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TRADE LIBERALIZATION, WTO, AND FOOD SECURITY

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Abstract

The links between trade liberalization and food security continue to be hotly debated. In the context of the World Trade Organization (WTO) and more specifically the Agreement on Agriculture, the debate centers on whether important policy objectives such as elimination of poverty and hunger (as cause and consequence of food insecurity) may have been helped or hindered by the current agreement, and whether further negotiations may improve upon the existing text or will further compromise the attainment of those objectives in poor countries.

This paper tries to contribute to that discussion. First, aggregate trends of food security indicators are presented as evidence of developing countries performance and heterogeneity over the past four decades. Second, using a classification of countries based on various dimensions of food security, the authors argue that if food security concerns are to be part of the current WTO agricultural negotiations, a more precise definition of food insecure countries may be needed. Finally, different policy issues and possible approaches in the WTO legal framework are discussed from the perspective of developing countries.

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List of Abbreviations

AoA	Agreement on Agriculture
EU	European Community
GATT	General Agreement on Tariffs and Trade
HIPC	Heavily Indebted Poor Countries
LAC	Latin America and the Caribbean
LDC	Least Developing Countries
LIFDC	Low Income Food Deficit Countries
NAFTA	North American Free Trade Agreement
NFIDC	Net Food Importing Developing Countries
SDT	Special and Differential Treatment
SPS	Sanitary and Phytosanitary
SSA	Sub-Saharan Africa
TBT	Technical Barriers to Trade
TE	Transitional Economies
WTO	World Trade Organization

1. Introduction

The links between trade liberalization and food security continue to be hotly debated: some argue that trade causes hunger (Madeley, 2000); others believe a complete liberalization of world agricultural trade is the best possible approach (Griswold, 1999). In the context of the World Trade Organization (WTO) and more specifically the Agreement on Agriculture, the debate centers on whether important policy objectives such as elimination of poverty and hunger (as cause and consequence of food insecurity) may have been helped or hindered by the current agreement, and whether further negotiations may improve upon the existing text or will further compromise the attainment of those objectives in poor countries.

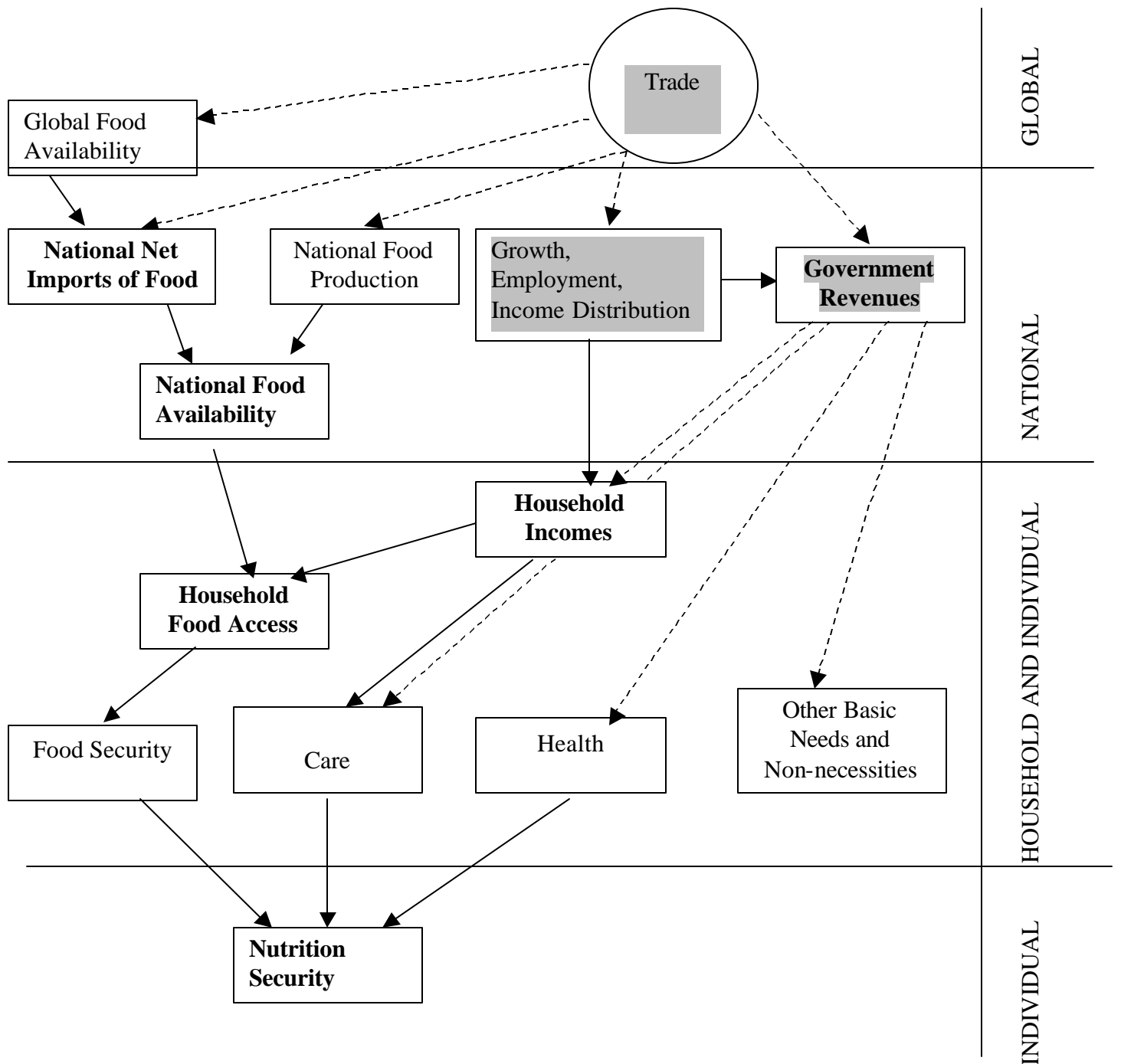
This paper tries to contribute to that discussion. First, aggregate trends of food security indicators are presented as evidence of developing countries performance and heterogeneity over the past four decades. Second, using a classification of countries based on various dimensions of food security, the authors argue that if food security concerns are to be part of the current WTO agricultural negotiations, a more precise definition of food insecure countries may be needed. Finally, different policy issues and possible approaches in the WTO legal framework are discussed from the perspective of developing countries.

