

Public Stockholding for Food Security Purposes

Scenarios and Options for a Permanent Solution

By Raul Montemayor

ICTSD
International Centre for Trade and Sustainable Development

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ICTSD welcomes feedback and comments on this document. These can be forwarded to Jonathan Hepburn at jhepburn [at] ictsd.ch

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LIST OF ABBREVIATIONS AND ACRONYMS

AGST	Supporting Tables Relating to Commitments on Agricultural Products
AMS	Aggregate Measurement of Support
AoA	Agreement on Agriculture
CIF	Cost, Insurance and Freight
EMS	Equivalent Measurement of Support
FAOSTAT	Food and Agriculture Organization Statistical Database
G-33	Group of 33 Developing Countries
GATT	General Agreement on Tariffs and Trade
LDC	Least Developed Country
TRQ	Tariff Rate Quota
UR	Uruguay Round
WTO	World Trade Organization

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FOREWORD

The relationship between international rules on trade and the achievement of national and global objectives in the area of food security has long been a subject of contention at the WTO. Over the years, this debate has matured considerably, moving from a rather simplistic discussion of whether market opening is intrinsically good or bad for food security, towards a much more nuanced appreciation of the complex implications that various trade policies and rules may have for different types of food producers and consumers, in different places and at different times. ICTSD has sought to help foster this more sophisticated discussion by sharing impartial, timely and policy-relevant analysis with trade policy-makers and negotiators, and by fostering dialogue between different policy actors at both the national and international level.

While food security is mentioned in the preamble to the WTO Agreement on Agriculture, as well as in a number of other places in the same agreement, talks in the early years of the Doha Round and immediately beforehand focused primarily on the issue of how trade-distorting subsidies in certain developed countries might undermine food security in poorer parts of the world, and on the question of the extent to which developing countries should be granted exceptions from trade liberalisation commitments on food security and related grounds. More recently, in the wake of successive food price spikes and the threat of further climate-induced disruptions to global markets in years ahead, the issue of food security has once again shot to the top of the agenda of leaders around the world. The FAO and other international agencies have nonetheless underscored the fact that - despite progress - a substantial proportion of the world's population has continued to lack adequate food and nutrition, both before the recent price spikes and since then.

WTO members have struggled to find ways in which to ensure that the rules of the multilateral trading system on agriculture respond effectively to the new challenges of today's world, and to those of the future. The difficulties in doing so are arguably compounded by the continued inability of governments to conclude the long-running Doha Round of trade talks – in which agriculture is a central component. At the same time, there is a growing awareness among many trade policy actors that the changing market environment requires new policy responses and new international rules, in areas ranging from biofuels and agricultural export restrictions to rules on 'green box' support and the reporting and monitoring of farm subsidy payments. Arguably, the rise of food stockholding schemes to the top of the trade policy agenda in the run-up to the Bali ministerial conference can be seen as symptomatic of the inability of WTO members to agree on equitable and effective solutions for updating farm trade rules in ways that would address new trends in markets and policy design.

During 2013, debate therefore focused on the extent to which existing rules on public stockholding for food security purposes were adequate for developing countries to achieve public policy objectives in this area. The G-33 coalition, as part of an initiative that was led by India, called for current rules to be relaxed in order to take account of price inflation that had occurred since thresholds on trade-distorting support were agreed some two decades ago. Others – including some developing countries – expressed concern that resulting trade distortions could undermine producers in other countries, and potentially also affect food security as a consequence.

Trade ministers agreed an interim solution to the problem in Bali, but also committed to begin discussions on a 'permanent solution' once the ministerial conference was over. This paper, by Raul Montemayor, seeks to contribute to this process by providing policy-makers, negotiators and other stakeholders with an impartial, evidence-based analysis of policy options for such a solution, by examining the implications of various scenarios. As such, we believe it represents a useful and important contribution to the broader debate over how trade rules and governance frameworks can best support food security goals at the international level.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

In the run up to the Bali Ministering Meeting in December 2013, various proposals were presented the resolve the predicament of some developing countries who were at risk of violating WTO rules on domestic support because of their public stockholding programs which provide market price support to domestic producers. In Bali, WTO ministers decided to temporarily shield such programs from challenges until a "permanent" solution was worked out. This study seeks to provide policy makers, negotiators and other stakeholders with an impartial, evidence-based analysis of policy options for such a "permanent solution".

Under the WTO Agreement on Agriculture (AoA), the distortive effect of market price support programs can be quantified into a product-specific Aggregate Measurement of Support or AMS. This is equal to the difference between a fixed external reference price and an applied administered price multiplied by the quantity of the product that is eligible to receive the administered price. The resultant AMS figure must not exceed the *de minimis* for such product, which is a prescribed percentage of the value of annual production of the said product.

Because the external reference prices were based on import prices during a distant base period (usually 1986-88), their variance from current administered or buying prices has increased significantly over time and now risks placing some countries in breach of their *de minimis*. Several proposals have been raised to address this problem. This study simulates the effect of some of these proposals on the behavior of AMS and the capacity of countries to comply with AoA rules on domestic support.

The simulations covered five developing countries with existing public stockholding programs that provide price support to producers. Only food staples, particularly wheat and rice, were included in the analysis. Relevant data on import prices, administered prices, production volumes and values, foreign exchange rates and other information were culled from the FAO Statistical Database and submissions of countries to the WTO.

The simulations confirm apprehensions that a literal and strict application of the AMS formula for market support price programs could lead most of the developing countries covered by the study to breach their *de minimis* allowances for product-specific AMS. Only one country was able to consistently comply with the *de minimis* rule despite agreeing to a lower threshold (8.5% of total production value versus 10% for the others) mainly because its administered prices were significantly lower than its reference prices.

Adjusting reference prices alone had mixed results. The use of 3-year rolling averages of import prices produced the most positive outcome although one country remained in breach of its *de minimis* cap primarily because of the unusually large gap between its reference and administered prices for rice. Adjusting reference prices for inflation, whether by using producer price indices or converting prices and monetary values to US dollars, also had generally positive effects but were not sufficient to allow two of the five countries to comply with the de *minimis* rule for their rice products.

Setting "eligible" production to actual procurement volume worked in favor of countries whose public stockholding programs covered only a small proportion of local output. Three of the five countries which absorbed less than 5% of local production fared best in this scenario. In turn, the two other countries which purchased about one-fourth of local wheat produce exceeded their AMS caps.

The only scenarios where all countries and commodities registered AMS within their *de minimis* was when "eligible" production was equated to actual procurement volume and reference prices were adjusted simultaneously either by applying producer price indices, or converting prices to US dollars or using 3-year or 5-year rolling average prices of imports.

In terms of crafting a "permanent solution", an Appellate Body ruling in a dispute involving Korea beef opened the possibility for countries to officially set a limit to the scope of their price support programs, and on this basis, legally declare their "eligible" production to a certain portion or percentage of local production. The simulations show that this option, which will not require any change in AoA rules, could even allow countries to increase their current procurement levels without breaching their *de minimis* caps.

If this option is not able to adequately address the concerns of some countries, the least contentious alternative would be to allow the use of US dollars in notifying prices and monetary values in AMS calculations and to equate "eligible" production only to the proportion of local output that is actually marketed by producers. These two adjustments will not sufficiently resolve the problems of three countries but it will at least bring one country's support program, which was in breach in the base scenario, in compliance with *de minimis* rules.

Another possible area of compromise would be to exempt developing countries from *de minimis* caps if their actual procurement does not exceed a given percentage of local production. This will address the concerns of the countries whose procurement programs are small and arguably contribute little to market distortions.

Rebasing reference prices to a more recent period, or adjusting them for inflation through the use of producer price indices, or replacing them with 3-year or 5-year Olympic averages of historical import prices may be difficult to pursue since they run counter to the "fixed" nature of reference prices. In turn, increasing *de minimis* levels had minimal effects and will conceivably provide only temporary relief from breaches.

Aside from adjusting the AMS formula, developing countries have the option to convert their buying programs to green box measures by removing administered prices altogether. Developing countries can replace these with practically unlimited amounts of input subsidies for as long as these are extended to low-income or resource-poor farmers. Using budgetary outlays as proxies for AMS through the EMS modality could be another option that could resolve the dilemma.

The study concludes that the public stockholding issue is solvable and that developing countries have many options, both within and outside the AMS formula, to continue providing support to their farmers. At the same time, the pursuit of a "permanent" solution to the public stockholding issue should be viewed in the light of calls of many developing countries to rectify many existing imbalances in the domestic support allowances accorded to developed vis-a-vis most developing countries. Care should nevertheless be exercised so that such programs do not end up unduly distorting markets and even harming other developing countries.

1. BACKGROUND

Under the GATT-Uruguay Round Agreement on Agriculture (AoA), domestic support measures were categorized depending on the degree by which they tended to distort trade. Basic infrastructure support and general services to farmers, together with decoupled income payments to producers which were not linked to output, were deemed to be non- or minimally trade distorting. Because they were not subjected to any limits, they were popularly referred to as green box measures. Price subsidies to producers based on fixed areas or herd sizes and which were part of production-limiting programs, or so-called blue box measures, were also exempted from reduction commitments. On the other hand, trade-distorting or "amber box" measures, including those which provided price subsidies based on output, were subjected to stricter rules. If support under such measures exceeded a certain threshold, it was not only capped but also subjected to a reduction timetable during the implementation period for the Uruguay Round (UR) agreement.

One of the most common trade distorting domestic support measures is a market price support program under which producers receive a guaranteed price for every kilo or liter of product they sell to the program. The price is usually based on average costs of production and ensures that producers will recover costs and generate profits even if market prices fall below a certain level. This system serves as an incentive for farmers to continue producing a product, even if they are not competitive or profiting from it. It often results in surpluses which eventually get dumped and create distortions in international markets. At the domestic level, these subsidized procurement schemes are sometimes linked to so-called public stockholding programs which accumulate and then distribute the stocks to targeted sectors usually also at subsidized and below-market prices.

Because they are trade-distorting and deemed harmful to trade, such price support measures are subject to strict disciplines in the AoA which aim to either keep them within certain bounds or reduce them over time.[1] Annexes 3 and 4 of the AoA provide the methodology for quantifying the levels of support from such measures and other types of non-exempt amber box subsidies for producers of each product. This results in the so-called product-specific Aggregate Measurement of Support or AMS. A *de minimis* allowance for each product equivalent to a certain percentage of the value of production of the product in a given year is then established. For most countries, the *de minimis* served as the maximum amount of allowable AMS that they could provide to each product in a given year. (A relatively small number of countries who fulfilled certain criteria were allowed to provide support in excess of their *de minimis* although they also had to commit to reduce their total levels of support by certain percentages during the UR implementation period.)[2]

Not all public stockholding programs provide price support to producers; in fact, many of them purchase stocks and release them at market or non-subsidized prices. Annex 2 of the AoA actually exempted public stockholding programs intended for food security purposes from amber box rules. However, a footnote to Paragraph 3 of the Annex stipulated that in programs in which food stocks for food security purposes are acquired and released at "administered" (as against market) prices, any difference between the acquisition prices and the corresponding external reference prices must be accounted for in the country's computation of its AMS.

These rules for determining product-specific AMS under public stockholding programs and keeping them below *de minimis* allowances did not surface as a major issue in the early years of the UR implementation period. At that time, most developing countries were probably not undertaking public stockholding and price support programs, or were doing so only at a relatively small scale. Others were interpreting the rules in different ways that enabled them to comply with the disciplines while somehow evading challenges from other countries.

Over time however, some of these countries expanded their public stockholding programs and coupled them with price support schemes, partly to support their farmers and encourage them to produce important staples and food products, and partly also to gain access to stocks that they could supply to target sectors, usually poor consumers in urban areas, at subsidized prices. Concerns about food security and interest in such public stockholding programs heightened after the 2008 food crisis which saw the international prices of basic staples spiking sharply upwards and some countries restricting the export of some of their key food products.

The rapid growth of subsidies in some developing countries, particularly those which were large and/or comparatively advanced, eventually raised concerns over the potentially distortive impact of such price support measures on global trade. Inquiries into such programs were initiated and a dispute involving subsidies for beef producers in Korea led to a WTO Appellate Body interpretation of the AMS formula which placed many developing countries in possible breach of their *de minimis* allowances.[3] This coincided with intense domestic pressures on some developing countries to expand their food stockholding and subsidy programs which in turn made them increasingly vulnerable to challenges from other WTO member-countries for non-compliance with their commitments under the AoA.

Attempts to address this issue were initiated during the now-stalemated Doha Round negotiations which were supposed to come up with a successor agreement to the GATT-UR. The draft modalities for agriculture (TN/AG/W/4/Rev.4) that were presented to WTO Ministers in December 2008 for example included a proposal from the G-33 group of developing countries to extend special treatment for public stockholding programs for food security purposes which undertook procurement at administered prices.[4] However, Ministers at that time failed to reach a consensus on the draft modalities, leading to the non-adoption of the G-33 proposal.

Subsequent attempts to reach a Doha Round consensus also failed and led WTO ministers to issue a declaration in December 2011 for Members to look into alternative negotiating approaches, including the possibility of reaching agreement in specific areas of the negotiation in lieu of attempting to generate acceptance of a single undertaking. This gave the G-33 group a new opportunity to revive their proposal on public stockholding programs and attempt to table it for adoption during the 9th WTO Ministerial Meeting in Bali, Indonesia in December 2013 as part of a mini-package of reforms.

A series of fact-finding technical meetings held in early 2013 led to a draft text that was deliberated on starting in October 2013. A final consensus on the draft text could not be reached in time for Bali, but the draft proposal was nevertheless presented to the Ministers for consideration. After some last-minute negotiations in Bali following one country's adamant demand that public stockholding programs be shielded from disputes for as long as a "permanent" solution was not arrived at, the Ministers adopted a final Decision in the early morning hours of December 7, 2013.

Among the salient provisions of the Ministerial Decision (WT/MIN(13)/38)[5] on public stockholding programs were the following:

a) WTO members will attempt to arrive at a "permanent" solution to the public stockholding issue. Until then, pre-existing public stockholding programs of developing countries which employ administered prices will not be subjected to disputes provided they comply with certain conditions and rules.

b) WTO members must notify the WTO if they have exceeded or are at risk of exceeding their AMS limits and must regularly and promptly provide the WTO with pertinent information on their public stockholding programs.

c) Only "primary agricultural products that are predominant staples in the traditional diet of a developing [country] Member" will be covered by the exemption.

d) Stocks procured under the programs must not "distort trade or adversely affect the food security of other [WTO] Members".

The Ministerial Conference tasked the members to immediately establish a work program to be implemented through the WTO Committee on Agriculture with the objective of arriving at a "permanent" solution to the issue in time for the 11th WTO Ministerial Conference.

2. OBJECTIVES OF THE STUDY

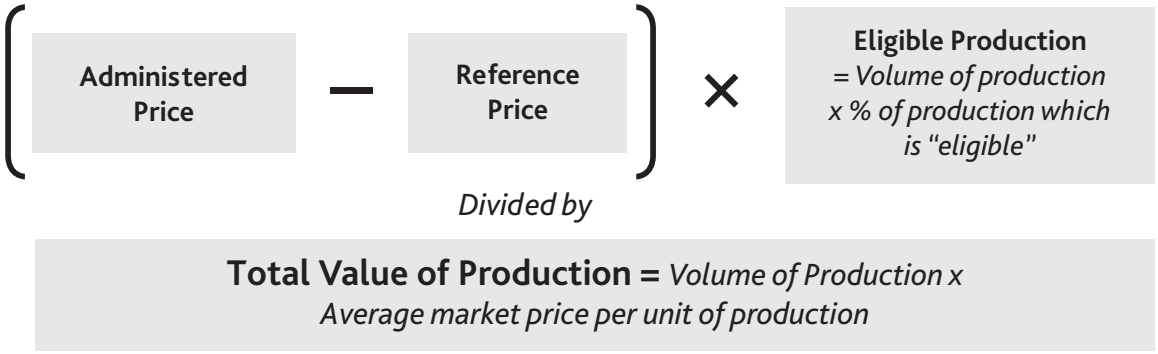
Given this background, there is a clear need to work out a "permanent" solution to the public stockholding issue that will gain the support of all WTO members at the soonest possible time. This study aims to contribute to this effort and seeks to provide policy makers, negotiators and other stakeholders with an impartial, evidence-based analysis of policy options for such a "permanent solution".

Specifically, the study will examine the implications of various parameter settings that have been proposed in the computation of the product-specific AMS of price support schemes under public stockholding programs of selected countries and products. The results of such simulations will show the degree by which AMS and *de minimis* limits are complied with or breached under various scenarios. These tests will hopefully provide indications on what options are available for countries concerned. The simulations, together with studies on relevant dispute panel decisions and other pertinent provisions of the AoA, could also help identify adjustments in WTO rules or interpretations thereof that may be needed to accommodate the concerns of developing countries implementing public stockholding programs that involve administered prices. These should at the same time be weighed against the apprehensions of other countries that granting special treatment to such programs may significantly increase distortions in world trade.

