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ICTSD Project on Farmers' Livelihoods and Food Security



# Food Security, Price Volatility and Trade:

## Some Reflections for Developing Countries

By Eugenio Díaz-Bonilla, Inter-American Development Bank  
Juan Francisco Ron, Inter-American Development Bank



International Centre for Trade  
and Sustainable Development

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# Food Security, Price Volatility and Trade: Some Reflections for Developing Countries

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## FOREWORD

Over the last fifty years the world's farmers have grown more food nearly every year, yet hundreds of millions of people, many themselves farmers, continue to go hungry. In the face of environmental degradation and climate change, more people than ever are competing over scarce resources such as water, land and farm inputs. Although the mantra of inadequate distribution and availability is often cited, not enough has changed at the household level to avert recurring crises. While a fraction of the food that makes it to our table crosses borders, we increasingly depend on a complex and interdependent global system to ensure that supply meets demand, especially at the margins. Quite simply, the way the world feeds itself has changed. However, the rules that govern trade in agriculture remain inadequate.

The Doha Round, now in its ninth year of negotiations at the World Trade Organization, offers hope on key issues affecting the most vulnerable. Proposed subsidy limits in developed countries, expanded market access for developing country goods and protection for the poorest farmers are likely outcomes of an agreement. This may provide incentives to farmers in developing countries to invest and produce more. However, today's multilateral talks are the product of an era of historically stable and declining food prices: some elements of the draft trade deal do not reflect changing realities, such as exporting countries limiting the access of their goods to international markets. Although many developing countries will enjoy flexibilities to protect and invest in their agriculture sector, they may not utilize these in the most effective manner. Moreover, many food import dependent countries have ceded attempts at national food sufficiency to trade, employing import subsidies in some cases, to satiate domestic demand. Governments need to address these challenges collectively.

Increasingly unpredictable climatic conditions and volatile prices may require more targeted policies to ensure that enough food is accessible and available for all. The food price spikes of 2007/8 and an incalculable volatility of markets that swing on a hair-trigger have led to commitments for policy reform and increased funding on the international stage. Many have concluded that investment in agriculture is key, especially as new challenges, such as large scale land acquisitions, come to the fore. How these investments are made may determine the future of hunger. UN agencies, such as the Food and Agriculture Organization, note that global food production will need to double by 2050 to feed a population of nine billion. In some cases the technical solutions, such as drought resistant seeds, may have progressed further in their development than the policies surrounding their use and dissemination. Policy makers will need to piece together solutions that run from the dinner table to the field and all the ports in between.

Working up from a household level analysis, Diaz Bonilla and Francisco Ron connect international trade rules to the country led strategies that are necessary for food security. Their paper surveys the post war history of agricultural trade and the related economic realities to provide policy makers with analysis on what is possible under the current regime and where improvements can be made. Theirs is a critical contribution to the debate that has ensued in the wake of the food price spikes of 2007/8.



Ricardo Meléndez-Ortiz  
Chief Executive, ICTSD

## EXECUTIVE SUMMARY

### Background

The main document discusses what food security is, highlights the heterogeneity of food insecurity situations, and analyzes global trends in the related variables. Then, it focuses on price trends and price volatility and the implications for food security.

Given that background the main document moves first to the consideration of agriculture and development strategies for poverty alleviation and food security, and then discusses trade issues. In what follows the executive summary focuses on those two issues.

### Agriculture and development strategies for poverty alleviation and food security

The importance of agriculture in lower income developing countries is undeniable due to the large percentage of the poor that live and work in agriculture and the positive multiplier effects of agriculture for the rest of the economy. But while recognizing that a strategy based on support to agricultural producers is generally appropriate for many developing countries, it is also crucial to consider the fate of poor consumers, both urban and rural, who may suffer from malnutrition and hunger. Poor households may spend as much as 70 percent of their income on food. Landless rural workers, poor urban households, and many poor small farmers tend to be net buyers of food, and there has been a steady shift in the locus of poverty in developing countries from rural to urban areas. Therefore there is a policy dilemma between high food prices that benefit food producers (other things equal), and low food prices that may help poor consumers. Any approach that deals with this dilemma must maintain a reasonably neutral system of price incentives and, at the same, promote investments in the agricultural sector and rural areas and generate employment opportunities for the poor.

The full document develops those topics in greater detail. The next question is what role may trade policies play in that context.

### Trade Policies in Developed Countries

#### *a) Economic and Social Aspects*

In general the more common conjecture is that the reduction or elimination of export and domestic subsidies and of barriers to market access is good for food security in developing countries (see ICTSD, 2009). Therefore, a “good” policy outcome under the WTO would be the reduction or elimination of protection and subsidies in industrialized countries. There are, however, cross and indirect effects that have led to some objections to this conclusion. The counter argument to these objections is that usually the best policy option is not to maintain the distorting policies in industrialized countries but to eliminate them while at the same time implementing compensatory policies for the countries or populations affected (the debate is reviewed in the main paper) .

#### *b) WTO Regulations under the Agreement on Agriculture (AoA) and Doha proposals*

The criticisms to the AoA include that it did not improve market access much in industrialized countries, it maintained great flexibility for industrialized countries to subsidize their own production through different forms of domestic support, and agricultural export subsidies were not eliminated.

The 2008 Draft Modalities (WTO, 2008) shows advances on several of those issues:

- Overall Domestic Subsidies that are trade distorting (Aggregate Measure of Support (Amber) + *de minimis* + Blue), would be cut further, and per product Amber Box support is capped. Green Box provisions, particularly on income support, have been tightened to ensure that are really decoupled from production levels, and there are stricter rules for monitoring and surveillance.
- Market Access, tariffs would be cut according to a formula that imposes deeper cuts on higher tariffs. The Special Safeguard (SSG) will be eliminated in 7 years. Tariff escalation would also be reduced, and tariffs and tariff quotas should be simplified, and their administration will be better monitored. The liberalization of tropical products is also accelerated. Least developed countries would have duty-free and quota-free market access for at least 97% of products.
- Export Subsidies in industrialized countries would be eliminated over a transition period of 5 years (with half of the elimination happening by the end of the second year). There are also tighter provisions on export credit, guarantees and insurance, international food aid (see below), and exports from state-owned trading enterprises.

Unfortunately, the Draft Modalities still maintains important levels of distorting domestic support in industrialized countries and leaves open several possibilities that may compromise market access for developing countries (e.g. Sensitive Products).

### Trade Policies in Developing Countries

#### a) *Economic aspects*

Increased protection for agriculture in developing countries is often argued to be easier to implement in poor countries than other interventions that require public funds. But this argument fails to recognize that protection does cost money as well. Indeed, border protection acts as a regressive and mostly privately-collected tax on food: it has a larger negative incidence on poor consumers, who spend a greater percentage of their incomes on food, and is received mainly by bigger agricultural producers. Also, trade protection for any sector usually implies negative employment and production effects in other sectors, and can affect costs and competitiveness in sectors that have agricultural products as inputs. Furthermore, higher costs of food may lead to higher salaries, affecting competitiveness, production and employment in export industries. Finally, protection may lead the real exchange rate to appreciate, affecting tradable goods that become less competitive internationally.

The interventions allowed under the AoA without restrictions, such as research, extension, infrastructure, and irrigation, to name a few, are the real foundations for increases in production, productivity, and competitiveness. Adequate policies and investments should be targeted to help the poor and vulnerable directly rather than to protect and subsidize crops in general.

#### b) *WTO Regulations*

The Agreement on Agriculture does not seem to limit the possibilities for implementing effective policies in developing countries to address poverty and food security concerns. The Draft Modalities, in turn, seem to expand the policy options for these countries. These policy options under the AoA and the Draft Modalities include the following:



**Food security stocks.** The most obvious instrument available in the AoA is the use of stocks for food security reasons. The Draft Modalities suggests further flexibilities for the formation and administration of these stocks.

**Domestic food aid.** A second instrument for food security, which is also part of Green Box measures, is domestic food aid. As in other instances, the issue is not legal restraints under the AoA, but rather how to design and finance adequate nutrition interventions.

**Support to poor producers and production for food security.** The AoA allows a great latitude in domestic support policies for developing countries too: Green Box measures, Blue Box, the *de minimis* exemptions, and the fact that the Aggregate Measure of Support (AMS) does not have product specific caps. LDCs are completely exempt from any reduction in domestic support.

The Draft Modalities allows additional exemptions from the disciplines on the AMS for domestic support policies when they “encourage agricultural and rural development” which “are an integral part of the development programs of developing countries;” when investment subsidies are given to low-income or resource-poor producers; and as support to eradicate illicit narcotic crops through diversification.

The Modalities include further flexibilities in the Green Box related to a) payments for relief from natural disasters; b) regional development payments; and c) for payments that require to fix the base year under some circumstances. Regarding domestic support subject to disciplines (Amber and Blue Boxes), LDCs are exempted and NFIDCs, RAMs and SVEs have reduced commitments and more flexibilities than for average developing countries.

**Market Access, trade remedies for food security and the Special Safeguard (SSG).** The restrictions of Article 13 of the AoA (known as the “peace clause”) ended in 2003, and therefore, developing countries can resort to trade remedies under the Agreement on Subsidies and Countervailing Measures (ASCM).

The 2008 Draft Modalities would eliminate the SSG and consider the creation of a new Special Safeguard Mechanism (SSM). This issue was very controversial in the negotiations and has continued to be a key unresolved issue since then. So far the negotiations do not seem to have achieved the needed balance not only between importers and exporters, but more crucial for food security, between small farmers and poor consumers in the countries that could apply the SSM.

**Volatility, Price Stabilization and Food Aid.** The 2007/2008 price spike revived attention about trade policy measures that may moderate volatility in food prices. The first thing to recognize is that measures taken by countries to try to reduce price volatility in their domestic markets, may exacerbate price volatility in world markets, by transferring outside the national markets the necessary price and quantity adjustments.

Three of the four measures utilized by countries during the food price crisis (anticipatory imports, reduction of import tariffs and increase of export taxes) do not have disciplines under the AoA. Only export prohibitions and restrictions have some relatively weak disciplines under Article 12 of the AoA. The 2008 Draft Modalities has expanded somewhat the obligations to notify, inform, and consult. The most important new proposals are a) that existing export prohibitions and restrictions in foodstuffs and feeds are eliminated by the end of the first year of implementation, and b) that new export prohibitions or restrictions cannot “normally be longer than 12 months,” and can exceed 18 months only with the agreement of the affected importing Members.

Other measures under the AoA that can help with domestic price volatility are, as mentioned, food security stocks and domestic food aid. The main issues are, again, the design of such schemes and the availability of fiscal resources that developing countries may have for those purposes.

Moving to international food aid, a general concern is the provision of adequate levels of such aid and the avoidance of cycles that tend to reinforce, instead of counteract, situations of oversupply and shortages. The AoA requires that WTO Members provide international food aid untied, directly or indirectly, to commercial exports of agricultural products; that they do it in a way that does not displace domestic production in the receiving countries; and that they offer food aid “to the extent possible in fully grant form” or on concessional terms. The Draft Modalities also considers a Safe Box for emergency food aid with less requirements, when those emergencies are declared by the recipient countries or relevant international organizations.

### Conclusion

The overall impact of agricultural trade and trade policies on food security can vary significantly. Several key points should be noted. First, to the extent that poverty and hunger materialize at the household/individual levels, special and differential treatment for developing countries in trade negotiations defined at the national and/or crop levels may not focus on the main problem. Second, protection that may help some small producers adversely affects poor consumers. A way out of this policy dilemma is to invest in the agricultural sector, whose expansion would trigger dynamic linkages, supporting production and employment in other sectors, while higher productivity in agriculture will help reduce food prices for consumers. But in this case, adequate policies for food security and poverty alleviation in developing countries go beyond trade issues.

The interventions needed may include increased investments in physical and human capital, land tenure, water access, technology, infrastructure and general services (such as health and education), especially focusing on the poor and women; support to non-agricultural rural enterprises; ensuring that product and factor markets operate adequately; implementing well designed safety nets (including conditional cash transfers (CCT), school lunches, women and infant nutrition, food-for-work); strengthening organizations of small farmers and empowering women; eliminating institutional, political, and social biases that discriminate against vulnerable groups and supporting the expansion of social capital and political participation for the poor and vulnerable, strengthening democracy and good governance; promoting macroeconomic stability; and implementing effective measures of adaptation and mitigation to climate change.

Third, trade-related agricultural policies do not seem greatly constrained by the AoA and it looks like the 2008 Draft Modalities would add additional flexibilities. But, it is also true that the AoA does not impose important limits to “bad” trade policies either (especially in industrialized countries) that can be potentially negative for the objectives of food security and poverty alleviation in developing countries.

Finally, probably the biggest constraints to effective agricultural and food security policies in developing countries result from constraints in financial, human and institutional capabilities. For developing countries, particularly the poorest, to be able to expand investments in rural development, poverty alleviation and health and nutrition, additional funding from international institutions and bilateral donors will be needed, as well as firm political commitment and good governance in the countries involved.

## 1. INTRODUCTION

The 2007/2008 spike in food prices and the trade measures applied by a variety of countries to counter that shock, along with the stagnation of the Doha Round negotiations, have revived interest in the analysis of trade issues and food security in developing countries. The global financial crisis and the more recent volatility in world markets for some cereals have reinforced those concerns. Here we briefly review some of the main issues related to food security and agricultural trade policies. The basic objective is to review trade policies considering both those allowed under the WTO Agreement on Agriculture, but also new issues that emerged in the Doha Round

negotiations and during the current spike in food prices.<sup>1</sup> As a background this paper summarizes the overall framework of analysis presented in Díaz-Bonilla et. al. (2003), briefly discusses some developments in global food security, tries to distinguish types of food insecurity at the national and household level, and analyzes different concepts related to trend and volatility in food prices. After that, this paper addresses trade issues and trade policies and the links to food security, distinguishing economic aspects and the legal issues within the WTO. The focus is on the Agreement on Agriculture. There is a closing section with the main conclusions.<sup>2</sup>

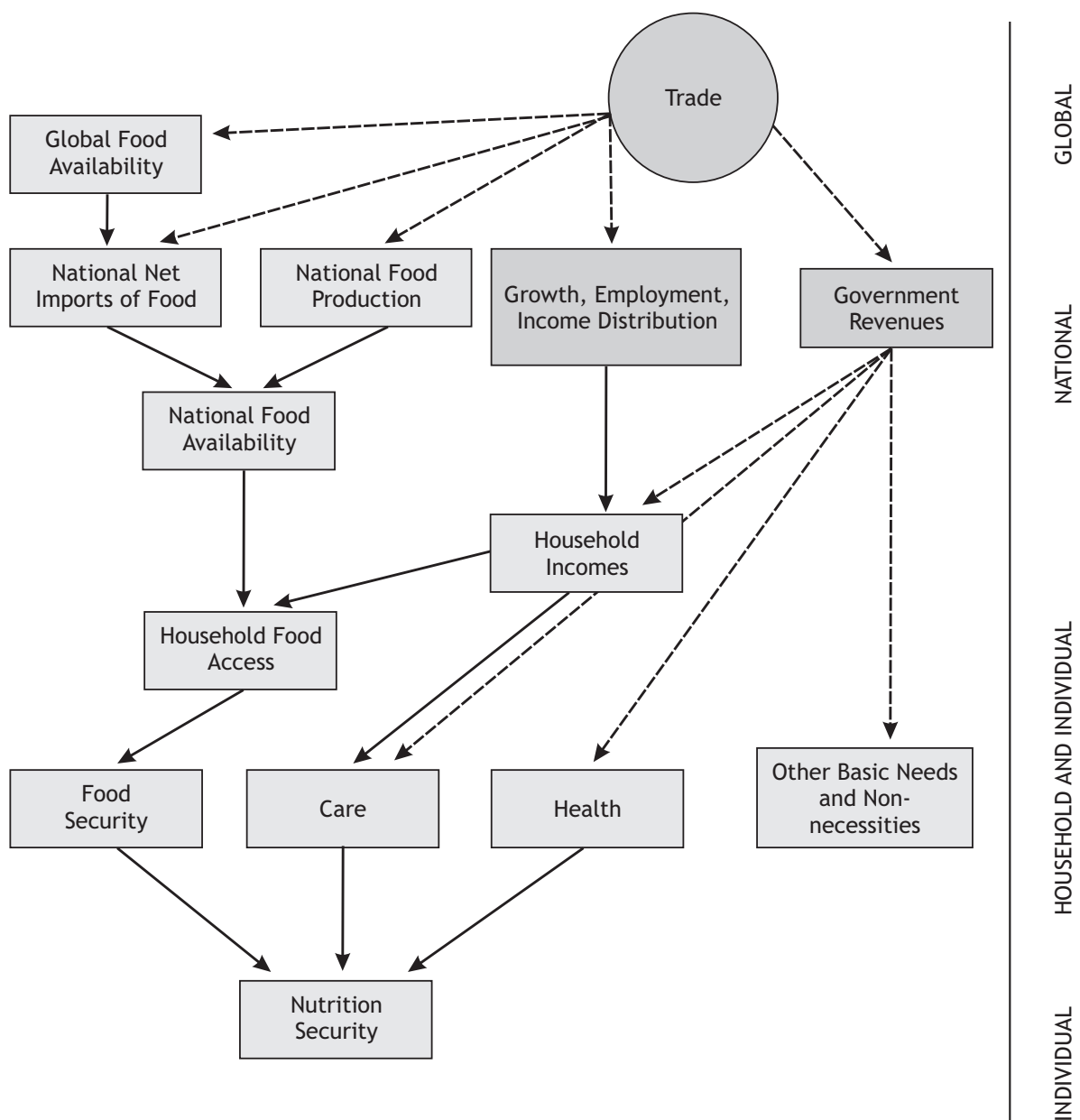
## 2. THE FRAMEWORK FOR FOOD SECURITY

Over time the issue of food security has been analyzed from the global, national, local, household and individual perspectives, although it is only at the individual level where malnutrition and hunger take a concrete manifestation. The traditional definition of food security<sup>3</sup> includes four components:

physical availability, economic access, stability of access and adequate utilization.

What are the links from trade and trade policies to food and nutrition security? Figure 1 displays several of the multiple links and interactions between trade and food security.

Figure 1. Conceptual framework for food security



Source: Diaz- Bonilla et. Al. (2002), adapted from Smith (1998).

First, trade and trade policies influence both world food availability as well as production and food imports (including food aid) at the national level (the latter two aspects define national food availability). As mentioned, food availability is a component of the notion of food security, and it has been shown to have a positive correlation with declines in malnutrition (Smith and Haddad, 2000).

Second, trade and trade policies affect profits of food producers and the food costs to consumers, mainly, but not only, through their effect on world food prices and on prices for producers and consumers in the domestic market. By influencing the average incentive framework for producers, trade and trade policies also have an impact on decisions to invest in agriculture and to adopt new technology, generating dynamic effects that are usually more important than the short term impacts of any policy. On the consumption side, trade and trade policies affect the cost of food, with important consequences for wages and maintenance and accumulation of human capital, which also generate medium term effects on welfare and production.

Third, trade and trade policies may also have an impact on the level and stability of the rate of growth, as well as the employment generation, income distribution patterns, and poverty effects of that growth. These variables define the level and variability of income for the population and whether growth is pro-poor or not.

Fourth, another important channel of influence of trade and trade policies is through government revenues, directly as collection of trade taxes and indirectly through the impact of the rate and variability of growth on general tax collection. The level of government revenues affects the possibility of a) investing in technology, services and infrastructure that support food and agricultural production; b) implementing transfer policies (like food subsidies, the more recent programs of conditional cash transfers, or other poverty-oriented programs); and c) financing public services and investments in health, education, and related areas. Furthermore, whatever the level of available revenues, external obligations related to trade

and agricultural policies (which are influenced by WTO agreements) or with international financial institutions (because of loan conditionality) may also affect the use of those revenues (i.e. the type of expenditures in which the available resources can be utilized). All these variables are crucial both for food security, but also for nutrition security.

Fifth, trade policies may lead to lower or higher volatility in production, stocks, and prices at the world and/or national levels for different commodities and markets.