2. Food Security and Agricultural Performance of Developing Countries

2.1. General Considerations

Food security can be analyzed at the global, national, regional, household, and individual levels (Figure 1). Since the World Food Conference of 1974, food security has been analyzed not only at the global and national levels but also at the household and individual levels, where issues of food security emerge in a more concrete way (Maxwell, 1996). In addition to food supply, poverty, and lack of income opportunities (Sen, 1981), variability around the trend of both food supply and access, and their sustainability over time are becoming the main obstacles to food access (Maxwell, 1990). Food intakes are required to provide more than what is needed for survival, they have to support also an active and healthy life (Maxwell and Frankenberger, 1992). The 1996 World Food Summit included several of those components when it asserted that “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” (FAO, 1996).

Figure 1--Conceptual framework for food security



Source: Adapted (shaded areas have been added) from Smith (1998).

But availability and access are only preconditions for adequate utilization of food. They do not determine the substantive issue of malnutrition or nutrition insecurity at the individual level (Smith, 1998; and Smith and Haddad, 2000). The Food and Agriculture Organization (FAO)'s recent report on the state of food insecurity in the world distinguishes between malnourishment linked to food intake and malnutrition: a physiological condition also related to food intake but affected by other determinants as well. In the report, malnourishment in 99 developing countries is measured using an indicator of food availability at the national level, doubly corrected by the gender and age structure of the population, and by the consumption or income distribution profile of the country (FAO, 1999). These national indicators of malnutrition, although showing an almost perfect and highly significant correlation with national food availability measured by national consumption of calories per capita, are far more weakly correlated with "deeper" measures of malnutrition, such as the percentage of child malnutrition based on anthropometrical measures (Smith, 1998). Analyzing nutrition insecurity at the individual level (utilizing child malnutrition as the indicator) requires the consideration of household and individual food access, as well as other determinants such as the health environment, women's education and women's relative status in the society, and democracy (Smith and Haddad, 2000).

Acknowledging that the relevance of nutrition indicators for analyzing food insecurity at the household and individual levels, this paper takes mostly a national perspective: the level at which the negotiating categories are defined. It focuses mainly on food availability issues, utilizing consumption, production, and trade measures.

2.2.Trends in Different Indicators of Food Security

Food security, on average, appears to have improved over the past four decades. Total food availability for all developing countries, measured in daily calories and grams of proteins per capita, was more than 30 percent higher in the second half of the 1990s compared to the 1960s, even though the population in the developing countries more than doubled from 2.6 billion to 5.7 billion persons during that time (Tables 1 and 2). The number of malnourished children under five (a better indicator of food problems than average food availability, because it captures directly income distribution effects) declined between 1970 and 1997 by about 37 million, and the incidence of malnutrition dropped from 46 percent to 31 percent in the same period (Table 8; see also Smith and Haddad, 2000)

Other points are worth noting:

- Food availability in developing countries comes mostly from domestic production: imports were about 15 percent of total food production in the 1990s, an increase from 10 percent in the 1960s and 1970s (Figure 2).
- Food trade, along with stocks, contributed to reduce the variability of food availability in developing countries to about 1/3 to 1/5 of that of food production (Diaz-Bonilla and Thomas, 2001).

Table 1. Calories per capita per day

	Average Levels					Ratio		
	1960s	1970s	1980s	1990s	1995-99	1995-99/1960s	1995-99/1970s	1995-99/1980s
World	2347	2453	2636	2750	2790	1.189	1.137	1.058
Industrialized Countries	2956	3079	3201	3337	3359	1.136	1.091	1.049
Developing Countries	2036	2173	2424	2607	2667	1.310	1.227	1.100
LDC	2016	2018	2078	2067	2073	1.029	1.028	0.998
SSA	2070	2077	2075	2160	2189	1.058	1.054	1.055
Transition Markets	3236	3366	3383	2992	2906	0.898	0.864	0.859

Source: Author's calculations using FAOSTAT database (FAO, 2000).

Table 2. Proteins per capita per day (grams)

	Average Levels					Ratio		
	1960s	1970s	1980s	1990s	1995-99	1995-99/1960s	1995-99/1970s	1995-99/1980s
World	64	65	70	73	75	1.170	1.143	1.074
Industrialized Countries	90	94	99	103	104	1.155	1.103	1.050
Developing Countries	51	53	59	66	68	1.326	1.278	1.148
LDC	50	51	51	51	51	1.008	1.006	0.990
SSA	53	52	51	52	53	1.000	1.009	1.024
Transition Markets	97	102	103	90	86	0.887	0.842	0.834

Source: Author's calculations using FAOSTAT database (FAO, 2000).

- Figure 3 shows the behavior of the ratio of food imports over total exports, which is an indicator of the burden of the total food bill. While in the early 1960s the ratios for all groups of countries shown were similar, ranging from 15 to 20 percent, they declined for both the world and developing countries (reaching around six percent in 1999), stayed relatively flat for NFIDCs (between 15 percent and 20 percent), but increased substantially for LDCs, to above 30 percent during the 1980s, before declining below 25 percent in the 1990s. It must be noted that the decline in the ratio during the last decade for LDCs and NFIDCs results from total trade expansion, and not from a decrease in the nominal value of food imports, which have been growing but at a slower rate than total exports (Figures 4 and 5).