3. METHODOLOGY

Developing countries with existing public stockholding programs that provide price support to producers were identified and filtered based on the availability of relevant data for the simulations. (The five countries covered by the study are referred to in coded form as Countries A to E below.) In accordance with the Bali Ministerial declaration, only primary food staples were selected for analysis. Finally, only developing countries without AMS reduction commitments, and who therefore are subject only to *de minimis* caps on their product-specific AMS, were included in the simulations.[6] Some least-developed countries (LDCs) such as Zambia apparently have public stockholding programs but were not included in the study since LDCs are basically exempted from all amber box disciplines. In total, rice from four countries and wheat from three countries were covered by the study.

Figure A. Formula for Computing AMS as a Percentage of Production Value

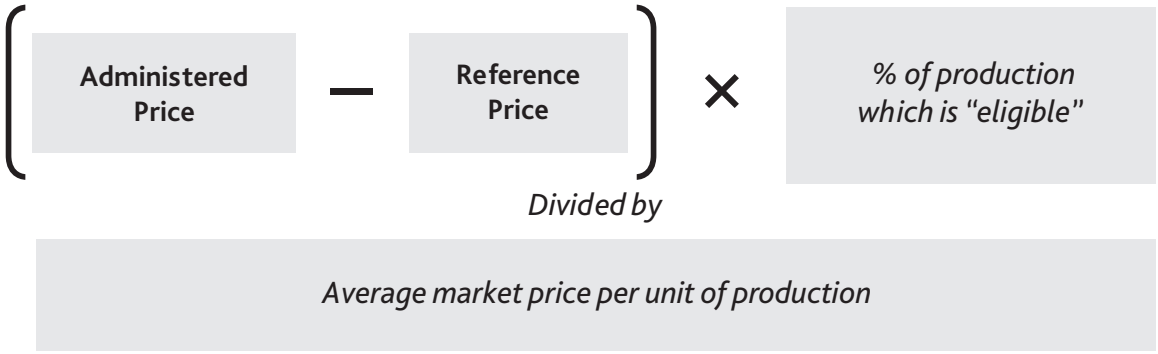


Annex 3 of the AoA describes the method for calculating the product-specific AMS for domestic support measures, including market price support subsidies extended to producers. Paragraph 8 of the said Annex stipulates that the AMS shall be the difference between a fixed external reference price and an applied administered price multiplied by the quantity of the product that is eligible to receive the administered price. The succeeding paragraph further provides that the fixed external price "shall be based on the years 1986 to 1988 and shall generally be the . . . average c.i.f. unit value for the basic agricultural product concerned . . . in the base period."[7] The resultant AMS must not exceed the corresponding *de minimis*, which is also a monetary value equivalent to a prescribed percentage of the annual value of production of the specified product.

In order to facilitate cross-country comparisons, the AMS can be divided by the total value of production and the result can be converted to a percentage, as illustrated in Figure A. This can then be compared to the prescribed *de minimis* percentage to determine if the level of support in percentage terms falls below or exceeds the allowed *de minimis* expressed as a percentage of total production value.

Notably, volume of production appears in both the numerator and denominator and therefore can be cancelled out to simplify the formula, as shown in Figure B. This implies that a country's tendency to comply with or breach its *de minimis* for a particular product will depend exclusively on prices – administered, reference and market – if "eligible" production is equal to total production. If not, the percentage of production that is deemed "eligible" will result in a proportional reduction in the AMS percentage.

Figure B. Simplified Formula for Computing AMS as a Percentage of Production Value



It was assumed that the product-specific AMS of the countries covered by the study were exclusively devoted to price support programs. This means that these countries had no other amber box producer subsidy programs for the designated products that would otherwise be added to their AMS.[8]

In carrying out the computations, steps were taken to ensure that reference, administered and producer prices referred to the same state of the product being studied. Since reference prices are based on imports of the product, they normally apply to the processed state of the product, such as milled rice or wheat. On the other hand, administered prices are usually offered for raw products from farmers, such as unmilled paddy or raw wheat grain. Producer or market prices are also normally quoted in terms of farmers' raw produce. In the simulations, reference prices were converted to raw product equivalent using a product extraction factor which took into consideration the reduction in volume of the raw product when it is processed to the same form as imports. The price for a kilo of imported milled rice for example had to be multiplied by an extraction factor of 65 percent to arrive at its equivalent price in raw paddy form. Once reference prices were adjusted in this way, they could be properly matched against administered and producer prices to come out with the correct AMS figures.[9]

Different settings for two key parameters, namely reference price and the percentage of production deemed "eligible", were applied to the formula. These settings are described as follows:

3.1 Variations in Reference Price Settings

a) Base period reference prices

These are the external reference prices for specific products covered by public stockholding programs as notified in a country's "Supporting Tables for commitments on agricultural subsidization" or AGST tables which were submitted upon accession to the WTO. Normally, these are equivalent to the simple averages of annual CIF unit prices of the corresponding imported products during the 1986-88 base period. Country C, which acceded to the WTO later, used 1996-98 as its base period.

If not notified, as in the case of Country A, the reference price is derived from available data using import prices during the designated reference period. If the reference price applies to a state of the product (i.e., milled rice) which is different from the state which is accorded the administered price (i.e., raw paddy), a product extraction factor is used to convert the price to match the latter. If necessary, reference prices quoted in other currencies are converted to local currency using applicable foreign exchange rates.

AoA rules provide that the external reference prices should be fixed throughout the implementation period.

b) Reference prices adjusted using producer price indices

Reference prices are adjusted on an annual basis using producer price indices derived from FAOSTAT.[10] In general, producer prices in

the year nearest to the end of the reference period and for which data were available were used as the base price (1998 for Country C and 1991 for the other countries). Producer prices in subsequent years were then divided by the base price to arrive at annual indices which were then multiplied by the fixed reference price.

This variation accommodates to some extent India's proposal to adjust the reference prices for inflation. India had argued that the gap between base period reference prices and administered prices could drastically increase over time due to above-average inflation and price volatility. This would in turn amplify AMS figures and make countries more vulnerable to breaching their AMS limits. India has referred to Article 18.4 of the AoA which provides that, in the review of implementation of their commitments, WTO members give "due consideration to the influence of excessive rates of inflation on the ability of any Member to abide by its domestic support commitments."

Producer price indices are used in the simulations as a proxy for general inflation indices.

c) Reference prices converted to US dollars

Reference prices are converted to their US dollar equivalents using applicable annual exchange rates. Administered prices and producer prices are similarly converted to allow for a proper evaluation. This variation assumes that the US dollar is more stable and less prone to inflationary pressures. Notably, the AoA does not mandate that local currencies be used in AMS computations. (However, it does require that Members "take into account" the data and methodology used in their original schedule of commitments with regards to their domestic support measures.)

d) 3-year rolling average prices of imports are used as reference prices

For each year, the annual CIF unit prices of imports of a designated product during the preceding three years are averaged, converted to local currency, and subjected to the product extraction factor if needed. The results are pegged as the reference prices for the year. In case there are gaps in import data, import figures in the most recent three years during which data are available are used.

This adjustment addresses the argument that prices during the 1986-88 or similar historical periods are outdated and are not realistic bases for determining whether current administered prices are distortive or not. Prices of imports in a more recent period would arguably be more reflective of what domestic prices would be if price support programs were removed and markets were allowed to operate freely. The difference between administered prices and more representative import prices would then be a better gauge of the distortive effect of price support measures under public stockholding programs.

e) 5-year rolling Olympic averages of import prices are used as reference prices

For each year, the annual CIF unit prices of imports of a designated product in the preceding five years are collected, the highest and lowest annual figures are discarded, and prices for the remaining three years are averaged. The result is converted to local currency and subjected to the product extraction factor if needed, and then use a proxy for the reference price of the product for the given year. In case there are gaps in import data, import figures in the most recent five years during which data are available are used. This variation uses the same arguments for the proposal to replace fixed reference prices with rolling 3-year averages of import prices.

f) Rebase the reference price to a more recent period

The reference price is recomputed by averaging the annual CIF unit price of imports in 2000 to 2002 for each product, converting the result to local currency and subjecting it to the applicable product extraction factor if needed. The updated reference price is fixed for all years starting 2003. This variation addresses concerns that the previous reference prices have become outdated and need to be replaced by more realistic figures.

3.2 Variations in "Eligible" Production

a) "Eligible" production is equated to total production volume

From a historical perspective of how AMS was conceived, and based on a July 2000 Appellate Body decision involving Korea's price support program for beef, "eligible" production is the portion of total production which is qualified and "eligible to receive the benefit of the price support", whether or not all or just a portion of this "eligible" volume is actually procured.[11] The panel pointed out that the mere presence of a market price support scheme can be enough to influence the system-wide behavior of prices and markets even if procurement is not 100 percent of the eligible volume.

For purposes of the simulation exercise, it is assumed here that the countries have not limited the scope of their price support programs and that all production is "eligible" to receive the administered price. In this case, "eligible" production is "total" production. Production figures are sourced from FAOSTAT and are for products in their raw unprocessed state.

b) "Eligible" production is equated to actual volume procured

Notwithstanding the Korea beef dispute panel decision, a significant number of countries have in fact notified their "eligible" production as equivalent only to the volume actually purchased under their market price support programs. Procurement data are derived from submissions from WTO members.

c) "Eligible" production is set to "marketable production"

The Korea beef panel decision made repeated references to "marketable" production as the basis for determining the portion of production which is "eligible". In many developing countries, farmers normally put aside a portion of their harvest of staple crops for family consumption and/or seeds for their next planting. In Country D for example, only 65 percent of total paddy production is estimated to be sold commercially. The percentages of local production that are deemed to be "marketable" in specific countries are based on information gathered from the countries concerned. If no information is available, the percentage is set to 100 percent. (Again, this simulation assumes that the price support schemes are open-ended and available to all farmers without limits, although only the products that they can sell to the market are considered.)

The parameter settings described above were applied individually and in combination with each other to determine their effects on the AMS of specific products and countries. No variations were applied for administered prices and producer prices except in cases where they needed to be converted to other currencies. However, a separate analysis in Section 4.4 evaluated the degree by which administered prices can be increased, or should be decreased, if a country were to keep within its *de minimis* under the various scenarios. Section 4.5 in turn shows the maximum percentage of total production that a country can declare as "eligible" to receive price support if it were to comply with *de minimis* rules under various reference price settings.

A table containing relevant data was compiled for each country and product mainly from submissions to the WTO and data from FAOSTAT. Annex C provides a description of the components of the table, the source of information used, how the data was used in the computations, and other relevant information regarding the data.

Only the latest year for which data was complete was used in the simulation for each product. Some of these data may be outdated already and may not fully represent the current or projected situation for some countries and commodities. Nevertheless, they will hopefully provide a basis for evaluating options under current conditions or guide other countries in analogous situations.

4. FINDINGS AND RESULTS OF THE SIMULATIONS

Only five countries (coded as Countries A, B, C, D and E) and two commodities (rice and wheat) were covered by the study. A quick scan of notifications and submissions to the WTO indicates that only a few countries actually implement public stockholding programs which involve price support mechanisms and are therefore covered by AMS rules.

Table 1 gives a profile of the countries and commodities covered by the study. Notably, the public stockholding programs of Countries A, C and D for rice covered a relatively small proportion (ranging from one to five percent) of total domestic production. In turn, Country B's rice program and wheat procurement in Countries B, C and E absorbed from one-fifth to one-third of local production.

Table 1. Profile of Countries and Commodities Covered by the Study

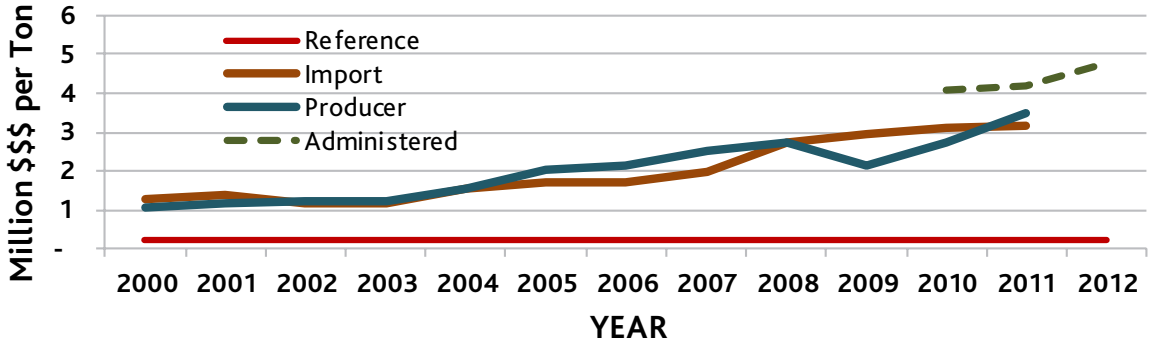
Country/Product/Crop Year	% Procurement	Administered/ Reference Price	Administered/ Import Price	Administered/ Producer Price
Country A-Rice, 2011	5%	26.53	1.33	1.21
Country B-Rice, 2010-11	22%	4.58	0.32	0.55
Country C-Rice, 2008	1%	0.87	0.48	0.79
Country D-Rice, 2011	2%	5.87	1.14	1.15
Country B-Wheat, 2010-11	26%	3.11	0.84	0.92
Country C-Wheat, 2008	37%	0.88	0.45	0.90
Country E-Wheat, 2010-11	25%	7.55	0.59	0.79

Administered prices were generally high compared to the fixed reference prices. Country A registered the highest ratio with its derived administered price equating to almost 26 times its reference price in 2011.[12] Only Country C had reference prices which were lower than administered prices. In turn, administered prices were generally lower than equivalent prices of imports, except for Countries A and D for rice. A similar result came out when administered prices were compared to producer prices.

Figure C graphically shows the wide divergence between Country A's reference price for rice and its administered prices in 2010-12.

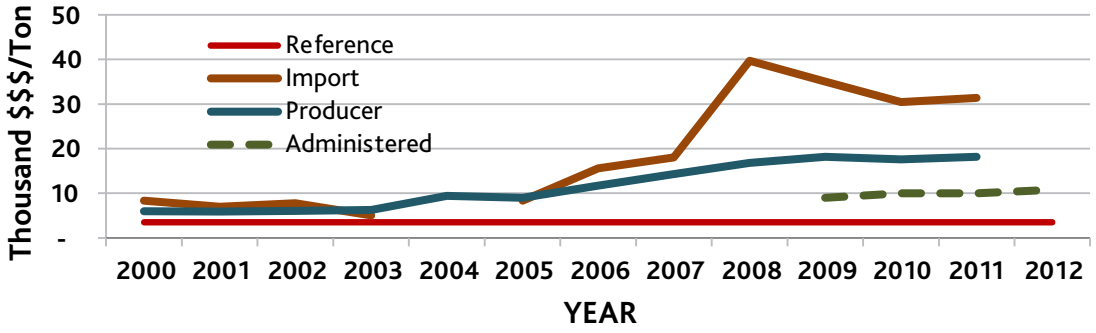
Prices of imports and domestic prices received by rice producers were also significantly higher than reference prices.

Figure C. Reference, Import, Producer and Administered Prices for Rice in Country A, 2000 to 2012



Compared to Country A, Country B's administered prices were only about five times its reference prices for rice in 2009 to 2012. Import and producer prices were generally stable until 2005 as shown in Figure D. Thereafter, they exhibited an upward trend and began to exceed administered prices significantly.

