 50 percent of a country's bound tariff ( $T^b$ ) or 50 ad valorem percentage points, whichever is greater, respectively.

Illustrated in Table 2, are the new SSM inclusive applied tariff rates for Thailand's soybeans, meal and oil imports. The effective SSM-augmented tariff is the sum of their current applied tariff rate ( $T^a$ ) plus the additional volume SSM duty, conditional on the level of the import surge. Two important results emerge. First, with no restrictions on exceeding pre-Doha bound tariff levels, the resulting SSM augmented applied tariffs are likely to result in very little trade assuming Thailand will apply the maximum SSM duty allowed. If SSM duties continue to be linked to bound tariff levels and have considerable gaps between bound and applied tariffs, these countries will gain a lot of policy flexibility with the SSM, as illustrated Thailand soybean imports in Table 2. Second, for countries with bound and applied tariffs that are very similar, capping SSM-augmented applied tariffs to pre-Doha bound rates effectively renders the SSM policy of little use to these countries. This result was similarly documented in Grant and Meilke (2009) using wheat tariffs. For example, if Thailand's meal or oil imports trigger the volume



SSM, it will always exceed its pre-Doha bound rate ( $T^b$ ) when the additional safeguard duty is applied. Thus, when developing countries have very little gap between bound and applied tariffs, it is difficult to argue that pre-Doha bound tariffs (or those bound tariffs agreed to under accession) should serve as an upper bound for the application of SSM duties. Because SSM duties are tied to bound tariffs in the July Package, countries with similar applied and bound tariffs will almost always exceed their bound tariffs when the SSM is triggered.<sup>2</sup>

### *Price SSM*

The price SSM is also based on an exogenous trigger level equal to the average of the most recent three years of *c.i.f* import prices. Figure 1 is an exercise that illustrates the operation of the price-based SSM. This time however, we add in the Special Agriculture Safeguard (SSG) established under the URAA for comparison. Under the proposed SSM, *cif* import prices must fall to \$85 before an additional duty may be imposed (Figure 1). Once this happens, an additional duty equal to 85 percent of the fall in the import price below the trigger level can be applied no matter how much further prices fall. Let  $P_m$  denote the current *cif* import price in local currency and  $PT$  denote the price trigger level. The price SSM remedy allowed under the July Package is:  $(0.85) * (PT/P_m) - 1$ , if the import price has fallen more than 15 percent below the trigger level ( $PT$ ) which is assumed to be \$100 in Figure 1. Thus, the July Package does not allow Members to fully offset price declines.<sup>3</sup> The horizontal axis in Figure 1 measures the percentage fall in the import price below the \$100 trigger level as illustrated by the solid line.

---

<sup>2</sup> Additionally, imports under tariff rate quota commitments may be counted for the purpose of determining the volume surge except where a volume increase is entirely attributable to a scheduled tariff rate quota increase under a Doha implementation, but no additional duty shall be imposed on imports within such tariff rate quota commitments (WTO 2008)

<sup>3</sup> In the widely circulated G33 proposal for a new SSM, the price SSM remedy allows countries to fully offset the price decline as long as import prices fell by at least 15 percent below the trigger level (WTO 2006)

The vertical axis measures import prices and each dotted line traces out the behavior of import prices when an additional price-based SSM or SSG duty is applied. The July Package SSM compensates for 85 percent of the price fall after prices drop 15 percent so import prices decrease linearly beyond a 15 percent fall below the price trigger. Conversely, the UR SSG allows for higher additional safeguard duties the greater the fall in the import price below the trigger but never allows for the extent of compensation provided in July Package proposal for the SSM.

### **A Simulation Model of World Soybean Markets**

In the current version of this paper a static, non-spatial, synthetic, global, partial equilibrium model of the world soybean market is calibrated to data averaged over the 2005-2007 reference years. We use the model to evaluate the impact of the proposed DDA tariff cutting scenarios. While not explicitly modeled in this version of the paper, we consider necessary steps to extend the model to a stochastic framework to assess the impacts of the SSM. The static model follows earlier work of Meilke, Wensley, and Cluff (2001) who develop a model of soybean supply, use and trade. The model includes 37 net importing regions and 6 net exporting regions.<sup>4</sup> Twenty-nine of the 37 net importing regions are individual countries accounting for the largest share of world soybean, meal and oil trade and the remaining countries are aggregated into 8 region groupings based on geographic proximity.<sup>5</sup> Six of the net exporters are individual countries and the remaining countries are grouped into a single net

---

<sup>4</sup> In some instances, countries are net importers of seed and meal but net exporters of oil (for example, Thailand).