Figure 2. Ratio of food imports to food production

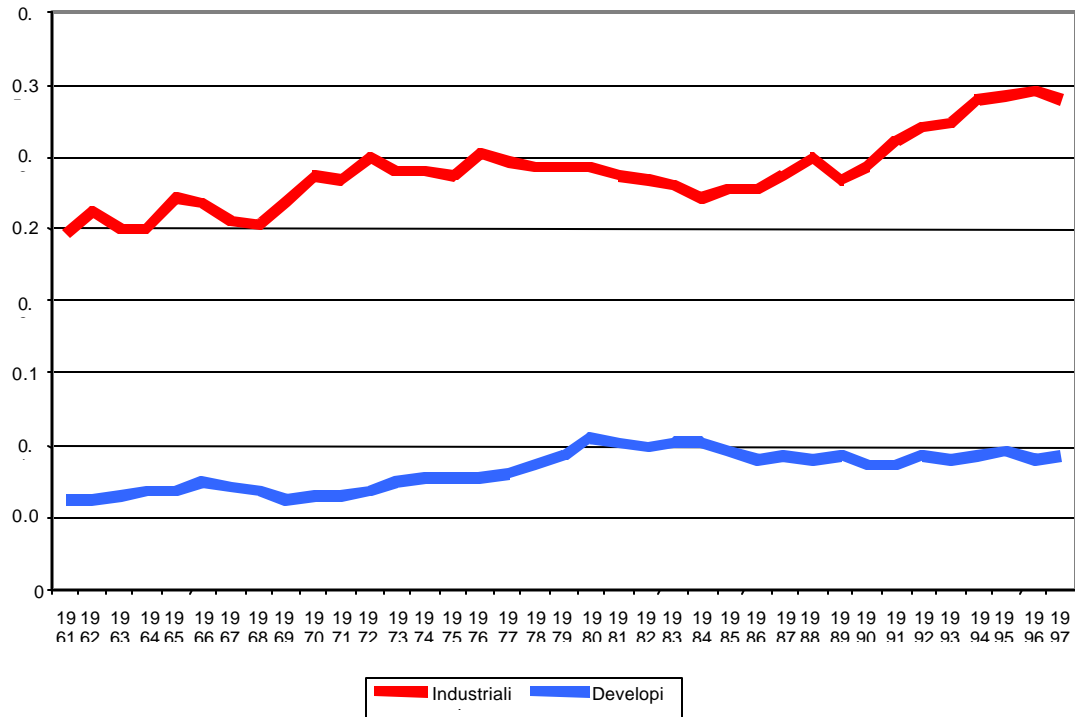


Figure 3. Ratio of food imports over total exports

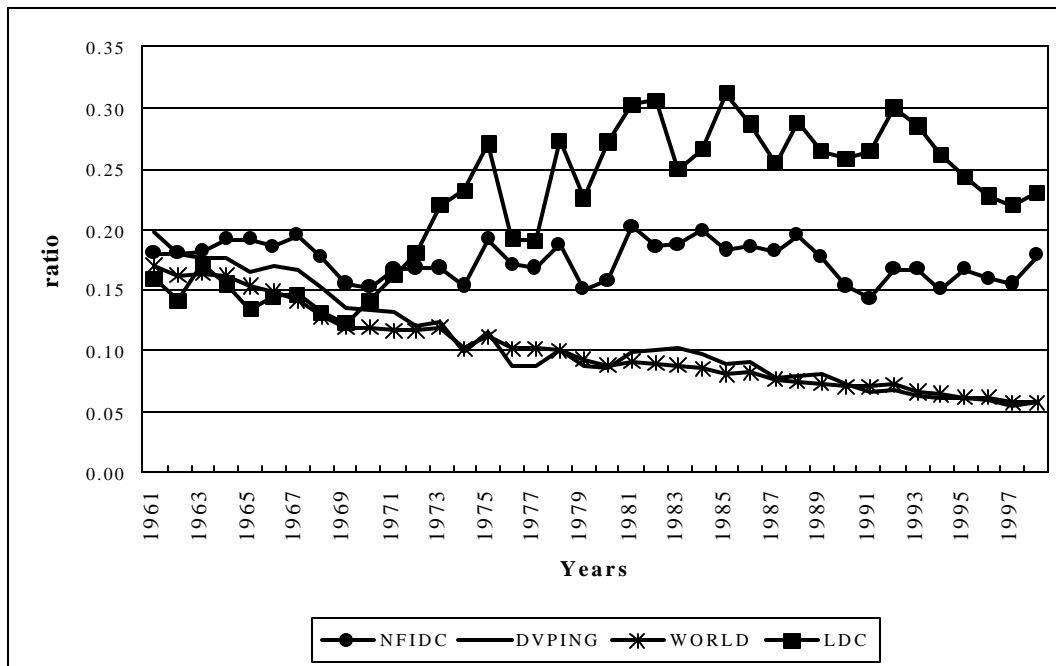
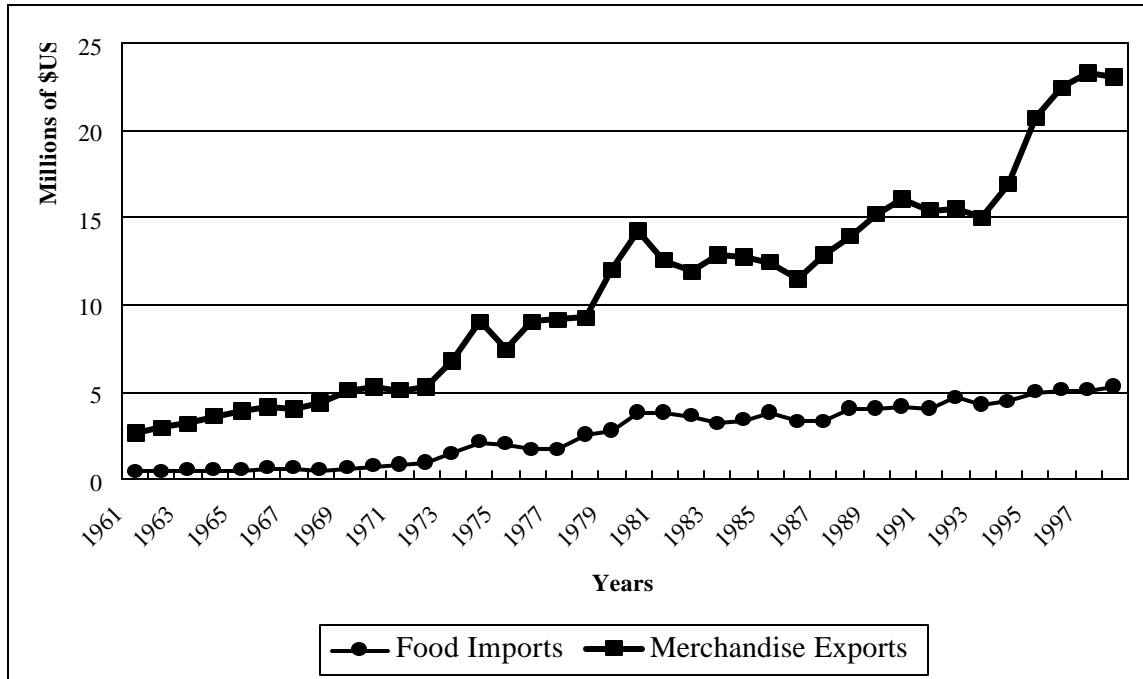
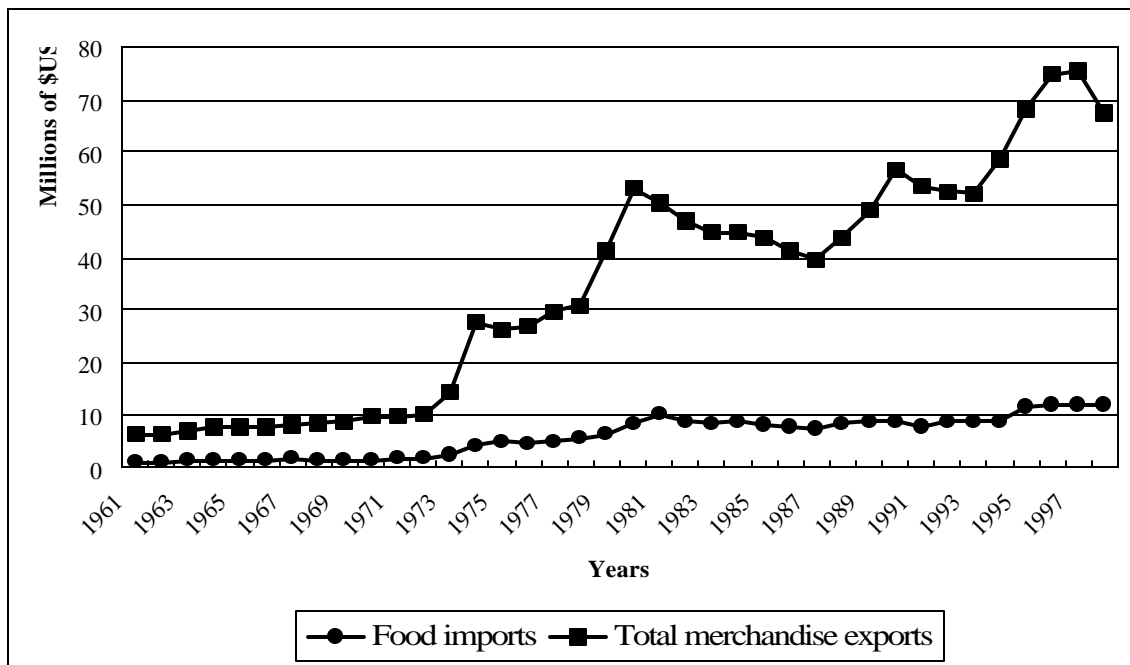