The multiple channels discussed have implications for the components of FAO's definition of food security: physical access to food (or food availability) is influenced by the first, second and fourth channels, which determine the volume of domestic production, stocks, imports and food aid for a country; economic access to food (another component of the definition of food security) depends on the relation between the cost of food (second channel), households' incomes (the third channel mentioned) and potential food subsidies (fourth channel). The definition of food security mentions physical and economic access "at all times"; therefore the fifth channel considers the possibility that trade and trade policies may help or harm stability of food availability, food prices and households incomes. Finally, nutrition security may be affected by the fourth channel, linked to governments' revenues to provide subsidies, services and investments for the poor and vulnerable.

In summary, trade may have a variety of impacts on the determinants of food and nutrition security, such as food availability, incomes and employment, food costs, government transfers and subsidies, and public services and investments. Given the variety of channels of influence it is usually difficult to identify unequivocally the impact, positive or negative, of a specific trade policy intervention. This framework must be kept in mind during the discussions of the next sections, where some of these channels will be explored in greater detail.

### 3. TRENDS IN FOOD SECURITY

Food security appears to have improved during the last decades, at least until the recent price spike and financial crisis. Total food availability in developing countries, measured in daily calories per capita was about 29% higher in the mid 2000s than in the 1960s (see Table 1), and average grams of protein per capita increased 37% over the same period (Table 2), even though the world population almost doubled during that time. Also, as discussed below, real prices of food have declined since the 1970s, and even during the last price spikes, real food prices stayed below the previous peak during the 1970s (see Figure 2). Therefore, with more

food availability and lower real prices, it is not surprising that the prevalence of undernourished people in developing countries has decreased from 33% of population in 1970 to 25% in 1980 and 20% at the beginning of the 1990s (FAO, 2009a). As can be seen in table 3, this downward trend in the proportion of undernourished has continued during the subsequent fifteen years, although at lower rates. As of 2004-2006 only 16% of the population in developing countries was considered to be undernourished. Positive trends in the Global Hunger Index calculated by IFPRI (2009)<sup>4</sup> also confirm the improvements observed during the last decades.

**Table 1. Calories per capita per day**

	60s	70s	80s	90s	2003-05	Last/60	Last/70	Last/80	Last/90
World	2347	2453	2636	2750	2770	1.18	1.13	1.05	1.01
Industrialized Countries	2956	3079	3201	3337	3480	1.18	1.13	1.09	1.04
Developing Countries	2036	2173	2424	2607	2620	1.29	1.21	1.08	1.00
Least Developed Countries	2016	2018	2078	2067	2051	1.02	1.02	0.99	0.99
Africa South of Sahara	2070	2077	2075	2160	2220	1.07	1.07	1.07	1.03
Transition Markets	3236	3366	3383	2992	3090	0.95	0.92	0.91	1.03

Source: Díaz-Bonilla et. Al. (2002) from 60's to 90's; data for 2003-2005 from FAOSTAT.

**Table 2. Proteins per capita per day (grams)**

	60s	70s	80s	90s	2003-2005	Last/60	Last/70	Last/80	Last/90
World	64	65	70	73	76	1.19	1.17	1.09	1.04
Industrialized Countries	90	94	99	103	107	1.19	1.14	1.08	1.04
Developing Countries	51	53	59	66	70	1.37	1.32	1.19	1.06
Least Developed Countries	50	51	51	51	51.48	1.03	1.01	1.01	1.01
Africa South of Sahara	53	52	51	52	54	1.02	1.04	1.06	1.04
Transition Markets	97	102	103	90	93	0.96	0.91	0.90	1.03

Source: Díaz-Bonilla et. Al. (2002) from 60's to 90's; data for 2003-2005 from FAOSTAT.

However, there are still regions and countries at risk, and some have become more food insecure. Average food availability is still low for regions such as sub-Saharan Africa, where 30% of the population are undernourished (see Table

3). In spite of the progress achieved in lowering the proportion of undernourished people, the number of undernourished people in this region has increased from 169 million in 1990-1992 to about 212 million in 2004-2006 (FAOSTAT).

**Table 3. Prevalence of undernourishment in total population (%)**

Regions	1990-1992	1995-1997	2000-2002	2004-2006
Latin America and the Caribbean	12	11	9	8
Sub-Saharan Africa	34	34	32	30
Near East/North Africa	6	8	8	8
South Asia	25	22	22	23
Southeast Asia	24	18	18	15
East Asia	15	12	10	10
Developing Countries	20	18	17	16

Source: FAOSTAT

Also, the prevalence of undernourishment is still high in South Asia, and has actually increased during the last ten years of available data. As can be seen in Table 3, the percentage of undernourished people increased from the minimum of 22% in 1995-7 to 23% in 2004-6 which implied that 58 million new people do not have adequate nutrition (FAOSTAT).

Even though there is still no definite data about the situation of food security after the 2007-2008 food price surge, there is, however, broad consensus that part of the progress observed over the last years has been eroded as a consequence of higher and more volatile food prices. FAO (2009a) estimates that the number of undernourished people in the world has reached about 915 million in 2008 and probably about 1020 billion in 2009, comparing to 873 million in 2004-2006. If these estimations are correct, this would represent the highest number of hungry people since 1970 (although it should also be acknowledged that because world population has increased more than 80% over the same period, the incidence is still lower now).

The latest financial crisis has posed additional challenges for the poor and their ability to

access to sufficient and nutritious food. World Bank (2010, pp. 41) estimates that the latest financial crisis will have left an additional 50 million people in extreme poverty in 2009 and some 64 million by the end of 2010 (relative to a no-crisis scenario). Many emerging economies had to confront falling trade volumes and declining terms of trade, with direct consequences on government revenues and the country's ability to finance safety nets for the most vulnerable. Other countries with high levels of hunger were affected through declines in foreign aid or remittances. According to IFPRI (2009, pp. 18), 40 out of 50 countries that have serious to extremely alarming Hunger Indexes show medium or high economic vulnerability to the global downturn (measured by deficits in their external accounts). This finding suggests that some of the most vulnerable countries in terms of food security were also the most affected by the financial crisis.

The final impact at the national and at the household levels depends on the particular characteristics of countries and families. We turn next to the issue of heterogeneity as a background to discuss the impact of specific trade policies.



#### 4. TYPOLOGIES OF FOOD INSECURITY

A first level of analysis can focus on agricultural differences across countries. For instance the World Bank in its World Development Report 2008 (World Bank, 2007) identifies three groups of countries that are denominated: “agriculture-based” (mostly countries based in sub-Saharan Africa, where agriculture is important for growth and poverty is rural); “transforming” (mostly from South-Asia and East Asia and the Pacific, where poverty is rural but agriculture is less central for the growth of the whole economy) and “urbanized” (mostly Latin America and the Caribbean and Eastern Europe, where there is more urban poverty and agriculture is less important in the national economy). Agriculture in urbanized Latin America and the Caribbean (LAC) is less important as a percentage of the GDP and rural population as percentage of total population is smaller than in other regions. Agriculture-based Sub-Saharan Africa (SSA) and South Asia fall on the other extreme, with agriculture production and rural population having a larger presence in those regions. Table 4 shows the important structural differences in

the different regions of developing countries regarding agricultural production and related infrastructure. For example, LAC depends more on agricultural exports and agriculture appears more productive per unit of labor, uses more capital such as tractors, and, after South Asia, is the region best served by roads. Africa and LAC have more available arable land per capita than Asian developing countries, but average holdings are larger in LAC and land appears to be distributed more unequally in LAC than in Asia, with Africa in between the other two developing regions (see Díaz-Bonilla, Frandsen, and Robinson, 2006, Chapter 1, Table 1). It is important to notice that SSA has an availability of land that is comparable to LAC, but at the same time average holdings are of similar sizes to those in Asia, and the region shows the lowest values for the capital/technology and roads indicators, highlighting some of the opportunities and constraints to expand agricultural production and ensure food security in that region (see Haggblade and Hazell, 2010).

**Table 4. Regional Agricultural Indicators**

	Latin America & Caribbean	Sub-Saharan Africa	Middle East & North Africa	South Asia	East Asia & Pacific	All Developing Countries
Agriculture, value added (% of GDP)	7.9	17.9	13.9	28.3	15.4	13.2
Rural population (% of total population)	26.5	68.4	43.6	73.2	67.7	60.6
Agriculture value added per worker (constant 1995 US\$)	2916.5	349.2	2163.6	376.2	418.4	589.8
Agriculture exports (% merchandise trade)	28.3	23.9	4.7	17.9	11.7	15.3
Land use, arable land (hectares per person)	0.27	0.26	0.21	0.16	0.11	0.21
Agricultural machinery, tractors per 100 hectares of arable land	118.2	18.0	117.8	80.9	67.9	102.0
Roads, km per squared km of total area	0.141	0.052	0.062	0.551	0.139	0.123

Source: Díaz-Bonilla et. al. (2010)



Moving from agriculture to food security issues, Diaz-Bonilla et. al. (2000) classified 167 countries using cluster analysis with five food security indicators: calories per day per capita; proteins per day per capita (grams); food production per capita; total exports (merchandise and services) over food imports; and non agricultural population over total population. The variables tried to capture different meanings of food insecurity based on production, consumption and trade issues. The study covered a variety of countries that were WTO members, including Least Developed Countries (LDCs)<sup>5</sup> and Net Food Importing Developing Countries (NFIDCs),<sup>6</sup> categories that have special implications under WTO disciplines. The countries were classified into 12 categories of food (in)security. There were 4 groups of food insecure countries but with different profiles depending on production, consumption, and trade structures and the urban/rural divide. For instance, among food-insecure countries, some groups were rural (mostly countries from

Africa and South Asia) while others were urban (countries from LAC and Eastern Europe); also the levels of food production per capita varied; finally, some clusters were what the paper called “consumption vulnerable” (because of low levels of consumption of calories and proteins per capita), while others were “trade vulnerable” (due to the large percentages of their exports that they utilize to buy food). Among the other 8 groups, 4 were considered food neutral and other 4 were in the food secure groups; but each cluster had also variations in their profiles. The heterogeneity of food security profiles has implications for trade policies, as discussed below in greater detail.

Table 5 shows the combination of the 3 types of countries (agriculture-based, transforming and urbanized) in the World Development Report 2008 (World Bank, 2007) combined with the 4 clusters of food insecure countries in Díaz-Bonilla et. al. (2000).

**Table 5. Classifications of Food Insecure Countries**

		WB Classification				TOTAL
		Agriculture-based countries	Transforming countries	Urbanized countries	N/A	
Diaz-Bonilla et. al. Classification	Cluster #1	15	5	0	9	29
	Cluster #2	1	1	3	8	13
	Cluster #3	8	5	2	2	17
	Cluster #4	3	1	0	9	13
TOTAL		27	12	5	28	72

Source: Author's own calculations based on Diaz-Bonilla et. al. (2000) and World Bank (2007)

Some countries that are in the cluster analysis are not in the 3 types of agricultural countries (those 28 countries designated N/A); but for the 44 countries that are in both classifications it is clear that the great majority, 27, (or about 60%) are agriculture-based economies. The implication for these countries is that food security, and more generally growth and poverty alleviation, must consider the performance of the agricultural sector. Also another 12 (or about 27%), are in transforming countries, where agricultural production continues to play an important role.

So far, we have discussed typological issues at the country level, which is usually the relevant one for trade negotiations. However, it is at the household level where food security issues take a more concrete form. Constructing household typologies is a time-consuming exercise that must be done on a country-by-country basis. Here we only present some general comments about such exercise. First, as already mentioned, the problem of economic access is not an issue of food prices per se, but depends on the relation between household incomes, on one hand, and the cost

of the minimum household food requirements (MHFR), on the other. Both income and costs involve price and quantity variables, and not only price variables as sometimes is implied by analyses that only compare food prices with wages, and ignore quantity effects, particularly related to employment. Therefore, in order to assess economic access to food the proper equations to consider are:

Incomes = Wages\*employment (or Prices\* Quantity of goods and services sold by the poor and vulnerable) + Subsidies/ taxes from Government + Other transfers and services.

Costs = Food prices\*MHFR + Costs of comple-mentary goods and services

Indicators of food insecurity and of poverty are closely related not only because of the obvious point that lack of income is an important determinant of hunger but also in a more mechanical way: the general poverty line is usually the cost of MHFR with an additional mark up representing other expenditures by the poor; and the line for indigence is usually the cost of MHFR, without any addition. Therefore, poverty and food security measures should move closely together because of these two reasons.

On the income side the issues to consider are the operation of labor, land, water and product

markets, and the availability of, and access to, infrastructure by the poor and vulnerable. On the demand side it is important to distinguish urban households, mostly net food buyers, from rural ones. But, within the latter, there may be net sellers; families suffering seasonal variations as net sellers/buyers; and rural families that are permanently net buyers, such as landless rural workers). Other issues are related to demographics and health status, such as whether the households are headed by females; households that are too young or too old; and the incidence of diseases and disabilities (in some cases related to wars and natural disasters).<sup>7</sup>

Also, as discussed before, it must be emphasized that food insecurity is different from nutrition insecurity, with the latter depending on factors such as the status of women in society and the availability of health, water and sanitation services (Smith and Haddad, 2000).

All these different levels of regional, national and household heterogeneity must be taken into account when discussing trade policies. Considering that those policies are usually applied at the national level and that they have a broad scope of application, the same trade intervention may have very different effects (positive or negative) on the heterogeneous universe of households affected by that particular policy.

## 5. FOOD PRICE TRENDS AND VOLATILITY

### *a) Conceptual Issues*

Food production and consumption are affected both by price levels and their variability. Different policies, including those related to trade, have been utilized to ensure some price levels for food and agriculture and to reduce volatility. However, to proceed with the analysis of policy responses we need first to clarify different definitions and conceptual issues.

For instance in the context of monetary policies the idea of price stability is an inflation in the range of 0-2% per year. Recently the Chief Economist of the IMF suggested that the definition of price stability could be expanded to an annual inflation of up to 4% (Blanchard et.al., 2010). It is obvious that a “stable” inflation of 2% per year (and even more 4%), means that the nominal price level is permanently increasing (in fact at 2% per year, the price level increases almost 50% in nominal terms in 20 years, and, at 4%, more than doubles during the same period). In other words, one thing is stability in levels, and another is stability in rate of change of those levels.

A related discussion is whether what is being analyzed is the variability of the trend or the variability around the trend. Once this dichotomy is recognized, the issues to be clarified expand significantly. First, it is necessary to define how the trend is measured.<sup>8</sup>

A second question is whether volatility is considered in world or in domestic prices. If the focus is on world prices, it is necessary to define the currency in which prices are quoted (such as US dollars, Euros, Special Drawing Rights,<sup>9</sup> and so on). If the analysis centers on domestic prices, we need to define the relevant markets for price formation and measurement along the production, processing and distribution chain that links primary producers to final consumers.

Thirdly, it is important to clarify whether volatility is analyzed for nominal prices or for real prices (and in the latter case, an appropriate deflator must be identified).

Fourth, the price index considered may be for a specific commodity or for broader aggregates of commodities.

Fifth, it is also necessary to make explicit the relevant time horizon for volatility analysis: is it an annual, seasonal, monthly or daily time window? The time horizon selected depends on the purpose of the analysis. For instance if the focus is on consumers, perhaps a shorter horizon may be needed than in the case of producers who make decisions on longer time frames (at least yearly for planting decisions of many crops, and even longer for investment decisions). Indicators of volatility for a specific time window (say monthly) may not behave the same as indicators for another period (say yearly).

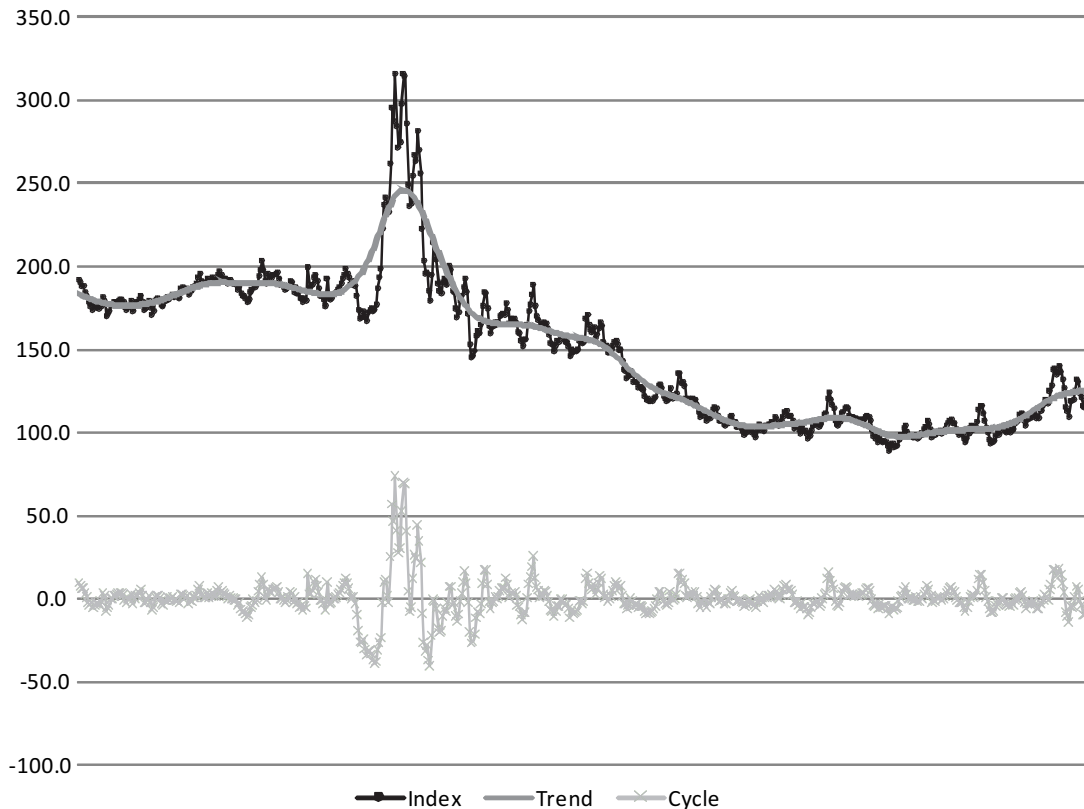
Sixth, it may be necessary to distinguish grades in volatility, such as for instance, price shocks that may fall outside a “normal range”, such as 2 standard deviations above/below trend.

### *b) Trends, Cycles and Volatility*

This section discusses some indicators of price volatility, based on specific decisions about the options mentioned so far. The Annex includes other options for indices, de-trending methods, and time horizons.

Figure 2 shows the index of world real food prices for the last fifty years in US dollars at a monthly frequency.<sup>10</sup> This variable reflects the real price of food interpreted as how affordable is food compared to the basket of goods, mostly manufactures, exported by advanced economies.<sup>11</sup> Figure 2 highlights the differences in the trend and around the trend in real prices.

**Figure 2. IMF Food Price Index deflated by IMF Export Unit Value of Advanced Economies, disaggregated between trend and cycle (Hodrick-Prescott Filter)**



Source: authors' own calculations over IMF-IFS data.

**Trends in Real Prices.** With the exception of the episode of high inflation during the first half of the seventies, real food prices showed a clear downward trend until at least 2005: after the plateau of the 1960s and the spike during the 1970s, there is clear decline during the 1980s, until it settles on a lower plateau during the 1990s until the mid-2000s, when average real food prices were about half those of the mid 1960s. However, in the second half of 2005 prices began to increase at higher rates than in the previous three decades: in particular during 2007 and the first half of 2008 real food prices increased at an average monthly rate of 1.5%.

