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**On Food Security Stocks, Peace Clauses, and  
Permanent Solutions after Bali**

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## ABSTRACT

Food security concerns have appeared prominently in the World Trade Organization (WTO) negotiations, causing the breakdown of the overall Doha process in 2008, nearly derailing the negotiations at the 2013 Bali Ministerial Conference, and currently holding the implementation of what was agreed there. This paper discusses potential solutions to the current impasse related to food security stocks, including a concrete proposal by the author on language to be included in the Agreement on Agriculture that may help comply with the mandate of the Bali Ministerial to find a solution in the next four years. The paper begins with an explanation of the background to the debate of the links between food security and WTO agricultural and trade negotiations and the interim solution (the *peace clause*) agreed upon at Bali. Then it discusses some economic issues that frame the discussion about food security stocks, noting the new context of higher (in nominal terms) and perhaps more volatile food prices, in part associated with expanding links among energy markets and food production, supply and prices, and greater weather variability associated with climate change. The paper analyzes potential approaches to solving the problems related to the use of public stocks for food security reasons and suggests specific language that may solve the current debate. The paper also notes the more complex political economy of the future negotiations, which, among other things, will require greater flexibility among WTO Members and deeper awareness of the evolving negotiating landscape. One scenario may well be the fragmentation of the single undertaking envisaged in Doha into parallel negotiations involving different topics and varying numbers of WTO members.

**Keywords:** World Trade Organization, trade negotiations, food security, agriculture, developing countries, public food stocks

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# 1. INTRODUCTION

The World Trade Organization's (WTO's) Ninth Ministerial Conference at Bali, Indonesia, closed on December 7, 2013, with an agreement on the first comprehensive multilateral trade package negotiated since the organization's creation in 1995. The Bali Agreement is the latest step in the process known as the Doha Round, launched in Doha, Qatar, in 2001 during the WTO's Fourth Ministerial Conference. The Doha initiative was an attempt to negotiate a multilateral deal building on the unfinished work of the Uruguay Round. In mid-2008, in the WTO headquarters at Geneva, Switzerland, the last sustained effort to finish a complete package of the Doha Development Round took place. Those negotiations collapsed, in large part due to disagreements related mainly to the operation of a Special Safeguard Mechanism (SSM), which several developing countries considered to be a food security-related issue linked to the market-access component of the agricultural negotiations.<sup>1</sup>

Since 2008, WTO members have instead attempted to tackle negotiations in smaller packages rather than as a whole; thus, the Bali Agreement forms a subset of the general Doha program. However, negotiating smaller deals still has not eliminated the challenges faced by members. During the frantic days of the Bali negotiations, even this more circumscribed package was at risk of not being completed, and once again, food security concerns were invoked as a major reason for the disagreements. The food security debate at Bali shifted from the market-access pillar to the pillar of domestic support for agriculture and focused on the WTO's treatment of the use of administered prices to build public food security stocks in developing countries. Unlike 2008, however, failure was averted this time through the establishment of a mechanism dubbed a *peace clause*, which provides additional time for members to resolve their disagreements over these food security issues.

The Bali Ministerial Declaration covered a larger set of issues, in addition to the specific problem of procurement prices for food security stocks. The Agreements can be divided into three groups, as shown in Table 1.1, which also lists the relevant documents as identified in the Bali Ministerial Declaration (WT/MIN(13)/DEC/W/1/Rev.1, December 7, 2013). This is the basic document identifying all the decisions agreed upon at the Ministerial Conference (see Díaz-Bonilla and Laborde [forthcoming] for a more complete overview of the Bali Agreements).

The main outcomes from Bali include the agreements and decisions related to a subset of components of the Doha Round (sometimes called the *Bali Package*). Part A of Table 1.1 lists those ministerial decisions linked to trade negotiations. Part B shows the decisions made about the WTO's post-Bali work program focusing on future trade negotiating activities. Part C shows a group of decisions that relate mainly to what is called the WTO's regular work.<sup>2</sup>

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<sup>1</sup> The three pillars of the agricultural negotiations within the WTO are domestic support, market access, and export competition. The debate about the SSM focused on whether tariff increases on products affected by import surges could, under certain circumstances, go above the levels previously negotiated and bound. Whether the SSM really addressed food security concerns was a matter of debate. Simulations in a global model suggested that if the protection afforded by the SSM were sustained over time, developing countries using that safeguard would have been worse off in terms of food security (measured as food consumption) and in other dimensions, such as employment, production, and exports (Díaz Bonilla, Diao, and Robinson 2004).

<sup>2</sup> Under the Ministerial Conference, there is the WTO General Council (GC), which manages day-to-day issues at the WTO headquarters in Geneva; under the GC is a series of other councils and bodies that carry out the organization's different functions and activities. Those WTO functions and activities can be divided into three main areas of work: (1) the negotiation of new agreements; (2) the work of different committees in which members monitor and maintain a continuous dialogue on current trade practices and operations in the context of WTO legal commitments (the *regular work*); and (3) the Dispute Settlement Mechanism (DSM), which members use when they believe their rights under specific WTO agreements have been affected by other members.

**Table 1.1 Decisions and declarations of the Bali Ministerial**

<b>A. Doha Development Agenda</b>
Trade Facilitation
• Agreement on Trade Facilitation (WT/MIN(13)/W/8)
Agriculture and Cotton
• General Services (WT/MIN(13)/W/9)
• Public Stockholding for Food Security Purposes (WT/MIN(13)/W/10)
• Understanding on Tariff Rate Quota Administration Provisions of Agricultural Products (WT/MIN(13)/W/11)
• Export Competition (WT/MIN(13)/W/12)
• Cotton (WT/MIN(13)/W/13)
Development and LDC Issues
• Preferential Rules of Origin for Least-Developed Countries (WT/MIN(13)/W/14)
• Operationalization of the Waiver Concerning Preferential Treatment to Services and Service Suppliers of Least-Developed Countries (WT/MIN(13)/W/15)
• Duty-Free and Quota-Free Market Access for Least-Developed Countries (WT/MIN(13)/W/16)
• Monitoring Mechanism on Special and Differential Treatment (WT/MIN(13)/W/17)
<b>B. Post-Bali Work</b>
• The relevant section of the Bali Ministerial Declaration (WT/MIN(13)/DEC/W/1/Rev.1)
<b>C. Regular Work Under the General Council</b>
• TRIPS Non-violation and Situation Complaints (WT/MIN(13)/W/2)
• Work Program on Electronic Commerce (WT/MIN(13)/W/3)
• Work Program on Small Economies (WT/MIN(13)/W/4)
• Aid for Trade (WT/MIN(13)/W/5)
• Trade and Transfer of Technology (WT/MIN(13)/W/6)
• Decision on the Accession of the Republic of Yemen (WT/MIN(13)/24- WT/L/905).

Source: WTO (2013a).

This paper focuses on the ministerial decision on “Public Stockholding for Food Security Purposes, WT/MIN(13)/W/10”<sup>3</sup> and analyzes a series of legal and economic aspects involved, in an attempt to place the discussion in the context of the significantly different economic scenario since the Doha Development Round started. This changed context includes (1) the new scenario for food prices, (2) the important advances of developing countries in incomes, (3) the parallel improvements in hunger indicators along with the continuous advance of the *triple burden* of malnutrition, (4) significant increases in agricultural production and trade, and (5) in policy support to the sector in developing countries, along with more diversified diets and new food retail channels, even among the poor and in rural regions.

This paper discusses these issues basically from the perspective of developing countries (while also recognizing that this is a heterogeneous group). The paper is mainly aimed at policymakers, development practitioners, and the general public in developing countries who are interested in these issues but who have not necessarily closely followed WTO and related debates. Therefore, the paper tries to provide some historical and conceptual background on the topics covered, while also seeking to include enough legal detail of the texts to serve as a basic reference.

<sup>3</sup> Readers interested in the topic should also consult the careful analysis in Matthews (2014).



The rest of the paper is structured as follows. First, it presents some background on the debate about food security and trade. The focus then shifts to the legal aspects involved in the negotiations related to food security stocks. Finally, the fact that a particular policy is allowed under the WTO legal framework does not necessarily mean that it makes sense in economic or social terms for the country involved. Therefore, the Section 4 looks at some of the economic and operational aspects of food security stocks and their impacts on food security, which should be taken into consideration when discussing potential legal solutions. The final section concludes.

## 2. BACKGROUND

### Food Security as a Trade Concern

Food security is not a new concern for either developing or developed countries. It has been invoked as a key issue during several rounds of trade negotiations. For example, during the Uruguay Round, several developing and developed countries claimed food security concerns to justify barriers to food imports and higher levels of domestic support (even though, under any metric, the notion of food insecurity in richer countries was clearly unrelated to the conditions in developing countries). At the conclusion of the Uruguay Round, the issue was reflected in the Marrakesh Declaration and the establishment of the Net Food-Importing Developing Countries (NFIDCs) category; these countries, along with least developed countries (LDCs),<sup>4</sup> were supposed to receive financial aid and other help in case food prices increased as a result of trade negotiations. Article 20 of the Agreement on Agriculture (AoA)<sup>5</sup> also mentioned that “nontrade concerns” (food security being among them) had to be taken into account in the continuation of negotiations on agriculture, which were recognized as not being completed by the Uruguay Round.

Subsequently, several developed countries included food security as a component of the notion of multifunctionality, which argued that agriculture created positive externalities for the economy beyond the direct market value of food and fiber and that these effects were inseparable from production. Therefore, in this view, barriers to food imports and higher levels of domestic support were justified.<sup>6</sup> Some of these countries attempted to use that notion (which, as noted, included food security as part of the positive externalities) to build alliances with developing countries for the WTO negotiations. However, it was obvious that no developed country fit the profile of food insecure according to comparable indicators of food consumption, production, and exports (Díaz-Bonilla, Thomas, Robinson, and Cattaneo 2000). It also became clear that if developed countries expanded their agriculture on the basis of multifunctionality using protection and domestic support, it would mean that for any given level of global demand, other countries (mostly developing ones) would see their agriculture contract, and, therefore, their assumed multifunctionality would fall (Díaz-Bonilla and Tin 2006). In the end, the use of multifunctionality as the foundation for the protection and subsidization of agriculture in developed countries did not gain much traction in trade negotiations.

Developing countries, on the other hand, clearly have stronger grounds for claims of food security concerns in trade negotiations. In the early 2000s, these claims were manifested in the request by several developing countries for a Food Security Box, which included more options to maintain high levels of protection and support for some agricultural products. Several of those proposals were incorporated in the “Revised Draft Modalities for Agriculture” (WTO 2008b. TN/AG/W/4/Rev.4, December 6, 2008; in what follows, this document will be called the 2008 Modalities). This document was the last attempt to reach an agreement on agriculture before the general Doha talks collapsed in 2008. Although the 2008 Modalities were not agreed upon, in the process leading to the Ninth Ministerial Conference and in the Bali Package related to agriculture, part of the language from that document remerged in some proposals, including the initial one on food security stocks, as discussed below.<sup>7</sup>

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<sup>4</sup> Whereas NFIDC is a WTO category, LDC is a group defined by the United Nations based on development indicators. There are currently 49 LDCs determined by the United Nations, 35 of which have become WTO members, counting the accession of Yemen during the Bali Ministerial.

<sup>5</sup> All references are based on WTO (2008b).

<sup>6</sup> Díaz-Bonilla and Tin (2006) noted that a similar notion of positive externalities, with a comparable debate about the appropriate policies, was behind the drive toward industrialization in developing countries after World War II. However, the GATT legal system put stronger disciplines on subsidization and protection of industry, whereas agriculture was largely exempted for several decades until some disciplines were introduced with the conclusion of the Uruguay Round.

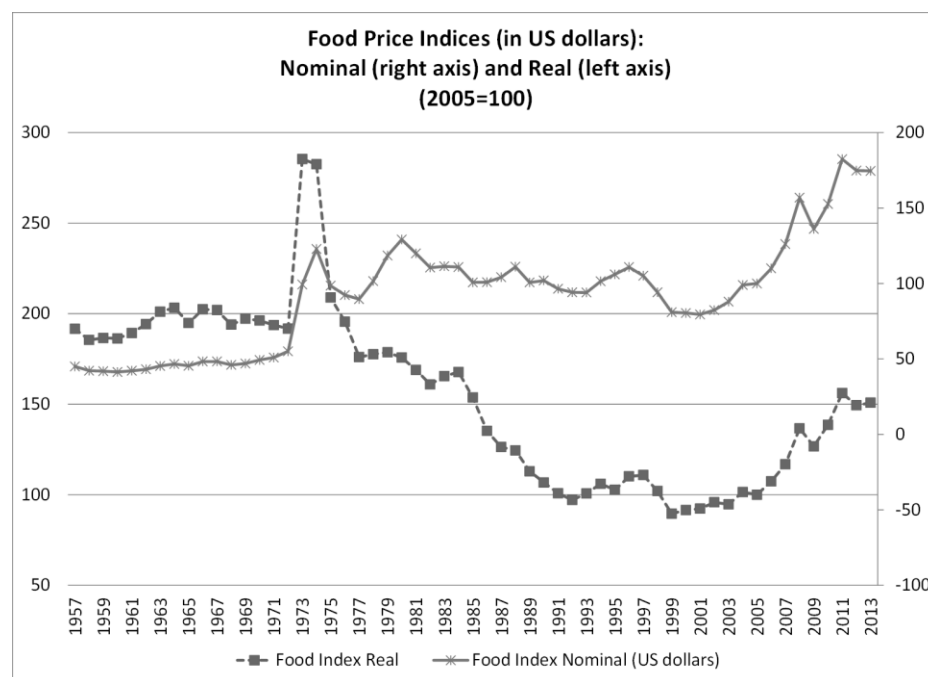
<sup>7</sup> Two other ministerial decisions (General Services, WT/MIN(13)/W/9, and Understanding on Tariff Rate Quota Administration Provisions of Agricultural Products, WT/MIN(13)/W/11) were also based on language from the 2008 Modalities.

## New Circumstances

Although food security issues are not new in trade negotiations, what has changed in recent years is that these concerns now appear against a background of higher nominal prices and volatility, whereas formerly they were postulated in a context of low food prices. Previous agricultural trade negotiations focused on policies that either artificially expanded supply in some countries through subsidies or reduced demand in other countries through protection (thus lowering global prices). Now, however, there is larger interest in disciplines on policies that may artificially restrict supply or expand demand (all of which would contribute to higher world prices). Therefore, whereas previous trade concerns focused on producers, now there seems to be more preoccupation with consumers (see Meyer and Schmidhuber 2013; Bureau and Jean 2013; Díaz-Bonilla 2013a; Tangermann 2013).

Figure 2.1 shows nominal food prices, which are above previous decades in US dollars (data from the International Monetary Fund (IMF)/International Financial Statistics (IFS) database; IMF, 2014). At the same time, real (that is, inflation-adjusted) prices are not as high as they were in the 1960s and 1970s, though the declining trend seen during the 1980s and 1990s has been stopped and reversed (see Figure 2.1, in which the deflator is the manufacturing unit value of exports from the main economies).

**Figure 2.1 Food price indices in US nominal and real values**

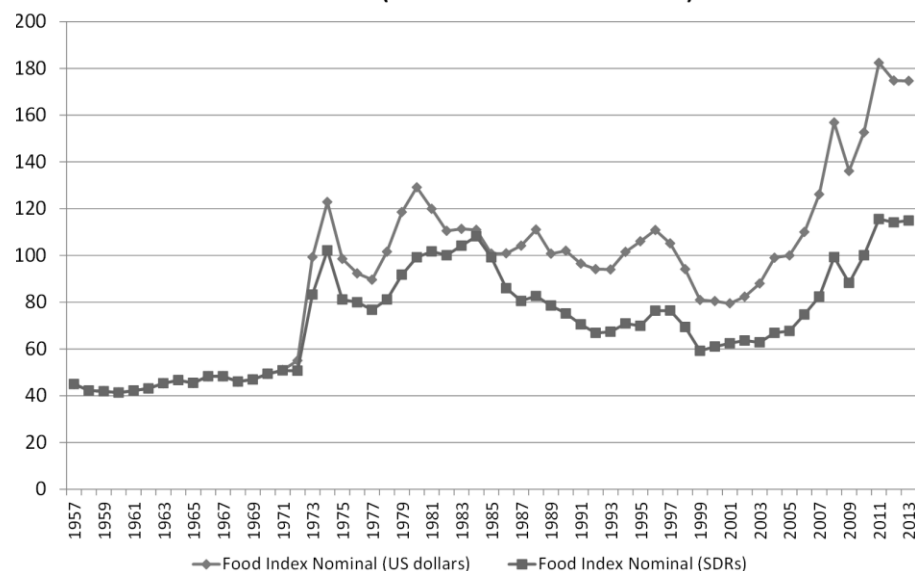


Source: Author calculations based on IMF (2014).

Even in nominal terms, high prices may reflect the well-known fact that nominal global commodity prices (which are usually quoted in US dollars) move in opposite directions from the US dollar (Mundell 2002). In other words, if the dollar appreciates (devalues) against other currencies, then the dollar price of commodities declines (increases) (a very clear example was the jump in nominal prices of commodities when the US dollar was devalued after the breakdown of the fixed exchange arrangements of Bretton Woods in the early 1970s). Therefore, part of the reason current global commodity prices in nominal dollars are high is because the US dollar has been dropping in value against other currencies (Díaz-Bonilla 2013a). The food index in US dollars for 2011–2013 is 68 percent above the average 1986–1988 price (which is the reference period used in the AoA for price comparisons). However, if the index is measured in nominal Special Drawing Rights (SDRs, a basket of currencies that

evens out the fluctuations of the US dollar), then its value is 38 percent above those prevailing in 1986–1988, which is still higher than the reference period but significantly less than it is in US dollars (Figure 2.2).

**Figure 2.2 Food price indices in US dollars and Special Drawing Rights (SDR) nominal values**



Source: Author calculations based on IMF (2014).

The current high global commodity prices, measured in nominal US dollars, have implications for the calculations of domestic support according to the AoA, which requires comparisons with fixed external prices from 1986–1988. Conceivably, if a country has to compare the current prices offered to its producers (which are in line with global market prices) with the lower levels of the reference years due to WTO legal requirements, that country may appear to be offering additional price support. However, as noted, with a more stable currency (such as SDRs), the increases in global prices are far more modest. Furthermore, in real US dollars, global price levels are still below those in the 1960s and 1970s. Yet, the upward movement in prices is clear, though it also appears to have plateaued.

The current environment of higher nominal prices may persist into the future, though not necessarily with further accelerations (a discussion of the potential scenarios can be found in Díaz-Bonilla et al. 2013). But the changed scenario for food prices is just one aspect of a larger set of new circumstances for agriculture and food production that now place food security concerns in a different context and that should be considered when analyzing the legal, economic, operational, and social aspects of food security stocks, as discussed in the following sections.

### 3. FOOD SECURITY STOCKS: LEGAL ISSUES

#### Background

The AoA (WTO 2008b) has four categories of domestic support.<sup>8</sup> The first three are exempted from disciplines under certain conditions; they include those considered in (1) Annex 2, the so-called *Green Box* (though no colored boxes are mentioned in the AoA); (2) Article 6.4 (also known as the Blue Box);<sup>9</sup> and (3) Article 6.2 (which applies to developing countries only).<sup>10</sup>

The opening paragraph of Annex 2 of the AoA indicates the conditions that the different measures listed in the Green Box must follow to be exempted from being counted in the aggregate measurement of support (AMS). First, those support programs must meet “the fundamental requirement that they have no, or at most minimal, trade-distorting effects or effects on production.” They must also “conform to the following basic criteria: (a) the support in question shall be provided through a publicly-funded government program (including government revenue foregone) not involving transfers from consumers; and, (b) the support in question shall not have the effect of providing price support” (WTO, 2008b, Annex 2, paragraph 1).

The remaining domestic support measures not included in these three categories are a residual category, usually called the Amber Box. These measures must be added in an AMS for each product (that is, product-specific AMS) and for agricultural producers in general (non-product-specific AMS) (Brink 2011).

Product-specific support includes an estimation of market price support (MPS), which “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” (Annex 3, paragraph 8). It is important to note the three crucial concepts—the fixed external reference price (FERP), the applied administered price (AP), and the *production eligible*—because they feature prominently in the legal issues discussed below.