<sup>5</sup> Countries with at least 500,000 metric tons of net imports in at least one category (soybeans, meal and oil) were selected as individual countries in the model.

exporting regional group. Appendix table 1 lists all of the countries in the model, their importing/exporting status, and WTO membership.

The equations used to represent a typical soybean importing country ( $i$ ) are shown below. Domestic price linkage equations for the net exporting countries are the same as equations (1), (5), and (8) except there is no adjustment for tariffs and modifications are made to handle the domestic loan rate program for soybeans in the U.S. as discussed below. In what follows,  $s$  denotes soybeans,  $m$  denotes meal,  $o$  denotes oil,  $K$  denotes crush,  $D$  denotes demand,  $Q$  denotes supply and  $F$  denotes food (as in food demand), and  $NT$  denotes net exports:

$$(1) \quad P_s = P_s^W(E) * (1 + T_s)$$

$$(2) \quad Q_s = a + bP_s$$

$$(3) \quad D_s^F = c - dP_s$$

$$(4) \quad K_s = e + f[Z^M P_M + Z^O P_o - P_s]$$

$$(5) \quad P_m = P_m^W(E) * (1 + T_m)$$

$$(6) \quad Q_m = Z^M * K_s$$

$$(7) \quad D_m = g - hP_m$$

$$(8) \quad P_o = P_o^W(E) * (1 + T_o)$$

$$(9) \quad Q_o = Z^o * K_s$$

$$(10) \quad D_o = i - jP_o$$

$$(11) \quad NT_s = Q_s - K_s - D_s^f - (ES_s - BS_s)$$

$$(12) \quad NT_m = Q_m - D_m - (ES_m - BS_m)$$

$$(13) \quad NT_o = Q_o - D_o - (ES_o - BS_o)$$

$$(14) \quad \sum_n NT_s^n = 0, \sum_n NT_m^n = 0, \sum_n NT_o^n = 0,$$

where,  $n$  indexes the 43 countries in the model.

The model treats seed, meal, and oil each as a homogeneous commodity. No quality differentials or level of processing are taken into account. Equations (1), (5), and (8) link the world prices ( $P_s^W$ ,  $P_m^W$ , and  $P_o^W$ ) adjusted for the exchange rate ( $E$ ) and the importer's applied tariff ( $T_s$ ,  $T_m$ , and  $T_o$ ) to the domestic price of soybeans, meal and oil ( $P_s$ ,  $P_m$ , and  $P_o$ ). We assume perfect price transmission between world and domestic prices for all commodities. The general structure of the soybean market contains behavioral equations for production ( $Q_s$ ) on the supply side, and crush ( $K_s$ ) and food use on the demand side with beginning stocks ( $BS_s$ ) and ending stocks ( $ES_s$ ) held fixed. Production and food demand for soybeans are a function of current prices.

The crush equation represents the price and quantity link between soybean and the meal and oil markets. We make the standard assumption of fixed proportions in the technology of meal ( $Z^m$ ) and oil ( $Z^o$ ) production (equations (6) and (9)) and price-taking is assumed in the oilseed crushing equation which is a function of the crushing margin ( $Z^m P_m + Z^o P_o - P_s$ ). As the margin increases (decreases), the demand for crush seeds increases (decreases). A change in the crush demand affects seed demand and products supply simultaneously, and prices adapt accordingly to establish equilibrium. Oil ( $Q_o$ ) and meal ( $Q_m$ ) supplies are a function of soybean crush ( $K_s$ ). Demand for meal ( $D_m$ ) as feed and oil ( $D_o$ ) for crude and industrial use are functions

of current prices ( $P_m$  and  $P_o$ ). Ending stocks and beginning stocks of meal ( $ES_m$ ,  $BS_m$ ) and oil ( $ES_o$ ,  $BS_o$ ) are held fixed.

Imports and exports are not explicitly modeled. Rather, net trade ( $NT_s$ ,  $NT_m$ , and  $NT_o$ ) is the difference between total supply and demand illustrated in equations (11) through (13). We assume that seeds, oil, and meal are tradable goods. Finally, equation (14) closes the model and determines world prices by forcing to zero the sum of net trade across for all three commodities.