Figure 4. Least Developed Countries (LDCs)



Source: Computed from FAOSTAT (1999) data.

Figure 5. Net Food Importing Developing Countries (NFIDCs)



Source: Computed from FAOSTAT (1999) data.

- Volatility of agricultural prices in world markets in the last half of the 1990s—since the implementation of the World Trade Organization (WTO) agricultural agreements—does not seem to be higher than for the whole period since the 1960s (Table 3). It is less clear what has happened to the volatility of agricultural prices within developing countries, which also depends on domestic trade, macroeconomic, and agricultural policies.

Table 3. Coefficient of Variability for Price: constant value

	1960-1999	1990s	1995-1999
Cocoa (cents/kg)	0.54	0.14	0.13
Coffee Mild (cents/kg)	0.40	0.29	0.21
Coffee Robusta (cents/kg)	0.55	0.26	0.14
Tea (cents/kg)	0.20	0.19	0.21
Sugar (cents/kg)	0.81	0.16	0.17
Orange (\$/mt)	0.11	0.08	0.01
Banana (\$/mt)	0.11	0.12	0.11
Beef (cents/kg)	0.21	0.13	0.06
Wheat (\$/mt)	0.22	0.14	0.16
Rice (\$/mt)	0.34	0.13	0.07
Maize (\$/mt)	0.21	0.16	0.17
Sorghum (\$/mt)	0.21	0.13	0.15
Coconut Oil (\$/mt)	0.36	0.29	0.15
Soybean Oil (\$/mt)	0.30	0.18	0.13
Groundnut Oil (\$/mt)	0.28	0.15	0.08
Palm Oil (\$/mt)	0.30	0.29	0.19
Soybean (\$/mt)	0.22	0.11	0.12
Soybean Meal (\$/mt)	0.27	0.16	0.21
Cotton (cents/kg)	0.19	0.14	0.12

Source: Authors' calculations based on FAOSTAT (2000)

However, although food security has improved in general, some regions and countries are at risk, and some have become more food insecure:

- Average food availability is still low for regions such as sub-Saharan Africa (SSA) and for the least-developed countries (LDCs) (Tables 1 and 2). More distressing, 26 developing countries have fewer calories per capita available, and 33 countries fewer proteins per capita, in the second half of the 1990s than in the 1960s (about 20 and 25 percent, respectively, of the developing countries with data) (Table 4). Of those countries 21 have both less calories and less proteins per capita (Table 4). In many cases those declines appear to be associated with war and civil strife. On average the volatility in calories intake has decreased for developing countries, but has increased for proteins intake (Tables 6 and 7). The volatility of calories and proteins availability in the second half of 1990s compared to the 1960s has increased for 17 percent of the developing countries with data for the whole period (Table 4).