Product-specific AMS also must include other nonexempt production-related payments and support to producers. The sum of MPS and other nonexempt payments is then compared with the value of production; if the sum is more than a de minimis level (5 percent for developed countries and 10 percent for developing countries),<sup>11</sup> then the value is computed in its entirety (that is, not only the excess over the de minimis) in the current total aggregate measurement of support (CTAMS). The non-product-specific support (usually measured through budgetary data) also needs to be compared to the entire agricultural production; if it exceeds the de minimis value, it must be added to the CTAMS. Finally, the CTAMS is compared to, and cannot exceed, the ceiling commitment (sometimes called the final bound total AMS, or FBTAMS), which is negotiated during the Uruguay Round or defined later during the accession process for new WTO members (Brink 2011).

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<sup>8</sup> For a detailed discussion of these topics, see Brink (2011)—in particular, Figure 2.1. See also the explanations in WTO (2008b).

<sup>9</sup> Article 6.4 allows certain payments directly linked to area or animal numbers but operating under mechanisms that also limit production to be exempted from the general rule that all subsidies linked to production must be maintained below a de minimis level or reduced.

<sup>10</sup> Because of the importance of Article 6.2 for developing countries, it is quoted here in full as reference: “In accordance with the Mid-Term Review Agreement that government measures of assistance, whether direct or indirect, to encourage agricultural and rural development are an integral part of the development programs of developing countries, 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 that would otherwise be applicable to such measures, as shall domestic support to producers in developing country Members to encourage diversification from growing illicit narcotic crops. Domestic support meeting the criteria of this paragraph shall not be required to be included in a Member’s calculation of its Current Total AMS.” It should be noted that in the accession negotiations, China was not allowed to use this article.

<sup>11</sup> Countries like China have accepted a different de minimis (in China’s case, 8.5 percent) as part of the accession agreement.

Two things should be noted. First, most developing countries have not declared domestic support in the negotiations (that is, the amount considered in the FBTAMS); therefore, the de minimis limits these countries' level of domestic support.<sup>12</sup> The small number of developing countries that has declared domestic support has the possibility of offering domestic support up to the FBTAMS; however, the value of that domestic support is small compared to the allowances negotiated by developed countries during the Uruguay Round.<sup>13</sup> Second, as noted, Article 6.2 allows developing countries to exempt from the AMS both general investment support for agriculture and input subsidies for low-income or resource-poor farmers. Although these domestic measures can be considered trade distorting, they are exempted from the AMS as part of the notion of "special and differential treatment" (SDT).<sup>14</sup>

The debate before and during the Bali Ministerial revolved around two sections of Annex 2 of the AoA (Green Box): food security stocks (AoA, Annex 2, paragraph 3) and domestic food subsidies (AoA, Annex 2, paragraph 4). Initially a group of developing countries (known at the WTO as the G-33)<sup>15</sup> presented a proposal based on the 2008 Modalities that included new language for paragraph 3 (Public Stockholding for Food Security Purposes) and paragraph 4 (Domestic Food Aid).

To understand the suggested modifications, it is necessary to look first at the current language. The provision on food security stocks (Annex 2, paragraph 3) declares "expenditures (or revenue foregone) in relation to the accumulation and holding of stocks of products which form an integral part of a food security program identified in national legislation" to be Green Box measures. It also adds conditions, such as: "the volume and accumulation of such stocks shall correspond to predetermined targets related solely to food security" and "the process of stock accumulation and disposal shall be financially transparent." However, a footnote simplifies the criteria for developing countries: food security stocks are considered in conformity with Annex 2, paragraph 3, if the operation "is transparent and conducted in accordance with officially published objective criteria or guidelines."

Annex 2, paragraph 3, also indicates that "food purchases by the government shall be made at current market prices and sales from food security stocks shall be made at no less than the current domestic market price for the product and quality in question." Note that purchases for food security stocks, and sales from them, must be made at market prices; this is again modified for developing countries on at least one account: footnotes 5 and 6 (a combined footnote so numbered) applies both to Public Stockholding for Food Security Purposes (Annex 2, paragraph 3) and Domestic Food Aid (another Green Box measure in Annex 2, paragraph 4) and allows the selling of products at subsidized prices "with the objective of meeting food requirements of urban and rural poor in developing countries on a regular basis." Although this stipulation allows developing countries to offer subsidies in the selling price, footnote 5 to the food security stock provision does not permit other than market prices for purchases to be part of the Green Box. If purchases are at "administered prices," then the "difference between the acquisition price and the external reference price is accounted for in the AMS."

The section on domestic food aid (Annex 2, paragraph 4), in addition to allowing the provision of subsidized food through domestic aid, establishes some reasonable criteria for the operation of those programs, such as that "eligibility to receive the food aid shall be subject to clearly-defined criteria related to nutritional objectives" and that "the financing and administration of the aid shall be transparent." It also

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<sup>12</sup> The relevant text in Article 7(b) reads: "Where no Total AMS commitment exists ... the Member shall not provide support to agricultural producers in excess of the relevant de minimis level set out in paragraph 4 of Article 6."

<sup>13</sup> A total of 33 countries have FBTAMS, but the European Union, Japan, the United States, Canada, Switzerland, and Norway represent 87 percent of the total value (the European Union alone represents about 49 percent of the total).

<sup>14</sup> SDT refers to the notion that developing countries may need special treatment under trade rules, differentiated from the legal obligations of developed countries.

<sup>15</sup> As is the case with many international groups, the G-33 has a different number of members (46) than the name suggests. The countries are Antigua and Barbuda, Barbados, Belize, Benin, Bolivia, Botswana, Côte d'Ivoire, China, Congo, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, India, Indonesia, Jamaica, Kenya, Korea, Madagascar, Mauritius, Mongolia, Mozambique, Nicaragua, Nigeria, Pakistan, Panama, Peru, Philippines, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Senegal, Sri Lanka, Suriname, Tanzania, Trinidad and Tobago, Turkey, Uganda, Venezuela, Zambia, and Zimbabwe.

allows domestic food aid to be in-kind or other means “to allow eligible recipients to buy food either at market or at subsidized prices.”

Some developing countries, particularly India, believed that if they had to account for the gap between administered prices and fixed external reference prices, then they would be bumping against, and probably exceeding, the product-specific limit of 10 percent *de minimis* of total production in some key products.<sup>16</sup> Further, they argued, given the current high international prices, it did not make sense to compare buying prices to the external reference prices that were specifically defined under the AoA as those prevailing in 1986–1988. In fact, if purchases were done at administered prices that closely tracked current world prices (and therefore would not be distortionary in an economic sense), the AoA comparison with the 1986–1988 levels would still show (largely imaginary) levels of market price support, as can be inferred when comparing the nominal values for 1986–1988 and 2013 from Figure 2.1 (this graph, however, is just a general reference, because it shows an index of several products, whereas the FERP is calculated by individual product).

Based on those concerns, the language proposed by the G-33 exempted the difference between administered prices and the FERPs from the obligation of being included in the AMS when the governments of developing countries have bought products for food security stocks (paragraph 3) and domestic aid (paragraph 4) from a specific type of producer—that is, those that are “low income or resource poor” (LIRP; this category is already considered by the AoA for some special treatment in Article 6.2<sup>17</sup>).

This approach generated two basic objections. First, it appeared to go against the conditions established for the Green Box (Annex 2, paragraph 1)—in particular, the second basic criteria (point b in the paragraph), which indicates that “the support in question shall not have the effect of providing price support” (Annex 2, paragraph 1). The G-33 proposal, on the other hand, clearly provided price support, at least to a certain type of producer; the concern was that once a loophole was created in the Green Box chapeau, then anything could happen with the rest of the programs listed there. Furthermore, other developing countries were concerned about the leeway granted under the current Annex 2 to provide income support that is, in theory (but not clearly in fact), decoupled from prices. Offering price support to LIRP producers would significantly undermine the possibility of disciplining those Green Box measures, which are currently used mostly by industrialized countries,<sup>18</sup> and which may create more than the minimal trade distortions required to be considered a Green Box measure (Annex 2, paragraph 1).

Second, other countries were concerned that the stocks allegedly accumulated for food security reasons may end up being sold on world markets. WTO members using the new allowance to provide price support to LIRP producers could accumulate products in excess of some desired ratio of stock-to-consumption and then may decide to sell those surpluses in external markets to help finance the program’s fiscal cost.<sup>19</sup>

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<sup>16</sup> This limit does not affect other options, such as the rest of the Green Box measures, Blue Box measures of support, and, for developing countries only, those considered in Article 6.2.

<sup>17</sup> Note that the relevant section of Article 6.2 of the AoA says to refer to “investment subsidies,” which are “generally available” to LIRPs. An issue to be considered is whether “generally available” means only for LIRP producers. Also, the wording refers to “low-income *or* resource-poor producers” (emphasis added), which seems to expand the scope of the category when compared to “low-income *and* resource-poor producers” (Lars Brink, personal communication; emphasis added).

<sup>18</sup> Some developing countries, such as China, use that type of support.

<sup>19</sup> Some countries, such as Pakistan, argued during the Bali negotiations that India was exporting rice from food stocks, thus affecting global rice markets and their own domestic markets and food security. As discussed elsewhere in this paper, India has become the main world rice exporter in recent years. Other people have argued that the rice exported by India and the rice used in its food security stocks are of different qualities (basmati rice being the exported product and common rice the one for domestic consumption); therefore, the postulated impact on global markets of domestic food stocks would not exist. However, Dorosh and Rashid (2012) showed that rice prices in Bangladesh and subsidized prices for that product from India’s public stocks appear highly correlated (technically, they are cointegrated). This was the result of the operation of private-sector importers that helped stabilize the operation of the rice market in Bangladesh to the benefit of poor consumers but with negative impact on producers. As Dorosh and Rashid (2012) noted, “This subsidized trade ended in late 2007, however, when India’s domestic market supply situation changed, international cereal prices rose, and India cut off exports to Bangladesh to protect its own domestic market.”

Therefore, negotiators looked at other options, including the possibility of changing the FERPs of 1986–1988, adjusting the definition of the production eligible to receive administered prices, and imposing a temporary standstill to challenges under the DSM, which may take place if a country breached its allowed levels of domestic support because of government procurement of products for food security stocks at administered prices.

However, changing the FERPs would have opened an entirely new set of difficult issues (such as the valuation of the commitments by countries with declared domestic support in the base year). The notion of eligible production, as noted before, was also a key variable because, according to the AoA, the gap between the administered price and the FERP for 1986–1988 must be multiplied by the quantity of all production in a WTO member that is eligible to be bought at the administered prices. The interpretation of the term was settled by the dispute about Korean beef (WTO 2000a); although the ruling left out other options to define eligible production (discussed below), this line of thinking was considered too complicated to be sorted out in time for the Bali Ministerial Declaration. In the end, the approach followed in Bali was to implement the peace clause (DSM) as an interim solution.<sup>20</sup>

## The Ministerial Decision

India considered the language of the draft Ministerial Decision that negotiators took to Bali to be inadequate, leading to a series of iterations before a final text was accepted. To understand these disagreements, it is useful to distinguish three different issues: (1) the substance and coverage of the *peace clause*, (2) the conditions for its application, and (3) the period during which the peace clause is operational.

The substance (point a) and the conditions (point b) for the peace clause did not change from the original language (more on this below). What did change was the definition of the period during which the peace clause was operational (point c). In the original language, the clause lasted until the Tenth Ministerial Conference (about two years after Bali), at which time WTO members “will decide on next steps.” The new language indicates that “members agree to put in place an interim mechanism ..., and to negotiate on an agreement for a *permanent solution* ... for adoption by the 11th Ministerial Conference” (paragraph 1), or about four years after Bali. The new language, then, changed the period covered by the peace clause and, perhaps, the conditions to end this mechanism, as discussed later.

Starting with the substance and coverage of the peace clause (point a), paragraph 2 of the Ministerial Decision has five components: (1) WTO members cannot challenge developing country members regarding compliance with the obligations of not exceeding their AMS (Article 6.3) or the de minimis (Article 7.2. (b)) when the following conditions apply; (2) it is “support provided for traditional staple food crops in pursuance of public stockholding programs for food security purposes;” (3) the programs protected from challenges are only those that exist as of the date of the decision; (4) those programs must be consistent with the rest of the criteria of Annex 2 for food security stocks (other than the issue of price support; see the earlier discussion); and (5) they must comply with other conditions established in the ministerial decision<sup>21</sup>

One footnote to the Ministerial Decision indicates that if and when a permanent solution is found, it will apply to all developing countries; another footnote mentions that developing countries can initiate new programs that comply with Annex 2, paragraph 3 (but, as noted, only existing programs as of the date of the decision are covered by the peace clause).

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<sup>20</sup> There is a nontrivial difference between *temporary* (which seems to imply a specific date as deadline) and *interim* (which does not necessarily have a specific termination date). Although in common parlance people tend to refer to the Ministerial Decision as a “temporary” solution, the decision uses the word *interim* (Lars Brink, personal communication).

<sup>21</sup> The complete language is as follows: “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 AoA in relation to support provided for traditional staple food crops in pursuance of public stockholding programs 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.”



Although the decision expanded the time scope of the peace clause compared to the initial draft, the new language may have also somewhat changed the product scope. The original language referred to the products bought as part of the food security program and that can be covered by the peace clause as “traditional staple food crops” (note the word *crops*, suggesting that livestock products are not included). The new language agreed to in Bali includes a footnote by the word *crops* that says, “This term refers to primary agricultural products that are predominant staples in the traditional diet of a developing Member.” This definition can be interpreted as tightening the definition of *staple food crops* by using the word *predominant* (which suggests that some significant percentage of consumption must be used in the determination of what crops are covered). On the other hand, it could also be argued that by using the word *products* rather than *crops*, it may have expanded the coverage to other non-crop products. Another question remains whether *primary agricultural products* is different from the *basic agricultural products* in the agreement’s definition of the AMS.

As mentioned, the Ministerial Decision establishes additional conditions (point b) in paragraphs 3, 4, and 5 (which did not change from the original draft) for those developing countries that currently operate food stock programs and want to be protected from legal challenges by the peace clause. Those conditions are in addition to the relevant conditions in Annex 2, paragraph 3, and include the need for countries to (1) notify the Committee on Agriculture “that it is exceeding or is at risk of exceeding either or both<sup>22</sup> of its Aggregate Measurement of Support (AMS) limits (the Member’s Bound Total AMS or the de minimis level)”; (2) be current on notifications of its domestic support; (3) provide timely information for each public stockholding program maintained for food security purposes, plus other related information according to a template included in the annex of the decision; (4) ensure that stocks procured under food security programs do not distort trade or adversely affect the food security of other members (this reference was also an addition to the original language, which referred only to trade distortions); and (5) make sure that the potential increase in domestic support in excess of the allowed levels can be the only one notified under point (1). Furthermore, any developing country benefiting from this decision must accept the requests for consultations by any other WTO member countries that may be interested in the operation of the notified public stockholding program or programs (paragraph 6).

The decision also instructs the Committee on Agriculture to monitor the information submitted under this decision (paragraph 7) and indicates that WTO members must agree to establish a work program in which the committee can make recommendations for a permanent solution no later than the Eleventh Ministerial Conference. Advances will be reported to the General Council during the Tenth Ministerial Conference (paragraphs 8, 9, and 10).

Several points in this decision should be highlighted (see also Matthews 2014). The first point is the change in the period considered and the conditions for ending that period. In the original formulation, the peace clause had a specific end (the Tenth WTO Ministerial, or about two years from Bali, considering the usual time between ministerial meetings), after which it lapsed and WTO members would decide on next steps. With the new language, member countries commit to finding a permanent solution by the Eleventh Ministerial (about four years from now), and the peace clause will remain in place “until a permanent solution is found.” As in other negotiating texts, there is some ambiguity in the timing. On the one hand, it appears to define a deadline (the Eleventh Ministerial), but on the other, it refers to the peace clause as being in effect until a “permanent solution is found,” without specifying when that may happen. The latter interpretation would strengthen the hand of India (or any other country following the same approach) to the extent that the country will be protected from challenges under the AoA until a solution is found. In addition, under the WTO’s consensus approach, different alternatives may be blocked until there is one that they consider acceptable. By the other interpretation, it still extends the day of reckoning from two years in the original language to four years in the text finally agreed upon.<sup>23</sup>

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<sup>22</sup> Some observers have noted that the use of *both* is a drafting mistake, considering that a WTO member is constrained only by the bound total AMS or the de minimis under the Agreement (Lars Brink, personal communication; see also Matthews 2014).

<sup>23</sup> WTO members could still mount challenges under other legal texts, such as the Agreement on Subsidies and Countervailing Measures, if they consider themselves affected by the operation of governmental purchases under this scheme. Whatever the legal issues involved, there is always the public relation issue of challenging a developing country on a program

Second, the notification and transparency requirements are not mere formalities, considering that many WTO members are extremely behind schedule in their notifications under the current obligations of the AoA (see the discussion in Orden, Blandford, and Josling 2011).<sup>24</sup> In particular, India only notified its levels of domestic support for the period 1998–2003 in June 2011 (Gopinath 2012). Therefore, to avail itself of the peace clause, India will have to complete its notifications of domestic support from 2003 onward and be open to consultations and questions regarding the actual operation of the food stock programs. Doing so would allow for more transparency and facilitate closer scrutiny and monitoring of the different programs of domestic support in the countries using the peace clause option.

A third point, already mentioned, is that only those food security programs existing at the time of the Ministerial Decision are covered. Matthews (2014) identified 16 developing countries under the WTO definition.<sup>25</sup>

As noted earlier, the Ministerial Decision also instructs WTO members to establish a work program in the Committee on Agriculture to make recommendations for a permanent solution no later than the Eleventh Ministerial Conference (paragraphs 8, 9, and 10). Going forward, a permanent solution may take different forms, including some of the options discussed in the pre-Bali negotiations that were discarded because of a lack of time to complete adequate negotiations (see Matthews [2014] for a detailed discussion of different options). The next section of this paper discusses some of these options and expands on the one presented in Díaz-Bonilla (2013b), which suggested the need to clarify the link between administered and market prices.

### **Potential Options for a “Permanent Solution”**

Thus far, the debate has centered on the prices at which food products for the food security stocks (which may be subsidizing producers through “administered prices”) are procured, rather than on the prices at which those food products are sold to domestic consumers, perhaps subsidizing those products through below-market prices. However, these two aspects have been conflated, confusing the terms of the debate.

This section discusses the different legal options available to address the food security objectives for producers and consumers, starting with those approaches that should already be available using current legal texts and then moving to others that may require further negotiations to change or expand the language in the AoA, including the proposal presented in Díaz-Bonilla (2013b). The focus here is only on what can be done in legal terms under the WTO Agreement, without judging whether those options make sense in economic or social terms (these aspects will be discussed in a subsequent section).

### ***Domestic Food Aid***

It is clear that any developing country can provide subsidized food to its own population under paragraph 4 of Annex 2 of the AoA. The claim by some observers (see, for instance, OWINFS 2013) that it is unfair that the United States can have a food stamp program while denying India the right to have a similar program is mistaken.

In fact, the combined footnote 5 and 6 indicates “the provision of foodstuffs at subsidized prices with the objective of meeting food requirements of urban and rural poor in developing countries on a regular basis at reasonable prices shall be considered to be in conformity with the provisions of this paragraph.” That footnote is in Annex 2, paragraphs 3 and 4, which means it covers both sales from food security stocks and any other sale of subsidized food by developing countries to help the urban or rural poor.

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that is allegedly aimed at helping the poor.

<sup>24</sup> This problem also occurs with several developed countries.

<sup>25</sup> Those countries are Botswana, Brazil, China, Costa Rica, India, Indonesia, Israel, Kenya, Saudi Arabia, Republic of Korea, Namibia, Nepal, Pakistan, Philippines, South Africa, and Sri Lanka. Note the presence of Israel and Republic of Korea, which, according to the WTO rules, have defined themselves as developing countries.

Therefore, the question is not whether a country can give subsidized food to poor and needy people, which they can under the AoA; the question is how governments may procure that food. In what follows, the options considered focus basically on the purchasing side of the issue.