### *The Policy Environment*

Most favored nation bound and applied *ad valorem* tariffs are the primary policies considered in the 37 net importing countries. Both bound and applied tariff data are important because the DDA formula cuts are made to bound tariffs. However, cuts to bound tariffs may not force a reduction in countries' applied rates if there are large gaps between the two rates. Figure illustrates the differences in WTO Members' bound and applied rates for developed, developing, and least-developed net importing countries across the three commodities (beans, meal, and oil). Focusing on developing and least-developed importing countries because these countries will be the ones eligible to use the SSM, the average difference between bound and applied tariffs is largest for oil at 43.6 percent followed closely by soybeans at 42.1 percent. Differences between bound and applied tariffs for meal are less severe averaging 22.4 percent. Least-developed importers have the largest levels of bound tariffs for all three commodities by virtue of their exemption from the agricultural trade policy commitments. With bound tariffs in the neighborhood of 50 to 70 percent for soybeans, meal and oil, and because the additional duties under the volume SSM are tied to bound tariff rates, the volume SSM has the potential

to generate sizeable additional duties in the range of 12.5 to 17.5 percent if the import surge is modest (110%-115% in Table 2) to (countries will choose the maximum option under the volume SSM).

Figure 2 begs an additional question raised by Grant and Meilke (2006): why are countries with such large differences between their bound and applied tariffs worried about an SSM since undesirable import surges could be remedied by simply raising applied tariffs within their bound ceiling levels? As Grant and Meilke (2006) point out, applied tariffs are usually specified in domestic legislation and not easily changed. Raising applied tariffs also makes it clear that the government is favoring domestic producers over domestic consumers. Moreover, while differences in soybean tariffs might be large for some low income countries, there may be other commodities where applied and bound tariffs are similar. Thus, if a country wants an SSM for even a few commodities, it must support the proposal to create this mechanism for all commodities.

The only other import policy that is considered regarding the net importing countries in the model is Korea's tariff-rate quota (TRQ) system for soybeans (food-quality and crushing beans). Soybean exports for food use in Korea presently have access under an 185,787 ton global WTO TRQ with an applied tariff of 5 percent. Soybean exports for crushing (oil and oil cake production) have access under an 846,365-ton global WTO TRQ that also carries an applied tariff of 5 percent. Korea's over-quota tariff rate on both food-quality and crushing TRQs is some 487 percent. However, we do not consider explicitly the over-quota tariff in the model because according to the Foreign Agricultural Service of the United States Department of

Agriculture, Korea allows imports above the quota to enter at the in-quota tariff rate of 5 percent (similar to an endogenous quota situation).<sup>6</sup>

The final policy considered is the United States' loan rate program for soybeans. The U.S. Loan Rate remained constant at \$183.70 per metric ton over the three year period 2005-2007. The farm price received by soybean producers over the same period averaged \$232.21/metric ton. Thus, the soybean production equation in the U.S. is calibrated to the higher farm price and the loan rate is not considered binding in the baseline. However, extending the model to a stochastic framework to incorporate the SSM policy for developing countries may result in a binding loan rate, particularly if the SSM is triggered by a number of large importing countries simultaneously. The application of relatively large additional SSM duties could depress world prices such that the farm price drops below the loan rate price. In these cases, the model will be programmed such that the price received by U.S. producers is not allowed to fall below the loan rate and the government cost of an implied deficiency payment equal to the difference between the loan rate and the market price is calculated.

## **Data**

The supply-use balance tables are retrieved from the USDA's online Production, Supply, and Distribution (PSD) database.<sup>7</sup> Exchange rates expressed as local currency per United States dollar are taken from the USDA's Agricultural Exchange Rate database.<sup>8</sup> In some cases, World Bank exchange rates are used when the data for individual countries in the USDA dataset was incomplete or missing. Most favored nation applied and bound tariff rates are taken from

---

<sup>6</sup> Information retrieved from: <http://www.fas.usda.gov/info/factsheets/Korea/commodity-soybeans.asp>

<sup>7</sup> Available at: <http://www.fas.usda.gov/psdonline/>

<sup>8</sup> Available at: <http://www.ers.usda.gov/Data/ExchangeRates/>

several sources. First, the WTO's tariff profile dataset is used for the majority of WTO member countries. However, a number of countries had missing tariff information. Thus, we relied on two alternative sources: the Market Access Maps dataset developed by the Centre d'études prospectives internationale (CEPII) and the Agricultural Market Access Database (AMAD).<sup>9</sup> Price elasticities are taken from multiple sources, including: the FAPRI Elasticity Database, Food and Agriculture Policy Research Institute (FAPRI, 2010)<sup>10</sup>, Meilke, Wensley and Cluff (2001), the ERS International Food Consumption Patterns Data Set (U.S. Department of Agriculture, 2010)<sup>11</sup>, and the Agriculture Trade Policy Simulation Model (United Nations Conference on Trade and Development, 2010). Finally, information on the U.S. loan rate program was obtained from the 2002 Farm Bill: Title I Commodity Programs.<sup>12</sup>