**Volatility in Real Prices.** Price volatility around the trend remained comparatively low from the late fifties until early 1970s (Figure 2). The stability was related in good measure to the maintenance of the fixed exchange rates under Bretton Woods, which linked the US dollar to a gold parity, and where other currencies were linked to the US dollar at fixed

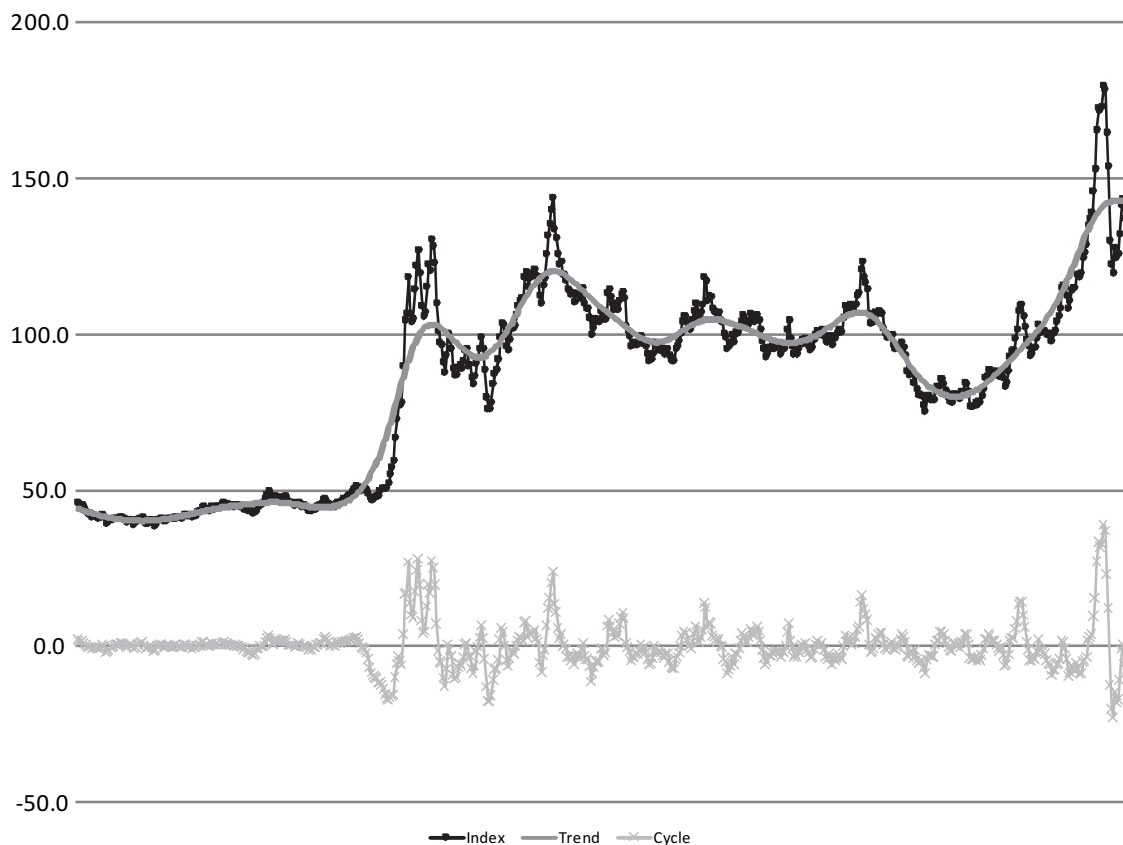
(but adjustable) rates. Global macroeconomic turbulences in the late 1960s and early 1970s, which led to the abandonment of the Bretton Woods arrangements, opened a period of exacerbated price instability that lasted almost the whole decade (see Díaz-Bonilla, 2010). The following phase during the 1980s and 1990s was characterized by declining volatility (although more unstable than in the first period during the sixties) that moderately increased during the 2007-08 episode. Even though the recent episode of increases in food prices generated higher volatility than in the nineties, it has not reached the magnitude of the food price crisis in the seventies, at least in real terms (see Díaz-Bonilla, 2010 for a more detailed discussion).

**Trends in Nominal Prices.** In Figure 3 we present the historical values for this same food index but now in nominal values. There is a clear upward shift in the trend during the 1970s, and after this, nominal prices stayed at a higher plateau but with cycles. In particular,

there is a clear and persistent bottom during the late 1990s and early 2000s that was later followed by the spike of 2007-2008. The difference in trends between real prices (which declined during the 1980s) and nominal

prices (which after the jump during the 1970s stayed on that higher plateau) is related to the behavior of the deflator -not shown here- that increased even more than nominal prices during the 1980s.

**Figure 3. IMF Food Price Index, disaggregated between trend and cycle (Hodrick-Prescott Filter)**



Source: authors' own calculations over IMF-IFS data.

**Volatility in Nominal Prices.** Moving to price volatility around the trend, this seems to have been very low until the early 1970s (for the reasons already mentioned related to the Bretton Woods system); it then increased considerably during the 1970s but later declined during the early 1980s. In nominal terms the price spike during the 2007-2008 episode seems larger than in the seventies, although the increase does not seem to have been so persistent.

**Combined Volatility.** A more detailed numerical perspective about price volatility patterns by decade is in Table 6 that shows the average coefficient of variability for the last five decades, for four different food

price indexes (three nominal and one in real terms).<sup>12</sup> Although acknowledging that these values would necessarily vary according to the de-trending method selected, it can still be argued that price volatility reached the highest level during the 1970s, for any of the price indexes selected, and then declined. For instance, for the IMF Food price index, price volatility during the 2000s was only two thirds of the volatility of the seventies, whereas for the deflated IMF Food Price Index it was only half of it. A point to be noticed is that volatility of the real price index shown here has remained stable over the last three decades (including the 2000s). Oilseeds have had the highest volatility during the 2000s for the commodities considered.

**Table 6. Coefficient of Variability for Price Indexes**

	60s	70s	80s	90s	2000s
IMF Food Index	0.02	0.09	0.04	0.03	0.06
Real IMF Food Index (*)	0.02	0.08	0.04	0.04	0.04
Cereals	0.02	0.09	0.04	0.03	0.06
Oilseeds	0.04	0.13	0.11	0.06	0.12

(\*) Deflated by the Export Unit Value Index for Advanced economies. Conclusions remain similar if U.S. CPI is used instead. Source: authors' own calculations over IMF-IFS data.

### c) Possible Explanations of Trends and Volatility

World price patterns, both trends and volatility, are heavily influenced by global macroeconomic and trade issues. As mentioned, the low volatility in nominal and real prices was linked to Bretton Woods system of stable exchange rates. After that the high prices in the 1970s were influenced by strong growth at the world level, expanding inflationary pressures, and a depreciating dollar (after the US abandoned the Bretton Woods system of fixed exchange rates in 1971), combined with poor weather conditions in many parts of the world and a hike in fertilizer prices.

In the next decade, the collapse in real prices in the mid-1980s was related to a combination of factors added to the supply side and/or weakened the demand side of agricultural markets. They included the deceleration of the

world economy in the early 1980s; expanded public support for agricultural production mostly in industrialized countries, particularly in the European Union which was steadily reducing its net imports through the Common Agricultural Policy and eventually becoming a net exporter of agricultural products<sup>13</sup> (see Table 7 showing the decline in EU net agricultural trade); and the US Farm Bill of 1985 which increased dramatically the level of agricultural export subsidies, launching a “subsidy war” with the EU;<sup>14</sup> the 1980s debt crises in developing countries; the agricultural transformation in China; the expansion of the Green Revolution in many developing countries; the break-up of the Soviet Union (which reduced demand for agricultural products); and the decline in oil prices (after OPEC price support arrangements broke down in early 1986). (Díaz-Bonilla 2010).

**Table 7. E.U. Agricultural Net Imports (Annual Averages)**

	Billions of 2010 U.S. Dollars
1960s	-67.9
1970s	-74.6
1980s	-33.9
1990s	-6.2
2000s	1.4

Note: FAOSTAT nominal trade in U.S. dollars deflated by the U.S. CPI.

The countries included in the calculations are: Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain and the U.K.

Prices stabilized on a lower plateau, but a further decline took place in the late 1990s and early 2000s after a second wave of financial crises erupted in developing countries (Mexico in 1995; East Asia in 1997; Russia in 1998; Brazil in 1999; and Argentina in 2001). These crises eroded the demand side of many commodities, and devaluations

in producing countries, such as Brazil and Argentina, expanded the supply of several of them. The unraveling of the technology boom in the US and other industrialized countries and the events of 11 September 2001, led to the slowdown in the early 2000s in the US and world economies. By the 1990s and early 2000s the European Union had completed its



transformation from agricultural net importer to net exporter, which implied a disappearance of annual demand in world markets of nearly 80 billion US dollars<sup>15</sup> (see Table 7). These changes in supply and demand along with an appreciating dollar that reached its peak in the early 2000s forced commodity prices to the lowest nominal levels in decades and to the absolute lowest real values for the whole period for which data on them had been collected (Díaz-Bonilla, 2010).

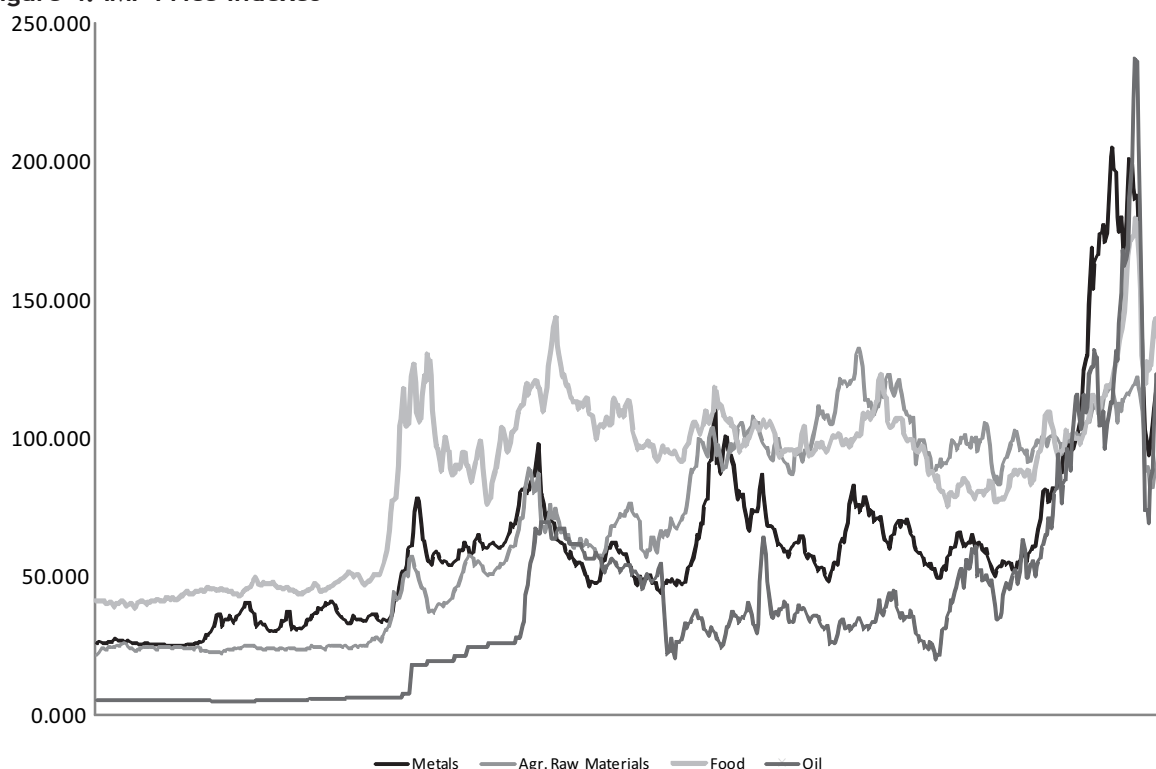
The acceleration in the world economy since the early 2000s pushed up the nominal and real prices of several commodities, particularly metals and energy.<sup>16</sup> The devaluation of the US dollar that started in early 2002 also added pressure to the increases in prices of commodities. For agricultural goods, besides the resumption of world growth and the greater demand from developing countries, higher nominal prices have also been influenced by competition with crops grown for use as energy sources (which in addition are subsidized in the main industrial countries),<sup>17</sup> the reduction of stocks (particularly in China; see Sarris, 2009<sup>18</sup>), weather patterns, and perhaps financial speculation (see Irwin et. al., 2009, for a detailed discussion about this argument).

The large increases in commodity prices since the second half of the 2007 appear to have been influenced by the Federal Reserve change to a strongly expansionary monetary policy due to evident signs of financial distress (Frankel, 2006). Such policy change led initially to fears of inflation and a decline in the US dollar,

prompting investors to turn to commodities as inflation hedges, in a context where alternative investments in stocks and other assets did not show good returns. This was combined with declining inventories in a series of commodities to generate the large price increases. Changes in the trade policies of several key countries also contributed to the run-up. Still most real prices, as already mentioned, stayed below the 1970s levels.

These global macroeconomic developments affected not only agricultural products but commodities in general. Therefore, food and agricultural price trends and volatility should not be analyzed in isolation but must be considered in the context of the behavior of the prices of all commodities in general. Figure 4 shows the evolution of the food price index compared to other price indexes such as agricultural raw materials, metals and oil. Although, in general, there is a correlation between all the indexes for the whole period, one particular aspect stands out when comparing the food crisis events of 2007-08 to the ones of the early seventies: the food prices spike that started in 1973 preceded the increase in oil prices, while in the latest episode the reverse happened, with food prices rising only after sustained increases in oil prices. In general, food and agricultural prices during the 2000s were less aligned with metal and agricultural raw material prices than in the previous decades: metals and oil prices began to increase persistently several years earlier than the food price spike of 2007-2008 (Díaz-Bonilla, 2010).

Figure 4. IMF Price Indexes



Source: authors' own calculations over IMF-IFS data.

These facts, besides reflecting the presence of global macroeconomic and trade factors behind the increases of all commodity prices, also suggest a more complex relationship between energy and food prices. In fact, during the 1970s the channels of influence on food and agricultural prices from oil prices were mainly two: energy as a cost of agricultural production and energy as a cost in processing and transportation of food products. However, in the last episode the links between energy and food expanded to include two more. One of them is the competition for land in biofuels. As energy markets are much larger than agricultural markets, and biofuels represent a substitute for some fossil fuels, oil prices in practice may set price ranges for certain agricultural products. Finally, the interaction between energy use and climate change, with the impact of the latter on agricultural production, has added a fourth factor linking oil and agriculture (Díaz-Bonilla, 2010).

So far, the focus has been on volatility in world market prices. But, as it was already mentioned, food security at the household level requires the consideration of domestic

price volatility. Even if global food price changes are transmitted to the national level, the final effect will be determined by the level of integration between the local market and the national food markets. In particular, in many developing countries there are clear distinctions between urban consumers who may be more integrated with national markets and rural consumers and producers who may have clearly lower levels of integration.

Price transmission from international prices to domestic prices can be limited for numerous reasons including trade, exchange rate, fiscal, internal commercial and other domestic policies, as well as other conditioning factors such as infrastructure, high transportation costs, marketing structures, consumer preferences and logistics. According to the World Bank (2009, pp.119) during the last price spike nearly three quarters of developing countries took some policy measures to prevent local prices from fully reflecting international prices.<sup>19</sup>

Several studies have shown that during the food crisis of 2007-2008 changes in domestic prices have been less pronounced than



variations in world prices. The World Bank (2009, pp.119) estimated that, while prices of internationally traded commodity increased as much as 74% in US dollars between January 2005 and December 2007, the majority of the 73 countries analyzed had real food price increases of 12% or less (and only four countries saw real food prices rise as much or more than real international food prices). FAO (2009b) analyzed food price transmission for two particular cases, maize in Africa and rice in Asia. In the first case, analyzing food prices for the 1998-2008 it was concluded that world prices did pass through to producers but a very slow pace due to transportation costs,

weakening US dollar, and domestic preferences between different types of maize. Whereas maize world price grew at a monthly rate of 3.9% from June 2006 to June 2008, domestic prices did so at 1.6% per month. For the Asian case, domestic rice price increases were less severe than at the global level during the 2007-2008 crisis leading local currencies to appreciate, spurring compensatory policy measures in certain countries. While world rice prices increased at a monthly rate of 1.2%, this figure was at 1% in countries like India ,where most rice exports were banned, or 0.2% in Thailand, which benefited by appreciation of its local currency.

## 6. WHAT ARE THE EFFECTS OF CHANGES IN PRICE TRENDS AND PRICE VOLATILITY FOR FOOD SECURITY?

It is important to differentiate the impact of changes in trends from changes in volatility around the trend (cycles and spikes) both for food production and food consumption. Prices in levels affect profits of food producers (and therefore the incentives to produce) and the food costs to consumers (and consequently their economic access to food, as already discussed). Volatility in prices generate uncertainty about the “true” price level for producers and consumers, and therefore the production and consumption decisions may be different from what would have been the case under more stable prices. We discuss briefly both aspects in turn.

Considering the issue of price levels first, high food prices benefit food producers (other things equal), while low food prices help consumers, at least in the short run. This poses an old policy dilemma that governments have tried to address in different ways over the years. In principle, both high prices and low prices would put in motion adjustment processes if markets operate normally and the signals are transmitted to producers and consumers: for instance, higher prices should eventually lead to more production and less consumption, and both effects push prices lower (and vice-versa, in the case of a low-price policy). But governments have tried to manage those adjustment processes in food markets with different objectives in mind. Generally speaking, industrialized countries have used transfers from consumers (through border protection) and taxpayers (through subsidies paid through the budget) to maintain high prices for producers, while many developing countries, on the other hand, have in several instances followed policies of low agricultural/food prices to help urban populations and further the process of industrialization (which was called the “bias against agriculture” or the “urban bias in development”; see next section).

A good part of the discussions 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 (one of the components of the definition of food security), while at the same time making food consumption more (less) costly and reducing (increasing) “economic access” (another component of the definition of food security).<sup>20</sup>

Moving now to the analysis of price volatility around a trend, the main effects of such volatility occur through higher uncertainty and less clear signals to produce and consume. For producers, price volatility is more important than average prices in explaining agricultural supply, mainly because uncertainty tends to shift production towards low-risk, but also less productive technologies (Johnson and Gale, 1947; Schultz, 1954; FAO, 2009b). Also, additional volatility provides more opportunities for large gains from speculation on food prices, therefore attracting even more speculative activities with further potential destabilizing effects.

In the case of consumers, high and variable food inflation and price spikes affect them negatively through reduced or, at least, uncertain access to food. This is particularly the case of poor and vulnerable households whose incomes do not adjust with inflation and that 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, with second round effects on poverty and food security (Díaz-Bonilla, 2008).<sup>21</sup> It is also important to consider the political impacts linked to social unrest and riots caused by increases in prices of food.

In summary, the analysis of the policy dilemma of high or low food price levels and their stability, is a non-trivial exercise that depends not only on the impact (or immediate) effect of high or low food prices, but on the wider economic linkages of the agricultural/food production, and the dynamic effects of expanded investment and technology adoption in those activities. In the end such analysis is directly linked to the more general debate about the role of agriculture in development strategies that consider poverty alleviation and food security as key components.

## 7. AGRICULTURE AND DEVELOPMENT STRATEGIES FOR POVERTY ALLEVIATION AND FOOD SECURITY.<sup>22</sup>

### *a) Anti- and Pro-Agricultural Biases in Development Strategies*

While industrialized countries have in general followed policies of support and protection of agriculture, particularly food products, developing countries, on the other hand, originally followed policies that saw the role of agriculture as supporting the needs of industrialization. The classical work of Johnston and Mellor (1961) considered four different way in which agriculture helped industrial developments: transferring labor to industry; providing food (or “wage goods”) and agricultural raw materials; generating savings from rural households that could be used to finance investments in industry; and providing foreign currency through exports to import the machinery and intermediate inputs needed by the industrial sector.

Those who argued that agriculture had a subordinated role in development also postulated different political and social externalities of industrialization: economic independence and political sovereignty; social modernization; more entrepreneurial spirit; a more pluralistic and participatory political and social life, linked to urbanization and so on (the most complete presentation of these arguments is probably Kerr et al., 1964).

Economic arguments in favor of industrialization included the idea of declining terms of trade of countries exporting agricultural products (or primary products, in general) compared to countries exporting industrial goods (Prebisch, 1950 and ; 1968; Singer, 1950).<sup>23</sup> What has been called *high development theory* (Krugman, 1994) considered that industrialization included important economic externalities: the interaction of economies of scale, pecuniary external economies, technological spillovers, backward and forward linkages, and strategic complementarities. The combination of these elements suggested the existence of multiple equilibria and the need for some form of coordination, probably, but not only, through government intervention, to move from lower

to higher levels of economic activity (Chenery et. al., 1986). Another issue was macroeconomic stability: policymakers considered that industrialization was going to make the economy less vulnerable to external shocks, thus avoiding macroeconomic crises. It was assumed that, as the industrial sector expanded, dependence on revenue from primary products would gradually be reduced, which was supposed to diminish the vulnerability of those countries to external shocks and to protect them against the losses in the terms of trade (ECLAC, 1969).