Figure D. Reference, Import, Producer and Administered Prices for Rice in Country B, 2000 to 2012



Country C was the only country whose administered prices substantially fell below the fixed reference price. Figure E shows that producer prices likewise were lower than reference prices for rice from 2000 to 2012. Import prices rose above reference prices starting only in 2008

Figure E. Reference, Import, Producer and Administered Prices for Rice in Country C, 2000 to 2012

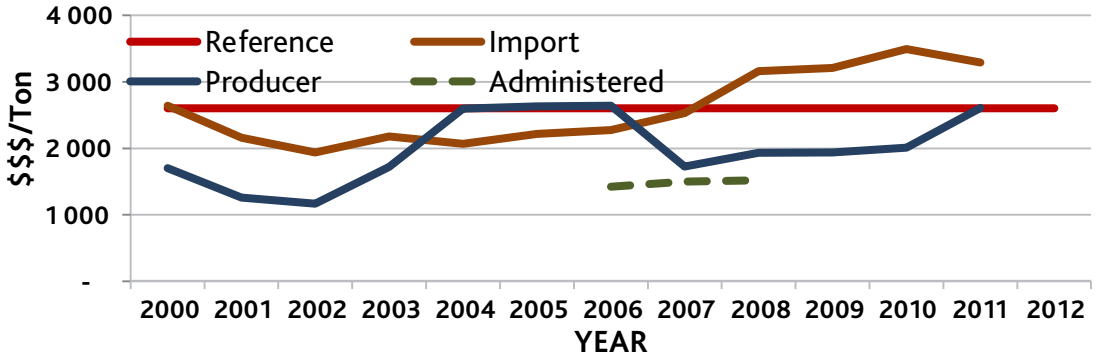
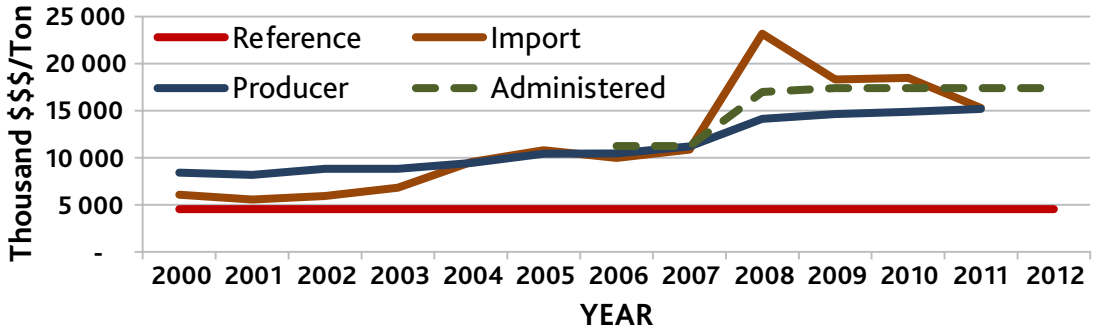


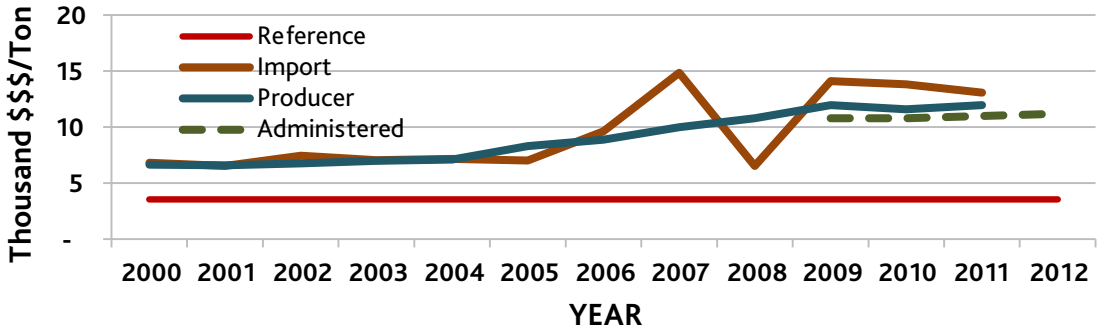
Figure F shows that Country D followed the general trend with its administered prices averaging around six times the reference prices starting in 2008. Domestic prices for producers were lower than administered prices, as were import prices except in 2008 and the years immediately following the 2008 food crisis

Figure F. Reference, Import, Producer and Administered Prices for Rice in the Country D, 2000 to 2012



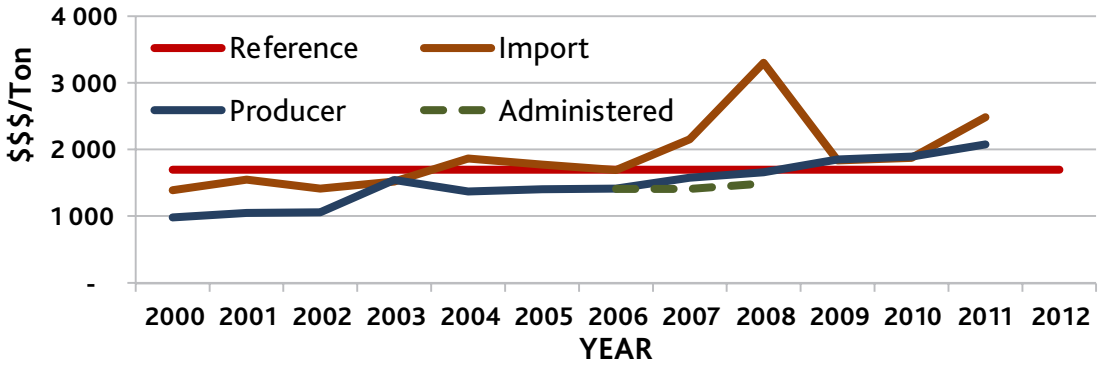
In the case of wheat in Country B, administered prices were three times the rates for reference prices in 2009 to 2012. Import and producer prices were generally lower than administered prices prior to 2009. Since then, they ranged from 10 to 20 percent over administered prices.

Figure G. Reference, Import, Producer and Administered Prices for Wheat in Country B, 2000 to 2012



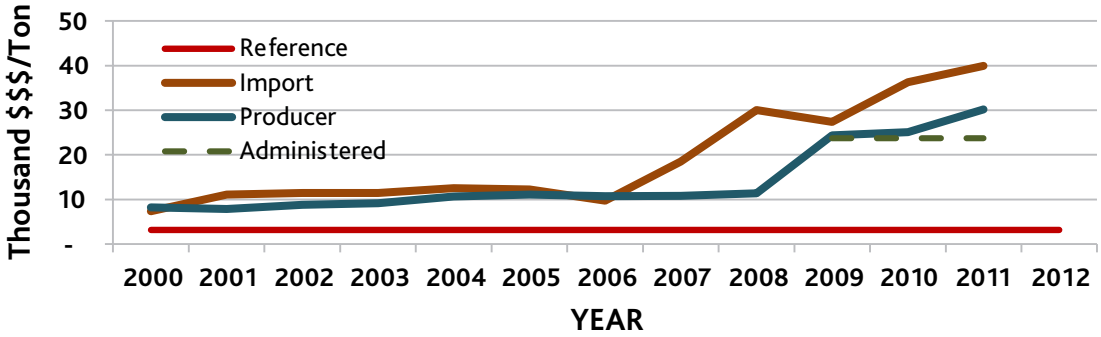
Country C's administered price for wheat fell below its reference prices, as in the case of rice. In 2006 to 2008, procurement prices were about equal to domestic prices. Import prices tended to be higher and spiked upwards to double the administered price during the 2008 international food crisis.

Figure H. Reference, Import, Producer and Administered Prices for Wheat in Country C, 2000 to 2012



Finally, Figure I shows that Country E experienced significant increases in import and producer prices relative to its reference prices starting in 2008. In turn, administered prices were almost eight times higher than reference prices in 2009-2011.

Figure I. Reference, Import, Producer and Administered Prices for Wheat in Country E, 2000 to 2012



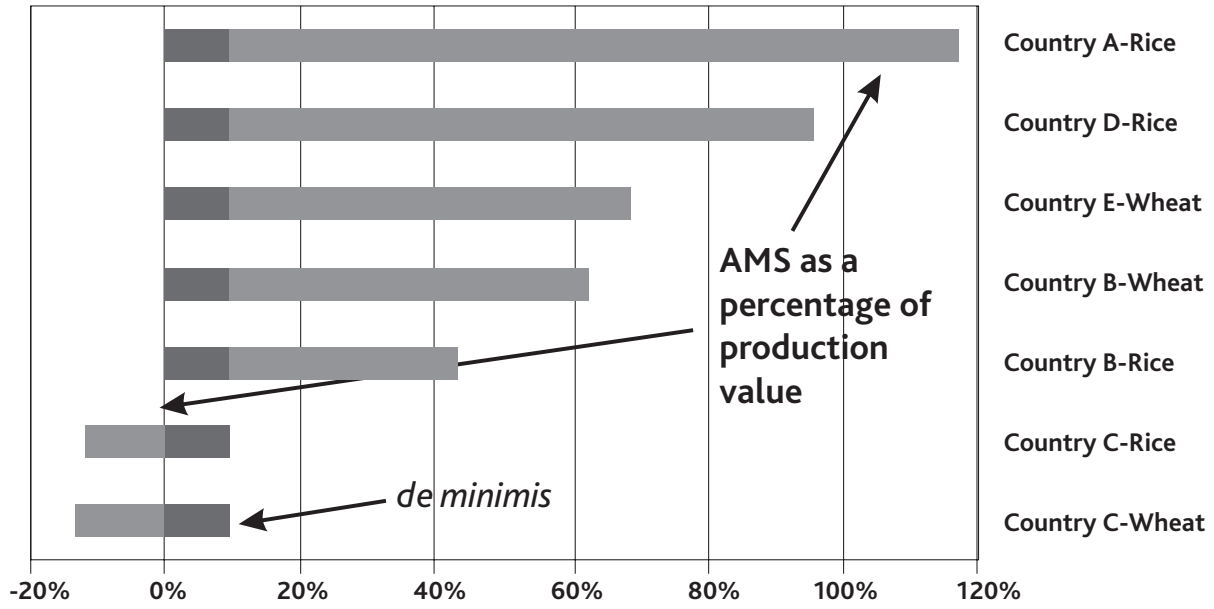
4.1 Simulations Using Variations in Reference Prices

The first set of simulations tested the behavior of AMS in relation to *de minimis* caps using different versions of "external reference prices". The variable settings under various scenarios are outlined in Table 2.[13]

Table 2. Scenarios Using Various Reference Price Settings

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Reference Price	Converted to raw product equivalent	Adjusted using producer price indices	Converted to US dollars	Rolling 3-year average of import prices	Rolling 5-year olympic average of import prices	2000-2002 base period
Administered Price	For raw product	For raw product	For raw product	For raw product	For raw product	For raw product
Eligible Production	Total production volume	Total production volume	Total production volume	Total production volume	Total production volume	Total production volume
Value of Production	Total production value	Total production value	Converted to US dollars	Total production value	Total production value	Total production value

Figure J: Base Scenario Results



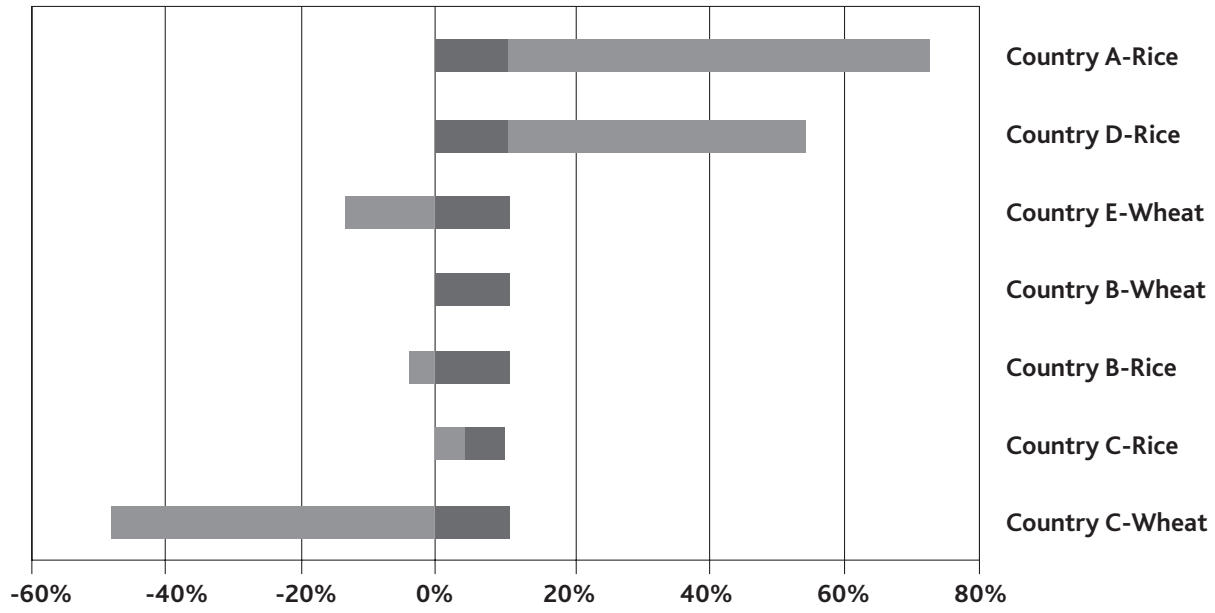
Scenario 1 represents the base setting and strictly follows the provisions of Annex 3. The only major adjustment was to convert the reference price, if necessary, to its equivalent for the raw form of the product using applicable extraction factors. Under this base scenario, all countries except Country C exhibited AMS which were well in excess of their product-specific *de minimis* caps. Figure J shows that Country A, whose administered price for rice was more than 26 times its reference price, came out with an AMS percentage which was more than ten times over the allowable *de minimis* limit. Excluding Country C, Country B had the lowest AMS percentage of 43 percent which nevertheless was still four times its *de minimis* allowance.

These results confirm apprehensions that many of the countries with price support programs will breach their caps and be vulnerable to disputes if the formula for computing AMS is applied literally and strictly. Country C, even though it had a lower *de minimis* cap of 8.5 percent, was the only country that complied with the rule. In fact, it consistently ended up with negative AMS because its administered prices for both rice and wheat were lower than the corresponding reference prices.

An analysis of producer prices for rice and wheat for all countries excluding Country C indicates that rice prices effectively doubled in 2000 in comparison to prices in 1991, which is the year nearest to the 1986-88 base period for which data is available in FAOSTAT. By 2011, prices had grown to an average of six times their comparable levels in 1991. Since administered prices often follow the trend in market prices for producers, the increasing gap between administered and reference prices is not surprising. Country C did not follow this pattern because its prices in 2000 were lower than 1998 base period rates by about 20 percent. Thereafter, rice prices increased only slightly to 113 percent while wheat prices grew to 169 percent of base rates by 2011.

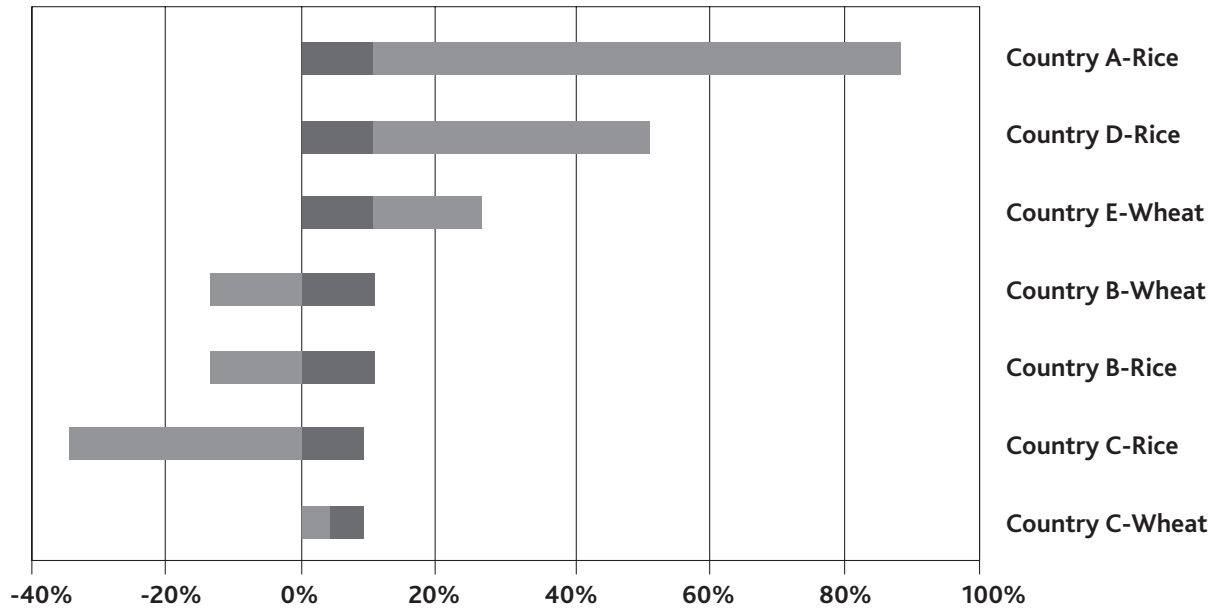
Countries B and E gained significantly if the fixed reference prices were adjusted using producer price indices under Scenario 2. Figure K shows that their AMSs in fact became negative since their references prices rose above administered prices after the adjustment. Country C's AMS for rice increased but remained well within its *de minimis* limits. On the other hand, Countries A and D continued to significantly exceed their caps even though their AMS percentages went down due to the adjustment.

Figure K. Scenario 2 (Producer Price Indices)



If all prices – reference, administered and producer – were converted to US dollars as in Scenario 3, Countries B and C (for rice) exhibited negative AMS while Country E's AMS for wheat turned around from -14 percent of production value under Scenario 2 to almost three times its *de minimis* allowance. Figure L shows that there were insignificant changes for Countries A and D which remained well above their caps.

Figure L. Scenario 3 (US Dollars)



Interestingly, the use of 3-year rolling averages of import prices as reference prices under Scenario 4 resulted in negative AMS for almost all countries and commodities covered by the study. This implies that the prices at which the public stockholding programs purchased from producers were generally lower than the corresponding historical prices of imports. Figure M shows that the most gains were garnered by Country B whose AMS for rice went down to -138 percent of the value of domestic production. Coincidentally, prices of rice imports of Country B during the immediately preceding three years averaged 3.7 times the prevailing administered price. The only outlier in this Scenario was Country A, whose AMS continued to hover above its *de minimis* cap by 27 percentage points.