Countries with more than 500,000 metric tons of net imports in soybeans, meal, or oil are kept as individual countries in the model. The remaining countries are aggregated into regional groups based on their level of development, geographical location, and WTO membership status. Appendix Table 1 lists the individual countries along with the regional groupings. Developed countries are defined

### **Results from DDA Tariff Cuts**

The results from cutting tariffs according to the DDA's formula are presented in Table 3. Shown are the market impacts on prices, demand for soybeans as food, and soybean production. This scenario is based on the DDA tariff cuts to the soybean sector holding meal and oil sector output and demand constant. Future versions of the paper will address this limitation. The

---

<sup>9</sup> CEPII is an independent research institution situated in Paris, France. CEPII's datasets can be accessed (with subscription in certain cases) at: [www.cepii.org](http://www.cepii.org). the AMAD database is freely available at: [www.amad.org](http://www.amad.org).

<sup>10</sup> Available at <http://www.fapri.iastate.edu/tools/elasticity.aspx>

<sup>11</sup> Available at <http://www.ers.usda.gov/Data/InternationalFoodDemand>

<sup>12</sup> Available from the USDA at <http://www.ers.usda.gov/Features/Farmbill/titles/titlelcommodities.htm>



DDA tariff cutting formula contains a harmonization element with high tariffs subject to larger cuts than small tariffs. In addition, the commitments for developing countries are two-thirds that of developed countries. However, given the large gaps between bound and applied tariffs for many developing and LDC nations, the DDA tariff cuts to bound rates only lower applied tariffs in three countries: China (2.4% to 1.6%), South Korea (487% to 166%), and Tunisia (17% to 11.33%).

Tabulated are the soybean market results for five subsets of countries: (i) exporters, (ii) developed country importers, (iii) developing country importers, (iv) Least-Developed Importers (LDCs), and (v) Non-WTO countries. World total reflect percentage changes in the world price of soybeans, world food demand, and world production.

In terms of market effects, the impacts of the DDA tariff cutting scenario on most countries are small (Table 3). World prices rise but by only 0.92 percent from \$381.37/mt to \$384.92/mt and most of this price rise is due to the large reduction in Korea's applied tariff. The modest world soybean price increase is due to the DDA tariff cutting proposal being binding on only four countries.<sup>13</sup> Soybean exporters saw their domestic prices increase by 0.99%. With the exception of South Korea, China and Tunisia, the majority of importers' prices increased in tandem with the world price increase

As prices increase, demand for soybeans in many countries decrease and production increases, (Table 3). World demand increased by 0.61%, or 174,451 metric tons. Most importers saw a drop in demand of -0.37% on average. However, the two countries that saw their demand for soybeans increase were China and South Korea, a result that is driven by

---

<sup>13</sup> We use the term binding to denote cases in which bound tariff reductions for importing countries forces a reduction in their applied tariff.

reductions in tariff rates that more than offset the increase in world prices. Production increases were less apparent, with only 64.17% of countries increasing production of soybeans with an average percentage increase of 0.23%. At the world level, the production of soybeans increased by 0.15%, on average, or 347,768 metric tons.

### **Conclusions and Future Work**

As the Doha Development Agenda's agricultural negotiations continues to make limited progress, there is increasing need for an examination of its proposals, including some of the technical issues surrounding the design and operation of the Special Safeguard Mechanism. This study developed a partial equilibrium model of the world soybean, meal and oil market from which to evaluate the static effects of a Doha Development Agenda tariff liberalization scenario. The July Package DDA proposals for tariff cutting result in modest trade liberalization. This is because the tariff cuts apply to bound rates which forced a reduction in applied rates in only three countries (South Korea, Tunisia, and China). World prices rose, but by only 1.32 percent from the baseline 2005-2007. More aggressive tariff cuts from applied rates would have a much larger impact on prices and quantities traded and these scenarios will be evaluated in future work.

This preliminary framework will form the basis from which to extend the model to a stochastic framework to evaluate the trade and welfare effects of the SSM for developing countries. Using this model, several policy questions surrounding the design and functioning of the SSM will be addressed:

- 1) Does the SSM have the capacity to stabilize domestic markets in low income countries?