In summary, according to these arguments the positive impact of industrialization appeared substantial, while agriculture appeared in a subordinated role.<sup>24</sup>

By the mid-1960s and early 1970s, several concerns began to be voiced about the adequacy of a development strategy that appeared to discriminate against the agricultural sector, maintaining low agricultural prices to help urban populations and further the process of industrialization. Schultz (1964), in an influential book, argued that farmers in developing countries were “poor but efficient”, reacting with economic rationality to changes in prices and incentives. If agricultural resources were efficiently utilized, no gains could be made by transferring labor and savings to other sectors. A better strategy would be to support the agricultural sector through investments in technology and physical and human capital formation in rural areas. The Green Revolution of the 1970s was based on the idea that there was a technological solution to the rural problem, based on better productivity.

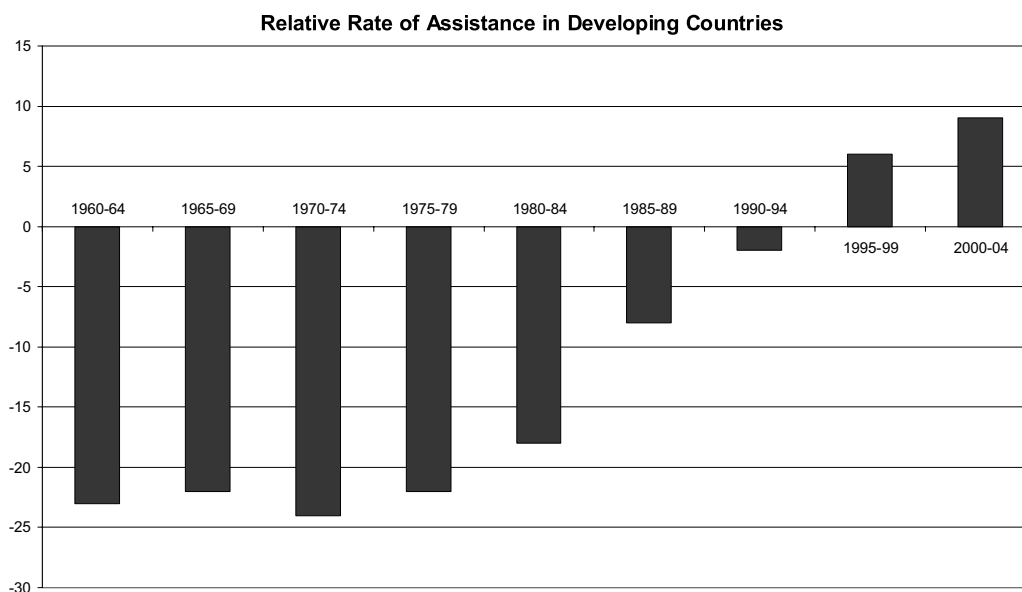
Other studies in the 1970s evaluated critically the development strategies and trade regimes based on import substitution industrialization (ISI) in a number of developing countries (Little et. al., 1970; Balassa, 1971; and Krueger, 1978). They argued that ISI had a negative impact on economic efficiency and growth. Also, arguments about inelastic international demand (“elasticity pessimism”) and deteriorating terms of trade began to be challenged (for an overview of those

debates see Balassa, 1986). It was also argued that poverty alleviation in developing countries was impaired by policies that protected capital-intensive industrialization and discriminated against agriculture, negatively affecting employment and income distribution. The obvious realization that the poor in developing countries were concentrated mainly in rural areas, led to the conclusion that if poverty alleviation was to be an important objective of economic policy, then greater attention should be given to agricultural and rural development. Chenery et. al. (1974) presented the case for an investment program centered on the poor, especially in rural areas. Another influential book (Lipton, 1977) criticized the “urban bias” in development, which he argued had led to a less pro-poor growth than a more balanced approach may have generated.

During the 1980’s the need for changes in the framework of development and macroeconomic policies was emphasized. In particular, the combination of overvalued exchange rates, protection of domestic industry, and taxation of agricultural exports, were criticized in different studies for severely hindering agricultural growth. According to several studies those policies represented a “policy bias against agriculture”, (Krueger et. al., 1988) amounting in some cases to “plundering” the sector (Schiff and Valdés, 1992a and 1992b). The policy recommendations included eliminating inefficient industrial protectionism, avoiding the overvaluation of the exchange rate, phasing out export taxes on agriculture, and reducing government’s involvement in agricultural markets through inefficient and many times contradictory interventions (World Bank, 1986). At the macroeconomic level, policies underscored the need of having domestic absorption in line with production (eventually expanded by sustainable external financing). These policies were implemented in a number of developing countries as part of IMF stabilization programs and World Bank structural adjustment programs.

The results of those programs in terms of growth and equity have been extensively debated (see among others Dorosh and Sahn, 2000, Kherallah et. al. 2001), but the point to be noted here is that an effect of such policy reforms appears to have been the reduction, or even the elimination, of the past bias in incentives against agriculture. More recently, those previous studies about the “bias against agriculture” and the “plundering of agriculture” have been criticized for overstating the estimated bias due to the partial-equilibrium approach and the type of indicators, mostly nominal protection, used in those studies<sup>25</sup> (Jensen et. al., 2002). These criticisms, however, can be also interpreted as suggesting that whatever is the evaluation of the previous policy framework, changes in exchange rate, fiscal, monetary, and trade policies in developing countries during the 1980s and the 1990s (including structural adjustment programs with international organizations) may have eliminated much of the *price and incentive bias* during the 1990s. At the same time, it must be noted that the *urban bias in investments and public services* (as suggested in the classic book by Lipton, 1977) may still remain in many developing countries. In fact, some of the trade remedies suggested to help with poverty alleviation and food security, such as agricultural protection, deal only with the first bias (prices and incentives) but not the second (investments and services).

A quantitative approach to the estimation of price biases is the nominal rate of assistance (NRA)<sup>26</sup> for agriculture. Anderson and Valenzuela (2008) show that the NRA has been growing in developing countries and turned positive since the mid-1990s. The improvements in NRA in those countries have been both the result of more protection for importables and less taxation for exportables. Also, their data show that the relative rate of assistance (RRA)<sup>27</sup> showed a significant bias against agriculture during the 1960s, 1970s, and early 1980s but has moved since then in favor of the agricultural sector and turned positive in the late 1990s and early 2000s (Figure 5).<sup>28</sup>

**Figure 5. Relative rate of assistance in developing countries, 1960-2004.**

Source: Anderson and Valenzuela (2008)

The behavior of the NRA, however, is different in the three types of agricultural economies identified in the World Development Report on Agriculture and whether the product is an exportable or an importable (World Bank, 2007, p.101. Figure 4.3). The NRA for exportables has been negative (a tax) although declining since early 1980s to early 2000s, while for NRA has been positive (a subsidy) but also declining. Agriculture-based countries are the ones that tax exportables the most (although the rate has come down from about 46% in 1980-1984 to 19% in 2000-2004), while urbanized tax exportable the less (and in fact they have moved to a small positive value, i.e. a subsidy). On the other hand, urbanized developing countries have the highest positives NRA for importables, albeit it is declining. Transforming countries are in between: they do not tax exportables as much as agriculture-based countries, and do not support importables like urbanized countries do.

The question now is whether developing countries should, out of concern for small farmers and food security, move even towards further protection of the agricultural sector (Díaz-Bonilla, et al 2003).

*b) Focus on Agriculture, but Balancing the Needs of Food Producers and Consumers*

The case for a framework of price incentives and investments that favor agriculture and food producers in developing countries has several components.

Although declining over time, primary agricultural activities still represent on average about 13% of total value added in developing countries, and primary and processed food products account for about 15% of their merchandise trade. Also some 60% of the total population in developing countries lives in rural areas. For Least Developed Countries, those percentages are even higher at 37% (value added), 35% (exports), and 76% (rural population), respectively. Similarly, in the case of SSA, South Asia, and East Asia, those percentages are significant (see Table 4). Moreover, about three quarters of the poor live in rural areas and depend on agriculture-related activities for their employment and incomes (World Bank, 2007). Developing countries also account for the largest percentage of world agricultural production: about 61% during the 1990s compared to 39% for industrialized countries (Díaz-Bonilla and Tin, 2006).

The second fact is that agriculture-led growth strategies appear to have larger dynamic multipliers for the rest of the economy than other alternatives in poor developing countries because of different backward and forward



linkages. First, the agricultural sector produces food, feed and fiber products for processing, exports and end-consumers. Second, the sector demands inputs and services from other sectors of the economy. Third, through employment and income effects, agricultural activities generate an expanded market for manufactures and services in general (Delgado et al. 1998; Haggblade et al, 2007; World Bank, 2007). In addition to these forward and backward linkages, there are cumulative dynamic effects over time, through investments and technology adoption. In fact, in the success stories of the newly industrialized countries of East Asia, a common characteristic is that they invested strongly, and very early, in rural and agricultural development (McCalla, 2000). Also, agricultural growth tends to have greater impacts in the reduction of poverty (see for instance, Lipton and Ravallion, 1995; Eastwood and Lipton, 2001; and Christiaensen, Demewry and Kuhl, 2010). To the extent that poverty is the main cause of food insecurity, then the expansion of agricultural and agroindustrial production should also help with food security concerns.

It should be noted, however, that an agricultural-based strategy for developing countries is not without doubters, which do not consider that the sector can generate the dynamic effects postulated (see Haggblade and Hazell, 2010, Chapter 1, for a review of the debate related to Africa; and Christiansen, Demery and Kuhl, 2010, for a consideration of the issue in developing countries in general). Recent econometric estimates (such as those by Christiansen, Demery and Kuhl, 2010) tend to support the existence of important positive linkages from agriculture to the rest of the economy, although with some qualifications in the case of countries with important presence of extractive industries (a characteristic that tends to diminish the positive linkages of agricultural growth). Also they find the positive impact of growth on poverty to be more pronounced at lower levels of incomes, both in the case of lower income countries and lower income populations.

The extent to which agricultural production is able to spread income-generation opportunities across large numbers of people changes with

the commodities produced and the prevalent production structures: mechanized farms are clearly different from small family farms. Furthermore, some agricultural products, such as cereals and dairy, can affect not only incomes and employment but also consumption for the poor, whereas others, such as coffee or sugar, would mainly affect incomes and employment in agriculture but would have a clearly smaller incidence in the consumption basket. Therefore, the net effect on poverty can vary. It has also been noted that the positive social impact of growth based on ores and metals or energy products seems to be lower than for other commodities (Sachs and Warner, 1995; Tsangarides et. al., 2000).

More generally, we have highlighted before the fact that there are variations across developing countries regarding the scope and components of an agricultural-based strategy (see World Bank, 2007) and because of different situations of food (in)security (Díaz-Bonilla et al, 2000).

Having noted those caveats, this paper takes as a benchmark the perspective of the small farmers and poor producers, based on the importance of agriculture in lower income developing countries, the fact that a large percentage of the poor live and work in agriculture, and the positive multiplier effects of agriculture for the rest of the economy. But while recognizing that a strategy based on producers is generally appropriate for many developing countries, it is also crucial to consider the fate of poor consumers, both urban and rural, who may suffer from malnutrition. Poor households may spend as much as 70% of their income on food<sup>29</sup> (World Bank, 2009, pp. 119). Landless rural workers, poor urban households, and many poor small farmers tend to be net buyers of food (see FAO, 1999b). At the same time, it is also important to note the steady shift in the locus of poverty in developing countries, where food insecurity and malnutrition are moving from rural to urban areas (Ruel, Haddad, and Garrett, 1999; Haddad, Ruel, and Garrett, 1999; and Garrett and Ruel, 2000). Urbanization in developing countries is posing new questions regarding economic and social policies in general, and, in the case of food security.

Certainly a government may try to keep producer prices high and consumer prices low through subsidies and market interventions, but the developing countries that tried such an approach have usually found the policies unsustainable, mostly because of the fiscal cost that they imply.

A more adequate approach to deal with that policy dilemma but which also requires budgetary outlays is: a) to maintain a reasonably neutral system of price incentives; and b) to promote investments in the agricultural sector and rural areas to enhance human and productive

capital, infrastructure, and the adoption of technology, improving productivity and incomes in agricultural and food production. A dynamic and expanding agricultural sector will trigger the dynamic linkages already mentioned, helping with production and employment in other sectors. Finally, higher productivity will help reduce food prices for consumers (Haggblade and Hazell, 2010). Adequate trade policies, national and international, for poverty alleviation and food security are those that would allow a framework of incentives and an adequate level of investments and services in developing countries.

## 8. TRADE AND TRADE POLICIES: BACKGROUND

What are the implications for trade and trade policies of the issues discussed so far? In particular, it is again important to differentiate the impact of trade policies on trends and on volatility around the trend.

In general, it can be argued that trade, which is different from trade policies, helps food security in developing countries mainly because of three reasons (Díaz-Bonilla et. al., 2003). First, through the availability of food imports it cushions the variability of food consumption in developing countries which is far lower than the variability of domestic food production in those countries. Although the latter is still the main component of domestic consumption in most developing countries,<sup>30</sup> imports provide the needed complement, increasing availability of food for consumption at the national level and compensating for possible declines in domestic production. Second, the food import bill for developing countries has become, in general, more affordable considering that it has declined over time as percentage of total exports from somewhat more than 15% in the 1960s to about 6% in the early 2000s (i.e. total exports in general have expanded in developing countries faster than their food imports; see Díaz-Bonilla et. al., 2003). Third, as discussed before, world price volatility has declined during the last decades, at least until recently (see Table 6), which some attribute to the existence of more sources of production linked to global markets through increased trade.

Moving now to trade policies for food and agriculture, the following discussion considers the framework provided by the WTO, with the three pillars of domestic subsidies, export subsidies and market access. In this regard, there are two main questions to answer (Díaz-Bonilla et. al., 2003):

- Are the categories of countries considered under WTO rules adequate to analyze food security issues (i.e. do they take into account the heterogeneity of situations in terms of food security among WTO members, considering the special and differential

treatments that emerge from these categories)? The Agreement on Agriculture (AoA) considers two special categories within the general one of developing countries: Least Developed Countries (LDC) and Net Food Importing Developing Countries (NFIDC). The 2008 Revised Draft Modalities for Agriculture expands those categories, mainly with exceptions for Small and Vulnerable Economies (SVEs),<sup>31</sup> recently-accessed members (RAMs) and others.

- Are WTO disciplines and Special and Differential Treatment linked to those categories adequate to address food security concerns? For instance, separate from a differential treatment provided to developing countries in general (such as lower percentages of tariff reductions, greater flexibility in the use of subsidies, and longer periods of implementation in general), there are special provisions for LDCs (that are not required to undertake tariff reductions and most other commitments), while NFIDCs are granted special rights in terms of international food aid to support food security efforts. The Draft Modalities considers new special and differential treatment for the old categories, but also for new ones such as SVEs and RAMs.

Both questions are related: if the categories are defined in ways that do not capture situations of food insecurity, then it is unlikely that the differential treatment under WTO rules will deal with food security concerns in a meaningful way; but, at the same time, even if those categories capture the variety in the situations of food insecurity, the question regarding the adequacy of current and future WTO rules and commitments to treat those differences requires a separate discussion (Díaz-Bonilla et. al., 2000).

The first question was analyzed in the cluster analysis in Díaz-Bonilla et. al. 2000, already discussed, focusing on the existing categories (developing, LDCs,<sup>32</sup> NFIDCs,<sup>33</sup> and developed). There are several conclusions from the cluster analysis. First, being LDCs seems to be a good



indicator for food insecurity at least according to the metrics utilized for the analysis: 43 out of 46 LDCs included in the analysis fall in food insecure clusters. Still there were three LDCs that were classified as food neutral, and there were some food insecure countries that were not LDCs, such as El Salvador, Georgia, Mongolia and Nicaragua (although most of these countries would be now considered under the new category of SVE, if the Draft Modalities was adopted). In turn, the category of NFDCs was not as good as proxy for food insecurity considering that almost 40% were in food neutral clusters. Developing countries, also a WTO category for the definition of trade disciplines, were spread over all categories, except the most food secure ones, making that category too heterogeneous to provide adequate guidance for trade negotiation issues related to food insecurity.

Another conclusion was that developed countries were all in the food secure category, raising the question of what was the meaning of “food insecurity” as a non-trade concern for those countries which have raised the issue. Certainly, it cannot be the same as food insecurity in poorer countries.

As it has been mentioned, the Draft Modalities includes the new category of Small and Vulnerable Economies. Comparing the list of SVE countries with the categories of food insecurity emerging from the cluster analysis, only 23 countries (or about half of the 45 countries in this new category) are in the clusters identified as food insecure. The category of RAMs is also very heterogeneous.

In summary, except LDCs, the different categories in the WTO are less precise indicators of food insecurity, at least based on the consumption, production and trade indicators utilized in the cluster analysis.

Moving now to the disciplines, the general answer is that WTO rules should give incentives to both industrialized and developing countries to follow policies that promote better availability and access to food, and that help with poverty reduction, while at the same time WTO rules should restrict potentially harmful ones. Because the disciplines are different and because the resources available to support those policies also vary among countries, we will discuss these questions separating developed and developing countries.

## 9. TRADE POLICIES IN DEVELOPED COUNTRIES

### *a) Economic and Social Aspects*

In general the more common conjecture is that the reduction or elimination of export and domestic subsidies and of barriers to market access is good for food security in developing countries (see ICTSD, 2009, and Josling, 2010). This argument is based on two aspects. First, it has been already argued that agriculture is important for growth and poverty alleviation in developing countries. Second, direct historical experience and simulations with global trade models suggest<sup>34</sup> that the combination of agricultural domestic support, market protection and export subsidies by industrialized countries have depressed world agricultural prices, reduced market opportunities for a variety of agricultural and food products, and competed with domestic production in developing countries, all of which has reduced agricultural production and exports in poorer countries. Or stating the same point from a different angle, if industrialized countries had followed a policy with less agricultural domestic and export subsidies and had allowed more market access in agricultural and food products, then production and exports (both primary and processed) in those products, and the related income and employment opportunities, would have expanded in developing countries in general.

These results are suggested by counterfactual analysis with global simulation models (see for instance, Diao et. al., 2005, Gersfelt and Jensen, 2006; Robinson and Thierfelder, 2006; and Frandsen, H. G. Jensen, Lind, Melgaard, and Yu, 2006), but are also based on a historical analyses that find important negative effects over time in several developing countries for production and employment linked to agroindustrial products such as meat, sugar, cotton and canned tomatoes, as a result of industrialized countries' agricultural policies (OXFAM, 1987; Eurostep, 1999).

At a more general level, agricultural protectionism and subsidies in industrialized countries, which, as already mentioned, transformed the European Union from a net importer to a net exporter

and the “subsidies war” between the US and the EU after the 1985 Farm Bill (see Table 7 and footnotes 11 and 12), depressed world prices of many agricultural and food products since the mid-1980s and until the late 1990s.

The fall in agricultural prices appears to have had important negative implications for agricultural investment and rural development in many developing countries, discouraging investments in their rural sectors. For instance, Collier (2005) calculated substantial losses in growth from falls in world agricultural prices, based on a sample of 56 developing countries during the period 1970-1993. The price declines reduced GDP growth by around 1.4% per year over the period and output at the end of the period was around 6% lower than before the price shock. Collier also argues that because of the negative multiplier effects and the types of activities affected, including those in the non-tradable sector, agricultural export price shocks were likely to be borne by groups at high risk for poverty.

As a result of these changes in prices and trade flows (which discouraged the domestic production of staples and close substitutes), several developing countries became increasingly dependent on subsidized food from abroad, and many of them, including various SSA countries, changed from being net food exporters into net importers.<sup>35</sup> Low food prices also pushed several developing countries into a more extreme specialization in tropical products, increasing their external vulnerability and reinforcing a net food import position that could have been avoided or mitigated under a different set of relative prices.<sup>36</sup> Also, the World Bank and other development banks cut their lending programs to agricultural and rural development projects in the late 1980s, a move that was apparently influenced in part by low world agricultural prices that reduced the expected returns of projects in those products (Lipton and Paarlberg, 1990).<sup>37</sup> The lack of rural dynamism also contributed to an increase in rural migration to the cities and fostered excessive urbanization in many developing countries.