Figure M. Scenario 4 (3-Year Import Price Average)

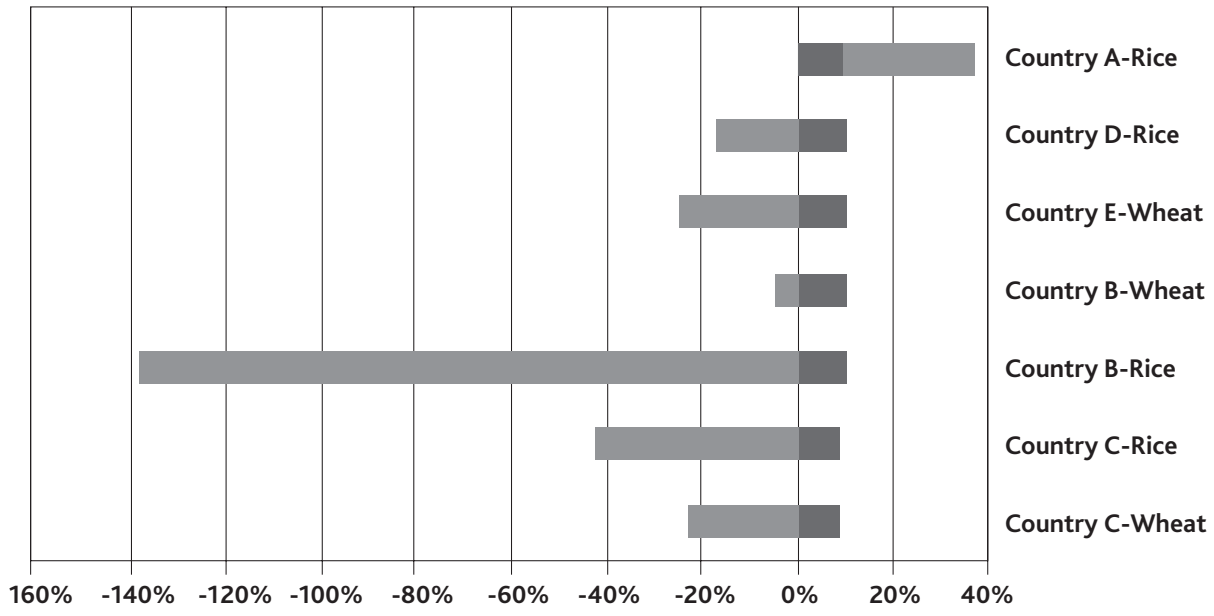


Figure N. Scenario 5 (5-Yr Olympic Price Average)

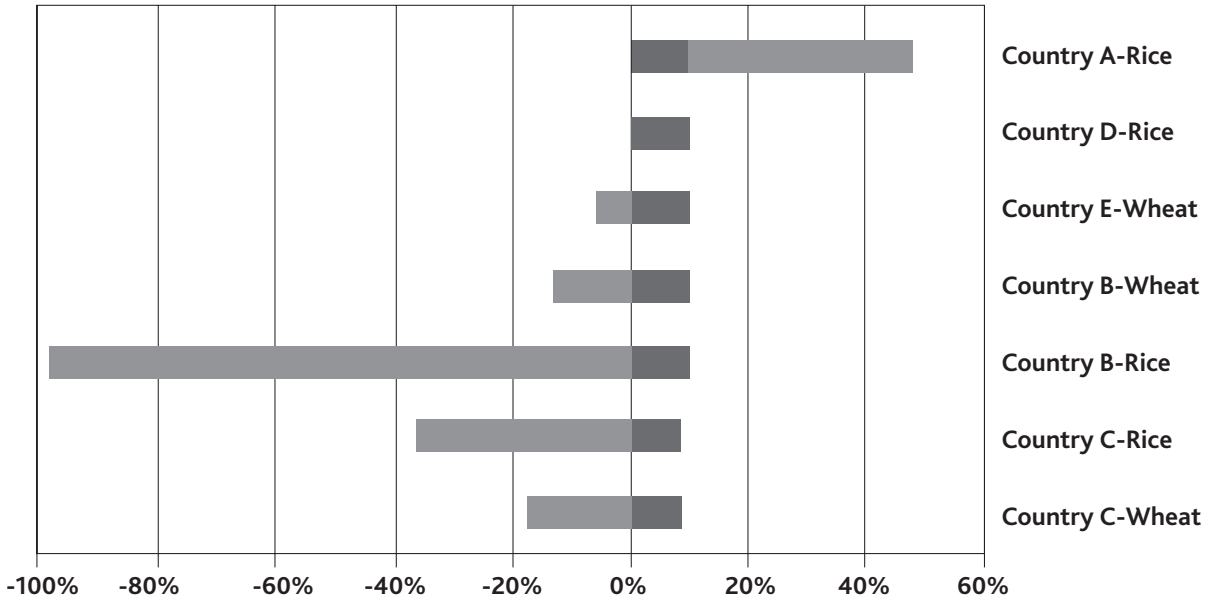
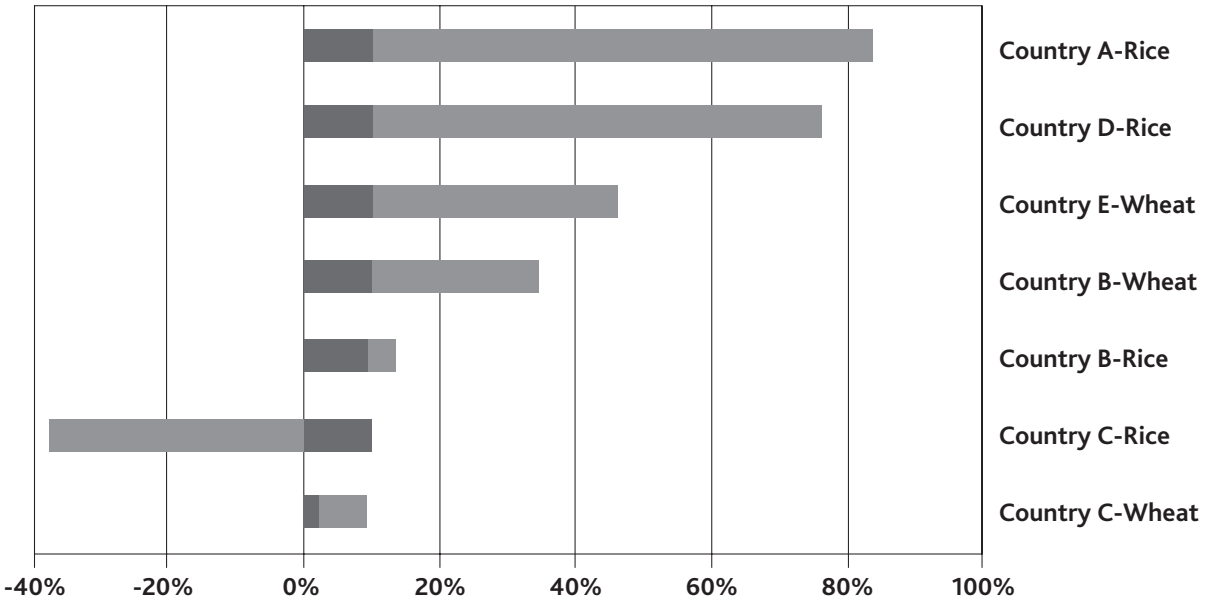


Figure O. Scenario 6 (Rebasing to 2000-02)



Similar, although less dramatic, results came out in Scenario 5 where 5-year rolling Olympic averages were applied as reference prices in lieu of 3-year averages. Figure N shows that the AMS for most countries increased but remained negative. Country D crept to within its 10 percent threshold, leaving it with almost no room to increase its buying prices. In turn, Country A's breach increased. These results imply that import prices have generally followed a linear growth pattern and have not been extraordinarily volatile thus making 5-year Olympic averages generally lower than 3-year averages.

Scenario 6 rebased the reference price and pegged it to the average price of imports in 2000 to 2002. Figure O shows that although the AMS for almost all countries and products declined as a result of this adjustment, all countries except Country C still went over their *de minimis* caps as in Scenario 1. Interestingly, Country C's AMS as a percentage of production value for wheat became positive at 2 percent although this was still below limits.

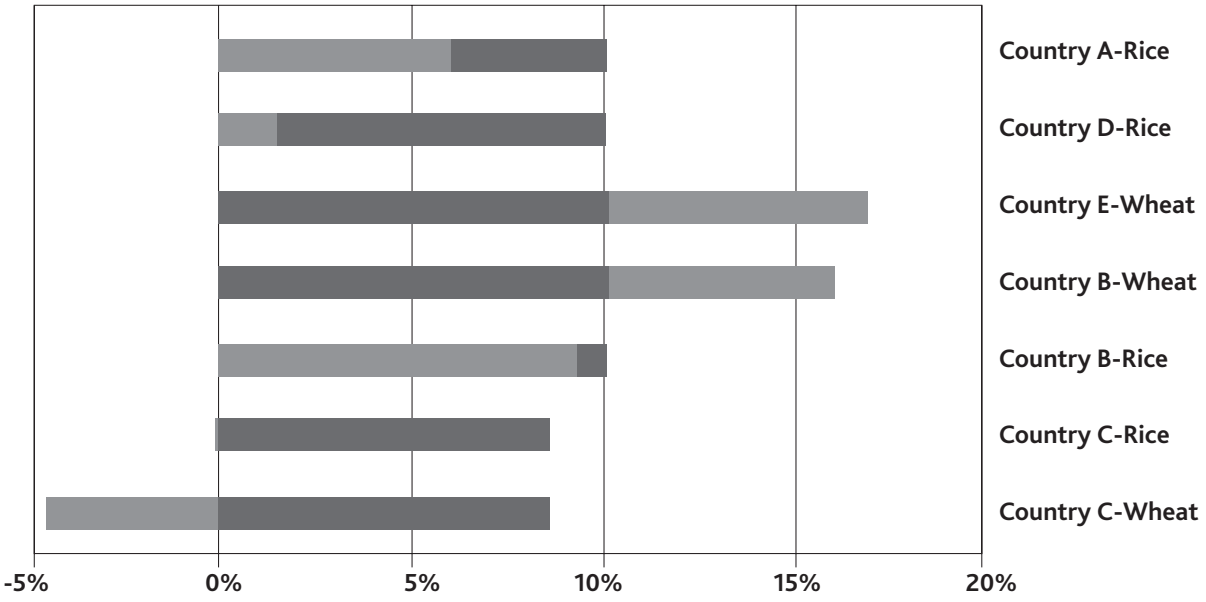
4.2 Simulations Using Variations in "Eligible Production

The next set of simulations tested the behavior of AMS using varying interpretations of what constitutes "eligible" production, as outlined in Table 3.[14] As indicated earlier, Scenario 1 adopted the interpretation that all production should be considered "eligible" if there are no expressed limits to what can be procured. Such an interpretation coupled with a strict application of the base reference price led to major breaches of *de minimis* caps for all countries except Country C.

Table 3. Scenarios Using Various Settings for "Eligible" Productions

Parameter	SCENARIO 1	SCENARIO 7	SCENARIO 8
Reference Price	Raw product equivalent	Same as in Scenario 1	Same as in Scenario 1
Administered Price	Raw product equivalent	Same as in Scenario 1	Same as in Scenario 1
Eligible Production	Total production volume	Actual procurement volume	Marketable surplus
Value of Production	Total production value	Same as in Scenario 1	Same as in Scenario 1

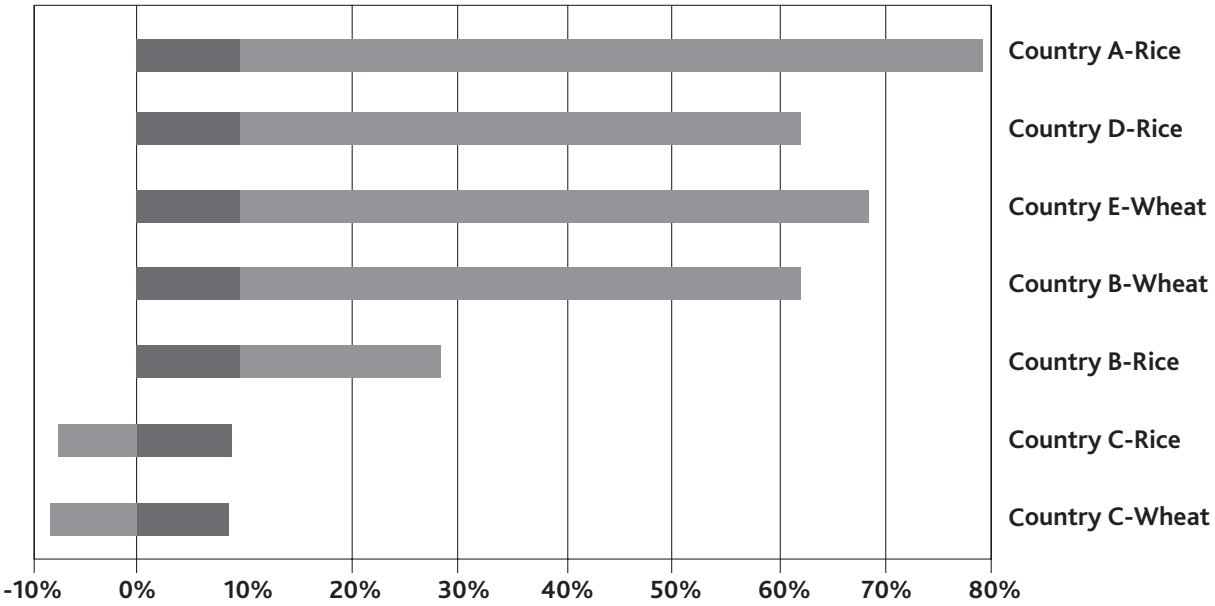
Figure P. Scenario 7 (Actual Procurement Volume)



If only actual procurement volumes were used as in Scenario 7, Country A's rice program became compliant with the *de minimis* rule for the first time. Figure P also shows that Country D's AMS dropped from 95 percent under the base scenario to only 2 percent of the value of its rice production in 2011. In the case of Country C which had relatively low administered prices, the diminution of "eligible" production had the reverse effect of reducing its negative AMS although the country remained safely below its *de minimis*. The lower administered prices also intriguingly did not deter Country C from absorbing more than one-third of wheat production in 2008. Only Countries B and E, because of their relatively large procurement volumes, continued to breach their *de minimis* thresholds for wheat under this scenario.

Scenario 8 equated "eligible" production to the portion of output that was sold by farmers to local markets. The results from this adjustment essentially mimicked the outcomes under Scenario 1 with all countries except Country C continuing to breach their *de minimis* caps by large margins even though their AMS declined.

Figure Q. Scenario 8 (Marketable Surplus)



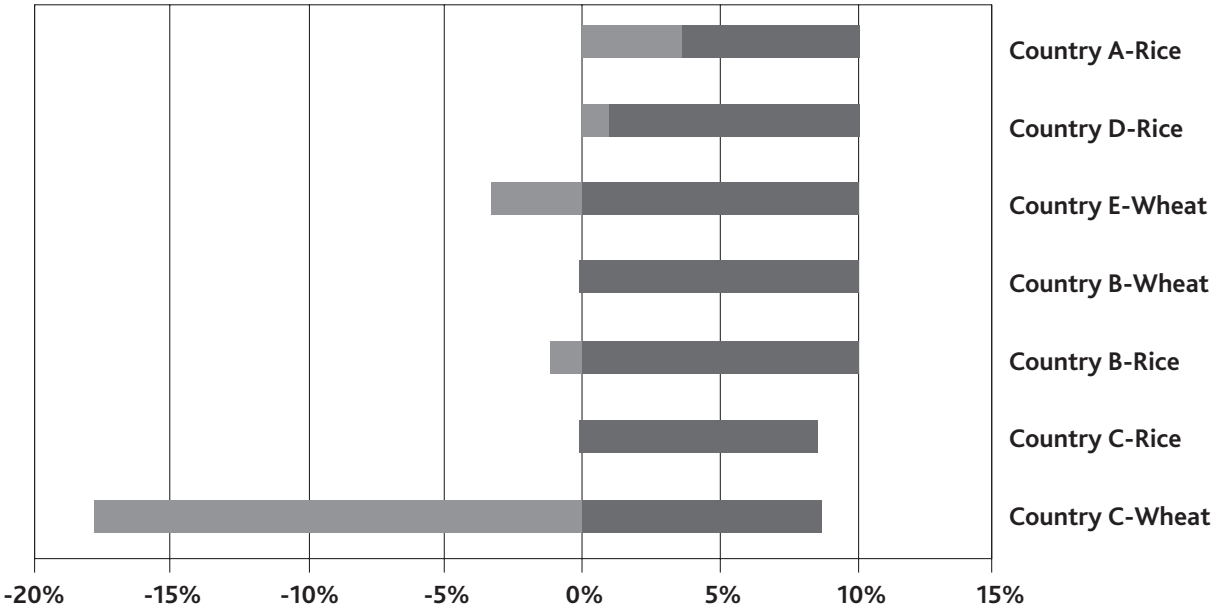
4.3 Simulations Using Combinations of Parameter Settings

The following simulations quantify the effects of combinations of adjustments in multiple variables in the AMS formula. Table 4 outlines the parameter settings in the first set of simulations.[15]

Table 4. Scenarios Using Combinations of Parameter Settings (Set A)

Parameter	Scenario 1	Scenario 9	Scenario 10	Scenario 11	Scenario 12
Reference Price	Converted to raw product equivalent	Use producer price indices (Scenario 2)	Use producer price indices (Scenario 2)	Convert to US dollars (Scenario 3)	Convert to US dollars (Scenario 3)
Administered Price	Raw product equivalent	Same as Scenario 1	Same as Scenario 1	Prices in US dollars	Prices in US dollars
Eligible Production	Total production volume	Actual procurement volume	Marketable surplus	Actual procure-ment volume	Marketable surplus
Value of Production	Total production value	Same as Scenario 1	Same as Scenario 1	Converted to USD	Converted to USD

Figure R. Scenario 9 (Producer Price Indices plus Actual Procurement Volumes)



Scenario 9 shows that the AMS for all commodities fell comfortably below their corresponding *de minimis* thresholds if the base reference price was adjusted using producer price indices and if "eligible" production was simultaneously set to actual procurement volume. Rice for Countries A and D was the biggest gainer from this combined adjustment. Country A, which registered the highest AMS percentage in the base scenario, came out with an AMS which was comfortably six percentage points below its *de minimis* for rice.