Table 4. Developing countries with lower indicators in 1990s than in 1960s and than the group average in 1990s

Level of Calories	Level of Proteins	Both
Afghanistan	Afghanistan	1
Angola	Angola	1
	Botswana	
Burundi	Burundi	1
Cambodia	Cambodia	1
Central African Republic		
	Cameroon	
Chad	Chad	1
Comoros		
Congo, Dem Republic of	Congo, Dem Republic of	1
Congo, Republic of		
	Côte d'Ivoire	
Cuba	Cuba	1
	Gambia	
	Guatemala	
Guinea	Guinea	1
Haiti	Haiti	1
	Iraq	
Kenya	Kenya	1
	Korea, Dem People's Rep	
Liberia	Liberia	1
Madagascar	Madagascar	1
Malawi	Malawi	1
Mongolia		
Mozambique		
Namibia	Namibia	1
Nicaragua	Nicaragua	1
	Rwanda	
	Sao Tome and Principe	
Senegal	Senegal	1
Solomon Islands	Solomon Islands	1
Somalia	Somalia	1
	Swaziland	
	Tajikistan	
Uganda	Uganda	1
	Vanuatu	
Zambia	Zambia	1
Zimbabwe	Zimbabwe	1
Total	26 (20%)	33 (25%)
		21

Table 5. Volatility in calories

Regions	Average Levels					Ratio		
	1960s	1970s	1980s	1990s	1995-99	1995-99/1960s	1995-99/1970s	1995-99/1980s
World	1.39	1.85	2.01	1.52	0.65	0.465	0.349	0.320
Industrialized Countries	1.45	0.96	1.97	0.98	0.91	0.629	0.950	0.465
Developing Countries	1.92	2.84	2.75	2.41	0.73	0.381	0.258	0.266
Least Developed Countries	0.77	1.57	0.80	0.97	0.99	1.275	0.627	1.231
Africa South of Sahara	0.82	1.41	1.47	1.52	0.45	0.550	0.320	0.307
Transition Markets	1.45	1.12	0.43	4.78	0.26	0.177	0.229	0.597

Table 6. Volatility in proteins

Regions	Average Levels					Ratio		
	1960s	1970s	1980s	1990s	1995-99	1995-99/1960s	1995-99/1970s	1995-99/1980s
World	0.61	1.33	2.20	2.11	0.70	1.156	0.528	0.319
Industrialized Countries	1.66	1.31	2.30	0.86	0.76	0.461	0.583	0.332
Developing Countries	1.01	2.27	3.14	3.95	1.10	1.095	0.487	0.352
Least Developed Countries	0.85	1.37	0.56	0.98	0.88	1.028	0.638	1.575
Africa South of Sahara	0.83	1.66	1.47	1.12	0.37	0.447	0.224	0.254
Transition Markets	1.20	1.60	1.43	6.94	0.89	0.740	0.555	0.620

Source: Author's calculation from FAOSTAT database (FAO 2000).

- The number of malnourished children under the age of five has actually increased in SSA from 1970 to 1997 by 14 million, and the incidence of malnutrition is still very high there and in South Asia (Table 7). There are no countries in the sample of about 150 developing countries that have worse indicators of malnutrition for children under 5 when compared to the 1960s, but 8 countries (5%) of the total are worse off in the 1990s than in the 1980s (Table 8).

Table 7. Number of malnourished children since 1970

Regions	1970	1975	1980	1985	1990	1995	1997
	(millions of children under age 5)						
LAC	9.5	8.2	6.2	5.7	6.2	5.2	5.1
SSA	18.5	18.5	19.9	24.1	25.7	31.4	32.7
West Asia/North Africa	5.9	5.2	5.0	5.0	n.a.	6.3	5.9
South Asia	92.2	90.6	89.9	100.1	95.4	86.0	85.0
East Asia	77.6	45.1	43.3	42.8	42.5	38.2	37.6
All regions	203.8	167.6	164.3	177.7	176.7	167.1	166.3

Source: Smith and Haddad (2000) from 1970 through 1995; 1997 data are the IMPACT base-year values extrapolated from 1995 values using the IMPACT model (Rosegrant et al, 2001). Note: n.a. is not available.

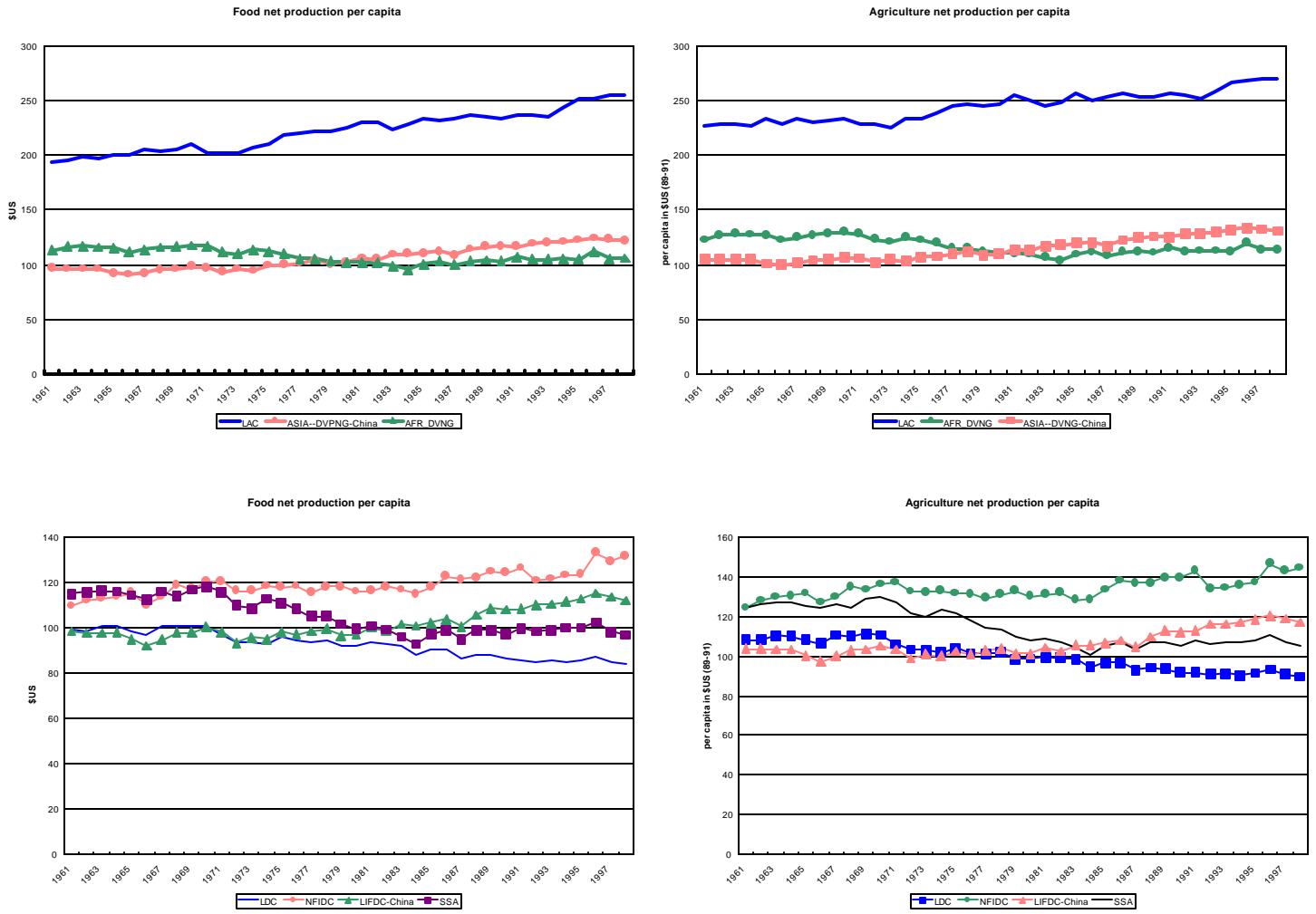
Table 8. Countries with worsening indicators of malnutrition of children under 5 year-old