### ***Buy at Market Prices***

One possibility is for countries to build food security stocks simply by buying food products at *market prices*; this approach is compliant with Annex 2, paragraph 3, of the AoA. The United States, Brazil, and other countries do buy food for their food security programs at market prices; in Brazil, some percentage comes from small farmers (Krivonos 2013), which is one of the aspects highlighted by the G-33's original proposal focusing on LIRP producers. India, on the other hand, uses *administered prices* announced in advance by the government, which may trigger Annex 2, paragraph 3, footnote 5. Those administered prices, however, seem to have been in line with market prices, as discussed below (Hoda and Gulati 2013).

A country that buys significantly above market prices and then wants to sell below market prices to poor and vulnerable populations will soon get into fiscal difficulties. However, although selling at below-market prices imposes a fiscal cost, it may be justified in the case of assisting the poor and needy. On the other hand, buying at market prices at least will not further increase the program's procurement costs (though other operational costs and the sales subsidy still remain). It should be noted that even when buying at market prices, the program offers some support to farmers compared to the counterfactual: without the domestic food security and aid programs, poor consumers would not represent the same level of "effective demand" (demand backed by purchasing power). With the program, however, the recipients of food aid expand effective demand as actual consumers of food through the intermediation of the domestic food aid program.

### ***Provide Indicative Prices, Use Trade Measures to Guide Prices, But Still Buy at Market Prices***

In the absence of futures markets in many developing countries, the only coordinating device for farmers' expectations about market conditions and production decisions may be pre-announced government prices (or the "administered prices"). If governments simply buy at spot market prices, they may fail to provide forward guidance to farmers in those countries; therefore, governments in these conditions may conclude that they need to announce "administered prices" in advance to the producers.

However, if the issue is simply to give producers some future anchor for their expectations and calculations, this may be done without necessarily committing to buying the production or part of it. Similarly, even if purchases occur, they can be done at market prices. Furthermore, in the case of developing countries that have room between the bound and applied tariffs, if they are importers, the government can use those tariffs to ensure that the domestic price follows the pre-announced price without violating WTO commitments, as long as they stay below the bound tariffs. Such an approach should consider two aspects—one legal and another economic. In legal terms, the changes of tariffs under the bound levels must take into account the WTO case against Chile on its "price band" system,<sup>26</sup> which clarified the options and limits to those practices under the current Agreements. In economic terms, trying to achieve some desired level of domestic prices through changes in import tariffs will force into the world market a larger adjustment in price and quantities than would have been the case without such manipulation of tariffs, with potentially negative effects on other countries (Bouët and Laborde 2010).<sup>27</sup>

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<sup>26</sup> Case DS207 "Chile—Price Band System and Safeguard Measures Relating to Certain Agricultural Products" (a summary of this extended case is in [http://wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds207\\_e.htm](http://wto.org/english/tratop_e/dispu_e/cases_e/ds207_e.htm)).

<sup>27</sup> A related current discussion has focused mainly on export taxes. However, there is a symmetry of effects for the following pairs of trade actions (when equivalently scaled): (1) increasing export taxes or reducing import taxes, (2) reducing export subsidies or increasing import subsidies, (3) reducing production subsidies or increasing consumption subsidies, (4) using export tax differentials or import tax differentials (tariff escalation), (5) imposing an export quota or eliminating an import quota, and (6) an export ban or anticipatory hoarding by an importer. Even though all those measures that try to stabilize domestic prices may

### ***Define Eligible Production in a Way that Focuses on Quantities Actually Bought***

The calculation of the MPS that has to be counted in the AMS includes both prices and quantities. In the previous examples, procurement has taken place at the market price, thus complying with Annex 2, paragraph 3. However, if the government is using administered prices (APs) rather than market prices, then footnote 5 kicks in, and the AP must be compared to the FERP of 1986–1988. If the AP is higher than the FERP, this positive gap has to be multiplied by the “eligible quantity” (not the quantity actually bought) and then compared with the de minimis. If the former value is more than the de minimis, it must be counted as part of the AMS in its entirety. Obviously, if the gap between the AP and the FERP is more than 10 percent above the market price and if the eligible production is the total production, then the de minimis will be exceeded. If a developing country has a final AMS commitment (the FBTAMS), then the whole amount (not only the value of production bought) will have to be counted as part of the product-specific AMS and will have to be compared to, and must not exceed, the FBTAMS. If the country does not have a FBTAMS, then it is prohibited by Article 7.b of the AoA from exceeding the de minimis.

What is key here is the definition of *eligible production*. This topic was adjudicated in the Korean beef case (WTO 2000a), which considered claims that the Korean government was violating the AoA by only using in the WTO notifications the amount of production it actually bought, when the amount of eligible production defined by the government was larger. By notifying not the total eligible production but rather the smaller amount that was actually purchased, the value counted within the AMS was reduced. This practice was challenged, and the WTO DSM ruled that the Korean government should notify the production defined as eligible and not the amount actually purchased.

Because of this ruling, some observers appear to assume that eligible production is always total production. However, this interpretation is not correct. Because the Korean government had established a maximum amount to be bought, the eligible production was less than total production. Therefore, the ruling in the case considered only the capped amount and not total production. The appellate body left open the possibility that eligible production can be more limited in cases in which the eligibility criteria identified a specific region or in which there is a limit on the quantity purchased.<sup>28</sup> In fact, the appellate body uses as *eligible quantity* only up to the maximum amount the Korean government said it was going to buy, which, as mentioned, was less than the total production but more than the amount that it actually bought.

So, if a government plans to buy, say, 30 percent of production (perhaps because that is the amount needed to run a food distribution system for the poor and needy), it may declare as eligible production only that volume, which would be far less than total production. Typically, developing countries running food stocks buy only a fraction of total production. (See the examples in Montemayor [2014], in which purchases of rice and wheat stay largely below one-third of total production in the five countries analyzed during a period that varies between 2008 and 2011. Hoda and Gulati [2013] estimated

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lead to destabilizing effects on world prices, affecting other countries that are treated differently (or not at all) in the current WTO framework (see Díaz-Bonilla 2013a).

<sup>28</sup> The relevant wording of the appellate body report in paragraph 827 reads (with emphasis added): “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. 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. Hence, with these qualifications, eligible production for the purposes of calculating the market price support component of current support should comprise the total marketable production of all producers which is eligible to benefit from the market price support, even though the proportion of production which is actually purchased by a governmental agency may be relatively small or even nil.”

that in India, procurement for rice was, on average, about 32 percent of total production; for wheat, it was close to 27 percent during 2007–2008 and 2010–2011. This is the national average, but the percentage varies significantly across states.) Governments can make those quantity limits clear in the definition of *eligible production*. It should be noted, though, that the panel added the qualification that in such a case, “the particular design and operation of the price support mechanism would have to be taken into account in determining eligible production” (see language in footnote 28).

As mentioned, in the G-33 proposal, purchases were limited to the product of “low-income or resource poor producers” (LIRPs), as in Article 6.2. The appellate body in the Korean beef case also used language related to the eligibility of certain producers in disadvantaged regions (see footnote 29 for the relevant language). Therefore, another way to ensure that eligible production is less than total production is to require that it come from LIRP producers. The issues then become how to define that category of producers and the operational safeguards to ensure that the production effectively comes from these producers.<sup>29</sup>

One possible way of identifying the farmers who would qualify for assistance is to apply the usual poverty line used for international comparisons of US\$1 (or US\$2) a day or to use a relative measure of poverty within the country (for instance, producers with less than 40 percent of national income per capita; Díaz-Bonilla, Thomas, and Robinson 2003). In practice, the use of the LIRP category in WTO notifications seems to have been relatively elastic and variable over time, even for the same country. For instance, India has moved from declaring about 80 percent of its producers as LIRP in the WTO notifications for 1995–1997 (based on a survey that showed that 80 percent of the farmers had fewer than 2 hectares) to basically considering all of its producers in that category (based on a subsequent survey that calculated that close to 99 percent of Indian producers were LIRPs; Gopinath 2012). Such an extension of the LIRP concept may test the limits of a nation that is supposed to offer help only to a specific type of producer.<sup>30</sup>

### ***(Re)Define Fixed External Reference Price in US Dollars***

Now we move to the other variable in the equation used to calculate MPS—the fixed external reference price (FERP).

Article 1(a)(ii) of the AoA indicates that the current AMS has to be “calculated *in accordance* with the provisions of Annex 3 of this Agreement and *taking into account* the constituent data and methodology used in the tables of supporting material incorporated by reference in Part IV of the Member’s Schedule” (emphasis added). Annex 3, in turn, indicates in paragraph 9 that “the fixed external reference price shall be based on the years 1986 to 1988 and shall generally be the average f.o.b. [freight on board] unit value for the basic agricultural product concerned in a net exporting country and the average c.i.f. [cost, insurance, and freight] unit value for the basic agricultural product concerned in a net importing country in the base period.”

In the tables and calculations submitted as constituent data and methodology, some countries presented the FERP in domestic currency, whereas others presented it in a foreign currency. This difference occurred because the Annex does not say anything about the currency to be used in the definition of the FERPs. The only requirements are that the FERP be “fixed,” “external,” and refer to the base period of 1986–1988. For example, in a background paper prepared by the WTO Secretariat (WTO 2000b), one example shows the use of FERPs in dollars.<sup>31</sup> This document notes that, obviously, it makes a big difference if the nominal variables for the commitments on domestic support and the relevant parameters (such as the external reference price) have been originally notified in the domestic currency of

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<sup>29</sup> One mechanism may be to establish a fixed cap on the quantity that can be bought from each individual farmer. Obviously, the administrative controls needed to ensure that purchases are from the type of farmers targeted are not trivial.

<sup>30</sup> As noted before, Article 6.2 refers to “investment subsidies,” which are “generally available” to “low-income or resource-poor producers.” The point to be considered is whether “generally available” means *only* for LIRP producers.

<sup>31</sup> It should be noted that documents by the secretariat are just opinions by the WTO international staff and are not meant to interpret the legal texts negotiated by the WTO members.

the reporting country or in a foreign currency. In the latter case, there is an automatic adjustment for domestic inflation, to the extent that the devaluation of the exchange rate follows the evolution of internal prices.

Certainly, considering that developing countries usually have a domestic inflation rate and a pace of devaluation that make 1986–1988 values in domestic currency outdated, those that notified the FERPs in foreign currency (say, US dollars) will have fewer problems comparing current APs with the FERPs than if they had notified the FERPs in their domestic currency. It is true that given the current high commodity prices in nominal US dollars (see Figure 2.1), even a 1986–1988 FERP in that currency may show a gap with current APs, even if the latter follow market prices. But that gap would be substantially higher for most developing countries if the comparison were between current APs and 1986–1988 FERPs in domestic currency. This is why some countries, including India, switched the original 1986–1988 FERPs from domestic currency to US dollars. The FERP is still fixed (in US dollars), external, and refers to the 1986–1988 base period, but it is now no longer affected by the impact of devaluation.

However, it has been argued that this switch may violate at least two WTO obligations (Brink 2014). First, because the “constituent data and methodology” was part of the commitments and was presented in domestic currency, such currency denomination cannot be changed afterward. However, as also clarified by the Korean beef case, there is a hierarchy of obligations: the AMS has to be “calculated *in accordance* with the provisions of Annex 3 of this Agreement and *taking into account* the constituent data and methodology” (emphasis added). The appellate body in the Korean beef case noted that the ordinary meaning of *accordance* is “agreement, conformity, harmony,” while *taking into account* is defined as “take into consideration, notice.” Therefore the appellate body held that Article 1(a)(ii) accorded “higher priority” to the provisions of Annex 3 than to the “constituent data and methodology” contained in a member’s schedule and that the term *in accordance with* reflects a more rigorous standard than the term *taking into account*.

Therefore, by using the equivalent in US dollars of the 1986–1988 FERP that had been presented in domestic currency in the member’s schedule, the constituent data and methodology has been “taken into account;” in fact, it is the same economic value for the reference year. To insist that the FERP must be the same as presented originally would be to use the other criteria (“in accordance”), which the panel indicated was not the standard for the constituent data and methodology.

The second objection is that if the FERP that was presented originally in domestic currency is transformed into foreign currency for the base period and then is transformed back every year into domestic currency to be compared with the respective annual AP (also in domestic currency), then the FERP is no longer “fixed” (that is, it would change every year in *domestic currency* according to the annual exchange rate). However, this objection assumes that the APs and FERPs will be presented every year in domestic currency, when it is also possible (1) to redefine the respective FERP into foreign currency (which is maintained fixed), (2) to transform every year the corresponding AP into the equivalent foreign currency using the annual exchange rate, or (3) to calculate the gap in foreign currency (as in example 5 of WTO 2000b, mentioned earlier).

An interesting exercise by Montemayor (2014) uses the case of five countries and several staple products to estimate whether those countries and products would stay within their actual *de minimis* under different assumptions of adjustments in key variables—basically, variations of the definitions of FERPs and eligible quantity. The simulations show that if eligible production is defined as being capped by some fixed quantity (that is, if the government announces purchases of a certain quantity for food stocks or only from LIRP producers), which is then not exceeded, *and* if the 1986–1988 FERP is defined in US dollars, then all cases analyzed stay below the *de minimis*. Therefore, applying the adjustments discussed in this and the previous section would go a long way toward solving most of the problems that developing countries may encounter.

In summary, changing the 1986–1988 FERP to US dollars is one way to deal with the differential inflation between developing countries and the United States. Still, there remains the issue of erosion of the value of the US dollar due to US inflation and other factors (see Figure 2.2). Therefore, one option that would further make values comparable across periods, smoothing out both inflation in developing

countries and fluctuations in the US dollar, would be to define the FERPs in SDRs for the base period (which would be fixed, external, and from 1986–1988).

### ***Consider Adjustments Due to Domestic Inflation***

Estimates for India by Hoda and Gulati (2013; see Table A-4) show that administered prices for wheat and rice in that country are largely below the 1986–1988 FERPs in domestic currency if the calculations take inflation into account. Hoda and Gulati (2013) justify the use of inflation-adjusted measures based on Article 18, paragraph 4, of the AoA, which says, “In the review process, Members shall give due consideration to the influence of excessive rates of inflation on the ability of any Member to abide by its domestic support commitments.” Other analysts, however, believe this text does not allow individual members to consider and adjust their notifications to “excess inflation” (see Brink 2014). Rather, they argue that Article 18.4 should be read literally as guidance to the rest of the WTO members, so that reviewing countries (and not the member presenting the data) “shall give due consideration to the influence of excessive rates of inflation” on the ability of that member “to abide by its domestic support commitments.”

In addition, it is not clear what is meant by *excessive inflation* or how WTO members can adjust for it (not only to take it into account in the notifications of other members). These questions have not been raised in the DSM; therefore, the proper interpretation of those concepts remains unsettled. In this regard, several factors can be noted, some that seem to lend some support in favor of allowing inflationary adjustments and some that seem to go in the opposite direction.

First, some countries have used constant prices in some of the tables and calculations submitted as constituent data and methodology. For instance, Mexico used “constant 1991 pesos” for its bound total AMS. Again, Annex 3 does not specify which currency commitments should use, and, apparently, no one has contested the use of constant prices (that is, inflation adjusted) in the example cited. Therefore, conceivably, if a country had notified its FERP in constant 1986–1988 domestic prices, it would have been legally valid to use the adjustment cited in Hoda and Gulati (2013).

Second, another document by the WTO secretariat (WTO, 1999) indicates in paragraph 43 that “the advice consistently provided to delegations has been that, for the purposes of the Review Process and Article 18.4 of the Agreement, the relevant Domestic Support (DS) Tables should be submitted concurrently on both an unadjusted and an inflation-adjusted basis.” However, as mentioned in a footnote 32, WTO secretariat opinions cannot officially interpret WTO legal texts. On the other hand, the background paper prepared by the WTO secretariat on inflation and exchange rate (G/AG/NG/S/19, October 23, 2000) presents an example that uses a FERP in domestic prices but that does not adjust for inflation.

An overall conclusion on the issue of inflation adjustment is that it seems to lack any economic rationale to determine whether a member is in compliance, depending on how that member defined its nominal variables in the base period: domestic currency, foreign currency, or, as in the case of some countries, constant domestic prices. However, from the legal viewpoint of the negotiations, some analysts and negotiators feel that countries had plenty of time to consider how to present their commitments and that once they present them in a particular way, they cannot keep changing them. Still, the need to “take into account” the “constituent data and methodology used in the tables of supporting material,” but not necessarily “in accordance” with them, may require further clarification.

It has been noted (Matthews 2014) that if the objective of the WTO disciplines is to eliminate distortionary practices, then the approach of defining the commitments associated with the AMS and related variables in nominal terms helps reduce or eliminate trade-distorting practices over time simply through inflationary erosion. In this view, opening the possibility of recasting commitments in inflation-adjusted terms would thwart this correction of undesirable trade practices. On the other hand, what may be a gentle adjustment process for industrialized countries may become a drastic cut in inflation-prone developing countries, without much of an economic or social rationale for it.

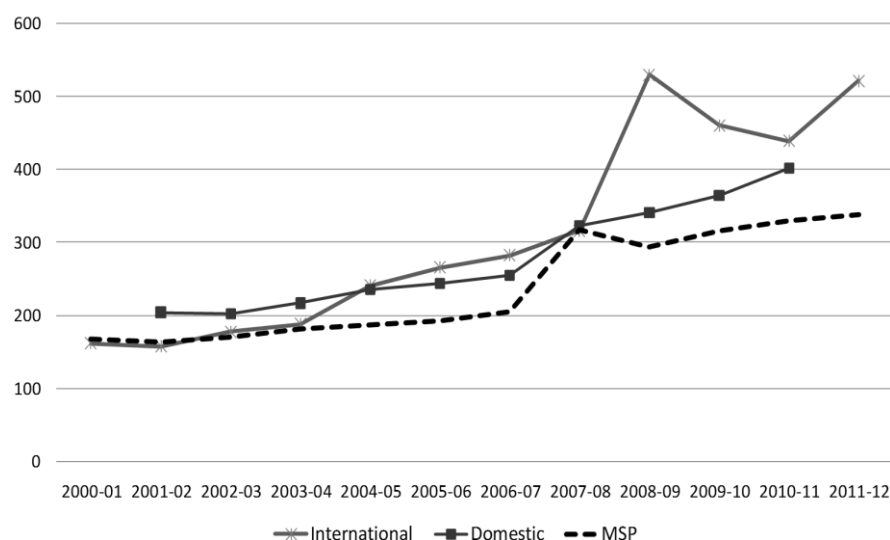
One final point is that the de minimis, which is calculated using the current value of production, automatically adjusts for inflation. Thus, there is an automatic, but partial, built-in safeguard against inflation that operates for all countries, whether developed or developing (see WTO Secretariat, G/AG/NG/S/19, October 23, 2000).

### ***Clarify the Link between Administered Prices and Market Prices***

The options discussed thus far have focused on adjusting some of the variables for the calculation of the MPS. The alternative presented now, which builds on Díaz-Bonilla (2013b), takes a different approach.

This section starts by noting that the estimates for India by Hoda and Gulati (2013; Table A-4) show that administered prices for wheat and rice in that country have been largely below both international market prices and domestic market prices, in addition to being below inflation-adjusted FERPs in domestic currency, as discussed in the previous section. Figures 3.1 and 3.2 show the international, domestic, and MPSs for wheat and rice, as calculated by Hoda and Gulati (2013).

**Figure 3.1 Price of rice: International, domestic, and MPS (in US dollars)**

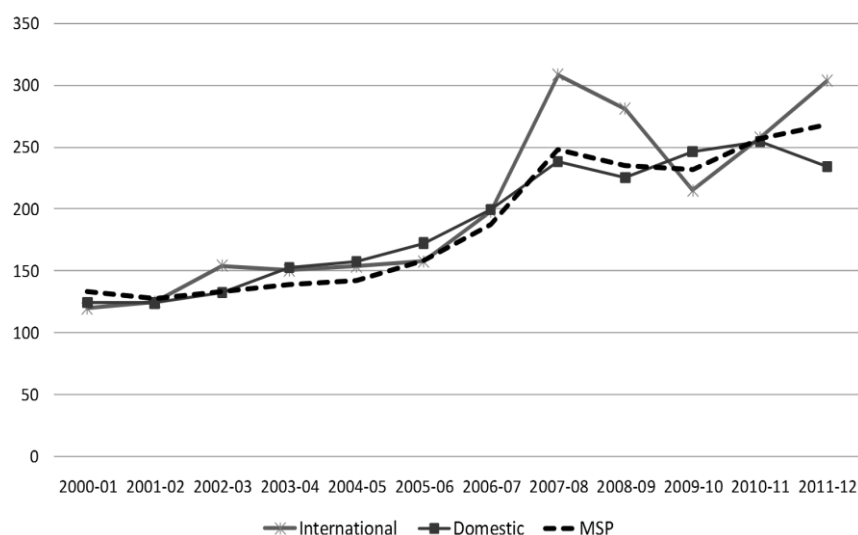


Source: Based on data from Hoda and Gulati (2013).