Similar results were generated when reference, administered and producer prices were converted to US dollars and only actual procurement volumes were considered in the computations, as in Scenario 11. Figure S shows that the AMS for wheat in Countries C and E inched upwards although, as a percentage of production value, they remained well below *de minimis* thresholds.

Figure S. Scenario 11 (US Dollars plus Actual Procurement Volumes)

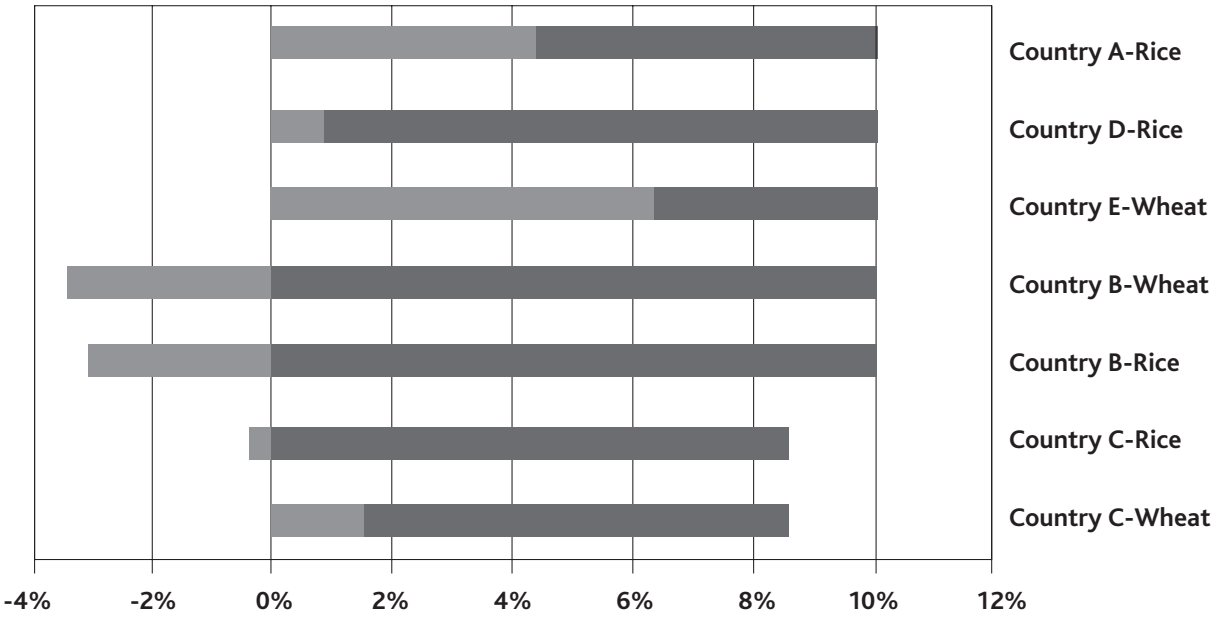


Figure T. Scenario 10 (Producer Price Indices plus Marketable Surplus)

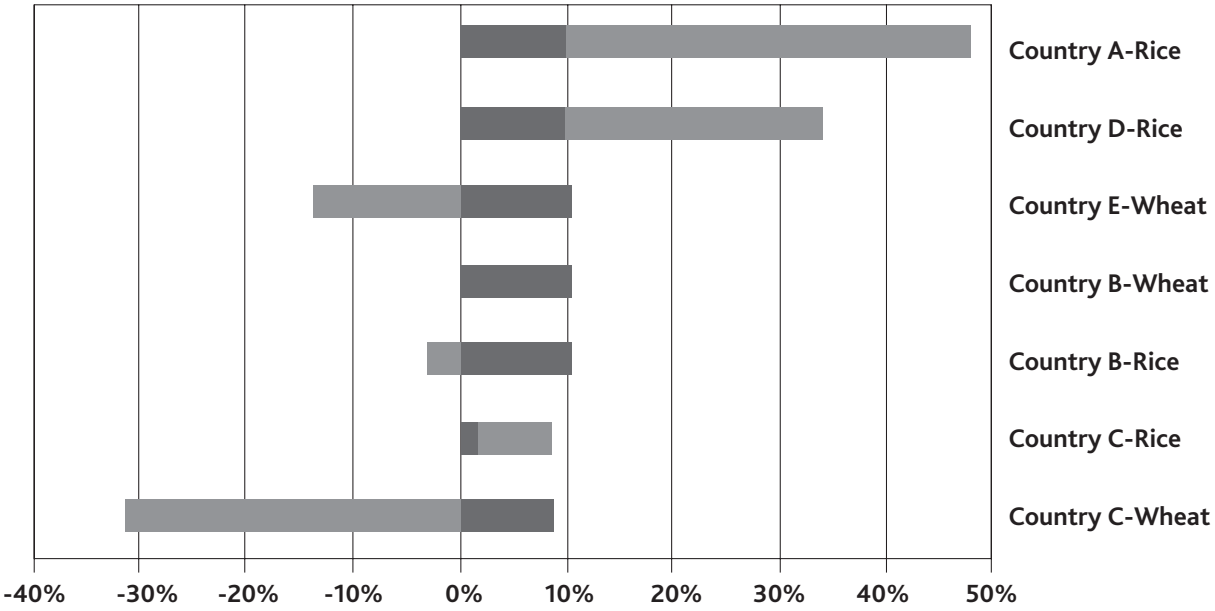
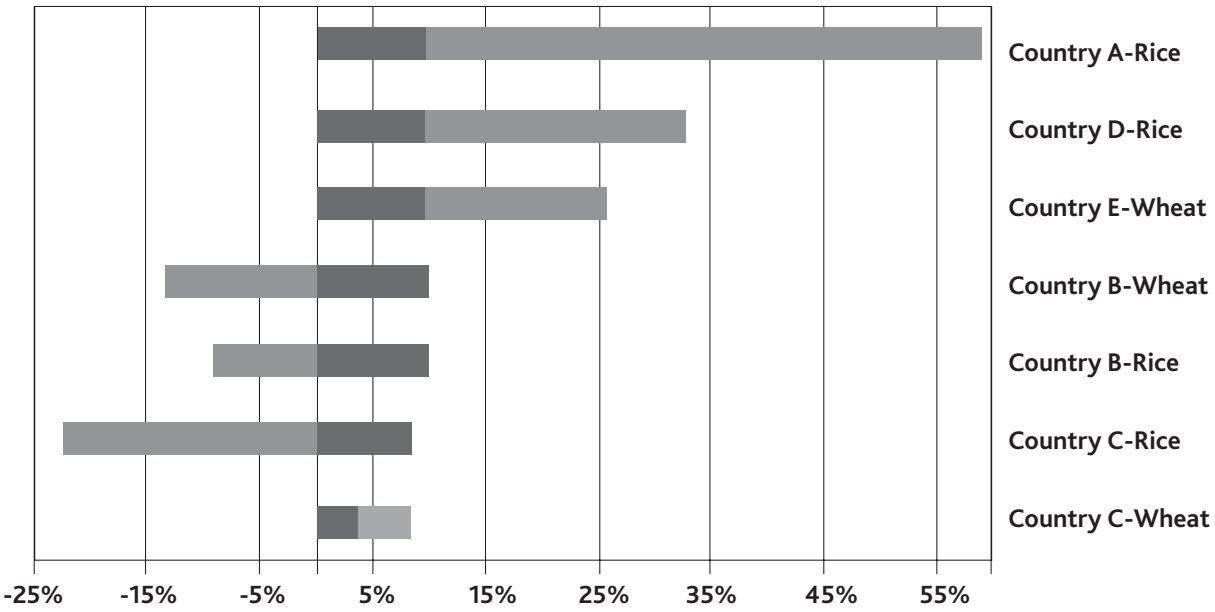


Figure U. Scenario 12 (US Dollars plus Marketable Surplus)



In Scenario 10 (Figure T), Countries A and D reverted to problematic situations if marketable surplus was used instead of actual procurement value even if reference prices were adjusted using producer price indices. In turn, Country E regressed into a breach in Scenario 12 (Figure U) if marketable production was applied instead of actual procurement volumes together with conversions of prices to US dollars. The effect of these combined parameter settings were mixed for the other countries and commodities although all of them remained at safe levels.

Table 5 lists down the combinations of parameter settings in the last batch of scenarios.[16]

Table 5. Scenarios Using Combinations of Parameter Settings (Set B)

Parameter	Scenario 1	Scenario 13	Scenario 14	Scenario 15	Scenario 16
Reference Price	Converted to raw product equivalent	3-year rolling average of import prices	3-year rolling average of import prices	5-year rolling olympic average of import prices	5-year rolling olympic average of import prices
Administered Price	Raw product equivalent	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1
Eligible Production	Total production volume	Actual procure-ment volume	Marketable surplus	Actual procure-ment volume	Marketable surplus
Value of Production	Total production value	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1

All countries and commodities were able to comply with their AMS obligations if only actual procurement volumes were applied together with either 3-year or 5-year Olympic averages of import prices, as in Scenarios 13 (Figure V) and 15 (Figure X). In fact, AMS as a percentage of production value was either zero or negative for all countries except Country A which nevertheless registered a relatively low 2 percent rate. On the other hand, Figures W and Y show that Country A reverted to a breach status if marketable surplus was deemed to be the proper figure for "eligible" production, more so if 5-year Olympic, instead of 3-year, averages of import prices were applied. All other countries and commodities either had negative AMS or were well within their *de minimis* in Scenarios 14 and 16.

Figure V. Scenario 13 (3-Yr Average Import Price plus Actual Procurement)

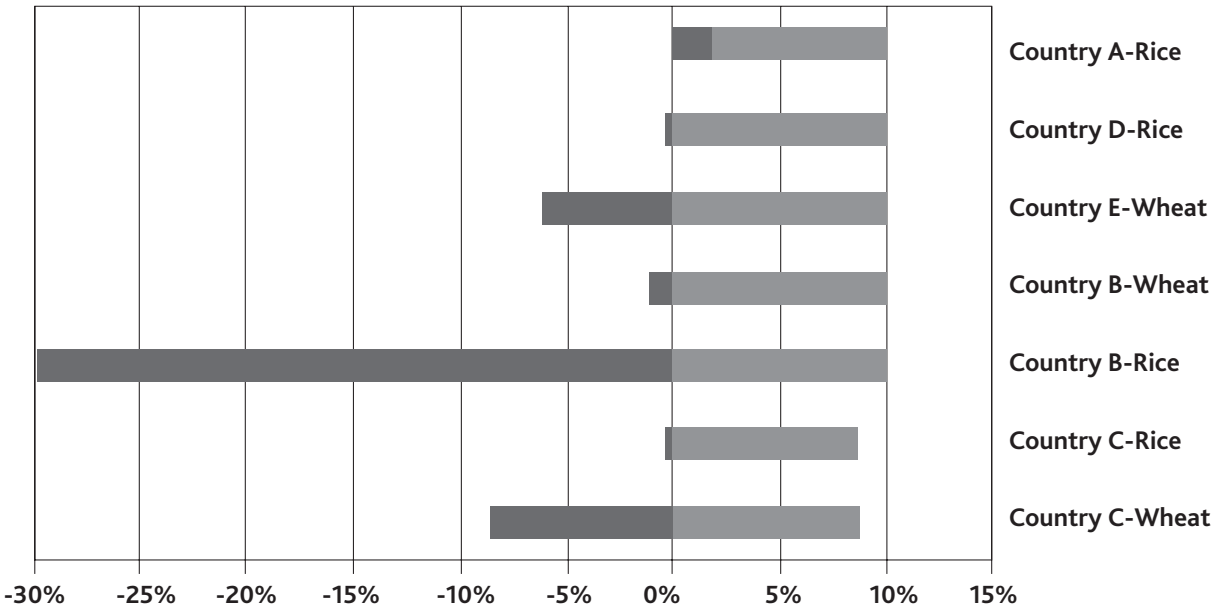


Figure W. Scenario 14 (3-Yr Average Import Price plus Marketable Surplus)

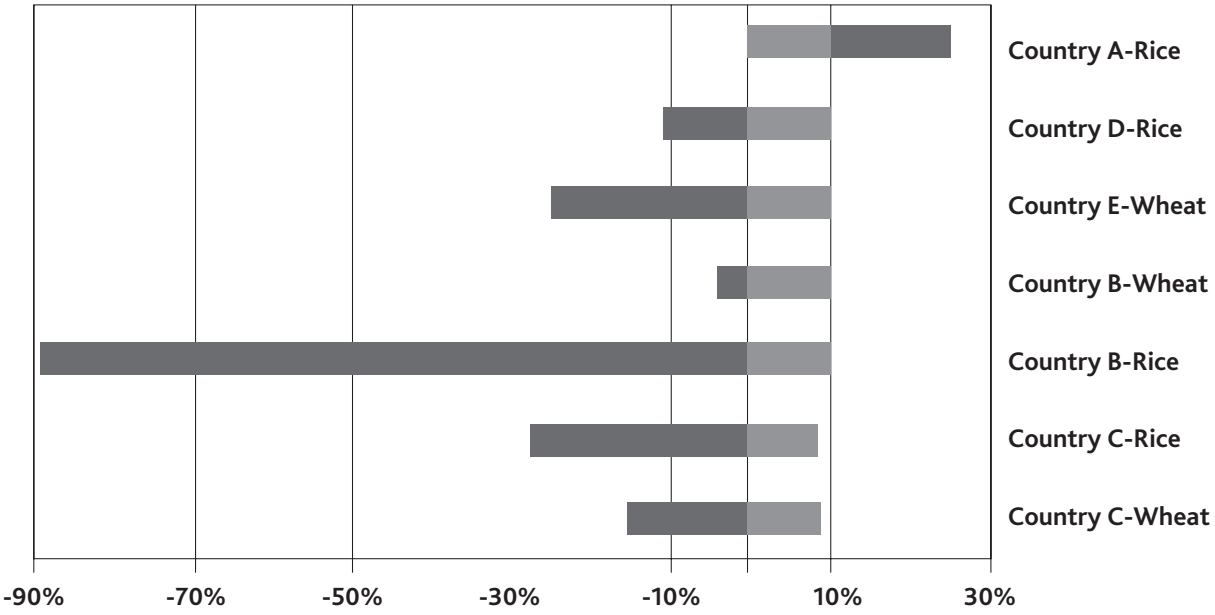


Figure X. Scenario 15 (5-Yr Olympic Average Import Price plus Actual Procurement)