	Late 1990s compared to 1960s	Late 1990s compare to 1980s
Worse off	0	8 (5%)
Improved by 1/3 or less and were below the average at the end of 1990s	17 (11%)	39 (26%)

Source: Author's calculation based on World Trade Indicators data (World Bank, 2001). Note: 149 developing countries with data for 1960s and 1990s; 150 developing countries with data for 1980s and 1990s.

- For the 49 least-developed countries (LDCs), the total food bill has remained high at 20 percent, and several developing countries with large external debts face additional constraints in financing their food imports (Figure 3).
- Trends of production per capita of food and agriculture also differ among developing countries by regions and economic groups. The best performers are the Latin American and the Caribbean (LAC) countries, Asian developing countries are steadily improving, but Africa's situation is at best stagnant. The net food importing developing countries (NFIDCs) and the low income developing countries (LIFDCs) are also improving their production of food and agriculture, but are still performing below developing country levels. On the other hand, LDC and Sub-Sahara African (SSA) countries continue to experience declining trends in food and agricultural production (Figure 6).

Figure 6. Net production per capita of food and agriculture



While aggregate trends of food security indicators seem positive, the situation is deteriorating in specific cases and would require a more disaggregated analysis of individual country situations. The issue of the heterogeneity of developing countries is discussed next.

3. Variety of Food Security Situations And Implications for WTO Negotiations

For the coming negotiations to consider in greater detail food security concerns under WTO rules, two issues need to be addressed. The first is the relevance of the current classification of countries with respect to their food security status. The second issue is whether the current legal texts, which define WTO commitments on the basis of those categories of countries, really address the issue of food security through that differential treatment. Both questions are related: if the categories are badly defined to capture food

security concerns, then it is unlikely that the differential treatment under WTO rules will deal with those concerns in a meaningful way. But even if these categories capture the variety in the situations of food (in)security, the question regarding the adequacy of current and future WTO rules and commitments to adequately treat those differences must still be answered. Here we discuss first the question of categories. Then we explore possible alternatives for the WTO rules and commitments.

3.1. WTO Classification

In addition to the obvious distinction between developed and developing countries, which are both self-identified groups, the WTO recognizes two other groups within developing countries: least developed (LDC), a United Nation (UN) classification; and net-food-importing developing (NFIDC), which are selected through the Committee on Agriculture of the WTO. LDCs have several legal implications under the WTO framework, and both types of countries were considered in a special Ministerial Decision approved at the end of the Uruguay Round (Díaz-Bonilla, Piñeiro, and Thomas, 1999).

The low-income food deficit countries (LIFDC), also defined by the UN under the Food and Agriculture Organization (FAO), are not subject to any special treatment or legal consideration under the WTO.

The question is how well those categories capture the heterogeneity of developing countries. A study by Valdes and McCalla (1999) identifies, among 148 developing countries, 105 countries that are net food importers and 43 that are net food exporters (15 are from the low income group). In total agriculture, 85 are identified as net importers and 63 as net exporters (33 are from the low income group). Among the most vulnerable economic groups, over one third of LDC are net agricultural exporters, more than half of the LIFDC are net agricultural exporters, 19 percent are net food exporters, and 22 net food importers are net agricultural exporters. These findings are consistent with the data for the top 20 traders in food and agriculture in Tables 9 and 10. There are seven developing countries among the top 20 food exporters and half of the top 20 net food exporters are developing countries.