In economic terms, it seems strange that if products for food security stocks are purchased at prices that track market prices, that purchase price is still presumed to be distortionary simply because it is called administered price and, as a consequence, has to be compared to an outdated 1986–1988 FERP, measured in domestic currency, and counted in the AMS. Considering this, developing countries, which saw the domestic programs of the United States and the European Union protected under carefully crafted language incorporated during the Uruguay Round, may consider it unfair that they have to redesign their own domestic programs just because of the possible legal interpretation of terms such as administered prices, FERPs, and the like. India's impatience with the idea of a temporary peace clause and its insistence on a more permanent solution should be placed in this context.



**Figure 3.2 Price of wheat: International, domestic, and MPS (in US dollars)**



Source: Based on data from Hoda and Gulati (2013).

As mentioned before, in the absence of futures markets, the only coordinating device for developing country farmers' expectations about market conditions and production decisions may be preannounced government prices. In such cases, to analyze compliance with the AoA, the point to be considered should be whether the announced administered prices for food security products are in line with relevant market prices. Thus, one approach would be to try to clarify the relationship between the language in Annex 2 on market prices and that on administered prices. In this regard, footnote 5 of paragraph 3 on food stocks could include language that a country may be considered "rebuttable presumed in compliance" with the requirement that it does not offer price support; therefore, it does not have a price gap that must be counted in the AMS, if the administered price does not exceed the appropriate domestic market price (or, if there are no clear domestic references, the import or export parity equivalent, depending on the net trading position of the country and based on the world market price of the product considered). Market protection in the form of tariffs, tariff-rate-quotas (TRQs), or similar measures that comply with WTO obligations must be considered in the calculation of the import parity price. In this way, domestic price support would be separated from market access measures, which have a different treatment under the AoA.

This approach is based on the notion expressed in paragraph 3 of Annex 2 of the AoA—to qualify to be considered a Green Box measure (and therefore exempted from the AMS), "food purchases by the government shall be made at current market prices." If the administered prices largely coincide with market prices, then it seems reasonable that those purchases should be considered in compliance with paragraph 3.<sup>32</sup> In addition, if a WTO member decides to challenge another members' food security program, the former would need to show that the administered price is above the relevant market prices in ways that would result in offering price support to producers and that would then distort trade. Regarding the concern that food security stocks might be accumulated in excess of food security requirements and end up being exported to other countries, thus disrupting their domestic markets,

<sup>32</sup> It is true that some language in the Korean beef case reads, "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 827; emphasis added). But this is just a commentary that seems to question the very notion that buying at market prices does not violate Annex 2, paragraph 3. Of course, any government's purchase, even at market prices, may provide an implicit support compared to the counterfactual of no purchases, but this is allowed in Annex 2, paragraph 3.

additional language should be considered that strengthens the current Ministerial Decision on Food Stocks. This document, as noted before, only asks that the developing country availing itself of this option should ensure that its food security stocks “do not distort trade or adversely affect the food security of others.” Additional language could be added to require that food security stocks be used only for domestic consumption purposes linked to food security and to prohibit any exports. If exports do occur, the administered prices will have to be compared with the reference prices and counted against the AMS, as applicable. The only possible exception to this language would be if a country with food security stocks were asked by the appropriate UN agency to release part of its accumulated stocks into world markets due to a global, regional, or national food security emergency. This approach provides stricter disciplines than the weaker language currently included in the peace clause (as noted in Matthews [2014]).<sup>33</sup>

In summary, this approach tries to align the economic rationale and the legal intent of the AoA by ensuring that administered prices used to build food security stocks are treated as market prices under the meaning of Annex 2, paragraph 3, when they stay at or below market prices and when products from food security stocks do not affect trade flows and, potentially, the food security of other WTO members.

### ***Other Options***

Leading up to the Bali Ministerial Declaration, WTO member countries began to discuss other potential permanent solutions to the problem of food security stocks in the context of the AoA, in addition to the suggestions outlined in the previous sections.

One option that has been debated is to change the 1986–1988 base period for FERPs to more recent values, for a fixed period or for rolling averages (say, three to five years). Although from an economic viewpoint, the need to update the external reference prices may seem obvious, developing countries should be very careful with this option in legal or negotiating terms, because industrialized countries currently have a large legal allowance to grant domestic support under the levels of AMS permitted. If reference prices are updated to the current values (and that will most likely apply to all WTO members), then the difference to be charged against the AMS is reduced, but the overall allowed AMS does not change. This change could potentially expand developed countries’ margin to offer distortionary domestic support.

Other ideas discussed have included (1) expanding the de minimis; (2) exempting MPS from the AMS if the actual procurement is less than a certain percentage of total production; and (3) using the equivalent measure of support (EMS) and notify only budgetary outlays (see, for instance, the enumeration in Montemayor [2014]).

All of these options, however, seem less adequate than the alternatives presented in previous paragraphs or are subsumed in some of them. Expanding the de minimis would be a temporary solution and would go against the goal of reducing or eliminating distortionary support. Exempting a percentage of production from the MPS may be better addressed, in economic and legal terms, if “eligible production” is handled as discussed in the previous section. Using the EMS is allowed in the AoA (Annex 4), but only when calculations under Annex 3 of the MPS to be included in the AMS are “not practicable.” The calculation of the MPS in the procurement of food security stocks at administered prices is “practicable;” therefore, it does not seem that this option can be used (see also Matthews [2014] for a detailed analysis of different options).

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<sup>33</sup> It was noted that Pakistan complained during the Bali negotiations about rice exports from India potentially disrupting its market, whereas Bangladeshi consumers may have benefited (and producers may have been negatively affected) from exports of Indian rice (Dorosh and Rashid 2012). This is another manifestation of the constant debate about high/low prices and food security.

## 4. ECONOMIC AND OPERATIONAL ISSUES

The previous section discussed legal issues. However, these considerations are, of course, different from the more substantive issue of whether food stock programs make sense in terms of food security, whatever the legal standing under the current AoA language or under modified language related to a potential permanent solution. This section briefly discusses several economic and operational aspects relevant to the design and use of food security stocks in developing countries.

First, there is the consideration of some of the new circumstances in which these food security programs would operate, including changes in (1) general economic and other conditions; (2) agricultural markets and policies; and (3) food and nutrition security conditions. Second, there is a group of general policy considerations related to food security and how food security stocks may fit into that framework. Finally, some economic and operational issues related specifically to public food stocks are discussed.

These three blocks of topics have implications both for the analysis of the use and design of public food security stocks and for the political economy of the negotiations mandated by the Ministerial Decision.

### A New Context for Food Security

#### *General Economic Conditions*

It should first be noted that developing and emerging countries have been expanding their global economic presence as measured by several indicators, such as the share of global gross domestic product (GDP), particularly when measured in purchasing power parity (PPP). According to the IMF World Economic Outlook database, developing and emerging countries' world shares of global GDP (at PPP values) grew from 31 percent in 1980 to 51 percent in 2013. During the same period, advanced countries' share of global GDP fell from 69 percent to 49 percent. In other words, in 2013, for the first time in modern history, emerging and developing countries represented a larger share of global GDP than advanced economies (using IMF categories, which are somewhat different from those of the WTO and World Bank). These increases in GDP and incomes have led to reduced levels of poverty and improvements in various health, nutrition, and food security indicators, though with important variations across developing countries and regions. Another implication of growing incomes in many developing countries is that additional public-sector revenues have facilitated the expansion of agricultural domestic support (more on this below). In addition to the changes in agricultural markets discussed in the next section, these developments have modified the political economy of the WTO negotiations, as briefly discussed later.

A second and much discussed aspect of the new global food security context is the expanded links between energy developments and food prices. The growth of biofuel mandates has been singled out as one reason behind the price spikes affecting corn and oilseeds in the second part of the 2000s (see OECD/FAO, 2011, 2012, 2013; Schnepf 2013; Laborde and Msangi 2012; Torero 2012; Headey and Fan, 2010). Going forward, OECD-FAO (2013) estimates that without significant policy changes, global production of ethanol (mainly from coarse grains and sugar) and biodiesel (mainly from oilseeds) will require 12 percent of the world's coarse grains, 29 percent of sugarcane, and 15 percent of vegetable oil production by 2022. Simulations by IFPRI (see Rosegrant et al. 2013; Al-Riffai, Dimaranan, and Laborde 2010) suggest that biofuel policies, if maintained in their current state, will imply higher prices for food products in the coming decades. The evolution of this connection may thus be crucial in the coming years, because the energy market is far larger than the food market.<sup>34</sup> Developments in energy markets may

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<sup>34</sup> Estimates for 2006 (Díaz-Bonilla and Robinson 2010) suggest that food energy amounted to about 28 exajoules, whereas the market for nonfood energy was approximately 460 exajoules for a population of about 6.4 billion people. In other words, the market for nonfood energy was about 16 times larger than the market for food energy. Projections only increase the disparity in the future; for instance, for 2050, the nonfood energy market would be 21 times bigger than the food energy market (Díaz-Bonilla and Robinson 2010; see also Meyer and Schmidhuber 2013).

drive outcomes in agricultural markets, adding another source of volatility for food production, demand, and prices. This topic warrants a more careful review within the WTO (Blandford 2013), considering the implications not only for the AoA (including issues of distortionary and Green Box domestic support) but also for other WTO legal texts, such as the Agreements on Subsidies and Countervailing Measures and Technical Barriers to Trade.

A third and widely noted development that arises when discussing food security concerns is climate change. Whatever the uncertainties about the evolution of greenhouse gas emissions and the overall and geographical medium- and long-term impact on agriculture and food production, it is important to consider the probability that the world may be on its way to surpassing the 2°C temperature increase threshold during the coming decades (IPCC 2014; Rosegrant et al. 2014). This increase will affect agriculture and food production and will require sustained research and development (R&D) investments in both adaptation and mitigation, with implications for the AoA, particularly regarding domestic support measures (Blandford 2013). In the shorter term, however, and of more immediate importance for agriculture is increased climate volatility around the long-term trend. The warming of the atmosphere seems to have already increased the frequency of extreme weather events (Hansen, Sato, and Ruedy 2012; IPCC 2014). This greater volatility, with a more frequent realization of extreme events such as droughts and floods, is the most important effect of climate change currently affecting food security. Both the new linkages between energy and food and agriculture and the increased shorter-term weather variability, all of which is increasing the volatility of food quantity and prices, add further urgency to the consideration of the food security stocks and domestic food issues debated at Bali (Murphy 2010; IATP, 2012).

### ***Changes in Agricultural Markets and Policies***

General economic advances in developing countries have been accompanied by changes in agricultural production, trade, and policies, which, among other things, have modified the landscape for the political economy of global trade negotiations (Díaz-Bonilla 2013c). In terms of global production, developing countries may now represent about 75 percent of total agricultural production (as measured in constant international dollars by FAO/FAOSTAT, 2014). The increase in developing countries' share in production since the 1960s (almost 29 percentage points, [pps]) can be explained mostly by Asia's expanded production (23 pps, of which China represents about 14.6 pps and India almost 2 pps); however, production in Latin America and the Caribbean (LAC) has also increased (3.5 pps), as has production in Africa (1.2 pps) (Díaz-Bonilla 2013c).

Considering trade data and looking at individual countries, the composition of the group of net agricultural exporters has also changed significantly since the Uruguay Round was finished and since the Doha Round was launched. Table 4.1 shows the evolution of the countries that were net agricultural exporters in the 1990s, the 2000s, and two more recent years (data from FAO/FAOSTAT, 2014).

**Table 4.1 Net agricultural exports (millions of current US dollars)**

Rank of countries	Average 1990s	Rank of countries	Average 2000s	Rank of countries	2010–2011
USA	19,951	Brazil	32,120	Brazil	60,796
Netherlands	14,054	Netherlands	21,989	Argentina	36,157
France	11,309	Argentina	20,727	USA	31,164
Australia	10,804	Australia	14,630	Netherlands	30,686
Argentina	8,008	USA	14,528	Thailand	22,729
Brazil	7,662	France	12,294	Indonesia	20,888
Denmark	5,313	Thailand	11,434	Australia	18,740
Thailand	4,864	New Zealand	8,851	France	15,672
New Zealand	4,681	Indonesia	8,658	Malaysia	14,481
Ireland	3,819	Malaysia	7,185	New Zealand	12,919
China, mainland	3,563	Canada	6,264	India	11,288
Canada	3,455	Denmark	5,966	Canada	8,782
Malaysia	3,065	Spain	4,881	Spain	7,695
India	2,104	India	4,869	Denmark	6,879
Colombia	1,951	Ireland	3,428	Ukraine	5,307

Source: FAO/FAOSTAT (2014).

During the 1990s, only one developing country (Argentina) was in the top five net agricultural exporters by value; only two more (Brazil and Thailand) were in the top 10. By 2010–2011, Brazil and Argentina had displaced the United States and the Netherlands. In addition to Thailand, by 2010–2011, there were three developing countries in the top five exporters. Altogether, in 2010–2011, five of the top 10 agricultural exporters were developing countries.

Although China has dropped from the list, India has been climbing the ranks as a significant net agricultural exporter. In fact, in recent years, India has become the main global exporter of rice and the second of both beef and cotton (see USDA 2014a, 2014b). On the other hand, India's agricultural sector includes a large number of small farmers affected by poverty and vulnerability. In recent trade negotiations, India has emphasized the latter aspect; however, its trading partners have taken note of the country's increasing presence in global food and agricultural exports.

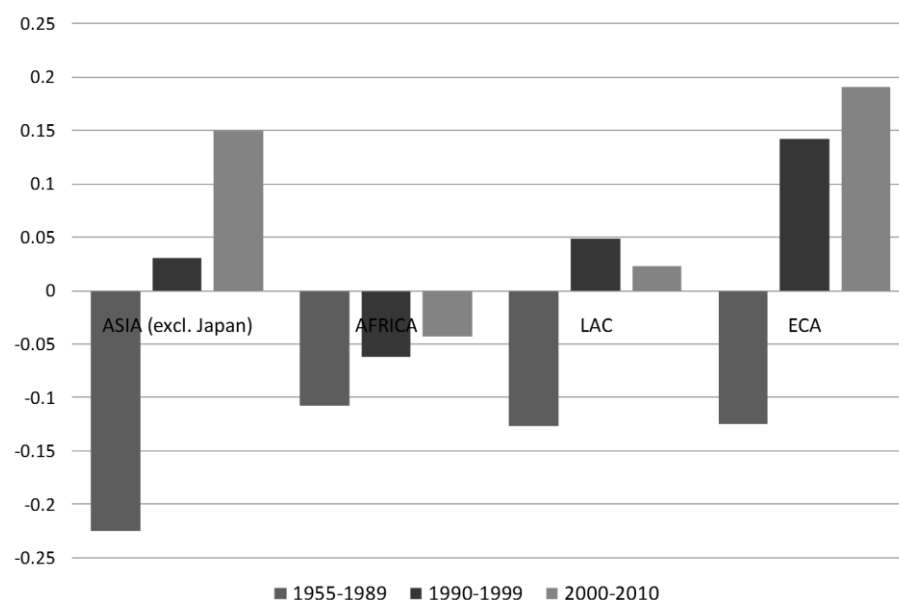
Not only have developing countries as a whole been advancing in production and trade globally; they have also increased their agricultural support. The old notion that the policy framework in developing countries is biased against agriculture needs to be significantly revised, judging from the nominal rate of assistance (NRA) (as calculated by a World Bank project reported in Anderson, 2009), the producer support estimate (PSE) (computed by the Organization for Co-operation and Development [OECD]), and the categories of domestic support, as defined in the AoA, that must be notified to the WTO (which will be called here WTO domestic support, or WTO DS). In the context of agricultural products, PSE and NRA are related economic measures of support to agricultural producers, whereas WTO DS is an indicator for trade negotiations. Increases (decreases) in their values in a country broadly indicate expanded (reduced) support to agricultural producers; however, these measures differ among themselves, particularly when comparing the first two with WTO DS.<sup>35</sup> Overall, the data shown in Figure 4.1 for all three indicators suggest that support for the agricultural sector in developing countries has clearly been increasing. The figure also shows the NRA for the agricultural sector in several developing regions.

The shift from taxing the agricultural sector (a negative number in the Figure 4.1) to supporting it through different measures (a positive number) becomes particularly clear in Asia, Europe, and Central Asia, where the NRA moved from a tax equivalent of about 10–20 percent of the value of total agricultural production for 1955–1989 to a positive transfer to agriculture since the 1990s, reaching about 15–20 percent of total agricultural production in the 2000s. LAC countries also shifted from taxing

<sup>35</sup> For the calculation of the NRA, see Anderson (2009). Comparisons of PSE and different WTO measures of domestic support can be found in Effland (2011); see also Brink (2009).

agriculture in the 1950s–1980s to supporting the sector since the 1990s; however, the NRA in this region has stayed below 10 percent and declined even further in the 2000s. Africa, on the other hand, continues to tax agriculture but at smaller rates, moving from about –10 percent to somewhat less than –5 percent in the 2000s.

**Figure 4.1 Nominal rate of assistance total (%)**



Source: Data are from Anderson and Nelgen (2013).

Note: The data was produced as a part of a recent World Bank exercise covering a large number of developing countries (see the main publications at <http://www.worldbank.org/agdistortions>).

The PSEs calculated by the OECD provide a comparative view of the advances in support in developed and developing countries (see also Bureau and Jean 2013). Table 4.2 shows the value of the PSEs in billion dollars for selected countries covered in the OECD database.<sup>36</sup> Although the developed countries considered (particularly the combination of the European Union, Japan, and the United States) still show the largest values of support compared with developing countries (about US\$215 billion in 2010–2012 compared with US\$211 billion), the aggregate PSEs have remained broadly stable since the 1990s. On the other hand, the developing countries included have significantly increased their PSEs, from about US\$15 billion in the 1990s to about US\$211 billion in recent years; however, this has been mainly driven by the large increase in China’s support, which includes significant investments in infrastructure. Not counting China, the value of the PSEs in developing countries drops to about US\$75 billion, or about one-third of the level of the group of developed countries but still a more than a sixfold increase since the 1990s.

<sup>36</sup> See data in OECD, 2014

**Table 4.2 Producer support estimates, 1995–2012**

Variable	1995–2000	2000–2005	2005–2010	2010–2012
Developed countries <sup>a</sup>				
Total USD billion	215.7	210.1	215.5	214.6
without EU	106.6	104.6	93.3	109.2
EU % total	50.6	50.2	56.7	49.1
Japan % total	25.4	22.3	20.5	28.3
US % total	18.1	20.9	15.2	13.9
Developing countries <sup>b</sup>				
Total USD billion	14.8	47.9	114.7	210.8
w/o China	12.1	27.6	52.6	75.4
China % total	18.1	42.4	54.2	64.2

Source: OECD (2014).

Note: EU = European Union; USD = United States dollars. <sup>a</sup> The developed countries included are Australia, Canada, European Union, Japan, New Zealand, Norway, Switzerland, and the United States. <sup>b</sup> The developing countries included are Chile, Mexico, Turkey, Brazil, China, Indonesia, Kazakhstan, Russian Federation, South Africa, and Ukraine.

The WTO DS, and the AMS within it, is a different measure than either the NRA or the PSE. In particular, the adequacy of the AMS to measure the economic extent and impact of domestic support has been questioned (Orden, Blandford, and Josling 2011), in particular because in the WTO framework, the comparison uses the fixed reference prices of 1986–1988 (which would not provide an interpretable economic measure of present domestic support), whereas the NRA and PSE use current market prices.