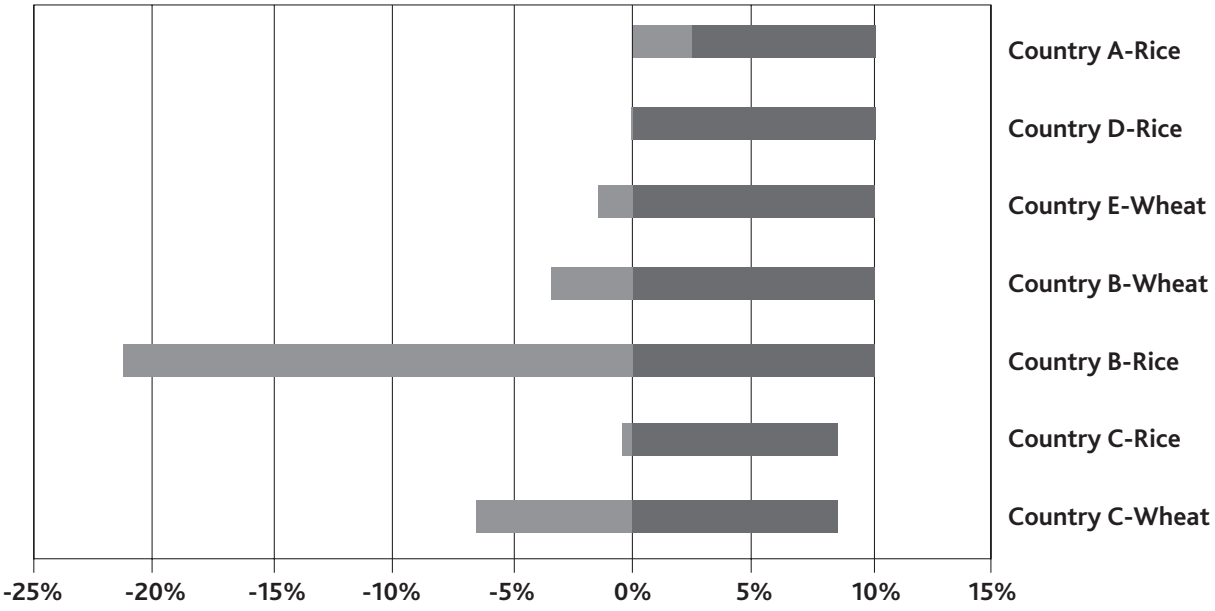
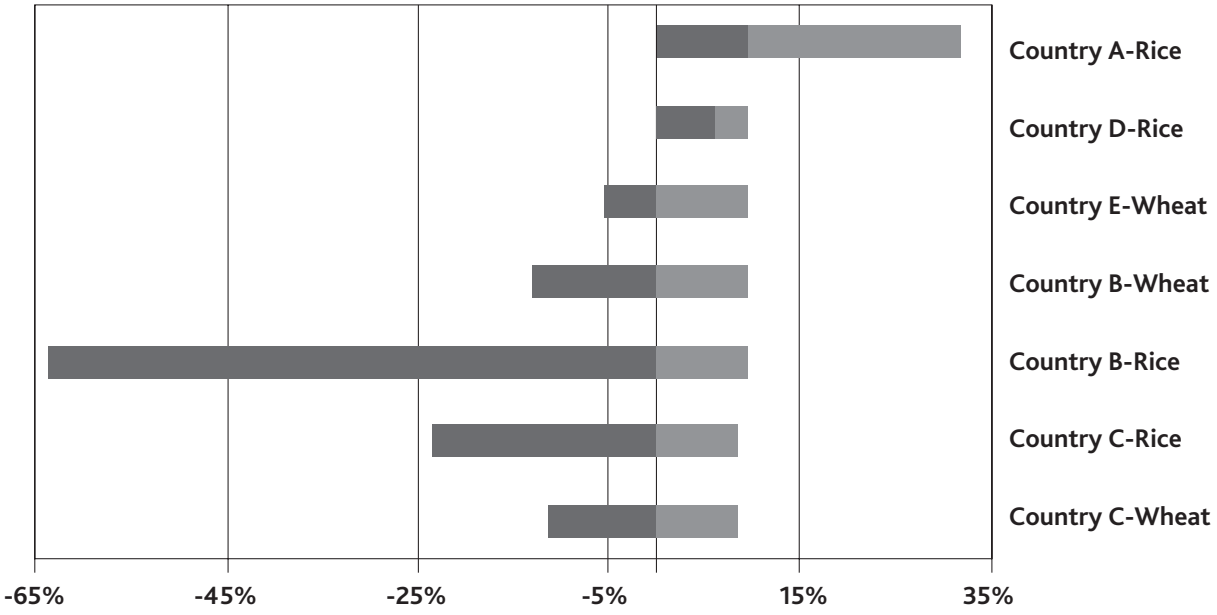


Figure Y. Scenario 16 (5-Yr Olympic Average Import Price plus Marketable Surplus)



4.4 Simulations for Administered Price Settings

The AoA did not prescribe limits on administered prices. However, excessively high buying prices would invariably expand the gap with reference prices and could lead to a breach of *de minimis* allowances. The following tables show the percentage by which administered prices could be increased or should be decreased in order to comply with *de minimis* rules under the various scenarios simulated above.

Table 6. Required Changes in Administered Prices Using Single Parameter Changes

PARAMETER	1	2	3	4	5	6	7	8
Reference Price	Base ref price	Prod Indices	US Dollar	3-year Average	5-year Average	2000-02 base	Base ref price	Base ref price
Administered Price			US Dollar					
Eligible Production	Total	Total	Total	Total	Total	Total	Procured	Marketable
Value of Production	Total	Total	US Dollar	Total	Total	Total	Total	Total
Country/ Product/ Year	**Percent Change in Administered Price Required to Equal *de minimis* Cap**							
Country A-Rice, 2011	-88%	-50%	-63%	-22%	-31%	-61%	66%	-84%
Country B-Rice, 2010-11	-60%	27%	43%	269%	196%	-5%	6%	-50%
Country C-Rice, 2008	26%	7%	54%	65%	57%	59%	1114%	32%
Country D-Rice, 2011	-74%	-37%	-35%	24%	0%	-58%	446%	-70%
Country B-Wheat, 2010-11	-57%	11%	25%	15%	25%	-26%	-26%	-57%
Country C-Wheat, 2008	23%	63%	5%	35%	29%	7%	39%	29%
Country E-Wheat, 2010-11	-74%	30%	-20%	44%	19%	-45%	-35%	-74%

Table 6 shows the results when parameters are changed individually. Under base scenario settings, Countries A, B and D would need to reduce their administered prices for rice by 60 to 88 percent, while the buying prices of Countries B and E for wheat will have to be cut by 57 to 74 percent if they were to comply with the *de minimis* rule. Similarly hefty cutbacks in administered prices would have to be applied for these countries and commodities under Scenarios 6 (using reference prices rebased to 2000-02) and Scenario 8 (using marketable production).

Country B gained additional leeway to raise its administered prices for rice and wheat if references prices were adjusted either using producer price indices or rolling averages of historical import prices or converting prices to US dollars. All countries except Countries B and E for wheat acquired a similar advantage when procured volumes were deemed "eligible" production. Country D also benefited from the application of rolling averages of import prices. Country C stood out as the only country who could afford to raise its reference prices under all scenarios.

Table 7. Required Changes in Administered Prices Using Combined Parameter Changes

Parameter	**1**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Reference Price	Base ref price	Prod Indices	Prod Indices	US Dollar	US Dollar	3-year average	3-year average	5-yr average	5-yr average
Administered Price				US Dollar	US Dollar				
Eligible Production	Total	Procured	Marketable	Procured	Marketable	Procured	Marketable	Procured	Marketable
Value of Production	Total	Total	Total	US Dollar	US Dollar	Total	Total	Total	Total
Country/ Product/ Year	**Percent Change in Administered Price Required to Equal *de minimis* Cap**								
Country A-Rice, 2011	-88%	103%	-46%	90%	-59%	131%	-18%	122%	-27%
Country B-Rice, 2010-11	-60%	93%	37%	109%	53%	334%	278%	262%	206%
Country C-Rice, 2008	26%	1095%	14%	1142%	61%	1153%	71%	1145%	64%
Country D-Rice, 2011	-74%	483%	-32%	485%	-31%	544%	28%	520%	5%
Country B-Wheat, 2010-11	-57%	42%	11%	56%	25%	46%	15%	56%	25%
Country C-Wheat, 2008	23%	79%	68%	21%	10%	51%	40%	45%	34%
Country E-Wheat, 2010-11	-74%	69%	30%	19%	-20%	83%	44%	58%	19%

As indicated in earlier simulations, the only scenarios where all countries and commodities fell below their *de minimis* and therefore could afford to raise administered prices were when only actual procurement volumes were deemed "eligible". Table 7 shows that this outcome would be achieved if reference prices were simultaneously adjusted to correspond to either 3-year or 5-year Olympic averages of historical import prices or adjusted using producer price indices or converted to US dollars. In turn, Country D would have to lower its buying prices in scenarios where marketable production was applied and references prices were adjusted using either producer price indices or US dollar conversions. Country A remained to be the most vulnerable under most scenarios while Country C had the widest leverage in adjusting its administered prices. In some settings, Country C could raise its buying prices more than 11 times for rice and still keep within its *de minimis* limits.

4.5 Simulations to Determine "Eligible" Production Settings that Will Comply with the de minimis Rule

In the Korea beef case alluded to earlier, the Appellate Body opined that it is the portion of total production which is declared to be "eligible to receive the benefit of the price support" which should be applied as "eligible" production in the AMS computations. This portion may not necessarily be total production or even marketable surplus, nor should it be limited to the volume actually procured through the price support program.

Following this line of thinking, the final set of simulations calculates the proportion of total production that can be declared as "eligible" under price support programs which will make the product-specific AMS equal to the prescribed *de minimis* of each product. These computations are made using various settings for reference prices and the results are summarized in Table 8.

Table 8. "Eligible" Production Settings That Will Comply with *de minimis* Rules

PARAMETER		1	2	3	4	5	6
Reference Price		Base ref price	Prod Indices	US Dollars	3-year Average	5-year Average	2000-2002 base
Administered Price				US Dollars			
Value of Production		Total	Total	US Dollars	Total	Total	Total
Country/Product/Year	**Current**	**"Eligible" Production (as % of Total Production) to Equal *De Minimis***					
Country A-Rice, 2011	5%	9%	14%	12%	27%	21%	12%
Country B-Rice, 2010-11	22%	23%	-205%	-73%	-7%	-10%	79%
Country C-Rice, 2008	1%	-86%	350%	-29%	-24%	-27%	-27%
Country D-Rice, 2011	2%	11%	19%	20%	-59%	100%	13%
Country B-Wheat, 2010-11	26%	16%	8254%	-76%	-247%	-79%	29%
Country C-Wheat, 2008	37%	-80%	-21%	247%	-43%	-58%	408%
Country E-Wheat, 2010-11	25%	15%	-72%	39%	-40%	-192%	22%

Under the baseline scenario where no adjustments are made for reference prices, a majority of the countries can set their "eligible" production to a setting which is higher than current procurement levels. Country A for example which breached its *de minimis* in most of the previous simulations could set its "eligible" production to 9 percent of total production and end up exactly at the 10 percent *de minimis* level for its product-specific AMS for rice. In effect, it could almost double its actual procurement and still comply with AMS rules. Similarly, Country D could expand its price support program to cover 11 percent of total production from the current actual procurement level of only 2 percent.

Country C had the luxury of setting "eligible" production to any level since the negative gap between its administered and reference prices would always make its AMS negative. Country B and E however would have to set their "eligible" production to approximately half of current procurement levels for wheat if they were to avoid a breach of their *de minimis*.

Adjusting reference prices either by applying producer price indices, or converting values to US dollars, or setting them to 3 or 5-year averages of import prices, or rebasing them to a more current period, had the effect of giving all the countries additional leeway to increase their "eligible" production when compared to the base scenario. In almost all these scenarios, allowable levels of "eligible" production were higher than actual procurement percentages, except for wheat in Country E which would still have to reduce its procurement from 25 percent of production to a maximum of 22 percent under Scenario 6.

5. GENERAL OBSERVATIONS

The simulations confirm the apprehensions of the proponents of the public stockholding proposal that a literal and strict application of the AMS formula for market support price programs that involve administered prices could lead most of the developing countries included in the study to breach their *de minimis* allowances for product-specific AMS. Only Country C was able to consistently comply with the *de minimis* rule despite agreeing to a lower threshold primarily because its late accession allowed it to adopt a more current and relatively high reference price. Its administered prices were also comparatively low.

All other countries had administered prices significantly exceeding their base period reference prices and were therefore vulnerable to breaches if the price gaps were large and "eligible" production was pegged to all or most of local production. Among the various proposals for adjusting reference prices, the use of 3-year rolling averages of import prices appeared to provide the widest latitude for price support programs for the countries covered by the simulation. Using a 5-year Olympic average gave similar, although less significant outcomes. In both scenarios however, Country A remained in breach of its *de minimis* caps. This was because of the unusually large gap between its reference and administered prices which could not be adequately offset by the adjustments in reference prices.

Adjusting reference prices for inflation, whether by using producer price indices or converting prices and monetary values to US dollars, generally reduced AMS percentages but were not sufficient in allowing some countries to comply with the *de minimis* rule. In these scenarios, rice from Countries A and D registered exceedingly high AMS despite the fact that procurement volumes in these countries were comparatively low. Only when "eligible" production was set to actual procurement volume instead of total or marketable production did the two countries comply with the *de minimis* rule. However, Countries B and E exceeded their AMS caps for wheat if only the "eligible" production variable was tweaked.

The only scenarios where all countries and commodities registered AMS within their *de minimis* limits was when "eligible" production was equated to actual procurement volume and reference prices were adjusted simultaneously either by applying producer price indices, converting prices to US dollars or using 3-year or 5-year rolling average prices of imports. Among these various options, using the 3-year average enabled the most number of countries and commodities to comply with *de minimis* caps. Adjusting reference prices while maintaining marketable surplus or total production as "eligible" production produced similar results for some countries and commodities but still left a few in serious breach of their AMS caps.

Simulations applying the rulings in the Korea beef case show that most countries could procure significantly more than what they are currently purchasing if they limit the portion or percentage of total production that is "eligible" for price support to a certain level. Such a unilateral move will not require any tweaking of AoA rules and may provide sufficient leeway for some countries to operate their public stockholding programs without fear of breaching *de minimis* rules.

6. RECOMMENDATIONS

Given these findings, the most feasible and least contentious way to resolve the public stockholding issue is to apply the Korea beef case ruling which opened the possibility of legally setting "eligible" production to a level below "total" production in certain instances, such as when the price support programs is confined to specific disadvantaged regions or the volume to be procured by the public stockholding program is not open-ended but formally fixed in advance, such as by legislation.[17] The simulations show that the levels of "eligible" production that will enable countries to comply with their *de minimis* caps are generally higher than current procurement levels and would therefore enable them to even increase their absorption of local products without bringing them into breach of AMS rules. More important, there will be no need to amend or reinterpret AoA rules. All that will be needed will be a unilateral move on the part of countries to officially set their levels of "eligible" production and design their price support programs in such a way that the impact is confined to targeted sectors and areas. Of course, they will also have to ensure that actual levels of procurement do not exceed the official limits.

In one of the countries studied for example, selected farmers in target provinces are given a fixed number of colored bags; only stocks delivered using these bags are eligible to receive the administered price. In another country, the procurement prices and the specific production areas which will be able to avail of administered prices are officially announced at the start of the planting season. Producers are also required to bring their stocks to designated delivery points. In these instances, the government could estimate in advance the proportion of local produce that it will absorb through its price support programs and notify this percentage as the "eligible" production for a given year and product.

Not all concerns of course may be accommodated by this option. Countries which currently absorb a large proportion of local produce may end up with a level of "eligible" production that will require them to downscale their procurement operations to significantly lower, and probably politically unpopular, levels. In these instances, there may be no other option but to change some AoA rules, or reinterpret them, to accommodate their concerns in a way that would also not unduly alienate other negotiating parties in the WTO. Otherwise, as the simulations show, the current formula could put these countries well beyond their *de minimis* limits for certain commodities. Their predicament will foreseeably get worse if they increase their support prices in the future.

Although only a few developing countries apparently operate market price support programs for their farmers at present and are covered by *de minimis* caps, their current and future concerns will need to be adequately addressed if a "permanent" solution is to be reached. Even countries which currently do not implement such programs may have a stake in the discussions if they want to preserve their options to introduce similar schemes in the future.

The main arguments for and against the public stockholding programs that involve administered prices are quite clear and well understood. Developing country proponents contend that trade rules must not unreasonably constrain their capacity to provide support to their producers who are mostly small-scale, indigent and resource-poor. These programs are at the same time intended to ensure the supply of basic staples mainly for the underprivileged sectors of their society. In turn, some countries, both developed and developing, have expressed concerns that giving free license to countries to provide increasing amounts of distortive subsidies to their producers will be construed as a retrogression in the reform program. Some of these distortive programs of developing countries could even end up harming their co-developing countries. Critics add that changing rules in how AMS is computed will instigate moves to amend many other modalities

that were painstakingly negotiated in the Uruguay Round and could very well complicate negotiations for a Doha round agreement.

With these considerations in mind, and on the basis of the simulation results, the components of a possible "permanent" solution (excluding the "eligible" production option described above) can be grouped into three categories; namely, those that would require minimal or no changes in rules and would therefore meet the least objections, those that could be particularly contentious and may be difficult to resolve, and those where mutually-acceptable compromise might be achievable.

6.1 Potentially Least Objectionable Options

Although prices and monetary values in AMS calculations are normally assumed to be denominated in local currency, there is no explicit prohibition in the AoA against using other currencies such as the US dollar for price and other valuations. Some developing countries such as Brazil and Pakistan for example have actually used this option, most probably to avoid wide fluctuations in its notified prices. Paragraph 6 of Annex 3 of the AoA, which sets the rules for computing AMS, merely provides that "[f]or each basic agricultural product, a specific AMS shall be established, expressed in total monetary value terms".

There could be some questions as to whether countries which previously notified their AMS in local currencies can shift in midstream to a new methodology using US dollars. Paragraph h(ii) of Article I of the AoA specifies that the annual AMS should be calculated using "the constituent data and methodology used" in the original schedule submitted by WTO members. Paragraph a(ii) of the same Article prescribes a less stringent rule by requiring that the method and data originally used be "taken into account". Notwithstanding these provisions, allowing such a shift may not be overly controversial since the data in local currency underlying the new notifications will not be changed. Official foreign exchange rates are also publicly available.

Similarly, there would presumably be no debate if only the portion of domestic production that is marketed commercially is considered as "eligible" production. Even if a market price support program is assumed to have system-wide effects, it will not be of much relevance to stocks that a farmer decides not to sell and retains for the consumption of his family. The Korea beef panel decision likewise repeatedly referred to "marketable" production as the relevant criterion for determining the volume of production that should go into AMS calculations.

Applying these two adjustments simultaneously will not be sufficient to address the continued breaches of Countries A and D for rice and E for wheat. However, it will at least bring Country B's support programs for rice and wheat in compliance with *de minimis* rules as shown in Scenario 12. Countries whose currencies have devalued rapidly in recent years also stand to benefit if their prices are converted into US dollars.