Table 9. Top 20 food products exporters, importers, and net exporters average in value, 1995-1999

Exporters	Exports (billion \$US) Share (%)		Importers	Imports (billion \$US) Share (%)		Net Exporters	Net exports (billion \$US)
US	41.39	13.82	Germany	28.34	9.10	US	18.41
France	26.94	9.00	Japan	25.91	8.32	France	8.99
Netherlands	21.90	7.32	US	22.98	7.38	Australia	8.57
Germany	17.16	5.73	United Kingdom	18.37	5.90	Netherlands	7.80
Belgium-Luxembourg	14.77	4.93	France	17.95	5.76	Argentina	7.32
Spain	11.85	3.96	China	15.56	4.99	Denmark	5.09
Canada	11.57	3.86	Italy	15.52	4.98	Canada	4.45
China	11.44	3.82	Netherlands	14.10	4.53	Thailand	4.20
Italy	11.29	3.77	Belgium-Luxembourg	12.21	3.92	New Zealand	4.07
Australia	10.33	3.45	Russian Federation	8.01	2.57	Spain	3.85
Argentina	8.32	2.78	Spain	7.99	2.57	Ireland	3.67
United Kingdom	8.14	2.72	Canada	7.12	2.29	Brazil	3.44
Brazil	7.90	2.64	Mexico	5.92	1.90	Malaysia	2.90
Denmark	7.64	2.55	Korea, Republic of	4.95	1.59	Belgium-Luxembourg	2.56
Malaysia	5.81	1.94	Brazil	4.46	1.43	Turkey	1.86
Ireland	5.73	1.91	Saudi Arabia	3.95	1.27	Hungary	1.72
Thailand	5.36	1.79	Indonesia	3.17	1.02	Côte d'Ivoire	1.60
New Zealand	4.85	1.62	Austria	3.03	0.97	Ukraine	1.18
Mexico	4.27	1.42	Switzerland	3.02	0.97	Chile	1.08
Turkey	3.66	1.22	Singapore	2.98	0.96	Ecuador	1.00
Total		80.26	Total		72.40		

Source: Authors' calculations based on FAOSTAT (2000).

Table 10. Top 20 agricultural products exporters, importers, and net exporters, 1995-1999 average

Exporters	Exports (billion \$US) Share (%)		Importers	Imports (billion \$US) Share (%)		Net Exporters	Net exports (billion \$US)
US	60.22	13.55	Germany	41.43	9.00	US	20.64
France	38.94	8.76	US	39.58	8.59	Netherlands	14.45
Netherlands	34.16	7.69	Japan	38.24	8.30	Australia	12.15
Germany	24.96	5.61	United Kingdom	27.05	5.87	France	12.12
Belgium-Luxembourg	18.60	4.18	France	26.82	5.82	Argentina	9.65
China	18.47	4.16	China	26.05	5.66	Brazil	8.73
United Kingdom	15.95	3.59	Italy	23.81	5.17	Thailand	5.54
Italy	15.84	3.56	Netherlands	19.71	4.28	Denmark	5.35
Australia	14.94	3.36	Belgium-Luxembourg	17.06	3.70	New Zealand	5.07
Canada	14.55	3.27	Spain	12.50	2.71	Canada	4.39
Brazil	14.54	3.27	Russian Federation	10.93	2.37	Ireland	3.85
Spain	14.43	3.25	Canada	10.16	2.21	Malaysia	3.67
Argentina	11.10	2.50	Korea, Republic of	8.84	1.92	India	2.15
Denmark	9.88	2.22	Mexico	7.58	1.65	Côte d'Ivoire	2.12
Thailand	8.30	1.87	Brazil	5.81	1.26	Spain	1.93
Malaysia	7.65	1.72	Switzerland	5.21	1.13	Colombia	1.89
Ireland	6.95	1.56	Singapore	4.83	1.05	Hungary	1.62
Mexico	6.30	1.42	Indonesia	4.67	1.01	Belgium-Luxembourg	1.54
New Zealand	6.17	1.39	Saudi Arabia	4.58	0.99	Costa Rica	1.46
Indonesia	5.54	1.25	Denmark	4.53	0.98	Chile	1.40
Total		78.17	Total		73.69		

Source: Authors' calculations are based on FAOSTAT (2000)

3.2. Cluster Analysis Classification

Focusing more specifically on food security, Diaz-Bonilla et al. (2000) employ various methods of cluster analysis and data for 167 countries to identify groups of countries categorized according to five measures of food security: food production per capita, the ratio of total exports to food imports, calories per capita, protein per capita, and the share of the non-agricultural population.¹ The results identify 12 clusters of countries according to their similarities in their food security profiles (measured by the variables listed above) from very food insecure, cluster 1, to very food secure, cluster 12. In Table 11 the values of the variables for the different clusters are presented and Table 12 shows the classification of countries across the 12 clusters. In the context of the WTO negotiations on agriculture, this classificatory exercise is relevant to evaluate the usefulness of the categories currently utilized in the WTO to address food security concerns.

The main conclusion is that some of the categories used by the WTO appear inadequate to capture food security concerns. The most obvious case is the category of “developing countries”. Concerns about the wide variety of countries that are self-identified as developing countries with special treatment have existed for some time in the General Agreement on Tariffs and Trade (GATT) and now in the WTO. Those concerns are borne out by this analysis, where developing countries appear scattered across all levels of food (in)security, except in Cluster 12 the highest of the food secure groups.

Another category with a weak correlation with food security indicators is that of NFIDCs: only 10 of the 18 countries in this group are classified in food insecure clusters groups (11 if Egypt is also included because of high trade stress).

Being a net food importer appears to be only a weak indicator of food vulnerability. Venezuela, for instance, a net food importer that is also a large oil exporter, has a food bill of around five percent of total exports, below the average for developing countries. Another NFIDC with important levels of oil exports is Trinidad and Tobago. In both cases high levels of food imports only reflect the comparative advantage of their production structure. Additionally, some countries may be net food importers just because of a dominant tourist industry (like Barbados, which has an income of US\$7,000 per capita, the highest of all NFIDCs). In any case, the seven NFIDCs considered here in the food neutral group (excluding Egypt), have food imports that represent about nine percent of total exports, while for the food insecure NFIDCs (including Egypt), the average is above 16 percent.