Simulations with large global trade models also suggest that although the absolute value of the damage caused by industrialized countries' agricultural policies is larger in bigger developing countries (like China, Brazil, Thailand, Argentina, and India), small developing countries in South and Central America and in SSA may suffer relatively more from those policies (or benefit relatively more from their elimination) as a percentage of the national economy, given the importance of agriculture in those smaller nations (Diao et. al. 2005).

Other general results from simulations with global trade models include the following (Diao et. al., 2005; Gersfelt and Jensen, 2006; Robinson and Thierfelder, 2006; and Frandsen, H. G. Jensen, Lind, Melgaard, and Yu, 2006):

- For the expansion of agriculture in developing countries to happen, the most important issue is market access in industrialized countries. The impacts of other interventions such as domestic subsidies and export subsidies are, in that order, quantitatively smaller than market access for the potential expansion of agricultural production in developing countries.
- Differentiating within industrialized countries, the largest negative impact on agriculture in developing countries comes from the agricultural policies of the European Union, followed by the US.

For those industrialized countries who argue the importance of the multifunctionality effects of agriculture, there is no escaping to the conclusion that the expansion of agriculture in industrialized countries, through subsidies and market protection on account of those assumed multifunctional effects, imply the reduction in agricultural production in developing countries, with the consequent decline in the postulated multifunctional effects in developing countries (see Díaz-Bonilla and Tin, 2006).<sup>38</sup>

So far, it has been argued that agriculture is important for growth, exports, employment, poverty alleviation and food security in developing countries, and that protection and subsidies in industrialized countries have limited

the expansion of that sector in developing countries. Therefore, a “good” policy outcome under the WTO would be the reduction or elimination of protection and subsidies in industrialized countries. However, the fact that agricultural subsidies and protection in industrialized countries negatively affect the expansion of agriculture in developing countries, does not mean that other aspects such as welfare (usually a measure of overall consumption),<sup>39</sup> total GDP, total employment, or food consumption (which is more related to food security than food production) may be also negatively affected in those countries.

In fact, as all these other variables measure different things, they may move in different directions. For instance, welfare may fall even as GDP increases if terms of trade decline significantly. Agricultural-related GDP may increase while total GDP declines, if the policies are expanding the former activities beyond its more efficient levels while drawing resources from other parts of the economy. Net agricultural trade may increase, while at the same time indicators of food security, such as food consumption or the ratio of food imports over total exports, may deteriorate (Diao et. al., 2005). These cross and indirect effects have led to some objections about whether strong disciplines on market access, domestic and export subsidies in industrialized countries really help developing countries' agricultural production and food security (Díaz-Bonilla et. al., 2003).

The first objection is the possibility of negative terms of trade effects on developing countries resulting from the elimination or reduction of protection and subsidies in industrialized countries. This effect may take place if, for instance, developing countries have access to high-priced industrialized countries' markets for some products (say sugar) and buy cheap subsidized temperate products (say wheat) from developed countries. This static analysis must be put in historical perspective. As argued, depressed world prices of many food products during the 1980s and 1990s related to agricultural protectionism and subsidies in industrialized countries contributed to some developing countries becoming net food importers of those

products, and pushed them into a more extreme specialization in tropical products than would have been the case under a different set of agricultural prices. Given such distorted starting position, influenced by decades of industrial countries' agricultural policies, the negative terms of trade effects on some developing countries found by different global trade simulation models is not surprising. However, a different set of prices resulting from world agricultural liberalization, may well lead to an increase of developing countries' production of temperate-zone staples and close substitutes, reducing or changing the net food import position.

The other issue to consider is that in many of the simulations that obtain these negative results, models are run under full employment assumptions or do not allow for capital accumulation, land expansion, or technological change. The result is that they show smaller positive results for developing countries as a whole from agricultural liberalization in industrialized countries, and then the negative terms-of-trade effects on developing countries may dominate the artificially smaller positive effects of agricultural expansion. On the other hand, if dynamic effects and the employment and other positive multiplier effects from agricultural expansion are considered, the negative impacts mostly disappear, showing positive welfare effects even for countries that show negative results under more static analyses. (USDA/ERS, 2001, Diao et. al., 2005).

A related issue is that, according to some analyses (for instance Koester and Bale, 1990) the fact that the combination of domestic support, market protection and export subsidies by industrialized countries depressed world prices, may have hurt developing countries that were net exporters, but it has helped the balance of payments position of developing countries that were net importers of those products. However, as discussed before, this argument does not consider the income, employment and other dynamic effects from the expanded agricultural production that was displaced due to the fact that developing countries had to compete with subsidized and protected agriculture in industrialized countries.<sup>40</sup> In any case, rather than maintaining protection and subsidies in the

industrialized countries on account of the net importers in poor developing countries, a welfare enhancing approach would be to offer cash grants or other financial schemes to compensate for higher prices linked to agricultural liberalization in developed countries.

Another related point is that if only industrialized countries liberalize their agricultural policies there is greater agricultural production, as well as of processed goods, in developing countries, but domestic agricultural consumption may fall in some cases. This happens because imports may decline by more than the amount of increased production, in the case of net importers, or because the expansion of exports, due to better world prices, is larger than the growth in production, in the case of net sellers. Certainly, from the point of view of food security it is more relevant to look at consumption, and not production, of food. We have already mentioned that Smith and Haddad (2000) have shown that increases in total national availability of food (which includes imports along with domestic production) have a positive impact on the decline of child malnutrition. Diao et. al. (2005) find that non-trivial number of developing countries and regions reduce their consumption of agricultural goods if agricultural trade liberalization takes place only in industrialized countries (although the percentages are small in most cases). This result, however, disappears almost completely once developing countries with high protection also reduce their own level of protection that keeps domestic food prices high for consumers.<sup>41</sup> So the proper interpretation of the results should highlight the fact that although the reduction of subsidies and protection in industrialized countries would increase world prices, an appropriate response from net food importing developing countries with high food import tariffs is to consider reducing them progressively to cushion the impact of higher world prices on their domestic markets.

The second issue refers to the erosion of preferences for a number of developing countries that have special market access arrangements with industrialized countries.<sup>42</sup> For some low-income developing countries, preferential access may represent a large percentage of agricultural

exports and sectoral value added, and has important implications for rural employment and balance of payments. Again, there are several options to compensate poor countries for the erosion in preferences that are better than maintaining current levels of protection or to extend significantly the transition periods for market access in industrialized countries. The most obvious is that if the preferential access is subject to some restrictions, the latter should be also eliminated, granting full market access. In other words, instead of restricting the access of other countries to help those with preferences is better to expand access for those already enjoying preferences.<sup>43</sup> Another, but less sweeping way is to improve the mechanisms for such preferential access. For instance, in some cases, changing how tariff-rate quotas (TRQs) operate could compensate the erosion of preferences in the short run, such as granting the import licenses to the exporting countries instead of giving those licenses to domestic importers, and reducing to zero the in-quota tariff for those exporting countries. Another possibility is to transform into foreign aid the equivalent value of the trade preferences. This would mean extending to the affected poor developing countries the same logic applied when industrialized countries compensate domestic producers for increased openness. Considering that a policy of reducing protection acts as a tax cut for consumers in the liberalizing countries, part of that tax cut may be recaptured (for instance, with small changes in sales tax or VAT) to help finance the compensations to poor developing countries for the lost access, and still leave net benefits for consumers.

A third objection is that supply-side constraints in many smaller and poorer developing countries will not allow them to take advantage of the expanded production and export opportunities created by the reduction of protection and subsidies in industrialized countries, which would mostly benefit larger developing countries. The issue is always the same: the first-best option is not to maintain the distorting policies in industrialized countries but to finance investments in those disadvantaged countries so they can take advantage of the

opportunities. Also, at least in the simulations, smaller countries seem to benefit as much or more than larger developing countries when benefits are calculated as a percentage of their economies, even though in absolute values the larger countries benefit more.<sup>44</sup>

Finally, some, mostly in the NGO community, have argued that export expansion of cash crops may have harmful effects on poverty and food security. In general, the validity of those arguments depend on the level, inclusiveness, and stability of the growth rate generated by that expanded trade. Within the agricultural sector, criticisms to different developments such as the Green Revolution, the increase in commercialization, and now the expansion of international trade, centered on the possibility of negative effects on the welfare of poor producers and poor consumers, through diverse economic and political channels.

For instance, a moderately negative scenario would be one in which the poor lack resources and access to technology, excluding them from participating profitably in expanding domestic or international markets. This exclusion may lead to the possibility of a worsening income distribution, but not necessarily increases poverty.

A more worrisome outcome would be one in which the poor became absolutely worse off, and not only in relative terms. Usually, those who consider this negative scenario likely argue that the process of technological innovation or expansion of market opportunities may shift relative prices against the poor and/or reinforce the power of already dominant actors (large landowners, big commercial enterprises) in ways that allow the latter to extract further incomes from the poor or to expropriate their assets (e.g. by displacing them from their lands). In terms of food security, the claims of negative effects from further insertion in commercial markets usually revolve around the possibility that the production of cash or export crops may displace staple crops, and/or that women, usually the anchor for households food security, may end up with less decision-making power and less resources due to the technological or commercial changes.



Different studies of the Green Revolution, and domestic and international commercialization that have addressed those concerns tend to paint a more positive view of the process involved: usually they find advances for the poor, due to production, employment and food price effects, although at the same time it is recognized that uniform attainment of benign outcomes is by no means guaranteed (Hazell and Ramaswamy, 1991 on the Green Revolution; Von Braun and Kennedy, 1994, on commercialization; Christiaensen, Demery, and Paternostro, 2002 and Kherala et al. 2001 on cash exports; Paolisso et al., 2001 and Fontana, 2002, on women issues). Generally, complementary policies and investments are needed to protect and increase natural resources and the physical and human capital owned by the poor and by women, to build general infrastructures and services they can access, to ensure that markets operate competitively, and to eliminate institutional, political, and social biases that discriminate against vulnerable groups.

*b) WTO Regulations under the Agreement on Agriculture (AoA)*

As argued, increased market access in industrialized countries offers the best opportunity of further expansion of agricultural production and exports in developing countries, with the corresponding positive employment and income effects on the most vulnerable economies (see previous section with the discussion about agricultural-based strategies).

The level of success in achieving this goal depends on a series of issues such as:

- further reduction of tariffs (particularly those still very high in some key products, such as fruits and vegetables, sugar, meat and dairy products, among others);
- the simplification of some complex tariff structures that include combinations of normal and ad-valorem tariffs (complexity which is compounded by seasonal adjustments in some cases);
- completing the process of tariffication in the cases where exemptions were granted;
- elimination or reduction of tariff escalation;<sup>45</sup>
- the volume of imports allowed under the current regime of tariff-rate quotas (TRQs); the transparent and equitable administration of those TRQs; and
- what exemptions may be granted to the rules defined, such as the Special Agricultural Safeguard (SSG) established in the AoA that acts as a variable levy, is not transparent, and has the potential of being very disruptive of trade.<sup>46</sup>

Some of the potential benefits of agricultural trade liberalization for food security are currently limited by the great flexibility that industrialized countries have to subsidize their own production through different forms of domestic support.<sup>47</sup> In particular, the Uruguay Round kept outside of the disciplines most of the domestic subsidies that were used by the European Union and U.S. since the mid-1990s, as they were incorporated under the “Blue Box” category. Therefore, the possible benefits that developing countries and the world could gain from following their comparative advantages have been significantly diminished by those subsidies.

Tighter disciplines on domestic subsidies require the consideration of several issues. For instance, the “aggregate measure of support” still allows industrialized countries to have flexibility to heavily subsidize certain sectors. Therefore, product specific caps would be more appropriate. Other options that would help developing countries include tightening the criteria for the Green Box and the elimination, reduction or tightening of the exemptions considered under the Blue Box. These adjustments would contribute to leveling the playing field that is now heavily tilted in favor of industrialized countries, which have the legal room under the WTO and the economic resources to distort production and trade in their favor. On the other hand, many developing countries dismantled or significantly reduced their own domestic support for agricultural producers, mainly because of fiscal constraints and policy changes usually enacted as part of programs supported by financial international organizations and aid donors.

Finally, the use of agricultural export subsidies has been widely criticized as unfair and disruptive of international trade. Those export subsidies have negatively affected both developing countries that are net agricultural exporters and agricultural producers in net importing developing countries, whose production is displaced by external unfair competition. Also, as an important percentage of those export subsidies do not benefit the poorest countries nor directly support food security alleviation efforts,<sup>48</sup> there is no justification for the special treatment of agricultural export subsidies in the AoA, compared to exports subsidies in other sectors.

The Draft Modalities 2008 shows advances on several of those issues, but at the same time it opens the possibility for loopholes particularly in the area of market access, which, as argued, is the most important constraint for agricultural expansion in developing countries. On the positive side, the following proposals may be mentioned:

- Overall Domestic Subsidies that are trade distorting (Aggregate Measure of Support (Amber) + *de minimis* + Blue), would be cut significantly (EU by 80%; US/Japan, by 70%; the rest, by 55%), with some down-payments. The cuts would be made over 5 years. There are specific cuts for the AMS as a whole and per product Amber Box support is capped. Subsidies for Cotton, a product of importance for several low-income African countries, would have deeper cuts. The *de minimis* is reduced to 2.5% of production and Blue Box also limited to 2.5% of production. The Green Box provisions, particularly on income support, have been tightened to ensure that are really decoupled from production levels, and there are stricter rules for monitoring and surveillance.
- Regarding Market Access, tariffs would be cut according to a formula that imposes deeper cuts on higher tariffs ranging from 50% for tariffs below 20%, to 70% for tariffs above 75%, all subject to a 54% minimum average cut. The Draft Modalities also include the elimination of the Special Safeguard in 7 years. Tariff escalation would also be reduced, and tariffs should be simplified, tending towards a simple ad valorem format (although there is still be some specific duties), but in any case they would be less complex than they are now. Tariff quotas would also be simplified and their administration better monitored, including the possibility of improving access to the market if imports are persistently less than the quota. The liberalization of tropical products is also accelerated. Least developed countries would have duty-free and quota-free market access for at least 97% of products, with simpler preferential rules of origin to determine whether a product qualifies as coming from those countries.
- Export Subsidies in industrialized countries would be eliminated (the document considers a transition period of 5 years, with half of the elimination happening by the end of the second year). There are also tighter provisions on export credit, guarantees and insurance, international food aid (see below), and exports from state-owned trading enterprises.

The negative aspects include:

- The fact that even if the Draft Modalities were accepted there will still be substantial levels of distorting domestic support in industrialized countries
- Also the Draft Modalities leaves open several possibilities that may compromise market access in industrialized countries, which as argued is the main international vehicle to help expand agricultural production in developing countries. One problem is the consideration of Sensitive Products which would be available to all countries and whose list has been the subject of some controversy. These products would be allowed to maintain higher levels of tariffs after applying smaller cuts, although these restrictions should be in part offset by the expansion of tariff quotas. Another potential drawback would arise from the proposed alternative to compensate the erosion of long-standing preferences through the delay of the starting of tariff cuts, as opposed to the other options discussed before in this paper. Finally, the period for the elimination of the SSG, seven years, is substantial.

## 10. TRADE POLICIES IN DEVELOPING COUNTRIES

### *a) Economic aspects*

During the current WTO negotiations some proposals have suggested, implicitly or explicitly, taxing consumers in developing countries to support producers, mainly by maintaining higher levels of border protection. Also several developing countries have indicated concerns that liberalizing their own agriculture may affect negatively those countries' large rural populations, where in many cases poverty is still concentrated. A related but separate concern is how to avoid sudden negative trade impacts on poor producers whose vulnerable livelihoods may be irreparably damaged by drastic shocks. It has also been argued that trade taxes are an important source of government revenues and that trade liberalization weakens public revenues.<sup>49</sup>

Sometimes the suggestion about increased protection for agriculture in developing countries is accompanied by the argument that such protection is easier to implement in poor countries than options considered in the Green Box, such as agricultural research and extension, or other alternatives to provide domestic support to poor farmers contemplated in the AoA (such as Article 6.2; see below). Also, it is sometimes argued that protection "does not cost money" while the previous Green Box and related measures require public funds. Both arguments seemed flawed. First, it is not clear that the institutional requirements to run efficient and honest customs administrations that can adequately manage tariffs, quotas, and imports are less demanding than organizing, for example, an efficient system of agricultural research and extension. Second, protection does cost money. Contrary to the common perception of protection as a tax paid by foreigners and collected by governments, a good portion of the implicit tax is paid by domestic consumers and collected privately by producers in the form of higher prices. In particular, increasing the domestic price of food products through protection is a tax on food that is mainly received by bigger agricultural producers who have larger quantities of products to sell. This tax on food has an obvious negative impact on

poor households, not only the increasing number of poor urban households and landless rural workers, but also poor small farmers that are net food buyers, all of which in many developing countries spend more than half their incomes on food (World Bank, 2009).

Certainly a government may try to compensate consumers through food subsidies, but they can become a heavy budgetary burden.<sup>50</sup> Also, protection will have other impacts in the functioning of the economy. For instance, during the second half of the 1990s Morocco was spending about 1.7-2.4% of the GDP in food subsidies (IMF, 2001), in part trying to compensate for the higher prices generated by trade protection. At the same time, simulations of alternative uses of water in Morocco showed that protection of certain crops was redirecting the use of that scarce resource toward protected products when the value of agricultural production measured at world prices would increase if protection were reduced and water were reallocated to other crops (Diao, Roe, and Doukkali, 2002). Moreover, concentration of production in some protected crops seems to have increased the vulnerability of the agriculture to droughts and made the whole economy more volatile (World Bank, 2001). Finally, more expensive food may be putting upward pressure on wages, affecting various manufacturing sectors in which Morocco may otherwise have comparative advantages. If the dynamic export sector is manufactures, sustaining competitiveness in those activities without reducing real wages may require a reduction, and not an increase, in the cost of food. However, this should be achieved mainly through investments in agriculture and not forcing the terms of trade against agriculture.

Border protection for food products acts as a regressive and mostly privately-collected tax on food: it has a larger negative incidence on poor consumers, who spend a greater percentage of their incomes on food, and is received mainly by bigger agricultural producers, which have larger quantities of products to sell. Also, trade protection for any sector usually implies negative employment and production effects in other



sectors through general equilibrium effects. The most obvious case is when protection for some products expands the land used in their production, while other products decline in land use and total supply. More generally, protection of an activity usually means that the latter expands more than what would have been the case without protection, pulling from other sectors at least some productive resources that may not be unemployed. The consequence is that the non-protected sectors may contract. Another effect is that protection increases prices of agricultural products that are inputs to other sectors affecting costs and competitiveness and forcing production and employment down in those other industries. For instance, increasing the price of corn through protection may affect the poultry industry. There are also other and perhaps less understood effects, such as that higher costs of food may lead to higher salaries, affecting competitiveness, production and employment in export industries. Also, a well-know general equilibrium effect is that protection increases the real exchange rate,<sup>51</sup> affecting other tradable goods that become less competitive internationally as a result of the appreciation of the domestic currency.

The conditions under which the negative general equilibrium effects of protection on other sectors do not happen are rather restrictive. First, the protected sector should expand only utilizing unemployed factors of production (i.e. the favored sector does not take land, water, capital, labor and so on from other sectors). Second, the protected sector should not be an important input to other sectors whose cost of production would otherwise be affected. Third, the cash flow generated by protection, separate from other policies and expenditures, will be utilized to finance improvements in technology, investment, and productivity in the protected activity so as to, eventually, make it competitive without protection. Since the classic studies from Little, Scitovsky and Scott (1970) and Balassa (1971), the experience in developing countries has been that those conditions do not usually apply.<sup>52</sup>

The main point to consider is that whatever the institutional requirements, the interventions

allowed under the AoA without restrictions, such as research, extension, infrastructure, and irrigation, are the real foundations for increases in production, productivity, and competitiveness. Trade protection measures, on the other hand, are mostly internal transfers of funds and largely regressive in the case of food, with no clear link to the real sources of agricultural productivity growth or to policies that can benefit the poor directly.