- 2) What effect does the SSM have on the welfare of developed country soybean exporters such as the U.S.?
- 3) How often will the price and volume SSM be triggered in developing nations?
- 4) What is the size of the additional duties triggered by the price and volume SSM?

To simulate the operation of the volume SSM, pseudo-random errors will be incorporated into the supply and demand equations for each country. Random shocks to supply and demand will generate random net imports potentially triggering an additional volume-based SSM duty. Further, because the pseudo-random error terms are based on individual or region-specific regression residuals, to the extent that random shocks in supply and demand are not perfectly correlated across countries, not all importers will trigger the volume SSM at the same time.

Modeling the price SSM is more challenging because it operates on a shipment-by-shipment basis. However, we follow Grant and Meilke (2006) in this respect and introduce some local movement in domestic prices by incorporating pseudo-random errors associated with a country's monthly exchange rate into each country's price linkage equation. In this way some countries will be applying the price safeguard while others are not, and the size of the additional duty allowed by the price SSM will vary depending on the size of the exchange rate pseudo-random error term. Given the flexibility of the additional duties allowed under the volume SSM, it is expected that the SSM will be fairly trade distorting, especially if developing nations are allowed to exceed their pre-Doha bound tariffs.

## References

- Federal Reserve Board. 2009. Financial Statistics Database.
- Finger, J. M. 2009. A Special Safeguard Mechanism for Agricultural Imports and the Management of Reform, The World Bank. Policy Research Working Paper: 70.
- Grant, J. H. and K.D. Meilke. 2006. "The World Trade Organization Special Safeguard Mechanism: A Case Study of Wheat." *Review of Agricultural Economics*: 28(1): 24-47.
- 2009. "Triggers, remedies, and tariff cuts: assessing the impact of a special safeguard mechanism for developing countries." *Estey Center Journal for International Law and Trade Policy* 10(1): 223-46.
- International Monetary Fund. 2009. International Financial Statistics Database.
- Meilke, K., M. Wensley and M. Cluff. 2001. "The Impact of Trade Liberalization on the International Oilseed Complex." *Review of Agricultural Economics*: 23(1): 2-17.
- Ruffer, T. and P. Vergano. 2002. "An Agricultural Safeguard Mechanism for Developing Countries." UK Department for International Development and Oxford Policy Management.
- United Nations Conference on Trade and Development (UNCTAD). 2010. Agricultural Trade Policy Simulation Model.
- USDA. 2009a. Economic Research Service. (Prices)
- 2009b. *Production Supply and Distribution (PS&D) Database*. Washington DC: FAS. Available at <http://www.fas.usda.gov/psdonline>.
- 2010. Economic Research Service International Food Consumption Patterns Data Set. Available at <http://www.ers.usda.gov/Data/InternationalFoodDemand>.
- World Trade Organization. 2006. World Tariff Profiles. Available for download at [http://onlinebookshop.wto.org/shop/article\\_details.asp?Id Article=728&lang=EN](http://onlinebookshop.wto.org/shop/article_details.asp?Id Article=728&lang=EN).
- . 2006. *G-33 Proposal on Article {...}: Special Safeguard Mechanism for Developing Countries*. World Trade Organization, Committee on Agriculture, Special Session, Job(06)/64, 23 March 2006.
- . 2008. *Negotiations on Agriculture First Draft of Modalities for Further Commitments Revision 3*. World Trade Organization. TN/AG/W/4/Rev. 3 July 2008.

**Table 1. A Tiered Approach to Tariff Cuts under the Doha Development Agenda**

<b>Development Status</b>	<b>Bound Tariff Bands</b>	<b>Reduction (%)</b>
<b>Developed Country<sup>a</sup></b> (over five years)	>0% and ≤ 20%	50
	>20% and ≤ 50%	57
	>50% and ≤ 75%	64
	>75%	66 or 73
<b>Developing Country<sup>b</sup></b> (over eight years)	>0% and ≤ 30%	33.33
	>30% and ≤ 80%	38.00
	>80% and ≤ 130%	42.67
	>130%	44 or 48.67
<b>Small, vulnerable economies (SVEs)<sup>c</sup></b>	>0% and ≤ 30%	23.33
	>30% and ≤ 80%	28.00
	>80% and ≤ 130%	32.67
	>130%	34 or 38.67
<b>Least Developed Countries (LDCs)</b>	None	Exempt

<sup>a/</sup> Minimum average cut on final bound tariff = 54%

<sup>b/</sup> Maximum average cut = 36%

<sup>c/</sup> Same as developing countries but entitled to moderate their tariff cuts by a further 10 *ad valorem* percentage points in each band or meet an overall average cut of 24 percent, the latter option being dependent on the number of tariff lines selected as Special Products (WTO 2008).