The careful calculations in Orden, Blandford, and Josling (2011) for 1995–2008/2009 show that when using WTO categories, the developing countries considered in the study (Brazil, China, India, and the Philippines) have increased their domestic agricultural support in recent years; India, in particular, has moved from a level of domestic support of about 6 percent of the total value of agricultural production in the 1990s to a level above 18 percent in 2008/2009 (or more than 11 percent if the domestic food aid program and related public stockholding are not counted). China moved from 6.5 percent to 9.6 percent in the same period. Domestic support in Brazil and the Philippines, on the other hand, stayed relatively flat, at somewhat less than 6 percent and 4 percent of the value of agricultural production, respectively. Still, the levels of domestic support in these developing countries clearly remain below the levels seen in developed countries. In 2008/2009, the comparable percentages of domestic agricultural support over total value of agricultural production were 33 percent in the United States, 29.1 percent in Japan, and 28.7 percent in the European Union.<sup>37</sup>

Orden, Blandford, and Josling (2011) also provided calculations of the levels of what the 2008 Modalities call overall trade-distorting support (OTDS), which would be limited under that text.<sup>38</sup> According to those estimations, China and India would have allowed levels of OTDS that are comparable to or above the levels permitted to developed countries: China (US\$85.5 billion), the EU (US\$33.1), India (US\$25.6 billion), and then Japan and the United States, each with about US\$14 billion.

The political economy of the negotiations under such a scenario may change significantly. Developing countries that do not have the fiscal space to grant higher levels of support and developed countries that may have the money but are legally constrained under the WTO rules embedded in the 2008 Modalities may join forces against those large developing countries that have both the financial resources and the legal space under the SDT provisions of the 2008 Modalities (see Brink 2011). WTO members may also be less willing to accept at prima facie the food security concerns of countries that are large exporters in the global food market.

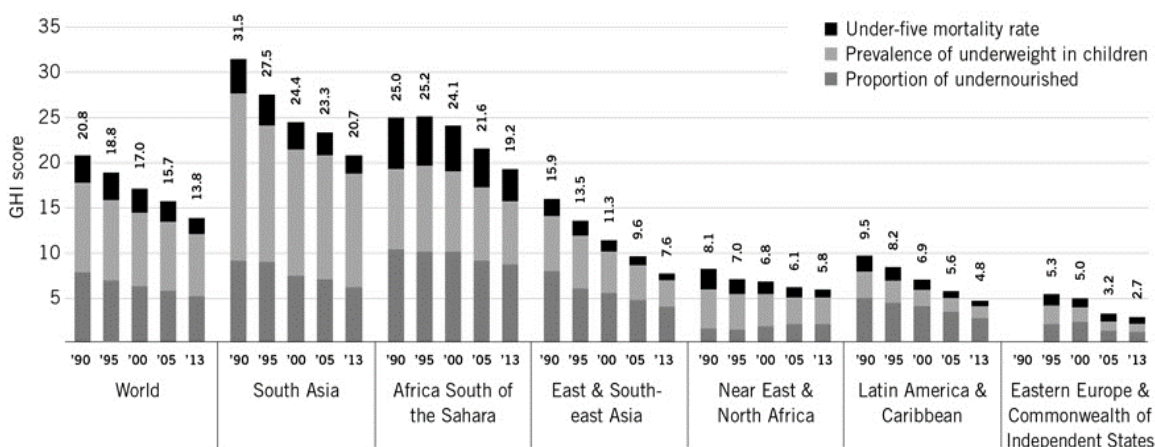
<sup>37</sup> The PSEs in Japan and the European Union are far larger than those of the United States because their calculation includes a market protection component through border measures that is not part of the WTO measure of domestic support.

<sup>38</sup> The OTDS, however, does not include all domestic support, distortionary or not. Therefore, the potential levels of domestic support under the 2008 Modalities are larger than the numbers mentioned in the text. For the intricacies of those calculations, see the chapters in Orden, Blandford, and Josling (2011), in particular Brink (2011).

## Changes in Food Security and Nutrition Conditions

Although there is a large heterogeneity of food (in)security conditions among developing countries, it is clear that there have been improvements at the global level. Figure 4.2 shows the evolution in different developing regions based on the Global Hunger Index.<sup>39</sup> South Asia and Africa South of the Sahara (SSA) show the worst indicators (a higher number implies worse hunger conditions), with the countries in the Near East and North Africa, LAC, and Eastern Europe and Central Asia on the other extreme. However, there has been a general decline of the Global Hunger Index over time, implying improvements in hunger conditions in developing countries, though with important differences across regions and countries.

**Figure 4.2 Contribution of components to 1990, 1995, 2000, 2005, and 2013 Global Hunger Index scores, by region**



Note: For the 1990 GHI, data on the proportion of undernourished are for 1990–1992; data on child underweight are for the year closest to 1990 in the period 1988–1992 for which data are available; and data on child mortality are for 1990. For the 1995 GHI, data on the proportion of undernourished are for 1994–1996; data on child underweight are for the year closest to 1995 in the period 1993–1997 for which data are available; and data on child mortality are for 1995. For the 2000 GHI, data on the proportion of undernourished are for 1999–2001; data on child underweight are for the year closest to 2000 in the period 1998–2002 for which data are available; and data on child mortality are for 2000. For the 2005 GHI, data on the proportion of undernourished are for 2004–2006; data on child underweight are for the year closest to 2005 in the period 2003–2007 for which data are available; and data on child mortality are for 2005. For the 2013 GHI, data on the proportion of undernourished are for 2010–2012, data on child underweight are for the latest year in the period 2008–2012 for which data are available, and data on child mortality are for 2011.

Source: von Grebmer et al. (2013).

At the same time, it has been argued that the world now suffers from a “triple burden” of malnutrition (Pinstrup-Andersen 2007): under-nutrition, or the traditional focus on insufficiencies in calories and proteins; over-nutrition, in particular, fat, sugar, and salt, leading to problems of obesity, diabetes, and cardiovascular disease; and micronutrient deficiency, which has a variety of negative consequences for nutrition and human development. In developing countries, both under- and over-nutrition may coexist, even within the same families (see Garret and Ruel 2003).

Important changes in consumption patterns in developing countries are linked to increasing incomes, urbanization, and important structural modifications in the processing and marketing of food products, all of which have led to a diversification of consumption and a decline in the percentage of calories and proteins associated with the usual staple crops considered in food security stocks. Some of these changes relate to improved Infrastructure and integration of markets (Rashid, Gulati, and Cummings 2008). Reardon et al. (2012) documented the modernization of rice and potato value chains in four Asian

<sup>39</sup> Welthungerhilfe, IFPRI, and Concern Worldwide developed the Global Hunger Index to reflect the multidimensional nature of hunger, combining three equally weighted indicators into one index: (1) the proportion of undernourished people as a percentage of the population, (2) the proportion of children younger than age five who have low weight for their age, and (3) the mortality rate of children younger than age five (see von Grebmer et al. 2013).



countries that resulted from the expansion of roads, electricity, and government support to small traders and processors.

More generally, Reardon and Timmer (2012) reviewed the expanding literature on the important changes in the processing, wholesale, and retailing sectors occurring in many developing countries. The authors documented the different waves of transformation, starting with processing and moving to the marketing channels, particularly the advance of supermarkets. Although the expansion of supermarkets started earlier and has gone further in LAC, the “retail revolution” has also expanded in Asia, as well as in Africa more recently. Reardon and Timmer (2012) also showed that modern food retail in many developing countries is spreading, or has already spread, beyond the upper and middle classes into low-income markets, small cities, and rural towns in a variety of small formats. Those small formats, cheap prices, and flexible inventories have facilitated the penetration of retail food stores into rural towns and poorer urban areas. However, these transformations have not advanced equally throughout Africa, where landlocked areas and countries still lack the modernized marketing chains that are present in other countries. However, the overall tendencies point in the same direction (see also Reardon, Timmer, and Berdegue 2004).

In summary, along with improvements in more traditional indicators of food and nutrition security in developing countries, new concerns of over-nutrition and its related health problems have emerged. At the same time, there are clear changes toward more diversified diets, and new marketing channels for food delivery, even in poor urban and rural areas, have been evolving. These changes in nutrition concerns and consumer demand, as well as in retail channels, suggest that an approach to food security limited to a reduced number of staple crops distributed by the public system may become progressively less and less relevant in many developing countries.

## **General Policy Considerations and Food Security**

As previously noted, the economic context for food security concerns has changed significantly, including the seeming persistence of higher food prices (at least in nominal terms; in inflation-adjusted terms, these prices are mostly below the levels of the previous food price shocks of the 1970s; see Figure 2.1). Notwithstanding those changes, however, some of the policies advocated to address food security concerns seem similar to those put forth in the past to deal with lower food prices. In many countries, the alarm about high prices and price volatility has led to proposals to increase *self-sufficiency* using import barriers and distortionary domestic support; this method is similar to what was done to try to help producers affected by low prices. Proponents of this line of thinking view international markets as unreliable; they believe that what is needed is the expansion of production to some level of self-sufficiency so that countries can depend less on external sources.

This self-sufficient approach, however, must consider the fact that domestic production in individual countries is far more volatile than global and regional aggregates (see, for example, Díaz-Bonilla, Thomas, and Robinson 2003; World Bank 2005).<sup>40</sup> Thus, using international trade to supplement domestic production should, in fact, stabilize domestic food availability. Although some developing countries have successfully managed external volatility, there are likely more examples in which efforts to shield domestic markets from global volatility led to increased internal volatility (see Minot 2011, 2012; Chapoto and Jayne (2009) also showed the destabilizing results of government interventions aimed at stabilizing maize prices in several SSA countries).

Although many policymakers and observers in civil society would always suggest protection (and distortionary support) as their preferred policy option, with either low or high prices, other standard economic policy advice seems to recommend trade liberalization in all circumstances. Here, as in other things, a more nuanced approach is required.

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<sup>40</sup> Although the comment in the text refers to production, Hazell, Shields, and Shields (2005) also documented that the domestic prices of food products tend to be more volatile than the respective world prices, though the period of analysis does not cover the recent global price spikes.

## ***Food Security: A Multidimensional Concept***

It is always useful to remember the definition of *food security* adopted at the World Food Summit in 1996, because this definition shows that the concept is multidimensional, including (1) availability (which depends on domestic production, stocks, and trade); (2) access (which is influenced by income, employment, and poverty patterns related to economic growth and development); (3) utilization (which depends on the quality of food, as well as other factors such as health services, water and sanitation infrastructure, education, and women's empowerment); and (4) stability (the fact that physical and economic access to and proper utilization of food should take place "at all times" and that many factors can affect this stability).

It is widely recognized that food (in)security is strongly correlated to poverty, which is also a multidimensional concept affected by many factors.<sup>41</sup> For instance, Sinha, Lipton, and Yaqub (2002) considered that poverty, poverty severity at a point in time (for instance, measured by the squared poverty gap), poverty persistence in individuals, and intergenerational transmission of poverty are all associated with what they call "damaging fluctuations." This is a general concept that goes beyond risks or shocks and encompasses changes over time that potentially harm people's welfare. The authors identified six major damaging fluctuations affecting the poor: (1) violence (wars, civil strife, community violence, and domestic violence); (2) natural disasters; (3) harvest failure; (4) disease or injury; (5) unemployment or underemployment; and (6) shocks that worsen the relative prices of food when compared with income.

For poor and food-insecure households, the main issues are exposure and vulnerability to these damaging fluctuations. However, typically only part of such events may be caused by food price fluctuations, with most being related to the other factors mentioned, such as weather shocks, health events, and the spread of conflict and war. In particular, macroeconomic crises with subsequent drops in production and employment, chaotic devaluations, and high inflation are some of the major causes of poverty and food insecurity (Díaz-Bonilla 2008).

Although the current period of higher and volatile prices in global food markets has focused much attention on the impact on poverty and food security, economic access to food is not just a problem of food prices. Access to food also depends on the relationship between household incomes (broadly defined), on the one hand, and the cost of the minimum household food requirements (MHFRs), on the other. Both income and costs involve the consideration of prices, wages, employment, and other variables, as opposed to simply a comparison of food prices with wages. Therefore, to assess economic access to food, the proper equations (Sinha, Lipton, and Yaqub 2002; Díaz-Bonilla and Ron 2011) to consider are as follows:

$$\text{Incomes} = \text{Wages} * \text{Employment (or Prices} * \text{Quantity of goods and services sold by the poor)}^{42} + \text{Subsidies or Taxes from the Government} + \text{Other Transfers and Public Services to the Poor}$$
$$\text{Costs} = \text{Food Prices} * \text{MHFR} + \text{Costs of Complementary Goods and Services Needed to Properly Use Food.}$$

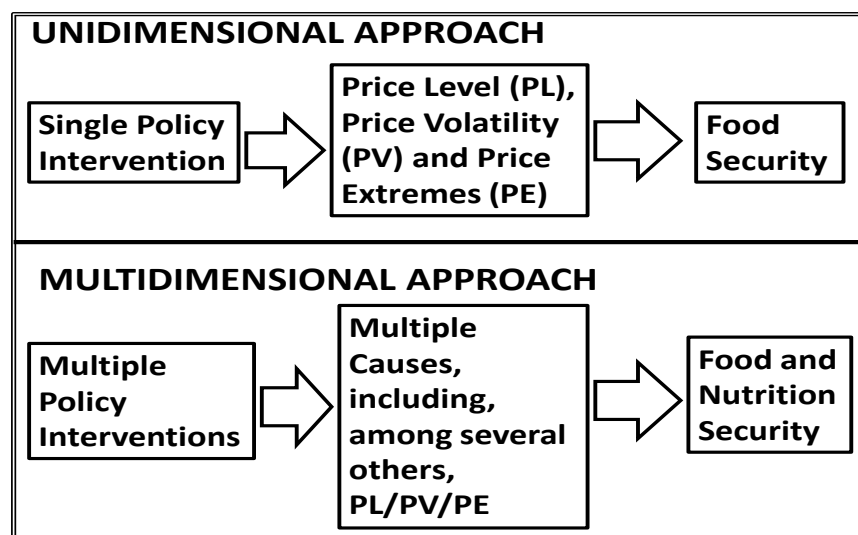
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<sup>41</sup> There is also a definitional relation between food insecurity and poverty in that the general poverty line is usually the cost of minimum household food requirements (MHFRs), with an additional markup representing other expenditures; the line for indigence is usually the cost of MHFRs without any additional expenditures. Therefore, poverty and food insecurity measures should move closely together by statistical construction. An implication is that if a policy measure increases the cost of MHFRs, keeping other things constant, then this would increase both the poverty headcount and the number of food-insecure households among those that are net food buyers. However, other things may not be constant (more on this below).

<sup>42</sup> The "\*" means multiplication. Obviously, taxes enter with a negative sign.

The implication is that a more multidimensional view of the problem is needed (Figure 4.3), because a single policy intervention will not address the multiplicity of factors affecting food security (Díaz-Bonilla 2013a). Furthermore, food stocks, though ostensibly focusing on price instability, may generate broader macroeconomic problems (perhaps associated with fiscal deficits), which may damage food security more than the price instability that those policies tried to solve (see, for instance, Timmer 1989; Dorosh 2008).

**Figure 4.3 Unidimensional versus multidimensional policy approaches**



Source: Author.

### ***Differentiated Impacts of Policies***

It must also be noted that the same policy intervention may have different effects on the general economy and on different households.

Looking first at the general economy, the impact of a policy will most likely depend on its interactions with other policies and structural factors. Therefore, the same policy intervention may have different impacts depending on the context in which it is implemented. For example, a reduction of agricultural tariffs will have different impacts on a country depending on, among other things, whether the tariffs are reduced unilaterally by that country or are the result of a multilateral exercise and whether the adjustment includes only agricultural products or apply to other products and services as well. Structural aspects, such as land distribution and rural infrastructure, are also crucial to determining the effects of a policy: reducing (or increasing) agricultural tariffs in a country with relatively equal land distribution and good infrastructure is most likely to have different impacts than in a country with unequal landholdings and bad infrastructure.

The same applies to external shocks. The analysis of the 2010–2011 food price shock by Ivanic, Martin, and Zaman (2011) shows that poverty increased in 27 of the 28 countries studied, with the exception being Vietnam. Vietnam was different because of its urban-rural division and the structure of landholdings in rural areas; the authors noted that in the last two food price shocks of the late 2000s, total poverty actually decreased in Vietnam due to a larger rural population and a more egalitarian land structure, which led to more poor people being net producers of food.

Moving onto households, it is widely accepted that any policy with economywide impacts will have differentiated impacts on households because of their diversity. Such heterogeneity needs to be considered because food security issues take concrete form at the household and individual levels.

Therefore, any general policy may be a blunt instrument with which to address food security problems; more differentiated policy approaches are needed.

For instance, looking only at the price of food, the impacts on households will be different depending on whether households are net food buyers or net food sellers. Urban households are typically net buyers; however, an important number of families within rural households are net buyers, including landless rural workers and a significant percentage of small farmers, some of whom may experience seasonal variations as net sellers/buyers. Only poor families that are net food sellers (which may not necessarily be the largest percentage of rural families in many developing countries) would benefit from higher food prices.

Table 4.3 shows a general typology of households for Africa and the price issues that may affect those households. (It should be noted that category 3 is nested into category 2, which in turn is nested into category 1; category 4 is separate.) (See also World Bank 2005.<sup>43</sup>)

**Table 4.3 Who is affected by food price instability and how?**

Affected group	Significance	Problem	Inter- or intraseasonal variability the bigger issue?
1. Poor consumers	Majority of both rural and urban population; includes nearly all poor households	High prices reduce real incomes, especially in years of low harvest	Peaks in both
2. Net deficit producers	70–80% of rural households	As in 1, but high prices also discourage investment in high-value crops	Peaks in both
3. Net deficit sellers	10–15% of rural households, including some of the poorest	As in 2, but low prices immediately after harvest also reduce real incomes	Intraseasonal troughs
4. Surplus producers	20–30% of rural households; often non-poor, but important to food security of poor	Price collapse at bumper harvest and (to a lesser extent) low prices immediately after harvest reduce real incomes and depress initiatives for investment in intensification	Troughs in both, particularly interseasonal troughs

Source: Poulton et al. (2006).

These structural characteristics may explain why some empirical estimates (Warr 2013) have found strong, statistically significant links between higher real food prices and increases in the prevalence and depth of undernourishment, as well as the incidence of poverty. This result would be reinforced in the case of price spikes (see Ivanic, Martin, and Zaman 2011). However, these may simply be short-term effects, and a longer-term policy perspective may be needed as well (more on this below).

So far it has been argued that food security is affected by many factors, including prices, and that multiple policies are needed to address the multidimensionality of the problem. The following subsections focus only on price developments.

<sup>43</sup> World Bank (2005) presented the following estimates of the percentages of rural households that are net sellers: Zambia (maize), 24 percent; Mozambique (maize), up to 25 percent; Kenya (maize), 27 percent; Ethiopia (maize and teff), 25 percent; Indonesia (rice), 29 percent; Vietnam (rice), 43 percent; Mexico (maize), 25 percent.

## ***Prices: Trends, Cycles, Volatility, and Extreme Lows and Highs***

Price levels and price variability both have an effect on food production and consumption. Different policies have been used to ensure desired price levels for food and agricultural products and to reduce volatility. However, before discussing specific policy responses, it is necessary to clarify some conceptual issues.

In the context of monetary policies, the idea of price stability takes into account inflation in the range of 0–2 percent per year. Recently it has been suggested that the definition of *price stability* could be expanded to an annual inflation of up to 4 percent (Blanchard, Dell’Ariccia, and Mauro 2010). Obviously, a “stable” inflation of 2 percent per year means that the nominal price level is permanently increasing. (At 2 percent per year, the price level increases almost 50 percent in nominal terms in 20 years; at 4 percent, it more than doubles during the same period.) In other words, stability in levels is one concept, and stability in the rate of change of those levels (that is, the stability of inflation) is another.

In the case of food and agricultural prices, the notion of (in)stability refers mainly to levels. It is important to distinguish among the trend, potential changes in that trend (such as the emergence of a new trend), and some notion of variability/volatility around the trend. This last concept may take the form of (1) a reasonably smooth business-cycle movement<sup>44</sup>; (2) shorter-term volatility around that cycle; or (3) extreme price events, which tend to be shorter in duration but which represent price shocks that may fall outside a “normal range,” such as two standard deviations above or below the trend or the cycle, depending on the time horizon used (see a discussion in Díaz-Bonilla and Ron 2010).<sup>45</sup>

The impacts of changes in price trends on food production and food consumption are different from the impacts of changes in volatility around those trends (cycles and spikes). In what follows, both aspects (price levels, on the one hand, and cycles and spikes, on the other) are briefly discussed.