For instance, Diaz-Bonilla, Diao, and Robinson (2004) compare in a global trade model the strategies of utilizing protection, with its implicit and mostly privately appropriated tax, versus defining an equivalent and explicit, government-collected tax, whose revenues are applied to research and development (R&D) in agricultural technology. In the first scenario there is an arbitrary increase in protection on food security crops but only in those countries that proposed flexibility in applying protection as part of the concept of a Development or Food Security Box. In the second scenario, the governments in those countries collect, through an explicit income tax, the equivalent of the implicit consumption tax privately collected through protection, and then invest that amount in agricultural technology R&D. The increase in agricultural protection results for those countries in a small negative effect on GDP and employment, and there is less consumption of food products, suggesting that food security declines with increased protection. Also, agricultural trade among developing countries, including those applying the higher levels of protection, declines in this simulation (i.e. South/South agricultural trade is hurt). On the other hand, an increase in investment in agricultural R&D financed by an equivalent tax calculated from the first scenario shows increases in GDP, employment, agricultural production, and consumption, including, particularly, food items.

More generally, special and differential treatment in the form of protection at the level of staple crops considered relevant for food security, or for other reasons, is not necessarily the most effective and equitable way to address problems of poverty and hunger. Instead, poor countries need adequate policies that operate at the household and individual levels. Investments

should be targeted to the poor and vulnerable rather than to protect and subsidize crops in general which, as it has been mentioned, usually benefits larger farmers. More generally, to the extent that protection is a “privatized” tax, there is always the question of whether those funds can be collected explicitly by the government and put to better uses.

Although it is dubious that high and permanent agricultural protection is the answer for addressing poverty and hunger concerns in developing countries, the opposite of drastic and sudden liberalization of agricultural and trade policies in those countries may pose problems too. A main problem is the presence of high levels of protection and subsidization in industrialized countries that survived changes during the Uruguay Round. There are certainly imbalances in the AoA, because industrialized countries have been able to secure exemptions for some of their policies (such as the Blue Box) and were allowed to continue using significant amounts of expenditures for domestic support and export subsidies. Furthermore, as discussed before, in relation to the Draft Modalities, those asymmetries may continue even after the conclusion of the Doha Round.

Developing countries, while pressing for a substantial reduction of those subsidies and protection in rich countries, are also requesting some trade instruments to defend themselves during the transition period to a less asymmetric situation. In particular, food-insecure and vulnerable countries need (1) longer transition times that must be utilized to implement adequate rural development and poverty alleviation strategies and (2) simplified and streamlined instruments to confront import surges that could irreparably damage the livelihoods of small farmers. The latter point is linked to the fact that the poor are more vulnerable to crises: long-lasting damage to their already low levels of human and physical capital may occur; crises may force poor families to sell productive assets, increase the possibility of illness, or have their children drop out of school (see, for instance, Lipton and Ravallion, 1995). Therefore, the concerns raised by developing countries regarding the presence of significant distortions in world

markets and the need to protect vulnerable groups from negative shocks are important issues that need to be addressed.

However, it should be emphasized that the problems faced by poor farmers and poor consumers are more adequately addressed through policies and investments targeted to them directly, rather than using indirect methods such as trying to protect specific crops.<sup>53</sup> Those indirect approaches inevitably lead to leakages (*i.e.* non target groups receiving part of the rents, which in some cases may be substantial) and to negative impacts on other non-protected sectors. A job saved in the protected activity, may have been at the cost of employment lost and poor people becoming more vulnerable in other activities.

That systemic analysis must be done considering always the important growth multiplier effects of agriculture especially in poor developing countries, while at the same time avoiding the penalization of poor consumers and of other activities. Therefore, the best approach for developing countries in terms of food security and poverty alleviation should include three aspects:

- First, the reduction of protection and subsidies in industrialized countries that displace agricultural and agroindustrial production in developing countries, negating the important growth multipliers of those activities.
- Second, the elimination of biases against that sector in their own general policy framework, if they exist, or more generally, ensuring broadly neutral incentives between producers and consumers and across sectors, to avoid penalizing other sectors that also generate incomes and employment.
- Third, increase investments in physical and human capital, land tenure, water access, technology, infrastructure and general services (such as health and education) (especially focusing on the poor and women); expand non-agricultural rural enterprises, ensure that product and factor markets operate adequately; implement well designed safety nets (including conditional cash

transfers (CCT), school lunches, women and infant nutrition, food-for-work); strengthen organizations of small farmers and empower women; eliminate institutional, political, and social biases that discriminate against vulnerable groups and support the expansion of social capital and political participation for the poor and vulnerable, strengthening democracy and good governance; promote macroeconomic stability; and implement measures of adaptation and mitigation to climate change.

#### *b) WTO Regulations*

The question in the context of the WTO is whether the current AoA and its possible future modifications under the Doha Round would allow or limit the range of policies needed to make sure that increased trade opportunities lead to adequate rates of inclusive, sustainable and stable growth, contributing to reductions of poverty and improvements in food security.

As argued in greater detail in Díaz-Bonilla et. al. (2003), the Agreement on Agriculture does not seem to limit the possibilities for implementing a whole range of effective policies in developing countries to address poverty and food security concerns. Developing countries currently have the necessary flexibility to develop well-defined programs for poverty, food safety and environmental protection. The Draft Modalities, in turn, seems to expand, rather than limit, the policy options (or “policy space”, as it is sometimes called) for developing countries in areas such as programs aimed at poor producers or consumers, food security stocks and domestic food aid for people in need.

**Food security stocks.** The most obvious instrument available in the AoA is the use of stocks for food security reasons. The Green Box, policy measures with little or no distorting effects on prices and production, includes “all support policies provided through a publicly-funded government program not involving transfers from consumers” and which do “not have the effect of providing price support to producers”. These policies are exempted from disciplines on domestic subsidies provided they comply

with other specific criteria established in that Annex 2, paragraph 1, of the AoA. For example, stocks must be an integral part of a food security program identified in national legislation; they must correspond to predetermined targets related solely to food security; the process of stock accumulation and disposal must be financially transparent; and the products must be bought “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” (Annex 2, paragraph 3).

Emergency food stocks may have an important role to play in food security arrangements. Carrying stocks as an insurance mechanism<sup>54</sup> is different from using stocks to stabilize domestic grain prices, which has proved expensive and relatively ineffective (Hazell, 1993; Knudsen and Nash, 1990). The cost of such a mechanism for public finances would be eased if it were limited to a few key food items - no more than three to five. Hazell (1993) suggests that relatively small percentages of total consumption may suffice to act as an insurance mechanism - about five percent of total consumption in the case of SSA countries. In turn, the AoA requires transparent financial arrangements, an appropriate requirement to avoid waste and corruption.

The key point for the WTO commitments, though, is that those stocks must be bought and sold at market prices. The AoA language is clear on sales from the stock: those prices are “current domestic market prices” including any level of tariff protection the country may have. The text is less clear in the case of buying food products, and a footnote in Annex 2 opens the possibility of buying at administered prices” but that may trigger disciplines related to domestic subsidies.<sup>55</sup> As indicated, building stocks for food security reasons is different from using stocks to stabilize domestic grain prices, which may be very expensive. For poor countries it makes sense not to add to the costs of the food security program through the use of non-market-based administered prices, which tend to generate losses buying high to support farmers and selling low to subsidize consumers. In any case, if a government buys at harvest time, say 10% of the

production of a crop, paying market prices to achieve the stock to consumption ratio defined for food security reasons, then that operation solely would give some price support with respect to the counterfactual of no intervention (Islam and Thomas, 1996: p. 58-61). But if all the operations are conducted at market prices, ideally using some sort of auction, the food stock program should be part of the Green Box and not subject to restrictions on the AMS (a more detailed discussion of the WTO regulations involved is in Díaz-Bonilla et. al., 2003).

The Draft Modalities in its Annex B (which focuses on Annex 2 of the AoA), suggests further flexibilities to the formation of food domestic stocks: in the footnote mentioned related to purchases for food stocks it is further clarified that “acquisition of stocks of foodstuffs by developing country Members with the objective of supporting low-income or resource-poor producers shall not be required to be accounted for in the AMS”. The Draft Modalities also allows “the acquisition of foodstuffs at subsidized prices when procured generally from low-income or resource-poor producers in developing countries with the objective of fighting hunger and rural poverty”.

**Domestic food aid.** A second instrument for food security, which is also part of Green Box measures (Annex 2), is domestic food aid. According to Annex 2, paragraph 4, food aid must target the population in need subject to clearly-defined criteria related to nutritional objectives; food purchases by the government must be made at market prices; the financing and administration of the aid shall be transparent; food aid can be in the form of direct provision of food or the provision of means to allow eligible recipients to buy food either at market or at subsidized prices. In the case of developing countries, a footnote indicates that “for the purposes of paragraphs 3 and 4 of this Annex, 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”.

Again, the AoA allows food security interventions, but imposes some sensible requirements, such as a clear plan with well-defined nutritional criteria, focusing on “population in need”. Moreover, in the case of developing countries, there may be subsidized interventions for urban and rural poor. As in other instances, the issue is not legal restraints under the AoA, but rather how to design and finance adequate nutrition interventions (see Coady and Skoufias, 2001 for a discussion of different types of those interventions).

**Support to poor producers and production for food security.** Although the formation of stocks, as indicated, can also help producers if the buying is timed adequately, the two measures discussed so far focus mostly on food consumption. But developing countries usually emphasize the production side of food security. So far we have discussed aspects related to market access in the developing country’s economy, particularly the internal impact of further reduction of their own tariffs, how to manage import surges, and how to deal with export subsidies that may displace local producers. Here we move to the crucial question of how to provide meaningful domestic support to agricultural producers, especially small farmers.

It has been already argued that for industrialized, but also for developing countries, the AoA allows a great latitude in domestic support policies: Green Box measures (Annex 2),<sup>56</sup> Blue Box (Article 6, paragraph 5), the *de minimis* exemptions (Article 6, paragraph 4 b), and the fact that the Aggregate Measure of Support (AMS) does not have product specific caps (Article 6 paragraph 1). Developing countries, in addition to a *de minimis* exemption (10%) for product specific support and for non-product specific support, were allowed to reduce their levels of domestic support less than non-developing members of the WTO and to implement the commitments in a period of 10 years instead of 6 (article 15, paragraph 2). Least Developed Countries are completely exempt from any reduction in domestic support (Article 15, paragraph 2).

It is true that many developing countries did not have domestic support policies in the first place (and therefore under the AoA they were



limited to the *de minimis* for product and non-product specific supports), but those countries also had additional exemptions under Article 6 paragraph 2, which allows them to exclude other categories of domestic support. The latter include “measures of assistance, whether direct or indirect, to encourage agricultural and rural development” which “are an integral part of the development programs of developing countries”. The article mentions investment subsidies generally available to agriculture; agricultural input subsidies to low-income or resource-poor producers; and support to eradicate illicit narcotic crops through diversification. Article 6.2 concludes saying that “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”.

Therefore, under WTO rules, a developing country is legally entitled to provide additional investment support to their agricultural producers provided that the measures are “an integral part of development programs of developing countries”, or, in the case of input subsidies (from credit to fertilizers or water) if they are given to “low-income or resource-poor producers”. By extension of the criteria of the Green Box, it could be argued that these interventions would be more protected from challenges, if they were part of clearly defined and publicly-funded government program (Annexes 2.1 and 2.5). Article 6, paragraph 2 has the advantage, from the point of view of equity, that it encourages developing countries to design specific programs for rural development or alleviation of rural poverty, instead of resorting to general and non-transparent subsidy schemes that may benefit richer farmers or be wasted in corruption. Article 6.2 would, for example, allow the use of input subsidies to poor farmers to promote production of a staple crop as part of a rural development program for such producers, without having to count those expenditures under the AMS, and therefore, without having to reduce them within the WTO commitments.<sup>57</sup>

Another issue is how to make operational the concept of “low-income or resource poor producers” (LI/RP) in Article 6.2. A possible way of identifying the farmers that would qualify

for assistance under this article is to apply the usual poverty line used for international comparisons of one dollar (or two dollars) a day, or to use a relative measure of poverty within the country (for instance, producers with less than 40% of national income per capita) (Díaz-Bonilla et al, 2003).

The Draft Modalities include further flexibilities in the Green Box such as: a) payments for relief from natural disasters may be provided to producers when the production loss is less than 30 per cent of the average of production in the corresponding base year; b) in the case of regional development payments the condition that a disadvantaged region must be a contiguous geographical area is eliminated; and c) for payments that require to fix the base year, developing countries do not have to use as the base period a time-limited experimental or pilot program.

Regarding domestic support subject to disciplines (Amber and Blue Boxes), least developed countries are exempted and net food-importing countries, RAMs and SVEs have reduced commitments and more flexibilities than for average developing countries. The Draft Modalities also indicates that the adjustments for inflation under the AoA will continue in effect, and that special consideration will be given to developing countries facing sharp rises in food prices.

**Market Access, trade remedies for food security and the Special Safeguard (SSG).** Article 13 of the AoA (known as the “peace clause”) imposed certain restrictions on the use of trade remedies to counter export subsidies and to claim other trade remedies against domestic subsidies of other countries. Those restrictions ended in 2003, and therefore, developing countries can request the common trade remedies under the Agreement on Subsidies and Countervailing Measures (ASCM) (including the possibility of claiming serious prejudice because of domestic subsidies of industrialized countries). During the negotiations, there were some proposals to allow the application of provisional measures (countervailing duties) under Article 17 of the ASCD with more streamlined procedures than those considered in article 17.1 (a), (b) and (c). For instance, it was suggested that the procedures

could be initiated by the government; and the countervailing duties could be applied before the period indicated in 17.3 and last for longer periods than the four months indicated in 17.4 (see a proposal for streamlined countervailing measures in WTO, 2001b).

However, most of the debates during the negotiations centered on variations around the Special Safeguard (SSG), which under the AoA is available only to countries, mostly developed ones, which underwent tariffication. In the current Doha Negotiations some developing countries have argued for also extending the utilization of the SSG to them, while others wanted the SSG eliminated for developed countries but to create a new Special Safeguard created for food security or other reasons. In fact, the Draft Modalities follows the latter option, eliminating the SSG and proposing the creation of a new Special Safeguard Mechanism (SSM). Besides the sections in the Draft Modalities, the then Chairman of the negotiating group prepared an additional document suggesting further operational aspects on the topic (WTO, 2008d).

The Special Safeguard Mechanism became a very controversial point in the negotiations and the issue was identified as one key factor for the derailing of the Doha negotiations in 2008. A recent report of the Chairman of the Committee on Agriculture still lists the SSM as one of the key unresolved issues (WTO, 2010). The conceptual problem is how to balance the need for a streamlined instrument to counter significant external shocks, such as import surges or price declines, that may affect poor producers and food security in developing countries with the fact that if the mechanism is too flexible and includes many products, it could be triggered frequently and therefore it may become a protectionist instrument with potentially even more negative impacts on food security of the countries using such SSM.

This internal food security effect is different from the issue that appears to have taken more time in the negotiations: whether a very flexible instrument to apply contingent protection is “good” for the countries using it, but it would be “bad” for potential exporters. In fact, the main

problem of a badly designed instrument would be internal to the countries using it: as explained before, and highlighted in the simulations in Díaz-Bonilla, Diao and Robinson, 2002, high and permanent protection is a privately-collected tax on food that negatively affects food consumption and food security in the countries applying it.

So far the negotiations on the SSM do not seem to have achieved the needed balance not only between importers and exporters, but more crucial for food security between small farmers and poor consumers. At the technical level there are still many unresolved operational issues (WTO, 2008b), and there are different opinions of what would be the real incidence of the SSM considering the specific operational variables in the Draft Modalities and the Chairperson’s additional document (see for example, Montemayor, 2010) and the fact that developing countries having access to the current SSG have not invoked it very often when compared to industrialized countries.

Moving to more general aspects of market access, the Draft Modalities considers smaller tariffs cuts over longer periods for developing countries in general, and further relaxations of disciplines for the 45 SVEs, while least-developed countries, very recent new members (Saudi Arabia, FYR of Macedonia, Viet Nam, Tonga, Ukraine), small low-income recent new members (Albania, Armenia, Georgia, Kyrgyz Rep, Moldova, Mongolia), and Bolivia, will not have to make tariffs cuts.

In addition, the Draft Modalities is also considering the case of Sensitive Products and proposes the differential treatment of Special Products. In regards to the latter, developing countries could declare up to 12% of products as “special” guided by indicators for food and livelihood security or rural development (the list of indicative criteria is in Annex F of the Draft Modalities), with smaller tariff cuts than the general ones (would have to average 11%), and may be combined in some ways with the cuts related to types of countries. As argued, this flexibility, as well as how the SSM is finally designed, can cut both ways for food security, to the extent that it may lead to more protection of food staples that may end up operating as a tax on food.

***Volatility, Price Stabilization and Food Aid.***

The recent food price spike revived attention about trade policy measures that may moderate volatility in food prices. The first thing to recognize is that measures taken by countries to try to reduce price volatility in their domestic markets, may exacerbate price volatility in world markets, by transferring outside the national markets the necessary price and quantity adjustments. More stability for some domestic markets may mean more instability for the domestic markets of other countries, given the global inter-linkages in commodity trade.

In that regard, there are some symmetries between import and export measures that transfer those adjustments to other markets: for instance, a substantial anticipatory import of a food commodity by a significant global importer of that product may have similar effects on world prices than a comparable export ban by a main exporter; similarly, important reductions of import taxes in a significant world importer may also have an impact similar to an equivalent increase in export taxes in a net exporter.

All four measures took place during the 2007/2008 food price crisis, and three of them, anticipatory imports, reduction of import tariffs and increase of export taxes, do not have disciplines under the AoA. Only export prohibitions and restrictions have some relatively weak disciplines under Article 12 of the AoA, which mandates that Members that institute new export prohibition or restriction on foodstuffs (following Article XI 2(a) of GATT 1994) must “give due consideration to the effects of such prohibition or restriction on importing Members’ food security” and must notify in writing, “as far in advance as practicable, to the Committee on Agriculture” explaining “the nature and the duration of such measure”. The Member instituting the measure must consult, “upon request, with any other Member having a substantial interest as an importer” and must provide the latter with the requested information. Article 12 also indicates that these obligations do not apply to developing country Members, “unless the measure is taken by a developing country Member which is a net-food exporter of the specific foodstuff concerned”.

The Draft Modalities has expanded somewhat the obligations to notify, inform, and consult, by defining 90 days for the notification, and by strengthening the surveillance role of the Committee of Agriculture in these matters. However, the most important new proposals are a) that existing export prohibitions and restrictions in foodstuffs and feeds must be eliminated by the end of the first year of implementation of a potential Doha Round agreement, and b) that new export prohibitions or restrictions cannot “normally be longer than 12 months”, and can exceed 18 months only with the agreement of the affected importing Members. The obligations to consult, however, do not apply to least-developed and net food-importing developing countries.

Another measure under the AoA that can help with domestic price volatility are the Green Box measures already mentioned related to food security stocks and domestic food aid. As mentioned, the Draft Modalities has made the provisions more flexible to help poor producers and consumers. The main issue is the availability of fiscal resources that developing countries may have for those purposes, rather than the “policy space” under the AoA.

Also there are important design issues for the operation both of food stocks and for domestic food aid. For instance, one is the level at which prices are stabilized. As discussed, aside from what happens with world price volatility, the domestic counterpart, which is what affects directly producers and consumers, also depends on domestic policies. For the poor, who are the most vulnerable to food price inflation and spikes, it may matter not only the stability of the domestic prices but also the level at which it is stabilized. If domestic price stabilization schemes maintain prices higher on average than what would have been the case without them, then there may be a trade-off for the poor: the market-based operation of food markets may lead to more volatile but perhaps lower prices on average, while with stabilization schemes prices albeit more stable would be higher, which may make more people food insecure (Sumner, 2000). In any case, it is important to devise mechanisms focused on people rather than on food products if



countries want to really provide adequate safety nets for those more vulnerable.

Moving to international food aid, a general concern is the provision of adequate levels and the avoidance of cycles that tend to reinforce, instead of counteract, situations of oversupply and shortages (*i.e.* the fact that there is excess of food aid when world supplies are abundant and lack of it when supply conditions are tight). Food aid should be made available in grant form; focused towards poor countries and social groups; and delivered in ways that do not displace domestic production in the receiving countries.