**Table 2. Operation of the Proposed July Package (2008) Volume-Based SSM**

-----VOLUME SSM-----				
-----Examples of Additional SSM Duties-----				
<i>Import Surge (M)</i>	<i>Remedy</i>	<i>Soybeans</i>	<i>Meal</i>	<i>Oil</i>
		<i>Thailand (T<sup>a</sup> = 20%; T<sup>b</sup> = 80%)</i>	<i>Thailand (T<sup>a</sup> = 40%; T<sup>b</sup> = 40%)</i>	<i>Thailand (T<sup>a</sup> = 146%; T<sup>b</sup> = 146%)</i>
M ≤ 110%	No Remedy	T <sup>a</sup> = 20%	T <sup>a</sup> = 40%	T <sup>a</sup> = 146%
110% < M ≤ 115%	Max{0.25*T <sup>b</sup> , 25 Percentage Points}	T <sup>a</sup> + SSM = 45%	T <sup>a</sup> + SSM = 65% <sup>a,b</sup>	T <sup>a</sup> + SSM = 182.5% <sup>a,b</sup>
115% < M ≤ 135%	Max{0.4*T <sup>b</sup> , 40 Percentage Points}	T <sup>a</sup> + SSM = 60% <sup>a</sup>	T <sup>a</sup> + SSM = 80% <sup>a,b</sup>	T <sup>a</sup> + SSM = 204.4% <sup>a,b</sup>
M > 135%	Max{0.5*T <sup>b</sup> , 50 Percentage Points}	T <sup>a</sup> + SSM = 70% <sup>a</sup>	T <sup>a</sup> + SSM = 90% <sup>a,b</sup>	T <sup>a</sup> + SSM = 219% <sup>a,b</sup>

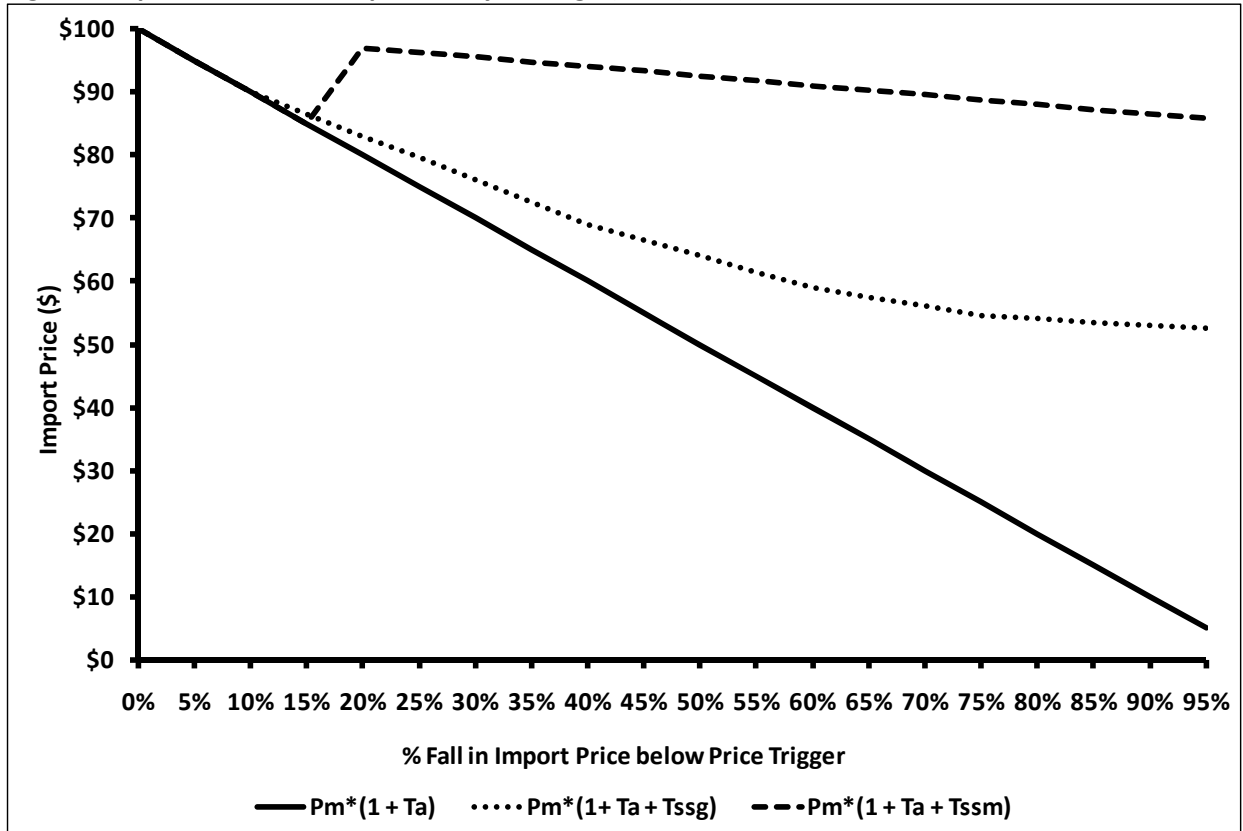
Notes: T<sup>b</sup> denotes Thailand's pre-Doha bound tariff. Thailand's tariff rate information can be found at:

[http://www.wto.org/english/news\\_e/news09\\_e/tar\\_09jul09\\_e.htm](http://www.wto.org/english/news_e/news09_e/tar_09jul09_e.htm)

<sup>a/</sup> Exceeds post-Doha bound tariff rate

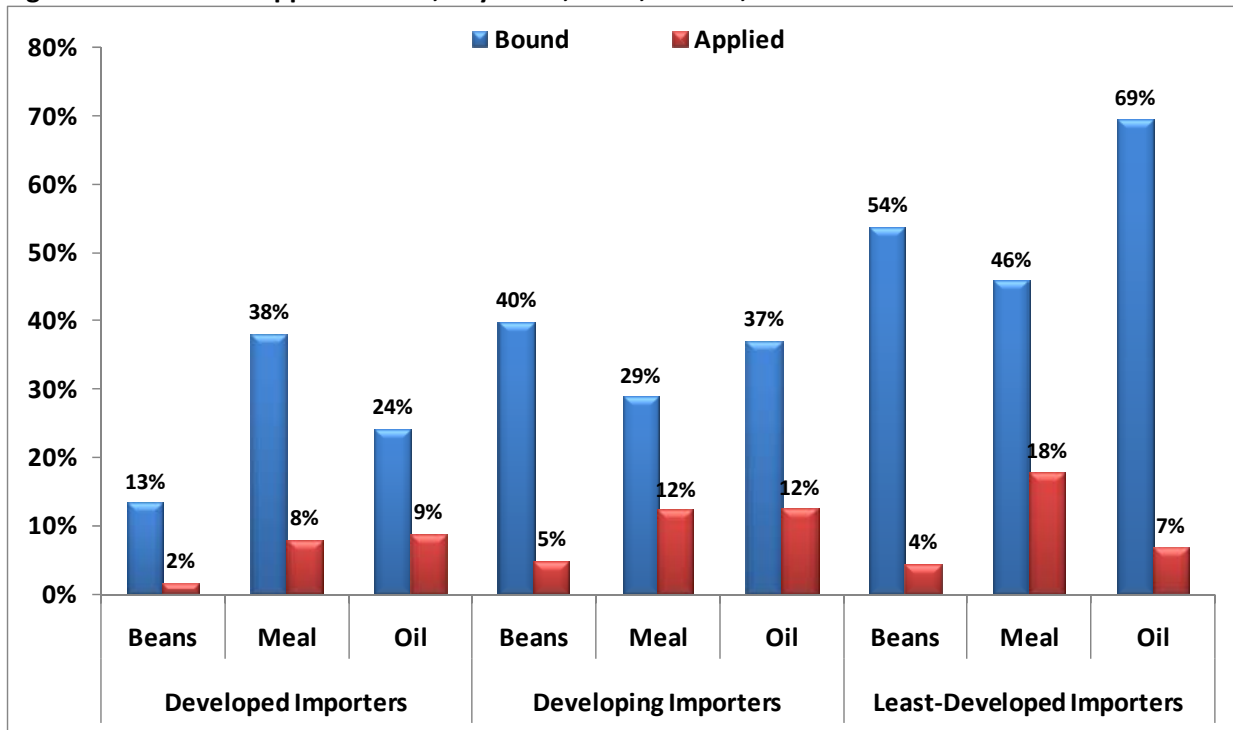
<sup>b/</sup> Exceeds Pre-Doha bound tariff rate

Figure 1. Operation of the Proposed July Package (2008) Price-Based SSM



Notes:  $P_m$  denotes the c.i.f import price,  $T_a$  denotes a member's current applied tariff,  $T_{ssg}$  denotes the additional duty triggered under the URAA Special Agricultural Safeguard, and  $T_{ssm}$  denotes the additional safeguard duty triggered under the recent July Package proposal (2008).