*Prices levels* affect producers’ profits (and therefore producers’ incentives to produce) and consumers’ costs (and consequently their economic access to food, as already discussed). Therefore, much of the debate regarding different policy approaches to food security usually revolves around a traditional policy dilemma (Timmer, Falcon, and Pearson 1983): what contributes more to generating food security—high prices for producers or low prices for consumers?

High food prices benefit food producers (other things being equal), whereas low food prices help consumers, at least in the short run. However, in the medium to longer term, there may be positive dynamic effects for net food buyers if higher food prices generate economic processes that rise employment or wages at the same time (both in rural and urban areas) by amounts that compensate for the greater cost of food. For example, higher agricultural and food prices may lead to increased investments by the private and public sectors in agricultural production and in rural areas that generate positive employment and wage effects. There may also be some positive dynamic effects if a policy, even though it increases food prices in the short term, leads to investments in productivity that may reduce production costs and prices in the medium term.

Of course, the opposite may also happen: farmers shielded by high protection and pampered by subsidies may not need to incur additional costs and investments to attain their desired profit levels; therefore, protection and subsidization may lead to fewer investments and slowed productivity. Mogues et al. (2012) conducted an extensive review of the impact of public-sector expenditures on agriculture and

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<sup>44</sup> For instance, in Figure 2.1, it is clear that after the spike following the breakdown of the Bretton Woods system, nominal prices followed a clear cyclical pattern (accompanying the global business cycle) around a rather flat linear trend, until the events of the second part of the 2000s led to what appears to be a change in the underlying nominal trend (see Canova [1999] for the complex analytical issues involved in distinguishing trends and cycles in macroeconomic analysis).

<sup>45</sup> Other issues to be clarified in those analyses include (1) how the trend is measured (there are several methodologies); (2) the use of global or domestic prices; (3) whether the focus is on global prices, the proper currency to use for pricing products (US dollars, euros, SDRs, and so on); (4) the relevant markets for price formation and measurement; (5) whether volatility is analyzed for nominal prices or for real prices (and in the latter case, which deflator is used); and (6) the relevant time horizon for volatility analysis (annual, seasonal, monthly, or daily; the time horizon selected depends on the purpose of the analysis, with consumer issues usually requiring shorter horizons than those of producers). (See Díaz-Bonilla and Ron [2010] for a more detailed discussion.)

showed that subsidies have limited impact in terms of their contribution to agricultural productivity in the case of India and other countries. In the case of LAC, López (2007) estimated that public agricultural expenditures labeled as “nonsocial subsidies” or “private goods” (export subsidies, forestry subsidies, targeted rural production subsidies, and so on) have a negative impact on per capita agricultural GDP, as opposed to the positive impact of “public goods” (such as investment in R&D, plant and animal disease control, and environmental protection).

In summary, both high prices and low prices result in adjustment processes if markets operate normally and if signals are transmitted properly to producers and consumers. Higher prices should eventually lead to more production and less consumption; these effects push prices lower (and vice versa, in the case of a low-price policy). A good part of the debates about food security in developing countries revolves around how to solve this policy dilemma: high (low) food prices should normally lead to more (less) food production, improving (worsening) the physical availability of food, while at the same time making food consumption more (less) costly and reducing (increasing) “economic access.”

Those who take the perspective of poor producers prefer high prices, arguing that agriculture’s multiplier effect has important benefits for employment and poverty alleviation; some tend to gravitate toward protection and price support. Those who take the perspective of poor consumers, on the other hand, emphasize the importance of low prices because of the impact on urban and rural poverty and malnutrition. They usually suggest lower levels of protection and the use of consumption subsidies. However, governments need to consider the welfare of both producers and consumers, which many have tried to do with diverse measures and mixed results.

The debate about *price volatility, cycles, and spikes* differs from that about price levels. It has been argued that price instability generates uncertainty about the “true” price level for producers and consumers, and thus that production and consumption decisions may lead to suboptimal outcomes compared with what would have been the case under more stable price conditions. For producers, price volatility may reduce investments and shift production toward lower-risk, but also less-productive, technologies (although World Bank [2005] estimates that these effects may not be that large).

High and variable food inflation and price spikes affect consumers negatively through reduced, or at least uncertain, access to food. This is particularly true for poor and vulnerable households whose incomes do not adjust with inflation and who do not have assets to stabilize consumption patterns. There may also be negative macroeconomic impacts, such as inflation and balance-of-payment and public deficits, as well as a decline in total investment, with second-round effects on poverty and food security (Timmer 1989). It is also important to consider the political impacts linked to social unrest and riots caused by increases in food prices. However, it has been noted that what seems to count in political riots and unrest are high price shocks, which is only one form of (asymmetric) volatility (see Barrett and Bellemare 2011), rather than volatility per se. Persistent food inflation also tends to generate political problems; in many cases, however, sustained inflation (as opposed to price shocks) result from macroeconomic difficulties, which may not be related to developments in food markets.

In summary, it is important to consider trends, their potential changes, business-cycle variability around those stable or changing trends, and shorter-term variability, in particular events of extremely high (or low) prices. Still, it must be emphasized that prices are not the only factor influencing food security and that obviously a variety of policies affects prices. Therefore, as argued earlier, a one-dimensional analysis looking at a specific policy instrument’s impacts on price levels or price volatility would leave a significant part of the causes of, and potential solutions to, food security out of the picture.

### ***Protectionism and Food Security***

As noted, the current period of price volatility has led to more interest in food self-sufficiency. Clearly, developing countries would be well advised to invest more in expanding and stabilizing their domestic agricultural production. The instinctive reaction of some policymakers and civil society advocates, both in the previous context of low world food prices and in the new context of higher prices, has been to resort

to protectionist measures. However, Green Box measures linked to investments in public goods are the real basis for competitiveness and productivity.

Díaz-Bonilla, Thomas and Robinson, 2003 discussed the argument, offered by some non-governmental organizations during the WTO negotiations, that such investments “cost money and are difficult to administer,” with the implication that protection does not cost money and is easier to implement (see the references in Díaz-Bonilla, Thomas and Robinson, 2003). But in fact, protectionism does cost money. It operates as a privately collected and regressive tax on food, the costs of which are paid relatively more by poor consumers (given the incidence of food in their total expenditures) and the benefits of which accrue relatively more to large producers (considering that protection is a markup received per unit produced). High tariffs and related import restriction measures also increase the price of agricultural inputs to other sectors, negatively affecting production and employment there. Higher costs of wage goods may lead to higher salaries, affecting other labor-intensive export industries. Large trade protection also tends to overvalue the real exchange rate, with negative implications for other tradable sectors. Finally, increased trade, rather than protectionism, seems to have greater positive effects on technological advancement, investments, and productivity (see the literature review on total factor productivity by Isaksson [2007]).

Import barriers and distortionary domestic support to expand production are usually less-than-optimal, and potentially costly, ways to try to insure against price volatility. For instance, Minot (2011, 2012)<sup>46</sup> showed that (1) food price volatility in several SSA countries seems more prevalent in domestic markets than in international markets; (2) such domestic food price volatility has not changed much with recent increases in international price volatility; (3) commodities that are more traded internationally have lower volatility than those less traded; and (4) volatility is higher in countries and for commodities where governments intervene actively in markets through state-owned enterprises (see also Hazell, Shields, and Shields [2005] for several products, and Chapoto and Jayne [2009] for maize).

If import barriers are used, domestic prices will also be kept at higher levels, which may affect the food security of poor and vulnerable populations. In any case, stable high prices, which may lead to the expanded domestic production and employment dynamics postulated by the high-price advocates, must be compared with the consumption losses and the displacement effects on production in other sectors that may have to contract to accommodate the larger use of resources by the artificially expanded agricultural sector (assuming that at least some of those resources are not unemployed). Finally, considering that domestic production tends to be more volatile than global production for most countries, self-sufficiency may in fact increase volatility. If distortionary domestic support measures are implemented, they will have fiscal impacts that need to be considered as well. These impacts may displace other public expenditures that have more positive impacts on production and poverty (Fan 2008; Mogues et al. 2012).

So far this paper has argued against some approaches that in the context of both high and low prices would suggest protectionism as the preferred policy option. However, there is also a mirror-image case to be considered with caution: the argument, based on undifferentiated trade theory that proposes trade liberalization irrespective of the context of low or high prices. Proponents of this approach should consider that slow or no mobility in labor, capital, and land implies that any reallocation of factors and resources will take time and would include potentially significant transaction costs. In particular, small and vulnerable producers may not be able to adjust to the new policy environment and may see a definitive negative impact on their livelihoods.<sup>47</sup> This possibility highlights the need for carefully modulated policies for poor producers and consumers.

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<sup>46</sup> For the analysis of patterns of volatility, the dataset uses wholesale and retail food prices compiled from local statistical agencies by the Famine Early Warning System Network (FEWS NET) for 10 staple foods (beans, bread, cooking oil, cowpeas, maize, millet, rice, sorghum, teff, and wheat) in 15 countries (Chad, Ethiopia, Guinea, Kenya, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe).

<sup>47</sup> In trade theory, this would apply to models with “specific factors of production”—that is, those that cannot be converted easily or at all into other activities.

## ***What Are the Outlines of an Adequate Policy Approach?***

In terms of aligning objectives and instruments, two general policy rules must always be considered. One is the Tinbergen rule (Tinbergen 1952), which indicates the need to have as many instruments as objectives; using just one policy (or focusing on just one intermediate variable) will not effectively ensure the welfare of both producers and consumers at the same time. In theory, with adequately operating markets, policymakers should be able to just let those markets deliver an acceptable price for all through supply and demand; however, markets do not necessarily operate adequately in many developing countries. The problems may be compounded when policymakers seek to modify those market-based results, sometimes trying to increase prices for farmers above market-clearing values, sometimes pushing prices for consumers below market-clearing values, and sometimes aiming to do both simultaneously.

Leaving aside the more involved debate about which market failures would need such correction through public policies and what potential fiscal and other costs of such correction would be, the point here is more mechanical. If there are two policy objectives, then there needs to be at least two policy instruments. Proposals in favor of just one policy (say, protection or free trade) or one situation (high or low prices) would most likely not deliver the multifaceted results needed by increasingly complex societies.

A second policy imperative can be called the Bhagwati rule, following the pioneer article on distortions and welfare (Bhagwati 1971). An implication of that analysis is the need to tailor policy interventions to the source of the problem as closely as possible to avoid second-round problems that can arise if the policy targets a proxy that is simply hoped will help achieve the objective. For example, if a country wants to help its poor and vulnerable people, targeting specific food products (even if called *food security* crops) is an indirect, and at times inefficient and inequitable, way to reach the intended objectives of poverty reduction and food security. In addition, if the concern is about the incomes of small and poor producers, trying to increase the prices of some agricultural products would be an indirect mechanism that, by necessity, will benefit larger producers more than smaller ones. Here, as in other cases in which food security concerns are invoked, the focus of the policy analysis should be on people rather than on crops or food products.

Overall, the most effective way out of this policy dilemma is through interventions that increase production efficiency and reduce costs (agricultural R&D, infrastructure, and related investments allowed in the Green Box), all of which increase profits and incomes for food producers while contributing to reducing prices and expanding food availability for consumers. At the same time, the challenges faced by poor and vulnerable populations can be addressed through properly designed and funded safety nets and cash transfer programs (Hidrobo et al. 2012; Hoddinott et al. 2013). An overall adequate policy framework for food security and poverty alleviation would include good governance; macroeconomic stability; a relatively neutral trade policy; investments in infrastructure, R&D, and human capital (health, nutrition, and education), focusing on the poor and vulnerable; policies and investments that facilitate the adequate functioning of product and factor markets; land and water policies that favor a more equitable agrarian structure, facilitating access to the sustainable use of natural resources by poor rural households and small and family farmers; women's empowerment programs; support for community organization and participation, particularly for the poor and vulnerable; and maintenance of law and order in rural areas.<sup>48</sup>

The specific debate about the economic and operational aspects of food security stocks, which is the topic of the next section, should be placed in this general context.

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<sup>48</sup> It was already mentioned that Sinha, Lipton, and Yaqub (2002) identified violence and conflict (wars, civil strife, community violence, and domestic violence) as one of the “damaging fluctuations” that deeply affect the poor and vulnerable. This fact is corroborated by the World Bank study titled “Voices of the Poor” and summarized in Narayan et al. (1999), which suggests the importance of effective and noncorrupt public law and order for the poor. Therefore, the maintenance of public safety in rural areas is crucial for food security.



## Food Security Stocks and Domestic Food Aid

The G-33 proposal analyzed in Section 3 that led to the peace clause would address the policy dilemma of high/low food prices by adjusting two separate policy instruments included in the AoA. It would allow for the payment of higher prices to LIRP producers (using purchases for food security stocks with modifications to Annex 2, paragraph 3), and it would offer lower prices to consumers (through domestic food aid, Annex 2, paragraph 4).

Leaving aside legal aspects, the design of food stocks for food market stability and domestic food aid needs to take into account a variety of economic and operational issues. The operational problems and costs involved are likely more important in developing countries than the issue of policy space within the WTO framework.<sup>49</sup>

### *Food Stocks: Unidimensional and Multidimensional Approaches*

This analysis starts by placing public food stocks in the general context of policies related to food security. Figure 4.3 distinguished between unidimensional and multidimensional approaches to food security. It should be reiterated that prices are not the only variables that impact food security, nor are they even always the main ones. The crucial importance of health and sanitation and women's empowerment and education (Smith and Haddad 2000)—all topics that are largely unrelated to price issues—has already been mentioned. However, it is important to also remember that many different policy instruments, not just public food stocks, affect the level and volatility of prices. Therefore a unidimensional approach to policy analysis would be highly constraining.

However, because food stocks are often discussed in the context of price stabilization, this paper now focuses on prices as the intermediating variable. Galtier and Vindel (2013) identified a variety of policies within four broad strategies resulting from a two-by-two matrix that combines markets and governments, with the goal of stabilizing prices or managing and coping with the consequences of price volatility. The four quadrants of the matrix define what Galtier and Vindel called A (use of market-based policies to stabilize prices), B (use of market-based policies to cope with volatility), C (direct interventions by governments to stabilize prices), and D (direct interventions by governments to cope with volatility). The authors emphasized the C strategy, which, in their view, is often missing in the advice given to developing countries.<sup>50</sup>

Table 4.4, taken from the report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security (HLPE 2011), expands the ABCD framework by defining a three-by-three matrix. The left column identifies policies and interventions operating through markets and the private sector, directly implemented by the governments, or carried out by the civil society; the top row distinguishes policies and interventions that focus on stabilizing prices or that assume that price volatility and shocks will occur and thus try to manage those problems *ex ante* or to cope with them *ex post*.

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<sup>49</sup> The long list of theoretical and empirical studies on food stocks cannot be reviewed here. Different evaluations of the uneven experiences of food stocks for stabilization of prices in developing countries can be found in Islam and Thomas (1996), Hazell (1993), and Knudsen and Nash (1990). Recent analyses include Galtier and Vindel (2013), who are more supportive of the use of food stocks for price stabilization. Less sanguine assessments can be found in World Bank (2005, 2012) and Gilbert (2011). See also HLPE (2011). Gouel (2013) provides a review of different approaches, including simulations with dynamic optimizing models. This section focuses on domestic food stocks; discussions about regional and international food stocks can be found in World Bank (2005, 2012), von Braun and Torero (2009), and Tangermann (2011).

<sup>50</sup> Timmer (1989), who consistently highlighted the importance of price stabilization in the successful expansion of agricultural production in Asian countries such as Indonesia, also wrote the preface to Galtier and Vindel (2013). In that introduction, Timmer argued, "It is not easy to stabilize food prices, but it is not impossible either. We just need to stop arguing that stable food prices are a bad thing and get on with the tough analytical and empirical work to learn how to do it effectively, efficiently, and honestly."

The HLPE classification also includes a useful list of possible policies and interventions in all the ABCD strategies, including food stocks as part of the C strategies of direct government interventions to try to stabilize prices. The point is not to discuss or rank all the possible policies and interventions but to simply point out that policymakers have available an extensive array of options that should be analyzed and deployed in an integrated framework for food security, including public stocks for food security purposes as a potential component of that framework.

**Table 4.4 ABCD framework**

Policies and Programmes	Reduce the eventuality and size of price shocks	Ex-ante interventions relative to price shocks	Ex-post interventions relative to price shocks
Programmes	Reduce price volatility	Manage price volatility	Cope with price volatility
Interventions through markets and with the private sector	<b>A. Make markets work better in time and space</b> <ul style="list-style-type: none"> <li>- Information systems</li> <li>- Transport and communication infrastructure</li> <li>- Increase competition in domestic market and trade</li> <li>- Private sector storage development through improved access to financing</li> <li>- Grades and standards</li> </ul>	<b>B1. Financial products</b> <ul style="list-style-type: none"> <li>- Crop/livestock insurance (index-based)</li> <li>- Credit and savings associations</li> </ul> <b>B1. Investment in agriculture</b> <ul style="list-style-type: none"> <li>- Increase domestic food production</li> <li>- Diversification and resilience of food systems</li> <li>- Growing local crops</li> <li>- Food storage systems at all levels including community storage</li> </ul>	<b>B2. Emergency loan programmes</b> <ul style="list-style-type: none"> <li>- Access of importers to trade loans</li> <li>- Loans to producers and consumers</li> </ul>
Direct state interventions	<b>C. Intervene in markets</b> <ul style="list-style-type: none"> <li>- Public stocks</li> <li>- Price bands schemes</li> <li>- Price stabilization</li> </ul>	<b>D1. Enhance productivity in smallholder farming</b> <ul style="list-style-type: none"> <li>- Resilience of farming systems</li> <li>- Targeted input subsidies (seeds, fertilizer)</li> <li>- Production for home consumption</li> </ul> <b>D1. Employment in the rural non-farm economy</b> <ul style="list-style-type: none"> <li>- Decentralization</li> <li>- Small and medium rural enterprise programmes</li> </ul>	<b>D2. Social protection for vulnerable households</b> <ul style="list-style-type: none"> <li>- Cash and food transfers</li> <li>- School feeding programmes</li> <li>- Taking into account human life-cycle</li> </ul>
Interventions through and with civil society		<b>E1. Negotiated ex ante social protection</b> <ul style="list-style-type: none"> <li>- Minimum wage, right to food</li> </ul> <b>E1. Producer organizations' services to members</b> <ul style="list-style-type: none"> <li>- Rotating credit schemes</li> <li>- Group insurance</li> <li>- Local purchases for food distribution systems (e.g. WFP's P4P)</li> </ul>	<b>E2. Community-driven productive social protection</b> <ul style="list-style-type: none"> <li>- Workfare (coping) with community-driven development projects (management)</li> </ul>

Source: HLPE (2011).

### **Objectives and Types of Food Stocks**

A common operational problem for food stocks is that they lack clear objectives or have multiple and sometimes conflicting objectives (NEPAD 2004; Dorosh 2009). Those objectives may include coping with emergencies, helping populations suffering from chronic hunger, stabilizing prices for producers at profitable levels, and providing food to urban populations at prices that are stable and affordable, among others (NEPAD 2004). These varying objectives can result in food stocks of an inadequate size (too high or too low), confusing decisionmaking and managing structures that are prone to political interference and short-term horizons, high costs and operational inefficiencies, and inappropriate levels of funding and misallocation of resources (NEPAD 2004). A basic starting point, therefore, is to properly categorize those food stock objectives into one of three general categories (NEPAD 2004; World Bank 2005; 2012).

First, *emergency food stocks* try to cope with natural disasters and other disruptions in the domestic or international food supply. These stocks are usually small and are supposed to bridge the supply gap until the arrival of commercial supplies or food aid. Hazell (1993) suggested that relatively small percentages of total consumption (which he estimated at 5 percent of total consumption in the case of SSA countries) may suffice to act as an insurance mechanism. More recently, NEPAD (2004) suggested that such stocks should be able to cover two to three months of consumption, which amounts to 17–25 percent of total consumption.