6.2 Potentially Contentious Proposals

Rebasing the reference prices seems reasonable but may be difficult to pursue since it could unravel other disciplines in the AoA which utilize the same principles of base periods and measurements. Agreeing on a new base period for determining reference prices will likewise be problematic. It should also be noted that rebasing the reference price for price support programs to a more recent period, such as 2000 to 2002 in the simulations, had only marginal effects. Additionally, the problematic gaps could recur if countries decide to increase their administered prices in the future. At best therefore, rebasing will provide only temporary relief from the problem.

Although a rebasing proposal may be difficult to adopt, it may nevertheless be helpful for developing countries to point out that the use of a fixed base period for reference prices was primarily intended to determine a monetary value for the product-specific AMS of countries which exceeded their *de minimis* allowances

and therefore were subject to reduction commitments on their Total AMS during the UR implementation period. It was arguably to the advantage of these countries to secure as much AMS allowance as possible by choosing a base period when import prices were low relative to their administered prices. Price support programs in many developed countries were also available to most of their farmers such that it was only logical to equate "eligible" production to total production. Using total production figures also enabled these countries to maximize their AMS allowances and preserve most of their support programs even if they were required to undertake reductions in their AMS.

Such a modality however resulted in an opposite effect for countries, most of whom were developing, whose AMS if any were below the *de minimis* caps at the start of the Uruguay Round and who were therefore required to keep their product-specific AMS within these caps. Instead of providing the maximum leeway for amber box support to producers as in countries that subsidized their farmers heavily, the formula stands to severely limit the magnitude and scope even of relatively small price support programs that developing countries can introduce for their producers.

As shown in Figure B earlier, the maximum allowable variance between reference and administered price is the *de minimis* percentage of producer prices if "eligible" production is set to 100 percent of total production. If for example the *de minimis* percentage is 10 percent, a country will exceed its cap once administered prices go beyond reference prices by the equivalent of 10 percent of the market prices received by farmers. (If only a certain percentage of production is deemed "eligible", the allowable variance will be 10 percent divided by the "eligible" percentage.) Clearly therefore, countries have very limited flexibility in setting their administrative prices notwithstanding the fact that such prices may have to be raised to keep up with inflation and address emerging concerns.

Adjusting reference prices to offset the effects of inflation however portends to be an equally contentious option. While Article 18.4 of the AoA does allow countries to "give due consideration" to the effects of inflation on their ability to abide by their domestic support commitments, it does not provide clear parameters for determining what is "excessive" in relation to "normal" inflation and how any adjustment could possibly be made. The said provision also appears in the context of reviewing the implementation of commitments and does not explicitly allow countries to unilaterally modify or adjust their notifications on the basis of assumed inflation figures. Additionally, the effect of inflation is already partially accommodated by the AMS formula. Because the *de minimis* is a percentage of total value of production which is denominated in current prices, the annual AMS that countries can provide to their producers will increase if producer prices increase.

Using producer price indices instead of general inflation indices may be a less problematic option for adjusting reference prices. However, this similarly runs counter to Paragraph 8 of Annex 3 of the AoA which specifically provides for a "fixed external reference price". As with inflation indices, methods for segregating abnormalities in price movements can complicate, instead of facilitate, negotiations for a "permanent" solution. Since increasing administered prices could directly impact on market prices and proportionately raise producer price indices, using the latter to adjust references prices may end up unduly masking the effect of higher support prices.[18]

Using continually changing reference prices, such as 3-year rolling averages of import prices or 5-year Olympic averages, will diverge even more radically from the "fixed" reference price modality. Still, it could be argued that the best measure of the distortive effects of a price support program would be the gap between the administered domestic price and the price of comparable imports. If no price support programs were in place and the domestic

market was free of price distortions, domestic prices would normally gravitate towards import price parity. Officially sanctioned buying programs would disrupt this situation only if they attempted to compete with imports by offering higher prices.

Proposals to increase the *de minimis* allowances of developing countries may be equally contentious given the wide variances in the scope and magnitude of price support programs among countries. This would also run counter to the objective of the trade reform program to gradually phase out distortive subsidies. Although no special simulations were conducted to test this option, the results indicate that even doubling or tripling the current *de minimis* allowance will not be adequate in resolving the breaches of some countries. For example, of the 31 instances in the simulations where *de minimis* caps were breached, doubling the *de minimis* allowance would have been effective in reversing the breach in only 3 cases or less than 10 percent of the time.

6.3 Possible Areas of Compromise

Price support programs of developing countries can arguably be as distortive as those implemented by developed countries. Many developing countries however face major financial and logistical constraints which prevent them from carrying out such programs on a large scale. They also have much more farmers to attend to than in developed countries. In many cases, the distortions that their programs impose on domestic markets may therefore be comparatively small. Further, most of their programs are directed towards domestic food security and public stocks are rarely exported.

A possible area of compromise would therefore be to exempt developing countries from d*e minimis* caps if their procurement does not exceed a given percentage of local production. Countries such as A and D for example absorbed only 5 percent or less of domestic rice production and could very well argue that their programs are not unduly distorting prices even through their AMS computations say otherwise. Providing such an exemption will not require any change in the formula for computing AMS or *de minimis* allowances. The exemption could be further qualified to refer only to price support for "low-income or resource-poor producers" to be consistent with similar accommodations for developing countries in other parts of the AoA.[19] Additionally, exports of stocks acquired through market price support programs could be prohibited or be subjected to applicable AoA restrictions with respect to export subsidies.

As mentioned earlier however, an easier way to address this issue is for the countries concerned to simply set a limit to the volume or percentage of production that they will absorb and declare this as their "eligible" production. In most cases, this will be significantly higher than what they are currently procuring and will therefore even give them additional leeway to expand their stockholding operations.

6.4 Other Options

There are several other options that developing countries can consider and which do not directly involve the formula for computing AMS.

In 2005, Korea reportedly abolished its government procurement program for rice and converted it into a public stockholding program that qualified as a "green box" measure. Price supports for local producers were replaced by decoupled income payments, thereby freeing Korea from potential breaches of its AMS reduction commitments. However, the country maintained its quantitative restrictions on rice imports by availing of an exemption from tariffication through Annex 5 of the AoA. (In comparison, Japan decided to withdraw its Annex 5 exemption from rice tariffication even before the end of the UR implementation period. It subsequently phased out its market price support program for its rice producers and replaced it with decoupled payments. The move freed Japan from its commitment to increase its tariff rate quotas or TRQs for rice imports while its exemption from tariffication was in place.)

Although many developing countries may not have as much resources and tariff protection options as Korea, they could allocate some or all of their resources to other support measures that will not go into the computation of AMS. Paragraph 2 of Article 6 of the AoA for example specifically states that "investment subsidies which are generally available to agriculture in developing country Members and agricultural input subsidies generally available to low-income or resource-poor producers in developing country Members shall be exempt from domestic support reduction commitments". This means that developing countries can provide practically unlimited amounts of subsidized fertilizer, seeds and other inputs without any danger of breaching their domestic support obligations. In order to encourage farmers to produce, such subsidies can be granted as "rewards" for deliveries and sales to public stockholding program although they should not be directly linked to the volume harvested and/or sold by farmers.

In addition, Annex 2 of the AoA enumerates a wide array of other measures that governments can provide to their farmers without any restrictions. Many of these measures in fact relate to the provision of basic infrastructure and general services which continue to be deficient in many developing countries. Subsidizing inputs and improving the environment in which farmers operate could arguably be a more cost-efficient and sustainable approach to assisting producers than continually propping up the prices for their output through price support programs. More important, they are not as trade distorting as price support measures.

A second option for developing countries is to use the Equivalent Measurement of Support (EMS) modality stipulated in Annex 4 of the AoA. Paragraph 2 of the said Annex states that the equivalent AMS for a price support program can be pegged to "budgetary outlays used to maintain the producer price" if the regular formula for computing AMS cannot be applied and an alternative mechanism using "the applied administered price and the quantity of production eligible to receive that price" is not "practicable".

The particular circumstances under which the EMS modality can be invoked are not clearly spelled out in the Annex. Several countries have apparently used this ambiguity to notify their budgetary outlay for their price support programs as their AMS. It is also not clear if Annex 4 of the AoA will be covered by the "permanent" solution envisaged in the Bali Ministerial Decision. Nevertheless, the EMS modality as presently configured could allow some developing countries to sustain their price support programs without having to deal with reference and administered prices. Anyway, many of these countries will most probably not have the resources to consistently purchase 10 percent of the domestic production of their staple crops. Additionally, since purchases from farmers can be partially or fully recouped from sales to consumers, a country may leverage its notified budgetary outlay to purchase larger amounts from farmers by claiming that the outlay is to be used to defray trading losses and is not exclusively for procurement costs.

The only possible complication in this regard is if a country which had previously used the AMS modality for its notifications will be allowed to shift to the EMS mode, and what justifications it will have to present in order to be permitted to make such a move.

Finally, there is nothing to stop countries from lowering their administered prices so as to reduce the gap with reference prices. However, the simulations show that buying prices for some commodities in some countries will have to be drastically cut in order to keep their AMS within *de minimis* limits. These reductions may be politically unpalatable or could results in prices that are so low so that they become meaningless in terms of encouraging farmers to produce and/or sell to public stockholding programs. One possibility is to offset any reduction with other incentives that are not linked to production, such as the input subsidies mentioned earlier, so that they continue to have the intended effects.

6.5 Other Considerations

Paragraph 2 of the Bali Ministerial Decision on public stockholding programs limits the coverage of the "due restraint" provision to "support provided for traditional staple food crops in pursuance of public stockholding programmes for food security purposes existing as of the date of [the] Decision". Footnote 3 of the Decision however adds that the Decision "does not preclude developing Members from introducing programmes of public stockholding for food security purposes in accordance with the relevant provisions of the Agreement on Agriculture." This implies that while countries may establish new public stockholding programs with market price support features, only pre-existing programs can enjoy the "due restraint" protection during the period when the "permanent" solution is being worked out. It remains to be seen whether a similar distinction will be carried over to the "permanent" solution.

Paragraph 5 of the Bali Ministerial Decision provides that the Decision "shall not be used in a manner that results in an increase of the support subject to the Member's Bound Total AMS or the *de minimis* limits provided under programmes other than" the public stockholding programs notified and covered under the terms of the Decision. This appears to prohibit the shifting of AMS allowances for market price support programs that are freed up by the "due restraint" clause to other types of amber box subsidies that are subject to AMS limits. Although developing countries can nevertheless invoke Article 6.2 to exclude input and investment subsidies from their AMS calculations, it should be noted that product-specific caps and rules against shifting subsidies among products were not part of the original AoA rules. Such subsidy shifting was in fact practiced by many developed countries during the UR implementation period and was made possible by the fact that reductions in AMS were based on Total AMS (product-specific and non-product specific combined) and not on a per product basis.

Notably, the latest draft modalities text in the Doha Round negotiations included proposals to impose product-specific AMS caps, reduce *de minimis*, and scale down not only individual types, but also overall totals, of trade distorting domestic support. This was apparently intended to plug loopholes in domestic support rules in the AoA which allowed mostly developed countries to retain and even expand their distortive subsidies for favored sectors even as they complied with their subsidy reduction commitments.

7. CONCLUSION

Although the debate over the public stockholding issue almost derailed the adoption of a consensus during the Bali Ministerial Meeting, it appears that the problem is not as serious and the differences need not be as irreconciliable as they have been projected to be. Only a few developing countries are directly and immediately threatened by current AMS rules. In many cases, the volume of staple products involved is not large from a global perspective and the level of support on a per capita basis is comparatively low. Additionally, most of the products purchased at administered prices will be used primarily for targeted groups in domestic markets. Rules could additionally be adopted so that such public stocks will not disrupt export markets.

Although it may be difficult to get consensus on proposals that would veer away from established modalities like "fixed" reference prices, AMS formulas, and *de minimis* allowances, it is important to heed the calls of many developing countries to rectify many existing imbalances in the domestic support allowances accorded to developed via-a-vis most developing countries. Some consideration should be given to the fact that most developed countries are able to continue distorting trade through their huge subsidies and/or have retained the potential to do so with their large AMS allowances despite the reforms instituted in the UR. Unduly restricting developing countries from providing similar subsidies, often to poorer farmers and at much small magnitudes, does not seem fair.

Additionally, projected volatility in food prices could heighten the political and socio-economic significance of public stockholding and price stabilization programs of governments in the coming years. In order to remain relevant, WTO trade rules must be seen as helping instead of unreasonably inhibiting the capacity of governments specially in developing countries to respond to such developments. This will become even more important as consumer incomes rise across the developing world, food products continue to be used for biofuel, weather-related production shocks occur more frequently due to climate change, and food prices in international markets becomes less predictable and more volatile.

The simulations nevertheless indicate that there are steps that can be taken unilaterally and modalities for computing AMS which will require little if any adjustments but which can satisfactorily address the concerns of many developing countries. Giving some added consideration to countries whose stockholding programs absorb a negligible proportion of domestic production could resolve all remaining apprehensions and pave the way for a "permanent" solution. If these are not enough, developing countries have a multitude of options in providing support to their producers in ways that will not compromise their obligations in the WTO. Recognizing all these possibilities will hopefully give the WTO members the confidence and willingness to finally resolve the problem.

ANNEX A: RELEVANT AOA PROVISIONS ON MARKET PRICE SUPPORT

The relevant rules in the WTO Agreement on Agriculture (AoA) with respect to the provision of market price support to producers are contained in the following Articles and Annexes of the AoA.

1) Article 6, entitled "Domestic Support Commitments", sets the framework of rules for domestic support to agricultural producers. Domestic support which is provided by measures that meet one of three sets of criteria is exempt from limits. The criteria are those under Annex 2 (green box), for payments under production-limiting programs (blue box), and for certain types of subsidies provided in developing countries. All other subsidies which are considered non-exempt are measured through a number of Aggregate Measurements of Support (AMS) and are subject to limits, either on individual AMSs or, for some countries, on the Total AMS. Any limit on Total AMS is enshrined in the country's Schedule of commitments. An AMS which is small enough so as not to exceed its corresponding *de minimis* is excluded from the Total AMS figure.

2) Article 7, entitled "General Disciplines on Domestic Support", requires all domestic support under non-exempt measures, whether existing, new or modified, to be included in AMSs and, as applicable, in Total AMS. AMS support must be kept within the prescribed limits.

3) Annex 2, entitled "Domestic Support – The Basis for Exemption from the Reduction Commitments" gives the criteria for various programs under which expenditures can be exempted from AMS. The criteria for "public stockholding for food security purposes" exempts programs that acquire and release stocks at administered prices, provided *"that the difference between the acquisition price and the external reference price is accounted for in the AMS"*. This price gap (not the expenditure) is therefore subject to AMS limits.

4) Annex 3, entitled "Domestic Support – Calculation of Aggregate Measurement of Support", stipulates how to calculate an AMS. Paragraph 8 states that *"market price support shall be calculated using the gap between a fixed external reference price and the applied administered price multiplied by the quantity of production eligible to receive the applied administered price"*. Paragraph 9 provides that "[t]*he fixed external reference price shall be based on the years 1986 to 1988 and shall generally be the f.o.b. unit value for the basic agricultural product concerned in a net exporting country and the average c.i.f. unit value for the basic agricultural product in a net importing country in the base period"*. Moreover, "[t]he fixed external reference price may be adjusted for quality differences as necessary."

5) Annex 4, entitled "Domestic Support – Calculation of Equivalent Measurement of Support", lays down an alternative method for calculating non-exempt support in cases where market price support as defined in Annex 3 exists, but the calculation of it *"is not practicable"*.

6) Article 1, entitled "Definition of Terms", defines, among other things, AMS, EMS, and Total AMS.

ANNEX B

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T/L/913

11 December 2013

(13-6827)
Ministerial Conference Ninth Session
Bali, 3-6 December 2013

PUBLIC STOCKHOLDING FOR FOOD SECURITY PURPOSES
MINISTERIAL DECISION OF 7 DECEMBER 2013

The Ministerial Conference,

Having regard to paragraph 1 of Article IX of the Marrakesh Agreement Establishing the World Trade Organization;

Decides as follows:

1. Members agree to put in place an interim mechanism as set out below, and to negotiate on an agreement for a permanent solution[1], for the issue of public stockholding for food security purposes for adoption by the 11th Ministerial Conference.

2. In the interim, until a permanent solution is found, and provided that the conditions set out below are met, Members shall refrain from challenging through the WTO Dispute Settlement Mechanism, compliance of a developing Member with its obligations under Articles 6.3 and 7.2 (b) of the Agreement on Agriculture (AoA) in relation to support provided for traditional staple food crops[2] in pursuance of public stockholding programmes for food security purposes existing as of the date of this Decision, that are consistent with the criteria of paragraph 3, footnote 5, and footnote 5&6 of Annex 2 to the AoA when the developing Member complies with the terms of this Decision.[3]

NOTIFICATION AND TRANSPARENCY

3. A developing Member benefiting from this Decision must:

   a. have notified the Committee on Agriculture that it is exceeding or is at risk of exceeding either or both of its Aggregate Measurement of Support (AMS) limits (the Member's Bound Total AMS or the de minimis level) as result of its programmes mentioned above;

   b. have fulfilled and continue to fulfil its domestic support notification requirements under the AoA in accordance with document G/AG/2 of 30 June 1995, as specified in the Annex;

   c. have provided, and continue to provide on an annual basis, additional information by completing the template contained in the Annex, for each public stockholding programme that it maintains for food security purposes; and

   d. provide any additional relevant statistical information described in the Statistical Appendix to the Annex as soon as possible after it becomes available, as well as any information updating or correcting any information earlier submitted

ANTI-CIRCUMVENTION/SAFEGUARDS

4. Any developing Member seeking coverage of programmes under paragraph 2 shall ensure that stocks procured under such programmes do not distort trade or adversely affect the food security of other Members.