The AoA considers international food aid under Article 10 (Prevention of Circumvention of Export Subsidy Commitments) paragraph 4, which requires that WTO Members which are donors of international food aid to provide such aid untied, directly or indirectly, to commercial exports of agricultural products; to follow the FAO “Principles of Surplus Disposal and Consultative Obligations”, (including when is bilateral food aid that monetized); and to offer food aid “to the extent possible in fully grant form” or on concessional terms that are not less than those contemplated in Article IV of the 1986 Food Aid Convention.

The Draft Modalities (Annex L) expands somewhat the AoA disciplines. The document establishes that food aid must be needs-driven; given in fully grant form; not tied directly or indirectly to commercial exports of agricultural products or of other goods and services; not linked to market development objectives; and that agricultural products provided as food aid cannot re-exported, except for some emergencies. The text also indicates that “food aid shall take fully into account local market conditions of the same or substitute products” and that food aid in-kind should not be given where this could cause an adverse effect on local or regional production of the same or substitute products. Donor Members are encouraged to procure food aid from local or regional sources to the extent possible, and to commit to best efforts to move towards more untied, cash-based, food aid.

The Draft Modalities also considers a Safe Box for emergency food aid with less requirements, when those emergencies are declared (or there is an emergency appeal) by the recipient countries or relevant international organizations such as the UN, World Food Program, Red Cross, or other recognizable international or non-governmental humanitarian organization, and there is a needs assessment by the relevant organizations.

Monetization of in-kind food aid in a non-emergency situation is prohibited in the Draft Modalities. However, the following exemptions are made: when food aid meets direct nutritional requirements of least-developed and net food-importing developing country members, is necessary to fund the internal transportation and delivery of the food aid to, or the procurement of agricultural inputs to low-income or resource-poor producers in, those Members. The text also insists that monetization shall be carried out within the territory of the recipient least-developed or net food-importing developing country, and must avoid displacement of commercial imports.

The rest of food aid which does not fall under an emergency must follow the disciplines indicated above to ensure that it does not hurt domestic production and that it does not lead to displacement of commercial trade. Needs assessment would be done under the responsibility of a UN agency, but the Draft Modalities highlights the responsibility and priority of the recipient country over all food aid operations.

While all these measures may help to reduce volatility in food access and prices, it is important to consider the provision of technical assistance and financial support to develop agriculture in food insecure countries, and to maintain and expand financial facilities to help with short-term difficulties in financing food imports. Improvements in early warning systems of food shortages, in weather forecast, and in transportation and storage, along with an adequate programming of food aid and financial facilities for emergencies, should help net food importers.

## 11. CONCLUSIONS

Poverty and hunger materialize at the household/individual levels, whereas the special and differential treatment for developing countries in trade negotiations is defined at the national, crop, or even farmer level. Due to the complexities of the trade links and the heterogeneity of countries and households, the overall impact of agricultural trade and trade policies can vary significantly. It is, therefore, important to recognize the limitations of trade policy design in support of food security. Food security is more than a trade issue. Therefore, adequate policies for food security go beyond trade regulations and include: investment in human capital and infrastructure, access to technology, sustainable management of natural resources, access to land ownership by small producers, well defined safety nets (including CCT, school lunches, women and infant nutrition, food-for-work), women's empowerment, community participation, adequate functioning of product and factor markets, macroeconomic stability and adaptation and mitigation to climate change.

Considering all the WTO issues discussed, it does not seem that the AoA is constraining "good" policies that developing countries can apply to help with poverty alleviation and food security and it looks like the Draft Modalities may add some additional flexibilities. But, it is also true that the AoA does not impose important limits to "bad" trade policies either, especially in industrialized countries, that can be potentially negative for the objectives of food security and poverty alleviation in developing countries. Different studies suggest that if industrialized countries were to substantially reduce their protection and subsidies, most Third World farmers would produce more food and agricultural goods domestically, leading to expanded incomes not only in the agricultural sector but in the rest of the economy as well.

Higher prices resulting from agricultural liberalization in industrialized countries could

still hurt some groups, especially poor urban consumers. Yet better farm incomes and related employment benefits to rural communities from higher prices of traditional crops, greater access to global markets for other products, such as fruits, vegetables and sugar, and the multiplier effects on employment and income for the rest of the economy resulting from a more vibrant agricultural sector, would likely more than compensate these vulnerable populations, thereby not harming overall food security. It is nonetheless important to expand the efforts for more disaggregated policy analysis of the different scenarios of trade reform.

In any case, countries must ensure that poor and vulnerable populations are compensated in the case of adverse effects, and that food security is not compromised by agricultural liberalization, or other policy changes. Fortunately, poverty-focused assistance is more effective - because it is more easily targeted - in urban communities, where poor consumers most likely would be harmed by higher food prices. In addition, some of the food importing developing countries with high food import tariffs should consider reducing them progressively to cushion the impact of higher world prices on poor consumers from a reduction of protection and subsidies in world agriculture. After all, high tariffs on imported food operate as a regressive tax on poor consumers.

Focusing specifically on the issue of volatility, the paper discussed different ways of measuring it and showed that in general, although it obviously increased during the 2007-2008 price spike, it has remained below the levels of the 1970s, at least until the mid 2010. The AoA includes, and the Draft Modalities expands, different options, such as food stocks and domestic food aid, that can be used by developing countries to support poor and vulnerable population. Also the AoA has some disciplines, reinforced by the Draft Modalities, to try to make international food aid less pro-

cyclical and to reinforce an approach that does not displace domestic production in the recipient countries.

Other trade policies utilized by countries to counter volatility (such as reducing import tariffs, increasing export taxes, anticipatory imports, and export bans) have tried to stabilize the domestic markets of the countries applying them, but may have increased volatility in world markets, particularly in those crops, such as rice, that is thinly traded in global markets. Export bans have received some attention under the AoA and the disciplines are somewhat strengthened in the Draft Modalities. This issue will require more careful consideration if confidence in an open world trade system is to be maintained.

There is also the need to design of instruments that protect the poor from import surges and unfair trade practices, as well as drastic shocks that affect survival strategies of the vulnerable. This is particularly important since many developing countries discontinued some of their previous mechanisms of domestic support and stabilization. The SSM, as a mechanism of contingent protection, may help

stabilize domestic prices. But it has been argued that a proper design is crucial to make sure that the old policy dilemma between high prices that help producers but may hurt poor consumers is properly addressed. The benchmark for comparison of any intervention that claims that more protection is needed should be: does it improve poverty and food security prospects compared to a more neutral trade policy plus complementary investments and social policies focused on the poor and food insecure?

Probably the biggest constraints to effective agricultural and food security policies in developing countries result from restrictions in financial, human and institutional capabilities, and not necessarily from “policy space” under the AoA (or the Draft Modalities). For the developing countries, particularly the poorest, to be able to expand investments in rural development, poverty alleviation and health and nutrition, additional funding from international institutions and bilateral donors will be needed, as well as firm political commitment and good governance in the countries suffering from food insecurity and high levels of poverty.

## ENDNOTES

- 1 An important caveat is that, other trade-related issues with important implications for developing countries such as the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) and the Agreement on Sanitary and Phytosanitary Measures (SPS), are not discussed here. Also, because of general equilibrium reasons, the same agricultural trade policy may have different effects depending on the results in other areas of the negotiations, such as the Non-agricultural market access (NAMA) or Services. Finally, there are other factors beyond trade, such as macroeconomic policies, social conflict, health crisis, and weather events that can be in many cases more relevant for food security than those considered in this study. These caveats must be kept in mind when reading what follows.
- 2 This paper uses extensively Díaz-Bonilla et. al. (2003) while at the same time tries to update the economic and legal discussion in that previous work.
- 3 For instance, according to FAO “food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life”.
- 4 The Global Hunger Index (GHI) is calculated as the arithmetic average of three different indexes: the proportion of the total population that is undernourished; the proportion of children under the age of five that are underweight; and the mortality rate of children under the age of five (the later takes into consideration the high correlation between inadequate dietary intake and unhealthy environments). The index ranks countries on a 100-point scale, with 0 being the best score (no hunger) and 100 being the worst (IFPRI, 2009).
- 5 LDCs are defined by the United Nations according criteria that originally included per capita GDP, share of manufacturing in total GDP, and the adult literacy rate. Subsequently, the criteria were revised and now include three considerations: low-income; human development fragility (based on indicators of nutrition, health, education and adult literacy) and economic vulnerability (considering instability of agricultural production, instability of exports, importance of non-traditional activities, export concentration, small size of the economy, and percentage of population displaced by natural disasters). Except for some of the original LDCs, like Bangladesh, this category mostly includes countries of middle to small size in terms of total population.
- 6 NFIDCs are selected through a procedure that takes place in the Committee on Agriculture of the WTO: countries wanting to be considered in that category must present data showing that they are net food importing countries and the other WTO members accept (or not) the petition based on that evidence. Some of the NFIDC under the broader definition of food followed by FAO in FAOSTAT have been food exporters on average for several years. However, they are importers of a narrower list of basic food products, and on this basis they have been included in the group.
- 7 Any typology of households related to poverty/food insecurity must also consider other issues. One is the distinction between chronic versus transitory poverty/food insecurity. In the transitory cases, it is important to determine the level of “churning” in and out of poverty. That variability tends to be related to external events that Sinha and Lipton (2002) have called “damaging fluctuations”, for which it is important to identify the origin and persistence. Only a small part of those fluctuations may be caused by trade and trade policies; rather, most of them are related to macroeconomic crises, weather shocks, health events, the spread of conflict and war, and the like. From the point of

view of the household that is poor and food insecure, the main issues are their exposure and vulnerability to those fluctuations and the level of risk aversion those shocks may generate. The level of risk aversion is important because it affects the adoption of new and potentially more productive technologies or activities. High risk aversion may generate poverty traps that keep people in low productivity activities and technologies. Exposure, vulnerability and risk aversion affect and are affected by the low levels of productive, human, social capital, and low savings in poor/food insecure households (Sinha and Lipton, 2002).

- 8 There are several options, such as lineal trends, log lineal trends, random walks, and different smoothing methods such as a variety of moving averages and more elaborate procedures to extract trends (see Annex for more details).
- 9 The Special Drawing Rights (SDR) is a synthetic currency issued by the International Monetary Fund and based on a basket of main currencies (the current composition is U.S. dollar, 44%; Euro, 34%; Japanese yen, 11%; and U.K pound, 11%).
- 10 This index is calculated by deflating the Food Price Index by the Export Unit Value (EUV) Index for Advanced economies (both calculated from the International Financial Statistics - International Monetary Fund (IFS-IMF) database).
- 11 Another commonly used deflator is the US Consumer Price Index (CPI). In this case the interpretation of “real” is against the basket of US goods and services included in the CPI. The analyses of the trends using the EUV or the USCPI are broadly comparable (see Díaz-Bonilla 2010). The decomposition between trend and cycle is done using the Hodrick-Prescott filter (see Annex for more details).
- 12 Volatility is defined as the ratio of the absolute value of the deviation over the trend, calculated using the Hodrick-Prescott filter.
- 13 In the 1960s and 1970s the countries that were going to be part of the European Union during the 1980s imported per year an average of about 21 million of metric tons (MT) of cereals, 550.000 MT of beef, and 2 million MT of sugar; during the 1980s and early 1990s, however, those countries became net exporters of 18 million MT, around 500.000 MT, and almost 3.5 million MT for the same products, on average per year (Díaz-Bonilla and Reca, 2000).
- 14 From 1986-1997, those export subsidies amounted to about 135 billion US dollars (see Leetmaa and Ackerman, 1999, for European and US export subsidies). That is the equivalent of almost 13 percent of the value of all agricultural exports by the developing countries of Africa, LAC and Asia (minus China) combined, during the period (Diaz-Bonilla and Reca, 2000).
- 15 In constant 2010 currency.
- 16 This was linked to expansionary monetary policy and increases in credit expansion and leverage in industrialized countries, strong export-led growth in China, and capital flows that kept longer term interest rates low.
- 17 Biofuels have multiple effects on food prices including food staples not directly involved in the production of energy. There is a direct effect because biofuels provide an additional demand for certain cereals and oilseeds, diverting them from food uses. But there is also a second round effect, because biofuels also give price incentives for farmers to shift from planting some food products to other crops utilized in the production of biofuels. And finally, there is also a negative effect on meat and dairy products that use corn and oilseeds as an input in their production.

- 18 The importance of food stocks in equilibrating markets and smoothing price variations is obvious. Some have argued that policy changes since the Uruguay Round Agreement may have led to reductions in food stocks in major exporting countries, and this could have magnified price swings. However, Sarris (2009) found that the ratio of stocks to utilization for the world has not shown a marked negative trend if China is excluded from the analysis. Therefore, rather than declining stocks in general, reduced stocks in China may be the issues (as of 2008, China had 53% of global rice stocks and 39% of global wheat stocks). Sarris also looks at variability of production, the other traditional factor behind price volatility, and finds that production variability for wheat, maize, rice and soybeans has decreased in general over the last 50 years.
- 19 Out of this group 30% imposed export restrictions and more than 40% price controls.
- 20 Of course there are other elements to consider such as the employment implications and the availability of imports (or food aid). These other issues will be discussed later in the paper.
- 21 Those impacts must be seen in their entirety, considering the full macroeconomic cross-effects of increases in all commodity prices (not only food and fuel) and their fiscal, monetary, and exchange rate implications. For instance, in some cases, increases in prices of metals for some developing countries that export those products diminished or countered almost completely the impact of higher food prices on their imports, with a positive impact on their overall terms of trade (Díaz-Bonilla, 2010).
- 22 This section draws on Díaz-Bonilla and Tin, 2006.
- 23 Singer's arguments were based on the characteristics of agricultural goods (such as supply and demand elasticities); Prebisch contrasted market structures in developed countries (characterized by industrial oligopolies and strong unions) with those of developing countries (characterized by smaller firms and surplus labor) and argued that the former could retain the benefits of technical progress while the latter surrendered gains from productivity through falling prices of their primary exports (hence the decline in the terms of trade).
- 24 Borrowing from the current debate that focuses on agriculture (see OECD, 2001), the "multifunctionality" of industry appeared substantial for policymakers in the 1950s and 1960s. Díaz-Bonilla and Tin (2006) present a more detailed comparison of the current debate on multifunctionality in agriculture with the older one on industry. Among other things, they note that though the early development literature appeared to assign zero marginal value to labor in the agricultural sector, or at least a value far smaller than in alternative uses (Lewis, 1954), now the multifunctional approach to agriculture seems to assign a higher value to employment in agriculture than to alternative uses, at least in industrialized countries. Of course, in both cases, the issue is not only the postulated "multifunctional" effects of a sector but the general equilibrium impacts of the policies followed, which may deny the beneficial contribution of other sectors that may shrink due to the excessive expansion of the favored sector.
- 25 Usually, partial equilibrium analyses use nominal rate of protection (the ratio of domestic to world prices, which does not consider costs) instead of the more appropriate indicator of effective protection (which includes the price of the output, but also costs). General equilibrium analyses use the ratio of the price of the value added for the agricultural sector and a similar price for the rest of the economy, and both include costs of production, making this indicator a more adequate proxy for effective protection. Also, in studies that apply general equilibrium approaches the real exchange rate is defined an economy



wide model and not by partial equilibrium approximations. Finally, it is important to look at other price and quantity channels through which trade and macroeconomic policies influence the behavior of the agricultural sector (Díaz-Bonilla and Robinson, 2010).

- 26 The NRA, which is different from nominal rate of protection mentioned before, includes border trade measures but other subsidies and estimates of the impact of exchange rates. The study covers 75 countries, 55 of which are developing countries. According to the authors, those countries represent 90% of the population, 92% of agricultural value added, and 95% of GDP at the world level (Anderson and Valenzuela, 2008).
- 27 Where  $RRA = [(1 + NRA \text{ agriculture}) / (1 + NRA \text{ nonagriculture})] - 1$ . Therefore, anti-agricultural bias (pro-agricultural bias) would be  $RRA < 0$  ( $RRA > 0$ ).
- 28 Díaz-Bonilla and Robinson (2010) show that the ratio of the deflator of the value added for the agricultural sector and the similar deflator for the rest of the economy (an indicator that, as mentioned, is more closely related to effective protection) in developing countries behaves very different from the RRA shown here: it declines rather than increase, since the 1970s. They speculate about the possible reasons, including the “Baumol’s effect” (i.e. the increasing presence of low-productivity, non-tradable activities, mostly in services), the decline in real prices for agricultural commodities since the 1960s/1970s, and the facts that, as argued by Martin and Mitra (1999) productivity change in the agricultural sector as a whole has been higher than in industry in developing countries during recent decades.
- 29 According to the World Bank (2009, pp. 119) food consumption in Developing Countries represents 66% of income for rural poor households and 60% for urban poor households, with highest figure at 71% for rural population in East Asia and the Pacific, and the lowest at 44% for urban population in Latin America and the Caribbean.
- 30 It must be stressed that trade is only a supplement to domestic food availability, with some exceptions such as mineral and oil producers, and tourism-based, small-island economies. In other words most of the food consumed in developing countries is produced domestically, although the ratio differs by products and countries (see data in Díaz-Bonilla et. al., 2002 and Díaz-Bonilla and Robinson, 2010). For instance, on average for Asia, Latin America and Sub-Saharan Africa, the ratio of imports over production moved from about 7% in the 1960s to almost 11% in early 2000s, but with differences across regions (in the early 2000s Asia developing had an import/production percentage of less than 9% while LAC was about 16% and SSA 14%) (Díaz-Bonilla and Robinson, 2010).
- 31 According to the Draft Modalities, the term SVE applies to “Members with economies that, in the period 1999 to 2004, had an average share of (a) world merchandise trade of no more than 0.16 per cent or less, and (b) world trade in non-agricultural products of no more than 0.1 per cent and (c) world trade in agricultural products of no more than 0.4 per cent”. Paragraph 157 (page 29) of the Draft Modalities.
- 32 At the moment the cluster analysis was conducted there were 48 LDCs. See footnote No. 3.
- 33 The NFIDCs at the time of the analysis included 19 countries. See footnote No. 4.
- 34 In interpreting the results from trade models readers must be aware that they generate “simulations” but not “projections”. They are based on the best available data on the structure and flows of the economy of the countries involved, and utilize parameters, such as different elasticities, selected from different econometric analysis. Yet these simulations only try to isolate a policy change (trade liberalization of different kinds) while

keeping the rest of the policy setting at certain pre-specified levels for the experiment analyzed. A different evolution of the non-trade policy framework (such as devaluations or modifications in non-trade taxes or public expenditures) may lead to different economic outcomes. Therefore, the results of those models must be interpreted as conditional simulations.

- 35 For instance, average annual food net trade balance in Africa changed from a positive of US\$ 6.6 billion in 1960s to a negative balance of US\$ 6.8 billion in 1980s and even more negative in the 2000s (US\$ -9.9 billion). In the case of LDCs the corresponding figures are US\$ 3.4 billion, US\$ -1.6 billion and US\$ -6.7 billion (constant US dollars of 2007; calculated from FAOSTAT).
- 36 This issue is important to evaluate the simulations of trade policies in large economy wide models of the world economy. The benchmark years from which the simulations are run have been already distorted in many developing countries by subsidized exports and low world prices. We will get back to this issue in the following sections.
- 37 The World Bank sharply curtailed its agricultural lending, including for integrated rural development, as the decade of the 1980s progressed; it declined (in constant 2001 U.S. dollars) from about \$5 billion and some 30% of total World Bank lending in the late 1970s and first half of the 1980s to \$3 billion and 10-15% of total lending in the second part of the 1980s. By the early 2000s agricultural lending had declined further, to about \$1.5 billion and 7% of total World Bank loans. Similar trends occurred in other multilateral institutions and individual donors (Lipton and Paarlberg, 1990).
- 38 Consequently, special and differential treatment for agriculture in developing countries do not need new and controversial notions such as multifunctionality, and can be more effectively based on traditional arguments linked to growth dynamics, poverty alleviation, and food security, as they apply to those countries. Further, the notion of multifunctionality may be not only unnecessary for developing countries to support the policies needed for rural development, but may also be harmful to the extent that it may lead to expand the production of industrialized countries more than what would have been the case without the additional support predicated upon such notion. In that case, agricultural production in developing countries (and the multifunctional effects linked to it) would contract because of the excess of subsidized production in industrialized countries.
- 39 In economic terms, welfare is the more general indicator and it is measured using consumption. It includes both the impact of additional production and the changes in prices of goods and services that determine the real purchasing power of the additional incomes resulting from expanded production. At the national level this implies that changes in national product must be adjusted by changes in the terms of trade. The measure can be constructed as the minimum payment that the consumer would require for foregoing the policy change or the maximum payment the consumer would be willing to make to avoid having the policy change undone.
- 40 Mc Millan et. al. (2007) tried to estimate the impact of agricultural subsidies by OECD countries on poverty in developing countries, separating net importers (which should be helped by subsidies) and net exporters (which should be hurt). The authors do not find any statistically valid correlation. However, they conclude that OECD subsidies are good for net importers. This result does not follow from their econometric estimates (they also include a case study of Mexico).