Figure 2. Bound and Applied Tariffs, Soybeans, Meal, and Oil, 2005-2007





**Table 3. Impacts of the Doha Development Agenda Tariff Cuts on Soybean Price, Food Demand, and Production**

-----Soybean Market Results-----																																																			
	Price Increase			Price Decrease			Food Demand Increase			Food Demand Decrease			Production Increase			Production Decrease																																			
	Countries		% Δ	Countries		% Δ	Countries		% Δ	Countries		% Δ	Countries		% Δ	Countries		% Δ																																	
	No.	Total		No.	Total		No.	Total		No.	Total		No.	Total		No.	Total																																		
<b>Exporters</b>	8	8	0.99	0	8		0	8		8	8	-0.44	8	8	0.27	0	8																																		
<b>Developed Importers</b>	5	6	0.92	1	6	-118 <sup>a</sup>	1	6	63.77 <sup>a</sup>	5	6	-0.28	4	6	0.24	1	6	-71.3 <sup>a</sup>																																	
<b>Developing Importers</b>	14	15	0.87	2	15	-2.34	0	15		11	15	-0.33	10	15	0.22	1	15	<0.01																																	
<b>LDC Importers</b>	5	5	0.92	0	5		0	5		5	5	-0.47	2	5	0.24	0	5																																		
<b>Non-WTO Importers</b>	6	6	0.92	0	6		0	6		6	6	-0.34	5	6	0.21	0	6																																		
<b>World Totals</b>	<b>World Price Increase (%) = 0.92%</b>																	<b>World Food Demand Increase = 0.61%</b>																	<b>World Production Increase = 0.15%</b>																

Notes: No. and Total tabulate the number and total number of countries belonging to one of the five groups reported in the first column of the table, respectively. The column label % Δ denotes percentage change. % Δ for each development group are averages across all countries belonging to that group.

<sup>a/</sup> The large % Δ values reported reflect South Korea's soybean tariff reduction from 487% to 166%.

## Appendix Table 1. Model Countries

---

---

### INDIVIDUAL COUNTRIES

---

---

#### 1. Developed Countries

Australia, European Union, Israel, Japan, United States, Developed Country Group

#### 2. Developing Countries

Argentina, Brazil, Chile, China (RAM), Columbia, Egypt, India, Indonesia, Malaysia, Mexico, Morocco, Philippines, Saudi Arabia (RAM), South Korea, Taiwan, Thailand, Tunisia, Turkey, Venezuela, Vietnam (RAM), Asian Group, Central European Group, South American Group

#### 3. Least-Developed Countries (LDCs)

Bangladesh, Dominican Republic (RAM, SVE), Ecuador (SVE), Paraguay (SVE), African Group, Caribbean Group (SVE), Latin American Group (SVE), Middle East Group (SVE)

#### 4. Non-WTO Countries

Algeria, Iran, Russia, Syria, Non-WTO Developing Group

---

---

---

---

### REGIONAL GROUPS

---

---

#### 1. African Group

Angola, Kenya, Madagascar, Mauritius, Senegal, Tanzania, Zambia, Zimbabwe

#### 2. Asian Group

Burma, Hong Kong, Pakistan, Singapore, Sri Lanka

#### 3. Caribbean Group

Barbados, Cuba, Haiti, Jamaica, Trinidad & Tobago

#### 4. Central European Group

Croatia, Georgia, Macedonia

#### 5. Developed Country Group

Canada, New Zealand, Norway, Switzerland

#### 6. Latin American Group

Costa Rica, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Panama

#### 7. Middle East Group

Jordan, United Arab Emirates

#### 8. Non-WTO Group

Belarus, Bosnia & Herzegovina, Ethiopia, Iraq, Kazakhstan, Lebanon, Libya, North Korea, Serbia & Montenegro, Somalia, Uzbekistan, Yemen

#### 9. South American Group

Bolivia, Uganda, Ukraine, Uruguay

---

---

Note: RAM denotes recently acceded member and SVE denotes small vulnerable economy