A second category can be called *food redistribution stocks*, which serve as a rotating stock that backs up the distribution of food in programs that can take several formats, such as targeted safety nets to help the poor and vulnerable; special programs, such as school lunch programs, supplementary feeding programs for women and children, food-for-work (FFW) schemes, and the like; and semi-targeted public distribution systems (such as *fair price shops* and *ration shops*) or even non-targeted public systems (though this option has been generally discontinued because of its high cost). These stocks may also cover some emergency functions.

Food redistribution stocks are typically bigger than emergency stocks, depending on the coverage and scope of the food distribution system of which they are a component. For instance, India's Targeted Public Distribution System (TPDS) is the largest food system of this type in the world (Dorosh 2008); it has reached some 600 million people considered food vulnerable or undernourished. India's National Food Security Act of 2011, expanded and revised in 2013, will increase this coverage to about 800 million people. This large system obviously requires large inventories, which has led to the government purchasing up to one-third of the country's wheat and rice produced in recent years (Hoda and Gulati 2013).

Although additional consumption may not increase one-to-one with the rations distributed (see Rashid and Lemma 2011), the people receiving food support represent an additional level of demand that would not have existed without the domestic food security and domestic aid program. As noted before, this additional demand tends to support food prices.

At the same time, different studies show that at different points over the past two decades, India has accumulated inventories far in excess of the amounts needed for its food stock program, which has generated large fiscal costs for the government and led to subsidized exports (Dorosh 2008). The program's operation may also have been pro-cyclical in recent episodes of global price spikes, without adequate releases of food stocks in the domestic markets and with even further stock accumulation during moments of high prices. This experience, coupled with additional exports, would not have helped poor consumers (Gouel 2013). The direct costs of the current TPDS have been estimated to be about 0.9 percent of India's GDP in 2009–2010 and 2010–2011 (Hoda and Gulati 2013). If the increase in coverage leads to a proportional increase in costs, the fiscal cost of the new scheme may reach close to 1.2 percent of the GDP. That cost, however, may not necessarily translate into an equivalent support to poor consumers, considering that other costs are associated with waste and loss because of inadequate storage, handling, and transportation; leakages of funds and products; and diversion of food from the poorest members of the society. Hoda and Gulati (2013) estimated leakages of the TPDS to be about 36 percent of the subsidized food grain and diversion to be about 21 percent. Furthermore, Reardon et al. (2012), in their analysis of rice distribution in several Asian countries, found that, according to the surveys conducted in New Delhi, fair price shops were closed during business hours in about two-thirds of the cases, which they found to be consistent with other studies about the inefficiency of the TPDS.

However, it must be noted that since India started procuring cereals domestically in the mid-1970s for the public distribution system, India the country has avoided a major food crisis, even though several instances of sharp declines in production have occurred (for instance, 1976, 1979, 1982, 1986–1987, 2002, and 2009 saw declines of more than 7 percent in cereal production). Furthermore, the country has been able to maintain reasonable stability in the domestic price of major food products, even in the face of important exogenous price shocks in recent years (though at the cost of exporting volatility to global markets) (Gouel 2013). The question here relates more to the costs of the current system and the possibility of designing a more efficient and equitable scheme to support competitive agricultural

production, provide a safety net for the poor, and insure against food shocks. It should be noted, however, that improving and modernizing such an enormous program, which reaches hundreds of millions of poor producers and consumers, may take many years, and the country should be given enough time to find its way.<sup>51</sup>

The third category is *buffer stocks*, the purpose of which is to stabilize prices. These stocks generally tend to handle larger quantities of food than the other two categories; they may even carry enough food to serve as emergency relief and as a backup for the operation of a public distribution system (World Bank 2005, 2012). This is true in India, where the system of public purchase and distribution, given its size, appears to have helped stabilize prices in the domestic market, though at significant costs compared with other countries in the region that followed other, more market-based strategies (Dorosh 2008).

Stabilization stocks differ in the definition of the price targets, such as (1) a single price, (2) symmetric price bands (of different widths), and (3) extreme values (in many cases asymmetrically, trying to ensure that they do not go above or below some level considered highly disruptive for consumers or producers).

If the real objective of the food stocks is price stabilization (as opposed to subsidizing producers with above-market prices or taxing them with below-market prices), then the target levels for prices or price bands should be updated to track mean trend values over the period of stabilization, such as a three to five year rolling average (Timmer 1989). However, historical examples show that these stabilization stocks tend to drift into subsidized price support to producers, to the detriment of consumers and taxpayers, or into taxing producers with low prices to help consumers.

Theoretical and empirical analyses of the welfare effects of price stabilization (as a notional concept) have generally found small positive effects for consumers (Gouel 2013), as well as some efficiency gains for producers, though still not very large (World Bank 2005). The main gains may come not from stabilization per se but from preventing large upward spikes (which may affect poor consumers irreversibly by hurting their health and nutritional status) and downward price spikes (which may force small and vulnerable producers into bankruptcy or a fire sale of assets). At a macroeconomic and political level, the argument is that these large upward or downward spikes affect political stability and the general economy in ways that are not captured in the more limited welfare and efficiency measures mentioned earlier (Timmer 1989). (There are different views on whether the political and macroeconomic benefits of avoiding price spikes are as large as postulated; see World Bank [2005].)

The question is how to move from the notional idea of price stabilization to operational schemes that actually deliver that outcome. Both food redistribution stocks (which, in principle, try to help specific poor and vulnerable consumers) and buffer stocks (which are not targeted in their effects on consumption) are more relevant when a country's consumption depends on a reduced number of basic products and when those products are less perishable (World Bank 2005). According to the food balance sheets calculated by FAO (FAO/FAOSTAT 2014), Indonesia (highlighted by Timmer [1989; 2013] as a positive example of price stabilization) is a clear example in which a product that is storable (rice) represents (using 2009 data) around 48 percent of the calories and 40 percent of the proteins consumed on average (these values were 56 percent and 53 percent, respectively, in 1980). On the other hand, many African countries have a more diversified structure that uses some products (such as cassava and yams) that are difficult and costly to store. In 2009 in western Africa,<sup>52</sup> the percentage of average calorie consumption was distributed as follows: 5.4 percent wheat and wheat products, 12.6 percent rice, 9.1 percent maize and maize products, 10 percent millet and millet products, 9.1 percent sorghum and sorghum products, 8.7 percent cassava and cassava products, and 7.9 percent yams. Although India is closer to Indonesia, it is

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<sup>51</sup> It must be recalled that the process of reform of the Common Agricultural Policy of the European Union, which started in 1992 with the McSharry Program, is far from finished after more than two decades. In the United States, agricultural policy reform has shifted across different approaches over the years; the current 2014 Farm Bill, if anything, is a movement away from WTO disciplines on trade or production distorting support (Orden 2014).

<sup>52</sup> Benin, Burkina Faso, Cabo Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Saint Helena, Ascension and Tristan da Cunha, Senegal, Sierra Leone, and Togo

still more diversified, with 21 percent of the total average calories in 2009 resulting from wheat and wheat products and about 29 percent from rice.

The importance of food security stocks may change depending on how advanced a country is in its development, which, among other things, defines the quality and extension of infrastructure and the operation of the private sector.<sup>53</sup> The geographical position also matters; a landlocked country with infrastructural limitations will face more challenges than a country with easy access to maritime routes.

In summary, emergency and redistributive food stocks can play an important role in food security arrangements. However, carrying stocks as an insurance mechanism or as a component of safety nets is different from using stocks to stabilize domestic grain prices, which, as noted, usually requires larger stocks and which may be expensive and not always effective in reaching the expected stabilization. Although stabilization schemes seem to have worked well in Asia, the same cannot be said in many of the stabilizing schemes in African countries (see Galtier and Vindel 2013; NEPAD 2004). This last observation coincides with the findings in Minot (2011, 2012) about the destabilizing effects of domestic policies in several SSA countries. Developing countries in LAC, which tend to have relatively diversified diets and more developed private systems for food processing and distribution, have in general moved away from public food stocks and have linked domestic food programs to general safety nets.

Neither emergency nor food redistribution stocks should have problems with the WTO disciplines if the products are purchased at market prices;<sup>54</sup> the only additional conditions mentioned in Annex 2, paragraph 3 (other than the issue of purchasing prices) are that stocks must be an integral part of a food security program identified in national legislation, must correspond to predetermined targets related solely to food security, and must include a financially transparent process of stock accumulation and disposal. As noted, for developing countries, these conditions are further relaxed by footnote 5 in Annex 2, paragraph 3, which only requires that public food stocks operate in a transparent manner and be “conducted in accordance with officially published objective criteria or guidelines.” These reasonable conditions can help with transparency and can limit opportunities for corruption and misallocation. The main issue, both operationally and for the AoA, is the purchasing price in the third case of buffer stocks for stabilization purposes.

### **Purchasing Prices**

It has been noted that stabilization stocks may focus on single prices and may defend price bands (mostly symmetrically) or price extremes (which may have an asymmetric definition, such as avoiding price spikes that hurt consumers). This section discusses some operational aspects of the different approaches.

It has been argued that the *single-price approach* may be costly and may eliminate all incentives for private-sector traders to offer storage, which in turn forces the public sector to undertake a larger role in the operations needed to stabilize prices (Gouel 2013). In addition, if the level at which food prices are stabilized is higher on average than what it would have been without stabilization, then this would help producers but hurt consumers, particularly poorer ones (Sumner 2000). Thus, there may be a trade-off for the poor between price stability and price levels, with price stabilization schemes at higher price levels possibly driving more people into food insecurity (Sumner 2000).

Purchasing prices above market-clearing prices can also lead to excessive accumulation of stocks, which eventually will have to be disposed of in the domestic or international markets, which, in turn, would depress prices. In the case of exports (which, to be competitive in world markets, may have to

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<sup>53</sup> For instance, Galtier and Vindel (2013) argued that the price stabilization scheme could be adjusted according to the level of a country’s development: a less-developed country, where agriculture may be in a pre-Green Revolution stage, may need price bands that are not too narrow but not too wide; developing countries with more productive agricultural and market institutions may reduce and even eliminate the lower support price but may maintain the upper part of the band to avoid shocks to consumers; finally, developed countries, where producers are competitive and food has a smaller incidence in consumers’ expenditures, the stabilization stock may be abandoned.

<sup>54</sup> The source of food for these food stocks may be food aid or international purchases, both of which raise other issues. However, these issues are unrelated to the problem of domestic support discussed here.

receive an explicit or implicit subsidy with respect to the purchasing price), this disposal of surpluses in global markets will most likely generate trade frictions with other countries (see Dorosh 2008, 2009).

Gouel (2013) showed that structuring purchases to defend a *price band* (to avoid excessively high or low prices) will lead to better prices for producers during the buildup of stocks but to lower prices (though also less volatility) once those levels have been reached, provided the stocks are not exhausted to defend certain levels and then permanently replenished, which will keep prices higher at significant fiscal costs (Thompson and Tallard 2010). Gouel (2013), in line with other literature, also disputed the notion that wider price bands lead to lower costs (supposedly because the government buys low and sells high and does not have to intervene that often), because this notion does not take into account the carrying costs of such policies, which increase with wider price bands because of the longer time that stocks have to be immobilized and maintained (see also World Bank 2012).

Thompson and Tallard (2010) analyzed *asymmetric interventions*, which are used only when prices are excessively high. This section discusses the authors' simulations in greater detail because (1) they focus on the problem that many observers have in mind when discussing price stabilization issues (that is, sharp upward price spikes as were seen in 2007–2008 and 2011), and (2) it illustrates in an empirical simulation many of the trade-offs related to the high/low food price policy dilemma highlighted earlier.

Thompson and Tallard used the OECD's Aglink-Cosimo economic model of global agricultural markets to simulate three policies to confront a sudden price increase in the international wheat and rice markets: (1) trade measures to prevent domestic prices from going above 35 percent of the preshock level; (2) consumer subsidies that limit the increase in consumer prices by 20–40 percent; and (3) additional public stocks for up to one-third of domestic consumption that are built and then released on domestic markets, if domestic prices rise by at least 40 percent in a specified period.

The policies are assumed to be implemented by a group of 10 countries (Argentina, Brazil, Chile, China, India, Indonesia, Russia, South Africa, Ukraine, and Vietnam) but not in the rest of the world (which nonetheless suffers the consequences of the policies implemented in the core group).<sup>55</sup> The new policies are in addition to any existing measures that these countries may already have in place. The prices for wheat and rice are simulated to jump a sizable 70 percent over the previous year (which the authors argued would be similar to the 2007–2008 price shock) and then revert to trend levels. The results calculate the levels of producer and consumer prices in these countries, the fiscal costs of the policies, changes in the per capita consumption of wheat and rice, and the impacts on world prices. The baseline (without the price surge and the new policies) and the simulated paths with the new policies cover a total of 10 years, with the price shock taking place somewhat before the midpoint of that period and the consequences of the shock and policies playing out until the 10th year.

This section discusses only some of the results linked to building and releasing food stocks. World prices are higher than the baseline when food stocks are being built, but then are obviously lower during the year of the price shock when food stocks are released (about 20–25 percent lower than world prices would have been with the shock alone). Prices are then higher again if stocks are rebuilt. Producers benefit and consumers lose while the stocks are being built; during the price shock, the reverse happens. Producers in the rest of the world (outside the 10 core countries considered) also benefit from the higher prices (underlining the fact shown in simulations by Gouel and Jean [2012] that additional trade measures are needed to keep the economic effects of building and releasing food stocks within the country).

If the stocks are built and the price shock does not then take place, then prices will have been maintained higher during the buildup and will then return to the trend once the desired level is achieved. However, the costs of building the stocks and of keeping them afterward increase significantly (about US\$160 billion over 10 years for all 10 countries considered).

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<sup>55</sup> The countries selected represented about half the world's population and about two-thirds of rice consumption and production, 45 percent of world wheat consumption for food, and 43 percent of world wheat production in 2010–2011.

It is important to look at the results in terms of rice and wheat consumption, which is what should count for food security. During the 10-year period of the simulations, consumption of both products is lower in the countries applying the policies and in the rest of the world. To understand these results, the following pair of scenarios must be considered: first, a world without a price surge and without new policies (compared with a world without a price surge but with new food stocks), and second, a world with a price surge and without new policies (compared with a world with a price surge and with new food stocks). The first result is obvious: food stocks have been built for no purpose (that is, there was no price shock), leading only to price increases and thus to a reduction in consumption. The second result is the combination of the period of the shock, when prices are lower and consumption is higher due to the release of stocks, and the rest of the years, when the positive effect in consumption is more than compensated for by higher prices and lower consumption during the periods of stock buildup.<sup>56</sup>

Thus, the old dilemma of high/low prices cannot be avoided. In these simulations, producers in the 10 countries (and in the rest of the world) benefit from higher prices; consumers, both in those countries and the rest of the world, lose on average (though they suffer less during the price shock); and the whole scheme implies significant fiscal costs.<sup>57</sup> This final problem highlights another point made earlier: If, as shown in Hazell, Shields, and Shields (2005), a nontrivial part of the domestic price variability is related to macroeconomic crises, then fiscal deficits caused by price food stabilization schemes may lead to macroeconomic problems and destabilize domestic prices through other channels (as recognized in Timmer [1989]). More generally, macroeconomic crises lead to increases in poverty, with negative effects on food security, nutrition, and health (see, for example, Díaz-Bonilla 2008).

It is also important to note that in the simulations, the buildup of stocks only goes up to a fixed level of consumption (one-third) and then is firmly maintained at that level. Experience shows that farmers' pressures to maintain high prices (or to increase them further) once stocks have been built may lead to excessive accumulation of stocks (Dorosh 2008, 2009). Therefore, food stocks must be designed with a strict limit (see Gouel 2013).

These results are based on food stock operations in which purchases are made at market prices. In many cases, however, the objective may be to provide further price support to farmers. The paper now turns to that issue.

### ***Additional Price/Income Support to Farmers***

The proposal by G-33 countries seems to consider that making purchases for food security stocks or domestic food aid at market prices may be a somewhat ineffective way to attain developing countries' food security objectives. Therefore, their suggestion focuses on exempting purchases from LIRP producers from domestic support limits.

It is not clear, though, why buying at market prices should be ineffective. Certainly, to build food security stocks for emergencies and to provide domestic food aid for poor consumers, governments in developing countries would be far better off financially if they bought at market prices (especially in a context of high food prices). For poor countries, it makes sense not to add to the costs of the food security program by using above-market administered prices, which generate losses through buying high to support farmers and selling low to subsidize consumers. In addition, conducting the operations at market price, ideally using some sort of auction, will ensure that the program is part of the Green Box.

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<sup>56</sup> The simulations are conducted in quantity units (not in monetary welfare metrics), and the results are not discounted over time.

<sup>57</sup> It is also interesting to note that the other simulated policies (trade measures and consumer subsidies) increase the level of wheat and rice consumption in the 10 countries when compared with a counterfactual of a price surge but no new policies; consumption also increases more with consumer subsidies than with trade measures. However, in the rest of the world, both policies lead to smaller consumption in addition to the decline caused by the price shock—though with consumption subsidies, that additional decrease is small (more on this later).

If the objective is to pay LIRP producers above the prevailing market price, then obviously the previous comment does not apply. Still, it is important to note that even when purchases are made at market prices, the program still offers some support to farmers<sup>58</sup> (as noted in the simulations of Thompson and Tallard 2010). Furthermore, that impact is reinforced if the food stocks are used annually and rotated as part of social safety nets or other public systems of food distribution targeting the poor and needy. As noted earlier, this type of redistributive program expands “effective demand” (that is, demand backed by purchasing power—in this case intermediated by government purchases) and leads to higher prices for producers than would have been the case otherwise. Although this cost would be borne by those consumers who do not receive food aid and by the taxpayers, it has the counterpart of poor people acceding to higher levels of food consumption.

It should be further noted that an income-redistribution program with discounted food vouchers for poor consumers would also lead to higher demand and therefore higher prices for farmers when compared with the counterfactual of no program, without the government having to physically intermediate the purchase of food and the distribution of food aid.<sup>59</sup> Of course, this assertion depends on the existence of a private sector that adequately covers the national territory, whose operations are reasonably efficient (that is, no large losses in the physical handling of the products), and that behaves competitively along the procurement and marketing chain (that is, there are no intermediate actors with dominant market positions that may retain a larger share of the benefits of the redistribution, charging lower prices to farmers and higher prices to consumers). In this situation, the comparison is between the quality of the coverage, efficiency, and competitive behavior of the private sector, on one hand, and the performance of the public bureaucracy distributing food in terms of potential additional costs and inefficiencies, on the other.

However, if a government is still focused on providing additional income support to LIRP producers (which is a separate objective from food security and nutritional support to consumers), in addition to the investment and input subsidies of Article 6, paragraph 2,<sup>60</sup> developing countries can use direct payments to producers (paragraph 5, Annex 2, of the AoA). Those payments should not be more difficult to implement and monitor (particularly with the extension of national identity cards in many countries and with the detailed household records kept under conditional or unconditional cash transfer programs) than a system of public purchase solely from LIRP producers, in which the problems of properly identifying appropriate sellers and avoiding leakages and abuses will also be present.

Furthermore, if poverty is the concern, providing income support to LIRP producers goes directly to the heart of the matter. This is another application of the Bhagwati rule, noted earlier, regarding the need to target policies as closely as possible to the source of the problem in order to avoid second-round problems if the policy targets a proxy. In fact, as argued before, if a country wants to help its poor and vulnerable populations, then targeting crops or livestock production is an indirect, and many times inefficient and inequitable, way to achieve poverty reduction and food security. Therefore, when food security concerns are invoked, the focus of the policy analysis should be on people rather than on crops or food products.

If there were sharp downward price spikes because of international shocks (including import surges, perhaps due to unfair trade practices from other countries), then trade measures such as safeguards and countervailing duties can be used as well, and developing countries, many of which have applied tariffs below bound ones, can also adjust these measures.<sup>61</sup> The drawback is that this approach would

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<sup>58</sup> See also Islam and Thomas (1996), who argued that if a government buys, say, 10 percent of the production of a crop at harvest time, paying market prices to achieve a stock-to-consumption ratio defined for food security reasons, then that operation would increase prices compared with the counterfactual of no intervention.

<sup>59</sup> In the case of the United States, the political economy of the series of Farm Bills has always featured the alliance of farmers and social advocates who support food vouchers and similar redistributive programs. That alliance was maintained in the 2014 Farm Bill (Orden 2014).