- 41 The only exception in Diao et. al., 2005, is the region that in their model is called Rest of North Africa, which show a small decline in consumption. This region includes countries whose national resource base for agriculture is limited and some of them are oil producers.
- 42 It should be noted that the continuation of those preferences is already under threat for different products irrespective of what happens in the WTO negotiations, because of the expansion of regional trade agreements by key industrialized countries.
- 43 Simulations in Bouet and Laborde (2010) support the positive impact on poor countries with preferences of this approach.
- 44 A related argument is that even though developing countries may benefit in general, the main rents may be captured by large producers and not by the poor. In opposition to this argument, Winters, 2005, shows, focusing particularly on the European Union that the poor can benefit in developing countries from reduction of protection and support in industrialized countries.
- 45 Tariff escalation is a scheme of progressively higher tariffs on more highly processed products, which shifts the incentives against the industrialization of raw materials in the countries producing them (see Balassa, 1986). Díaz-Bonilla and Reca (2000) include data showing that industrialized countries, which do not produce coffee or cocoa, are the main exporters of valued-added products using those raw materials.
- 46 The SSG was permitted for products that underwent tariffication; a total of 39 countries have established SSG for about 6156 tariff items; about 3600 tariff items belong to industrialized countries (WTO, 2010).
- 47 Domestic support expenditures are usually separated into three categories or “boxes”: Amber Box (prohibited expenditures considered very trade-distorting; they are subject to reductions and can be countered using different remedies, particularly those considered in the Agreement on Subsidies and Countervailing Measures); Blue Box (expenditures considered less distorting than Amber; are subject to smaller cuts); Green Box (expenditures considered to have minimal or no distorting effect on trade; they are not subject to cuts).
- 48 According to data published by Economic Research Service of USDA (2010) 87% of the export subsidies provided by Industrialized Countries over the period 1995-2002 supported the production of value added products such as dairy products, beef and other processed agricultural products, while only the rest went to basic food staples.
- 49 The final impact of trade liberalization on government revenues is an empirical issue, considering that trade reforms such as moving from quotas or tariff-rate quotas to non-prohibitive tariffs, or in general the fact that trade liberalization may increase international trade, could lead to larger government revenues.
- 50 Only a fraction of total consumption of food products is imported in developing countries (typically not more than 10-20% in the aggregate). But border restrictions increase prices for the total amount of the commodities consumed domestically, of which 80-90% is produced domestically. Thus, through border protection, there is an implicit transfer from domestic consumers to producers. This same fact also limits the use of the receipts from import taxes to subsidize food consumption of the poor. To the extent that the volume of taxed commodities is only a fraction of total domestic consumption and that the poor population may represent a sizable percentage of total domestic consumption, government revenues from taxing imported commodities would typically not be enough

to compensate poor consumers. The case of developed countries, where the incidence of poverty is small and which have additional fiscal resources, is different. They can tax consumers in general with border protection for food, but then, at the same time, are able to subsidize poor consumers through different targeted policies financed by general revenues (Díaz-Bonilla et al, 2003).

- 51 Imports imply a demand for hard currency (say US dollars) in the domestic market, while exports are supply of US dollars in the same market. Protection tries to expand domestic production of a good and reduce imports. Therefore, other things being equal, protection reduces the demand for US dollars, and the price of this currency in terms of the local currency declines (i.e. the local currency appreciates). More generally, a similar argument can be presented using a well-know equation of macroeconomic balances from national accounts:

$$\text{GDP} - (C+I+G) = X-IM$$

where GDP is Gross Domestic Product, C is private consumption, I is investment and G is government current expenditures, X is exports and IM is imports. Attempts to reduce IM through protection will only happen if GDP increases or (C+I+G) decreases, which would most likely require additional policies. On the other hand, if the left hand side of the equation does not change much, a decrease in IM means that X must also diminish to fulfill the equation ex-post.

- 52 Although those conditions may have been present in some instances, particularly in some of Asian countries that applied protection against some performance indicators, which forced firms receiving protection to increase their productivity. An early example on the issue of unemployment is the debate about Australian protection in the early XXth century, summarized by Samuelson (1981).
- 53 The issue of defining the interventions in terms of people has been emphasized again by the approach based sustainable livelihoods; see for instance Adato and Meinzen-Dick (2002).
- 54 For instance, by setting a target as a percentage of total consumption.
- 55 Footnote 5 in Annex 2 indicates that “governmental stockholding programs for food security purposes in developing countries whose operation is transparent and conducted in accordance with officially published objective criteria or guidelines shall be considered to be in conformity with the provisions of this paragraph, including programs under which stocks of foodstuffs for food security purposes are acquired and released at administered prices, provided that the difference between the acquisition price and the external reference price is accounted for in the AMS”.
- 56 Green Box policies include general government services (such as agricultural research, disease control, infrastructure, and food security stocks); direct payments to producers decoupled from production; other direct payments for structural adjustment assistance, environmental programs, and regional assistance programs.
- 57 The only restriction is that those subsidies may be actionable under Article 13b, particularly if they exceed the budgetary limit of subsidies approved (but not necessarily granted) in 1992 by product (13b, ii and iii) (see the discussion in Díaz-Bonilla et. al., 2002, where it is argued that such possibility, although unlikely, may need a further clarification of the interface between Article 6.2, *de minimis* exemption (Article 6.4), and Article 13, particularly for poor countries with problems of food insecurity).

- 58 The Hodrick-Prescott filter is a widely used smoothing method to obtain a smooth estimate of the long-term trend component of a series, whereas the Christiano-Fitzgerald filter is a frequency filter that aims to isolate the cyclical component of a time series by specifying its duration range (E-Views 6 User's Guide, 2007, pp. 360-365).

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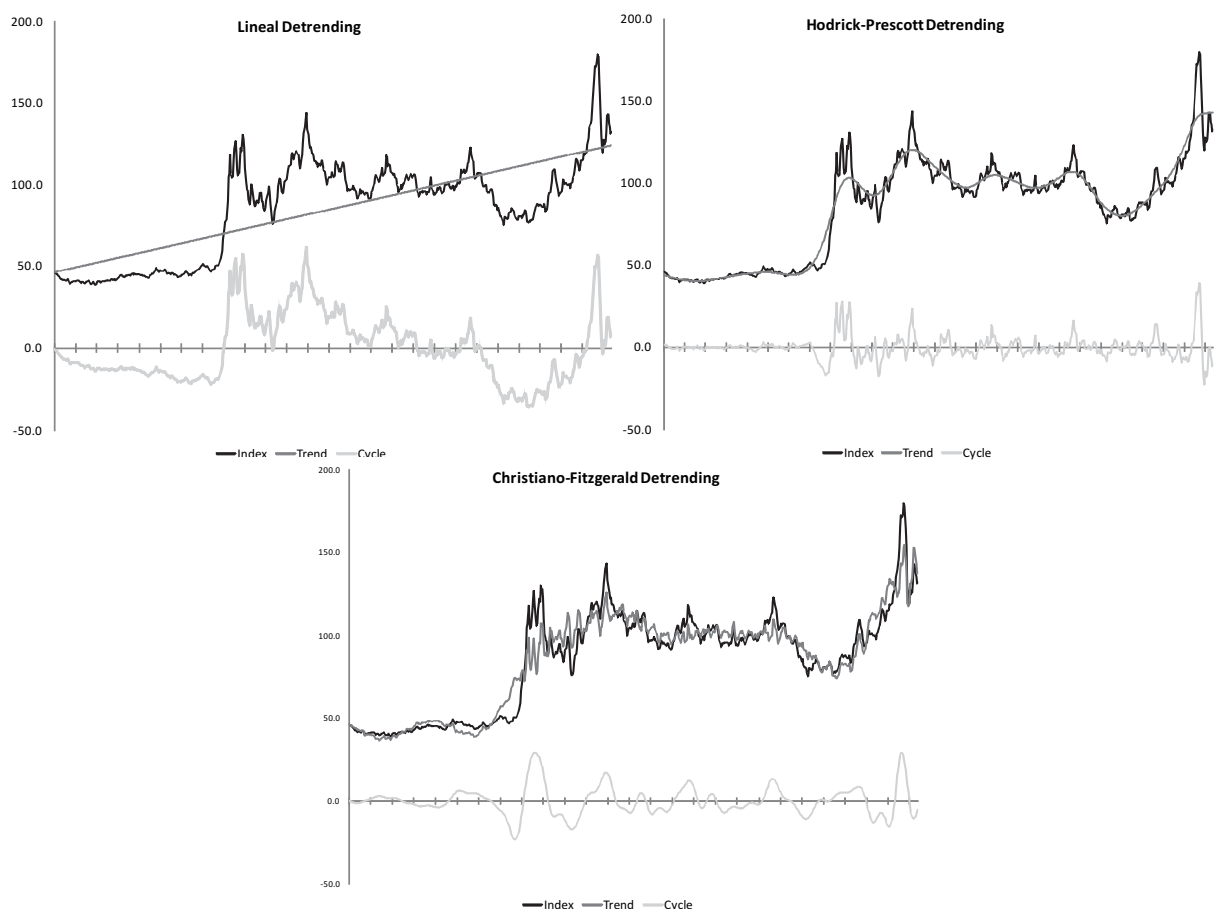
## ANNEX A: DETRENDING METHODS

A relevant issue to consider when analyzing price variability is the selection of an appropriate detrending method to accurately identify whether price movements are related to changes of the trend (explained by long term factors) or it is volatility or variability around the trend (linked to shorter term causes). Since there is no single method that could be considered valid for every set of historical series or type of analysis, here three different methods are applied to the IMF Food Price Index (in nominal US dollars and on a monthly basis): lineal, Hodrick-Prescott filter, and Christiano-Fitzgerald filter<sup>58</sup> (see Chart A1). Several inferences can be drawn from comparison between these methods. It seems to be clear that disregarding the method selected, price volatility was low from the late 1950s until the first half of the 1970s. The lineal approach

implies long-term stability in the trend, ignoring obvious changes. The other two methods seem to identify more clearly the two main episodes of high volatility (food crises of the seventies and price spike of 2007-2008), although they differ in the definition of the trend and the cycles: Christiano-Fitzgerald filter is more irregular in the trend but shows clear cycles around it, while the Hodrick-Prescott shows the opposite pattern.

All three methods suggest that price volatility was higher (or more persistent) in the 1970s than during the last episode. However, it is important to keep in mind that the assumptions about trend behavior and the corresponding detrending method may affect to some extent the conclusions about price variability.

Chart A



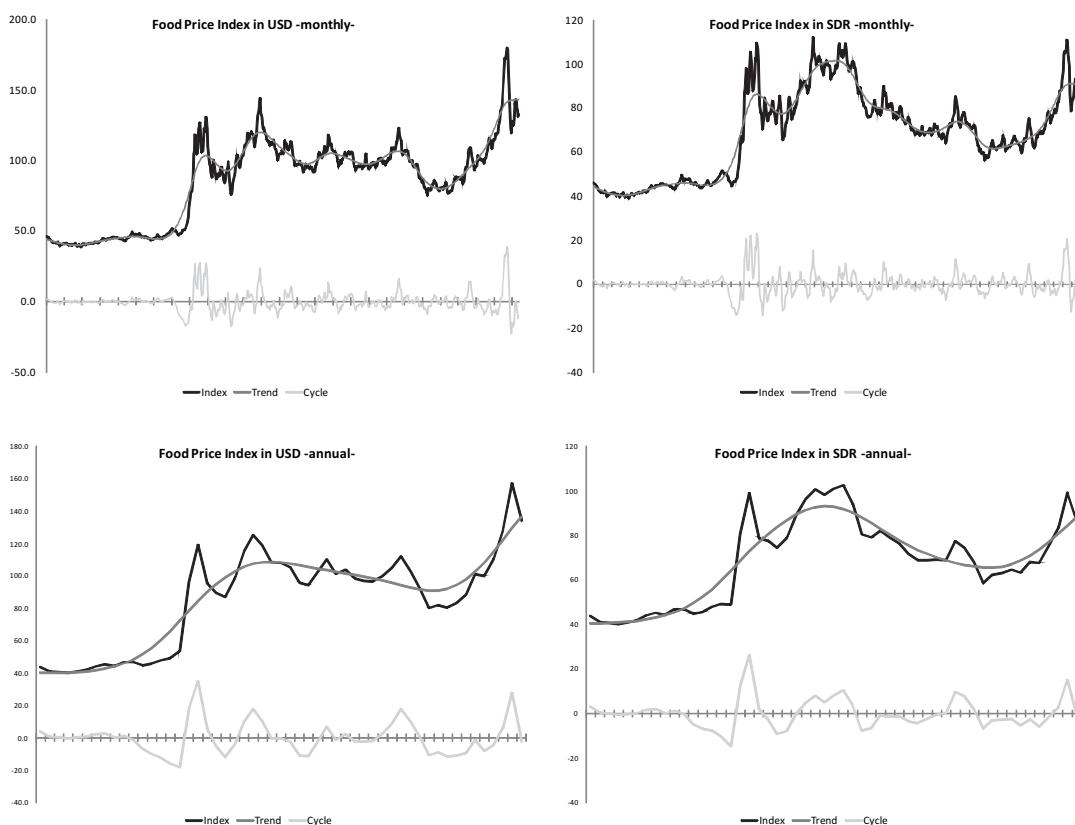
Another point to be noticed is that in general, price spikes have been preceded by periods of below-trend prices. Although in the lineal trend case this may be just a mechanical consequence of the way the trend is calculated (which keeps

it fixed for all decades), the other two methods (where the trends change over time) identify clearly the pattern of relatively more extended periods of low prices that are then followed by a shorter spikes.

### World prices. In what currency?

As it has already been argued before, analysis of price movements cannot be done separate from developments in world macroeconomics conditions, in particular, exchange rate movements. Therefore, it is important to clarify the currency in which food prices are quoted. In what follows we compare the evolution of nominal food indexes in US dollars against Special Drawing Rights (SDRs), in monthly and annual frequency. The selection of SDRs would represent an approximation to how affordable food is for the average consumer in the world against a weighted basket of the four major currencies in world trade.

Chart A2



### Time Horizons

Price volatility needs to be defined within some time horizon, which may be daily, monthly, quarterly, yearly or longer. Naturally, the frequency that is selected will determine our definition of short term or long term volatility, as a longer frequency will necessarily ignore short term volatility which might be relevant to analyze overall price instability and its corresponding effect on food insecurity.

As can be seen on Chart A2 (where annual and monthly data are presented), a first conclusion that can be drawn is that the latest price surge of 2007-2008 does not stand out so notably if prices are considered in SDRs. At least in nominal terms, current food prices in SDR are still below those observed in the 1980s, whereas current prices in USD are clearly above historical averages, in line with the latest depreciation of the USD. In other words, if prices are considered in SDRs, the food crisis of 2007-2008 does not seem as pronounced as the one of the 1970s. All this, suggests that at least some volatility of food prices observed lately was determined by additional instability from macroeconomic factors, particularly exchange rates.

As can be seen on the left quadrant of chart A2, food price trends for the annual series are significantly smoother than for the monthly series, therefore identifying more clearly the price cycles. There are four clear moments of price increases: in the mid 1970s, late 1970s, mid 1990s and late 2000s. The food crises of the 1970s showed more instability than the episode of 2007-2008. It is also noticeable that the current spike was preceded by an extended period of below-trend prices, during the late

1990s and early 2000s (the consequence of several financial crises in developing countries, the appreciation of the US dollar, and the global economic slowdown of the early 2000s, as discussed in the text).

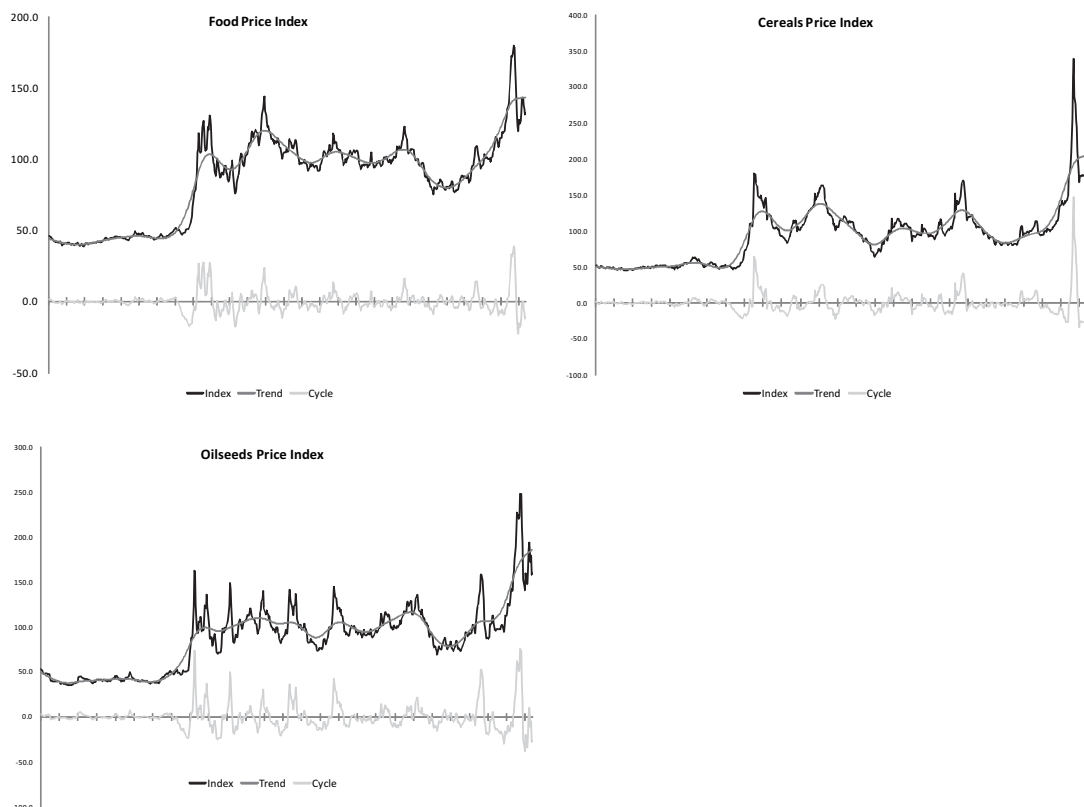
### The selection of Food Indexes

Another relevant aspect that deserves special attention when analyzing food price volatility is the question of which food items or food indexes to consider. Obviously, the final effect of food price volatility on the food security at the national level will depend on the particular diet of each country under consideration. Some studies may focus on the price movements of the most basic food staples (such as rice) as they represent an important portion of the dietary requirements in developing and especially in the most vulnerable countries. But as it has already been argued, access to minimum level of food calories is not sufficient to achieve a good food security, as the latter requires nutrition standards that provide a full development of the individual's capacities. Therefore, a more comprehensive analysis of the effects food price volatility should also take into consideration the price evolution of different food items (for instance, oilseed

products have increasingly taken a more important role both as food directly (such as soybean oil) and as feed for meat and dairy production.

In order to consider this issue, Chart A3 presents the evolution of the food price index in comparison with two other price indexes for cereals and oilseeds. The latter two were prepared by the authors and are defined as the simple average of the IMF price indexes for rice, wheat and maize (for the case of cereals) and soybeans, soybeans oil and soybean meal (for the case of oilseeds). A couple of inferences can be drawn by comparing those indices. First, price volatility for the food index seems to be less severe than for the other two indexes, which is a very intuitive result since the former includes several products and should be better hedged against price variations of individual products. Second, oilseed price index seems to show the highest volatility overall. Finally, the Cereals Price Index appears to show the highest increase during the 2007-2008 episode (even more acute than in the food crisis of the 1970s), which is mostly explained by the strong increase in the price of rice during the first half of 2008.

Chart A3



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