5. This Decision shall not be used in a manner that results in an increase of the support subject to the Member's Bound Total AMS or the de minimis limits provided under programmes other than those notified under paragraph 3.a.

CONSULTATIONS

6. A developing Member benefiting from this Decision shall upon request hold consultations with other Members on the operation of its public stockholding programmes notified under paragraph 3.a.

MONITORING

7. The Committee on Agriculture shall monitor the information submitted under this Decision.

WORK PROGRAMME

8. Members agree to establish a work programme to be undertaken in the Committee on Agriculture to pursue this issue with the aim of making recommendations for a permanent solution. This work programme shall take into account Members' existing and future submissions.

9. In the context of the broader post-Bali agenda, Members commit to the work programme mentioned in the previous paragraph with the aim of concluding it no later than the 11th Ministerial Conference.

10. The General Council shall report to the 10th Ministerial Conference for an evaluation of the operation of this Decision, particularly on the progress made on the work programme.

1 The permanent solution will be applicable to all developing Members.

2 This term refers to primary agricultural products that are predominant staples in the traditional diet of a developing Member.

3 This Decision does not preclude developing Members from introducing programmes of public stockholding for food security purposes in accordance with the relevant provisions of the Agreement on Agriculture.

ANNEX C: DESCRIPTION OF DATA TABLE COMPONENTS

For each country and product, a standardized Excel worksheet is built up containing the following data:

#	DATA	SOURCE	FORMULA	NOTES
A	Reference Price (in US Dollars)	Submission or Derived	B ÷ C	If the external reference is in local currency, it is converted to US dollars using the corresponding exchange rate.
B	Reference Price (in local currency)	AGST Submission	Given or derived separately	Sourced from supporting tables submitted by WTO members relating to their commitments on agricultural products in Part IV of their schedules, as compiled under G/AG/AGST/. See http://www.wto.org/english/tratop_e/agric_e/supporting_tables_e.htm. In cases where the reference price is not indicated in the country's AGST submission, it is derived from import volume and value figures during the base period.
C	Foreign Exchange Rate	World Bank, fxtop.com		Average annual foreign exchange rates in terms of local currency per USD
D	Conversion Factor	FAOSTAT		Factor in percentage terms to convert the processed form of a product (i.e., milled rice) to its raw form (i.e., paddy) by volume. These conversion factors are listed by country and product in "Technical Conversion Factors for Agricultural Commodities" issued by the FAO Statistics Division. See http://www.fao.org/fileadmin/templates/ess/documents/methodology/tcf.pdf.
E	Converted Reference Price (US Dollars)	Derived	A × D	For example, this gives the equivalent reference price in US dollars for unprocessed paddy where the notified external reference price is for imported milled rice.
F	Converted Reference Price (Local Currency)	Derived	B × D	Same as above but expressed in local currency. All subsequent computations will be based on the raw form of the commodity.
G	Administered Price	Submission	G × D (if necessary)	This is the price at which the public stockholding program buys from producers. Normally, the quoted price is for the raw form of the commodity, but it is adjusted using conversion rates if the notified price is for the processed form of the commodity.
H	Producer Prices	FAOSTAT		Average current price per unit of a commodity in local currency in a given year; this is quoted for products in their raw form as purchased from farmers

#	DATA	SOURCE	FORMULA	NOTES
I	Producer Price Index	FAOSTAT, Derived	H÷Prod $Price_{base}$ × 100	FAOSTAT data series for producer prices starts in 1991 and this is set as the base (100 percent) for commodities for which a 1986-88 reference price is used. For commodities using a different reference period, the produce price for the last year of the base period is used as the base. Producer prices for succeeding years are then converted to a percentage of the base producer price to determine the index.
J	Index-adjusted Reference Price	Derived	F × H	Reference price multiplied by the producer price index for a given year
K	Import Volumes	FAOSTAT		Imports are assumed to be in the processed form of the product
L	Import Values	FAOSTAT		In Thousand USD
M	Average CIF Import price	FAOSTAT	L ÷ K × 1,000	In USD/ton
N	Converted CIF Import Price	Derived	M × D	Conversion factor (D) used again to convert the CIF import price for the processed form of the product to its raw form equivalent.
O	Converted CIF Price in Local Currency	Derived	N × C	Equivalent dollar price of raw products converted to local currency using the applicable exchange rate
P	Converted CIF Price (3-yr rolling average)	Derived	(O-1+O-2+O-3)÷ 3	Rolling average of import prices in preceding three years; if there is a data gap, the data from the preceding three years where data is available is used
Q	Converted CIF Price (5-yr olympic average)	Derived	(O-1+O-2+O-3 +Ohigh +Olow)÷ 3	Rolling average of import prices in the preceding five years excluding the highest and lowest; if there is a data gap, the data from the preceding five years where data is available is used
R	Production Volume	FAOSTAT		Volumes are for the raw product as produced by farmers
S	Marketable Surplus	Assumed 65%	R × % marketable surplus	Percentage of production of raw products that is assumed to be sold commercially; the rest is assumed to be consumed directly and/or not sold in markets
T	Volume Actually Procured	Submission		Volume of products in raw form actually purchased by the public stockholding program
U	Production Value	FAOSTAT	R × H	Value of raw products produced in a given year
V	Administered Price (in US Dollars)	Derived	G ÷ C	Convert administered price to US dollars
W	Producer Price (in US Dollars)	Derived	H ÷ C	Convert producer price to US dollars

ENDNOTES

1 A more detailed listing and explanation of the WTO rules and provisions pertinent to public stockholding and price support programs is attached as Annex A.

2 For most developing countries, the *de minimis* was 10% of the value of production of each product. Country C, which acceded to the WTO later in 2001, agreed to a lower *de minimis* percentage of 8.5%. Developed countries on the other hand were accorded a *de minimis* allowance of 5% for their product-specific AMS. In addition, developed and developing countries were entitled to another 5% and 10% respectively of total agricultural production value as allowance for non-product-specific AMS. These were for subsidy programs that were generally available for all crops, such as credit subsidy schemes that all types of farmers could avail of.

At the start of the UR implementation period, the non-exempt product and non-product specific AMSs of each country were added up to come up with their Total Base AMS. However, if their AMS for a certain commodity did not exceed its corresponding *de minimis* allowance, the product-specific AMS for that commodity was excluded from AMS computations. Similarly, non-product specific support was excluded from Total Base AMS if it fell below the corresponding *de minimis* allowance. If a country still ended up with a positive Total Base AMS after the allowable exclusions, it was then required to reduce such Total Base AMS by a certain percentage during the implementation period and then keep its annual Total AMS within the resultant yearly limits. On the other hand, countries which had no Total Base AMS reduction commitments were limited to providing amber box support only within their d*e minimis* allowances.

3 See Report of the Panel on KOREA - MEASURES AFFECTING IMPORTS OF FRESH, CHILLED AND FROZEN BEEF (WT/DS161/R, WT/DS169/R, 31 July 2000).

4 Paragraph 53 of the draft modalities (TN/AG/W/4/Rev.4) referred to proposed amendments to Article 2 of the Agreement of Agriculture as contained in Annex B of the document. A section in this Annex proposed that the "acquisition of stocks of foodstuffs by developing country Members with the objective of supporting low-income or resource-poor producers shall not be required to be accounted for in the AMS."

5 See Annex B for the full Ministerial Decision.

6 A country with AMS reduction commitments is subject to a cap on its Total AMS, both product and non-product specific. Hence, even if it exceeds its *de minimis* for a certain commodity, it will not necessarily breach its total AMS cap and has the additional option of adjusting support for other commodities or other subsidy programs. Because of this, it will be difficult to make conclusions about such a country's capacity to comply with its AMS obligations solely on the basis of its price support measures under its public stockholding programs.

7 Paragraph 9 makes a distinction between net exporting countries, for which the FOB price of exports should be used in determining reference prices, and net importing countries, for which CIF prices will be applicable. All of the countries which submitted information on their public stockholding programs declared that procured stocks were not intended for export. All of them had data showing imports in the years covered by the study. Based on this, all references prices in the simulations are quoted in CIF terms.

8 In addition to price supports, input and similar subsidies for specified commodities are normally considered part of the product-specific AMS. However, it would be difficult to analyze and isolate the effect of price support programs if the product-specific AMS and its magnitude in relation to *de minimis* can be simultaneously affected by other trade-distorting support measures. It should be noted also that Paragraph 2 of Article 6 of the AoA allows developing countries to exclude agricultural input subsidies from AMS computations if these are given to "low-income or resource-poor" producers. Hence, it would be safe to assume that most developing countries would have only price support measures under their product-specific AMS, if any.

9 A more precise matching would require that import prices be adjusted further by deducting the cost to bring the imported product from the port of entry to the area where the producer delivers his raw product. However, accounting for such transfer costs is complicated since they will vary greatly within a country where production is widespread. Accurate and up-to-date data on such transfer costs is also generally unavailable. Although transfer costs were not considered in the simulations, it should be noted that they will tend to reduce reference prices and potentially increase the difference with administered prices.

10 FAO online statistics database. See http://faostat3.fao.org/faostat-gateway/go/to/home/E

11 See Report of the Panel on KOREA - MEASURES AFFECTING IMPORTS OF FRESH, CHILLED AND FROZEN BEEF (WT/DS161/R, WT/DS169/R, 31 July 2000). Paragraph 827 of the Panel Decision states: "It is worth recalling that the quantification of market price support in AMS terms is not based on expenditures by government. Market price support as defined in Annex 3 can exist even where there are no budgetary payments. Market price support gauges the effect of a government policy measure on agricultural producers of a basic product rather than the budgetary cost of that measure borne by government. In general, with market price support programmes, all producers of the products which are subject to the market price support mechanism enjoy the benefit of an assurance that their products can be marketed at least at the support price. Therefore, the minimum price support will be available to all marketable production of the type and quality to which the administered price support programme relates, including where actual market prices are above the administered minimum price level." Paragraph 831 continues: "The language of paragraph 8 of Annex 3 makes it clear that it is the quantity of production which is 'eligible' to receive the benefit of the price support provided through the applied administered price which is relevant. The actual quantity of purchases is not relevant in the calculation of market price support. Korea, by indicating its intent to purchase specified quantities, made them eligible to receive the applied administered price, and consequently affected and supported the price of all such products."

12 Country A did not indicate its 1986-88 reference price for rice in its initial schedule of AMS commitments. For purposes of the simulation, its reference price for rice was derived from available FAOSTAT data on imports in 1986-88.

13 The resulting data from the simulations using various reference price settings were as follows:

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Reference Price	Converted to raw product equivalent	Adjusted using producer price indices	Converted to US dollars	Rolling 3-year average of import prices	Rolling 5-year olympic average of import prices	2000-2002 base period
Administered Price	For raw product	For raw product	For raw product	For raw product	For raw product	For raw product
Eligible Production	Total produc-tion volume	Total produc-tion volume	Total produc-tion volume	Total produc-tion volume	Total produc-tion volume	Total produc-tion volume
Value of Production	Total produc-tion value	Total produc-tion value	Converted to US dollars	Total produc-tion value	Total produc-tion value	Total produc-tion value
Country/ Product/ Year	**AMS as a Percentage of Value of Production**					
Country A-Rice, 2011	116%	71%	86%	37%	47%	84%
Country B-Rice, 2010-11	43%	-5%	-14%	-138%	-98%	13%
Country C-Rice, 2008	-12%	3%	-34%	-42%	-36%	-38%
Country D-Rice, 2011	95%	53%	50%	-17%	10%	76%
Country B-Wheat, 2010-11	62%	0%	-13%	-4%	-13%	34%
Country C-Wheat, 2008	-13%	-48%	4%	-23%	-17%	2%
Country E-Wheat, 2010-11	68%	-14%	26%	-25%	-5%	46%

14 The results of the simulations using various settings settings for "eligible" production were as follows:

Parameter	**Scenario 1**	**Scenario 7**		**Scenario 8**	
Reference Price	Raw product equivalent	Same as in Scenario 1		Same as in Scenario 1	
Administered Price	Raw product equivalent	Same as in Scenario 1		Same as in Scenario 1	
Eligible Production	Total production volume	Actual procurement volume		Marketable surplus	
Value of Production	Total production value	Same as in Scenario 1		Same as in Scenario 1	
Country/ Product/Year	**AMS as % of Prod'n Value**	**Procurement as % of Production**	**AMS as % of Prod'n Value**	**AMS as % of Prod'n Value**	**AMS as % of Prod'n Value**
Country A-Rice, 2011	116%	5%	6%	68%	79%
Country B-Rice, 2010-11	43%	22%	9%	65%	28%
Country C-Rice, 2008	-12%	1%	0%	62%	-8%
Country D-Rice, 2011	95%	2%	2%	65%	62%
Country B-Wheat, 2010-11	62%	26%	16%	100%	62%
Country C-Wheat, 2008	-13%	37%	-5%	65%	-8%
Country E-Wheat, 2010-11	68%	25%	17%	100%	68%

15 The results of the simulations using the first set of combinations of parameter settings for reference prices and "eligible" production were as follows:

Parameter	**Scenario 1**	**Scenario 9**	**Scenario 10**	**Scenario 11**	**Scenario 12**
Reference Price	Converted to raw product equivalent	Use producer price indices (Scenario 2)	Use producer price indices (Scenario 2)	Convert to US dollars (Scenario 3)	Convert to US dollars (Scenario 3)
Administered Price	Raw product equivalent	Same as Scenario 1	Same as Scenario 1	Prices in US dollars	Prices in US dollars
Eligible Production	Total production volume	Actual procure-ment volume	Marketable surplus	Actual procure-ment volume	Marketable surplus
Value of Production	Total production value	Same as Scenario 1	Same as Scenario 1	Converted to USD	Converted to USD
Country/ Product/Year	**AMS as a Percentage of Value of Production**				
Country A-Rice, 2011	116%	4%	48%	4%	59%
Country B-Rice, 2010-11	43%	-1%	-3%	-3%	-9%
Country C-Rice, 2008	-12%	0%	2%	0%	-22%
Country D-Rice, 2011	95%	1%	34%	1%	33%
Country B-Wheat, 2010-11	62%	0%	0%	-3%	-13%
Country C-Wheat, 2008	-13%	-18%	-31%	2%	3%
Country E-Wheat, 2010-11	68%	-3%	-14%	6%	26%

16 The results of the simulations using the second and final set of combinations of parameter settings for reference prices and "eligible" production were as follows::

Parameter	**Scenario 1**	**Scenario 13**	**Scenario 14**	**Scenario 15**	**Scenario 16**
Reference Price	Converted to raw product equivalent	3-year rolling average of import prices	3-year rolling average of import prices	5-year rolling olympic average of import prices	5-year rolling olympic average of import prices
Administered Price	Raw product equivalent	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1
Eligible Production	Total production volume	Actual procure-ment volume	Marketable surplus	Actual procure-ment volume	Marketable surplus
Value of Production	Total production value	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1	Same as Scenario 1
Country/ Product/Year	**AMS as a Percentage of Value of Production**				
Country A-Rice, 2011	116%	2%	25%	2%	32%
Country B-Rice, 2010-11	43%	-30%	-89%	-21%	-64%
Country C-Rice, 2008	-12%	0%	-28%	0%	-24%
Country D-Rice, 2011	95%	0%	-11%	0%	6%
Country B-Wheat, 2010-11	62%	-1%	-4%	-3%	-13%
Country C-Wheat, 2008	-13%	-9%	-15%	-6%	-11%
Country E-Wheat, 2010-11	68%	-6%	-25%	-1%	-5%

17 The said paragraph states: “There may, of course, be circumstances where eligible production may be less than total marketable production, as for example where the minimum price support is only available to producers in certain disadvantaged regions. Another possible example would be where there is a legislatively predetermined, non-discretionary, limitation on the quantity of marketable production that a governmental intervention agency could take off the market at the administered price in any year. In the latter case, the particular design and operation of the price support mechanism would have to be taken into account in determining eligible production, since even governmental purchases at a level below the legislatively predetermined quantity limit could, depending on market conditions, suffice to maintain market prices at above the minimum levels for all marketable production.”

18 For example, let us start with a situation where the administered price is equal to the reference price, resulting in zero AMS. If we double the administered price, it could result in a doubling of the market price and hence also of the producer price index. If we adjust the reference price using the new price index, we will again end up with zero AMS even if the support price doubled. Although the effects may not be strictly proportional, it could still be argued that adjusting references prices using producer price indices could result in misleading measurements of the distortive effects of support prices.

19 Notably however, this qualification was left out in the Bali Ministerial Decision and even in some G-33 non-papers on the public stockholding issue apparently because of complexities and difficulties in arriving at a precise and commonly acceptable definition of “low-income” and “resource-poor”.

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