<sup>60</sup> Article 6, paragraph 2, has the advantage, from the equity viewpoint, of encouraging developing countries to design specific programs for rural development or alleviation of rural poverty, instead of resorting to general and nontransparent subsidy schemes that may benefit richer farmers or be wasted in corruption.

<sup>61</sup> Galtier and Vindel (2013) argued that such adjustments should not be ad hoc but should rather follow a rule, such as



force the adjustment onto the rest of the world and would be self-defeating, as argued by Martin and Anderson (2012), if other countries did the same. In many cases, problems of competitiveness in the farming sector (that is, imports coming at low domestic prices) may result from overvalued exchange rates due to macroeconomic mismanagement. In this case, the right approach is to correct the overvaluation, which will help all tradable sectors, not just agriculture.

### ***Consumer Issues 1: Impact and Delivery Mechanisms***

For poor consumers, it may be more efficient to use cash transfers or food vouchers and to let the private sector manage the physical handling of the product (see Hoddinott et al. 2013). Some nongovernmental organizations have argued that managing cash transfers or food vouchers is far more cumbersome than the physical distribution of the food items, but this argument seems largely incorrect. If the government has a system to identify poor households and to distribute the physical product, it can do the same with food vouchers. The administrative costs and the possibility for corruption and misallocation are similar in both schemes; with food vouchers, however, the government avoids losses stemming from handling the grain through bureaucratic structures (though those losses need to be compared with the ones affecting potentially ineffective and underdeveloped private-sector channels). The other challenge stems from the possibility of abuse of market position by private-sector operators, which must also be compared with the possibility of corruption and abuse by the public staff operating governmental schemes.

The simulations in Thompson and Tallard (2010) also show that consumer subsidies seem to have more beneficial food security effects (as measured by wheat and rice consumption) for the countries applying them as compared with the use of trade measures and food stocks to avoid price peaks (which reduced consumption over the decade simulated because of the higher prices resulting from building up the stocks). Furthermore, consumer subsidies in those simulations have smaller negative impacts on the quantities of wheat and rice consumed in the rest of the world; however, they carry an important fiscal cost (which may be more or less than the building of public stocks, depending on the prices at which those stocks are released).

Of course, there is still the issue of how to ensure the physical delivery of the product to isolated areas, which cannot be guaranteed by simply handing out vouchers. The expansion of a private-sector delivery network is something that will evolve along with general economic development and supportive government policies. Then the question of whether the government or the private sector is better equipped to handle physical distribution for the poor and for isolated areas becomes an empirical issue.

### ***Consumer Issues 2: Public Food Security or Nutrition Security?***

The previously noted triple burden of malnutrition also poses new challenges when considering food security stocks. Each of the components of the triple burden has different negative impacts on human health and may be affected differently (or not at all) by the policies negotiated under the AoA—in particular, by the operation of food security stocks and domestic food aid. For instance, a food security program centered on a limited number of products selected mainly because of their calorie content will have to contend with the fact that a lack of dietary diversity appears more correlated with the prevalence of child stunting and wasting and with underweight mothers (Arimond and Ruel 2006; Headey 2013). If lack of dietary diversity is a more relevant indicator to assess food security and nutritional problems, then food security stocks and programs focusing on a limited number of staple crops may not address the main problem.

More generally, changes in consumption patterns linked to increasing incomes in developing countries, which have led to the expanded use of other products exceeding the usual staple crops considered in food security stocks, also question the traditional focus of these programs (see Hoda and Gulati [2013], who criticized India's National Food Security Act of 2013 for being “cereal centered”).

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variable levies and price bands. These mechanisms, which basically force adjustments into the rest of the world on a permanent basis, have been banned in the WTO.

In addition, except for the decreasing number of countries in which a significant proportion of calories and nutrients depends on only one or two products, the issue of food price inflation (and upward price spikes) is associated with a larger basket of goods; when those problems do occur, they are mostly related to macroeconomic imbalances. Food security stocks do not have the product breadth to address those problems and may actually contribute to creating those macroeconomic imbalances.

### ***Other Concerns***

Another concern that supports building public-sector-operated systems for food distribution is the exercise of monopoly power by private operators, which may push down prices for farmers and increase prices for consumers. If such a problem exists, it is important to understand the causes. One reason that monopolies exist in generally consumed food products may be a public policy that, directly or indirectly, grants such powers (such as discretionary import licenses or domestic trade licenses and restrictions). If the monopoly (or monopsony) power has its origin in market imperfections (as opposed to a policy-induced imperfection), then the persistence of the problem may be related to a government that is failing to implement adequate regulatory approaches to eliminate abuses. Therefore, a better approach would be to eliminate the policy-induced monopoly/monopsony in the first case and to establish adequate anticompetitive regimes in the second, rather than trying to establish a governmental distribution system to counterbalance the potential abuses of the private sector, which may lead to larger costs than the assumed lack of market competition.

### ***Final Comments***

This section has tried to show that food security is a multidimensional concept, influenced by many policies and contextual variables, and that any one policy may have diverse impacts depending on other policies, structural issues, and household types. In particular, focusing on price instability (or even price extremes) leaves aside many other factors that heavily influence food security at the household and individual level. Furthermore, food stocks are just one possible policy instrument, and their contribution to national welfare varies significantly with consumption diversification, the perishability of the main food products, the level of the country's development (which, among other things, defines the quality and extension of infrastructure and the operation of the private sector), and the country's geographical position (landlocked or not). Rather than a system to manage price volatility to address food security (which seems to be a main focus of current attention), a broader, multidimensional approach is needed. Research and policy dialogue should consider integrated frameworks for food security and poverty alleviation; within that general framework, the problem of price volatility and price extremes, as well as the possible contribution of food security stocks, can be discussed as one component among several others.

Governments of landlocked countries, with concentrated consumption of some food products that are less perishable and with difficult access to international markets, may find it both useful and necessary to maintain food security stocks to help prevent potential breakdowns in supply. If that food is procured domestically, those purchases, well timed at harvest, will provide some price support during a crucial time for farmers, even if those purchases follow prevailing market prices.

Depending on the conditions of the country, a food redistribution stock (the second category mentioned) could also be an important component of a country's social safety nets and targeted food programs. It is important to have such safety nets (conditional cash transfers, nutritional programs for women and children, school lunches, FFW programs, and so on) in place so that they can be scaled up if and when a sharp upward price spike occurs. But again, buying at market prices is the best option to build these stocks, but not because of AoA constraints; rather, if a developing country is buying food above market prices to provide farmers with high price support and selling below market prices to help poor and vulnerable populations, it will most likely get into severe fiscal problems long before a trade case is brought up against it. Along with the extension of safety nets for poor consumers, it would also be useful

to consider safety nets for poor and vulnerable agricultural producers; these safety nets could provide income support when harvests fail or in the case of sharp downward price spikes.

If public food stocks are built, they must operate with clear objectives and decisionmaking rules, as well as with strong financial, accounting, and audit safeguards. They should also be adequately sized and properly located (with the necessary transport, storage, and communications infrastructure). Finally, there should be adequate funding arrangements with properly trained staff (NEPAD 2004; World Bank 2005; 2012).

Whatever type of public food stocks is implemented, it is always important to consider additional policies, such as credible early-warning and food security information systems about harvest prospects, potential food shortages, and emergency needs, as well as embedding the operation of stocks in an integrated policy framework for food security. The latter should consider a full array of policies that support production; ensure market development; invest in infrastructure (transport, storage, and communications); help farmers and farmer associations create and expand their own stock-holding facilities (including traditional on-farm options) and support those efforts with additional instruments, such as warehouse receipts and credit; adequately use trade to enhance food security; expand safety nets for the poor and vulnerable; and avoid ad hoc policy interventions by the government (NEPAD 2004).

As noted earlier, those interventions should be part of an integrated policy framework for food security and poverty alleviation that also includes other components—from overall good governance and macroeconomic stability, to different types of investments, to programs supporting women's empowerment and community organization and participation.

A permanent solution for the treatment of public food security stocks, as requested by the Bali Ministerial Decision, will require a careful consideration of many of these legal, economic, and operational issues.

## 5. CONCLUSIONS

Food security concerns again threatened to derail the negotiations of the Bali Ministerial. This paper has analyzed several aspects of the links between food security and WTO agricultural and trade negotiations, focusing specifically on the issue of food security stocks.

The paper began with an explanation of the background to the debate and the interim solution (the *peace clause*) agreed upon at Bali. Under one interpretation, the Agreement strengthens the negotiating position of India (or any other country following the same approach), which will be protected from challenges under the AoA until a permanent solution is found (which seems to leave the end date open-ended). Under another interpretation, the period in which to find a permanent solution is not open-ended but rather has been postponed until the Eleventh WTO Ministerial (four years after Bali). In any case, the WTO members that want to be protected by the peace clause will face more stringent notification and transparency requirements regarding domestic support, forcing those that are extremely behind schedule in their notifications to become current in their obligations under the AoA. This requirement would facilitate closer scrutiny and monitoring of the different programs of domestic support in the countries using the peace clause option.

The Ministerial Decision also instructs WTO members to establish a work program in the Committee on Agriculture to make recommendations for a permanent solution no later than the Eleventh Ministerial Conference (about four years from now). As a contribution to that effort, this paper analyzed a variety of options, including an update of the one presented in Díaz-Bonilla (2013b). In the current paper it is argued that carefully defining *eligible production* (perhaps by capping the percentage of production to be bought, by restricting purchases to come only from a certain type of producer such as LIRP ones, or by other similar approaches) and allowing the FERP to be defined in US dollars (or a basket of currencies, such as the SDRs) may go a long way to solving the problem that developing countries may face about exceeding the de minimis. In addition, to align the economic and legal aspects of the operation of food stocks, here it is also discussed the proposal (based on Díaz-Bonilla 2013b) to clarify the relationship between “administered prices” and “market prices” and not to penalize schemes in which the former basically do not exceed the latter, therefore complying with the requisite that food stocks should be purchased at (no more than) market prices to be considered within the Green Box (Díaz-Bonilla 2013b; see also the interpretation of Matthews 2014).

The paper further discusses some economic issues that frame the discussion about food security stocks, noting the new context of higher (in nominal terms) and perhaps more volatile food prices, in part associated with expanding links among energy markets and food production, supply and prices, and greater weather variability associated with climate change. These developments highlight the importance of considering diverse instruments, including food security stocks and domestic food aid, which were the focus of much debate before and during the Bali Ministerial.

Several general considerations about trade and other policy instruments and food security were also mentioned. It is important to note that trade, in most countries, has helped with food security by stabilizing domestic consumption versus more erratic domestic production and by decreasing food import bills as a percentage of total exports because of increases in world trade (Díaz-Bonilla 2013a).

The current period of higher nominal prices has also led to more interest in food self-sufficiency. Clearly, developing countries would be well advised to invest more in expanding and stabilizing their domestic agricultural production. The instinctive reaction of some policymakers and civil society advocates (both in the previous context of low world food prices and the new context of higher prices) has been to resort to protectionist measures; however, Green Box measures linked to investments in public goods are the true basis for competitiveness and productivity.<sup>62</sup> In that regard, the AoA does not constrain

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<sup>62</sup> Several developing countries claimed that the measures listed in the Green Box, including the one related to General Services (Annex 2, paragraph 2) refer to public investments and services as they exist in rich countries; therefore, they asked that the list be expanded to include other programs more related to the needs of developing countries. The 2008 Modalities reflected that request and included a modified list in the corresponding paragraph, with measures that were supposed “to promote rural

*good* policies used by developing countries to address poverty and food security, such as programs aimed at poor producers or consumers, stocks for food security, and domestic food aid for populations in need. However, it also does not much constrain *bad* policies either, in either industrialized or developing countries.

Overall, in developing countries, the most important constraints to designing and implementing adequate trade and nontrade policies to help with food security continue to be the limitations of those countries in financial and human resources and institutional capabilities. It must also be remembered that general trade policies are not necessarily the main factor affecting food security and that, in any case, trade policies are blunt instruments with which to address the challenges of poverty and hunger: the latter materialize at the level of heterogeneous households and individuals and require a multidimensional approach. Therefore, special and differential treatment defined at the national and crop level (even if called *food security crops*) may not focus on the main problem; rather, it is important to have well-targeted safety nets for the poor—both consumers and producers.

Rather than some approaches that focus on price volatility or price extremes as the main cause of food insecurity (a unidimensional approach), this paper has highlighted a variety of damaging fluctuations and governance and macroeconomic problems that are crucial determinants of poverty and food insecurity. The paper also noted (several times) the need to take a multidimensional approach and develop an integrated framework for food security and poverty alleviation; this approach includes, but goes clearly beyond, the potential link between high and volatile prices and food security.

The best policy approach would include a relatively neutral trade policy; support for land and water ownership by small producers and landless workers; investments in human capital, infrastructure, climate change adaptation and mitigation, and agricultural R&D; appropriate management of natural resources; strengthened safety nets for the poor and vulnerable (conditional cash transfers, school lunches, women and infant nutrition programs, food-for-work programs); women's empowerment programs; community organization and participation, particularly for the poor and vulnerable; adequate functioning of product and factor markets; macroeconomic stability; and overall good governance, including strong efforts to reduce corruption and ensure public safety.

The paper then focuses specifically on food stocks and the issue of price stabilization. After reiterating that price stability is just one of many factors affecting food security, it was noted that food stocks are not the only, and often not even the best, policy tool to stabilize prices and incomes. A unidimensional policy analysis going linearly from food stocks to price stability to food security would ignore significant parts of the relevant policy issues and contextual variables that affect food security. In particular, inadequate monetary, fiscal, and monetary policies may have more relevance for inflationary pressures in food markets than product-specific policies, including food stocks.

Still, considering that the debate that almost derailed the Bali negotiations focused on food security stocks, several economic and operational issues merit analysis. In line with other analyses, this paper distinguishes food stocks for emergencies (type 1) and redistribution (type 2) from stocks for price stabilization (type 3). In turn it notes that the latter may focus on single prices, price bands, and price extremes and briefly discusses some aspects related to the operation of these various types of stocks.

Depending on a country's conditions, emergency food stocks (type 1) and food redistribution stocks that are part of safety nets and targeted food programs (type 2) may be necessary to achieve food security objectives in some categories of countries. If there is enough production, then buying food domestically at market prices would be the best option, as this would not only make the operation compatible with the AoA Green Box but would also make economic sense. Poor countries should not add to the costs of their food security programs (emergency and redistributive) by using administered prices that may generate further losses by buying high to support farmers and then selling low to subsidize

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development and poverty alleviation.” At Bali, a watered-down version of the language of the 2008 Modalities was approved. Díaz-Bonilla and Laborde (forthcoming) discuss this issue further. In the authors' opinion, developing countries were asking for something that they already had under any reasonable interpretation of the current AoA; furthermore, the new language does not change what was already there.

consumers. This approach would most likely generate severe fiscal problems long before other WTO members consider the possibility of bringing a trade case against the country.

The paper also notes that food stocks for emergency purposes and those that operate as redistributive devices backing up safety nets and other targeted food aid programs, if purchased domestically, expand domestic food demand and support prices, as compared with the counterfactual that no such program exists. Still, in the case of the redistributive food stocks plus food aid, it is necessary to evaluate the development and competitive operation of markets by the private sector against the costs and benefits of having the government perform the purchasing and distribution functions. With the continuous integration of markets in LAC and Asia, and the slower but nonetheless similar process present in Africa, the cost-benefit analysis of the different options should be reassessed in those countries with large governmental intervention in food markets. Reardon et al. (2012) noted that fair price shops in India's public distribution system handle about 15 percent of the rice consumed in New Delhi, whereas the incipiently expanding supermarkets are already reaching 7 percent of consumption (though it may be the case that customers from those two types of retail outlets differ).

The issue of food price inflation and price extremes would be better managed by a combination of macroeconomic, trade, and investment policies, combined with safety nets that try to supplement the incomes of the poor. But whatever type of public food stocks is implemented, it is important to consider additional policies, such as credible early-warning and food security information systems and embedding the operation of the stocks in an integrated policy framework for food security. When public food stocks are built, they need to have properly defined objectives and managerial rules and be adequately sized, financed, and operated.

The section on the new context for food security also notes the challenges posed by the triple burden of nutrition and recent studies that show that increases in dietary diversity, not in calorie availability, are more closely related with declines in stunting and wasting in children and underweight in mothers. Thus, food security stocks based on a limited number of staple crops, usually selected for their calorie content, may not be the best approach for tackling the multiple challenges of under- and malnutrition.

The need to look for a more permanent solution to replace the peace clause will keep food security concerns at the center of future WTO negotiations. The consideration of food security stocks and domestic food aid in Annex 2 of the AoA will require a full debate of the legal, economic, and diplomatic issues involved. That debate will benefit from the ongoing efforts to revisit the topic of the operation of food stocks (for emergencies, food security, and stabilization) and to understand what has worked and what has not (as suggested by Timmer 2013). More generally, WTO members need more precise analyses of the quantitative impacts of the different options considered, not just food stocks, when defining food security policies that are equitable and efficient. This type of analysis is separate from the legal issues that are part of the search for a permanent solution to the issues discussed at Bali.

However, even if the variety of WTO legal options to address food security concerns are clarified and the main economic, social, and operational problems are understood, the more complex political economy of the trade negotiations and trade issues may impose further constraints to finding an adequate resolution during the next WTO Ministerials, especially given the important changes in the world economy. Some of these new developments include the strong growth of developing countries (which now represent more than half of global GDP at PPP prices), the important advances of these countries in agricultural production and trade, and the increases in policy support to developing countries' agricultural sectors. The dual situation of countries like India, which is now a net food exporter overall and a leading exporter in several key food items (such as rice and beef) but which also has an agricultural sector with a large presence of small and poor farmers, was also mentioned as a further complication to future negotiations.

As noted in Díaz-Bonilla (2013a), these developments have led to the emergence of at least two different narratives. On the one hand, developing countries see industrialized countries that have productive advantages in farm size, land, water, climate, infrastructure, R&D, credit conditions, and the like, and ask, legitimately, why those countries need the levels of protection and distortionary subsidies

that they are allowed under the AoA. Many developing countries see their own producers, who as a general rule are clearly poorer, farm significantly smaller areas, struggle with water and climate constraints, and suffer from weak infrastructure and lack of R&D and credit support; they conclude that there are clear imbalances in the AoA that benefit industrialized countries and that disadvantage poorer countries. Therefore, developing countries try to expand their “policy space” and limit that of industrial countries,

On the other hand, industrialized countries see developing countries’ advances in production and trade (and their own shares decreasing), the expansion of these countries’ agricultural support, the sheer number of farmers in developing countries, all the potential policy space already existent in the AoA, and the possible expansion of this space under the 2008 Modalities; they worry not only about current and future access to the markets of developing countries but also, eventually, about potential displacement of production in their domestic markets by exporters from the largest emerging economies. Thus, industrial countries are reluctant to diminish their levels of protection and subsidization, as demonstrated by the refusal at Bali to accept further disciplines on agricultural export subsidies, a practice that is already prohibited for nonagricultural products under the WTO. In addition to clinging to the trade dispensations they got in the Uruguay Round, developed countries have also resisted general expansions of policy space for developing countries.

These two narratives must eventually converge on a more realistic appreciation, on all sides, of the new facts and responsibilities of the global agricultural system if improvements in the governance of global trade are really going to take place (Díaz-Bonilla 2013a; 2013c).

Furthermore, an analysis based only on the dichotomy of developed and developing countries may miss much of the increasing complexity in substance and in the political economy of global trade negotiations, as the experience at Bali showed (Díaz-Bonilla 2013a; 2013c; Díaz-Bonilla and Laborde forthcoming). Intricate bifurcations of interests are clear among WTO membership, even among low-income developing countries. In particular, the increases in economic size and in the full use of policy instruments to support agriculture in several large developing countries may lead to changing alliances within the heterogeneous group of developing-country members

Another consequence of the complex political economy of the future negotiations may well be the fragmentation of the single undertaking envisaged in Doha into parallel negotiations involving different topics and varying numbers of WTO members. The drafting of the work program for 2014 and beyond to chart a reasonable path for the multilateral trading system, including finding a permanent solution to the issue of public food stocks, will require substantive economic analysis, foresighted political flexibility, and a realistic dialogue among WTO members.

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