However, the fact that the category of NFIDCs may not be a good indicator of serious food-security problems, does not mean that it can be dismissed. This classification,

¹ The indicators used in the study are considered proxies for three elements of food security at the national level: food availability, access, and utilization.

negotiated during the Uruguay Round, has implications under the Ministerial Decision on LDCs and NFIDCs, and constitutes an acquired right.²

Table 11. Classification of countries in 12 clusters: mean values of the food security variables

	Calories per capita CALCAP (calories)	Proteins per capita PROTCAP (grams)	Food production per capita PRODCAP (US\$)	Export to food import ratio EXPTOIMP ratio	Share of food import to total export 1/EXPTOIMP (percent)	Share of non-agricultural population NAGRPOP ratio
Cluster-1	1,982.9	48.6	81.8	4.9	20.4	0.23
Cluster-2	2,229.2	58.8	117.6	5.3	19.0	0.71
Cluster-3	2,244.6	52.6	120.3	14.1	7.1	0.41
Cluster-4	2,581.5	70.8	157.2	4.8	20.8	0.39
Cluster-5	2,602.3	66.5	210.4	11.3	8.8	0.75
Cluster-6	2,672.9	72.8	124.1	19.8	5.0	0.41
Cluster-7	2,976.1	82.7	135.1	9.1	11.0	0.82
Cluster-8	2,827.7	78.4	233.3	25.6	3.9	0.83
Cluster-9	3,231.3	100.1	254.2	18.6	5.4	0.88
Cluster-10	3,271.8	97.7	304.2	35.9	2.8	0.93
Cluster-11	3,303.7	103.3	520.6	17.7	5.7	0.93
Cluster-12	3,374.1	107.5	923.9	32.7	3.1	0.93

Source: Diaz-Bonilla et al. (2000).

² During the Uruguay Round negotiations a special Ministerial Decision was agreed upon, called the “Decision on Measures Concerning the Possible Negative Effects of the Reform Program on Least-developed and Net Food-Importing Developing Countries” (GATT, 1994:448-449).

Table 12. Country membership in Cluster 1 to 12

		LDC	NFIDC	Others	
Food Insecure Groups	1. (30)	WTO members	Angola, Bangladesh, Burkina Faso, Burundi, Central African Republic, Chad, Dem Republic of Congo, Gambia, Guinea, Guinea-Bissau, Haiti, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, United Rep of Tanzania, Uganda	Kenya	
		WTO observers	Cambodia ¹ , Ethiopia, Nepal ¹ , Yemen		
		Others	Afghanistan, Comoros, Eritrea, Liberia, Somalia		
	2. (14)	WTO members	Djibouti, Lesotho	Botswana, Cuba, Dominican Republic, Honduras, Peru	El Salvador, Georgia, Mongolia, Nicaragua
		WTO observers			Armenia, Azerbaijan
		Others			Tajikistan
	3. (17)	WTO members	Solomon Islands, Togo, Zambia	Côte d'Ivoire, Sri Lanka	Bolivia, Cameroon, Republic of Congo, Ghana, Guatemala, India, Namibia, Papua New Guinea, Philippines, Zimbabwe
		WTO observers	Laos ¹		Viet Nam
		Others			
4. (13)	WTO members	Benin, Mauritania, Senegal	Pakistan, Saint Lucia	Albania, Grenada, Saint Kitts and Nevis, Saint Vincent/Grenadines	
	WTO observers	Sudan ¹ , Vanuatu ¹		Seychelles	
	Others	Kiribati			
Food Neutral Groups	5. (18)	WTO members	Jamaica, Trinidad and Tobago, Venezuela	Belize, Brazil, Colombia, Costa Rica, Ecuador, Fiji Islands, Guyana, Kyrgyzstan, Nigeria, Paraguay, Suriname, Swaziland	
		WTO observers		Croatia, Macedonia (The Former. Yug. Rep.), Uzbekistan	
		Others			
	6. (5)	WTO members	Myanmar		Antigua and Barbuda, Gabon, Indonesia
		WTO observers			China
		Others			
	7. (14)	WTO members	Maldives	Barbados, Egypt, Mauritius, Morocco, Tunisia	Brunei Darussalam, Dominica, Estonia, Jordan, Kuwait, Macau, Mexico
		WTO observers	Cape Verde		Algeria, Lebanon, Russian Federation, Saudi Arabia
		Others			Bahamas, Islamic Rep of Iran, Libyan Arab Jamahiriya, Syrian Arab Republic
8. (9)	WTO members			Bulgaria, Chile, Republic of Korea, Latvia, Malaysia, Republic of Moldova, Panama, Slovakia, South Africa	
	WTO observers				
	Others				

Table 12. Continued

		LDC	NFIDC	Others	
Food Secure Groups	9. (16)	WTO members		Czech Republic, Germany, Iceland, Israel, Japan, Lithuania, Malta, Poland, Portugal, Romania, Slovenia, Turkey, United Arab Emirates, United Kingdom	
		WTO observers		Belarus, Kazakhstan	
		Others			
	10. (9)	WTO members			Austria, China–Hong Kong SAR, Finland, Hungary, Norway, Sweden, Switzerland, United States of America
		WTO observers			Ukraine
		Others			
	11. (9)	WTO members			Argentina, Belgium-Luxembourg, Canada, France, Greece, Italy, Netherlands, Spain, Uruguay
		WTO observers			
		Others			
	12. (3)	WTO members			Australia, Denmark, Ireland
		WTO observers			
		Others			
	Outliers (2)	WTO members			New Zealand, Thailand

Source: Diaz-Bonilla (2000).

Notes: WTO members not included because of data unavailability: Bahrain, Cyprus, Liechtenstein, Qatar and Singapore.

LDC: Least Developing Countries. LDC not included because of data unavailability: Bhutan, Equatorial Guinea, Samoa, Sao Tome Principe, and Tuvalu.

NFIDC: Net Food Importing Developing Countries.

The majority of countries have been classified in the same group by all three clustering methods; the countries in bold have been classified in the same group by two out the three clustering methods.

¹ Countries in the process of accession to the WTO.

Number of countries in a cluster is in parenthesis.

The current membership in NFIDCs does not have to be changed and it certainly remains valid for other goals of the Ministerial Decision separate from food security considerations. But addressing the latter concerns requires a more precise approach based on specific indicators, such as the ones suggested here.

The category of LDCs, on the other hand, corresponds most to countries suffering from food insecurity, even though this issue is not explicit in its definition. Only three out of the 44 LDCs covered in Diaz-Bonilla et al, 2000, are not among the food insecure Clusters 1 to 4: Cape Verde, Maldives, and Myanmar. These countries, classified in food neutral Cluster 7, have incomes per capita four to six times higher than the LDCs' average of US\$235 (UNCTAD, 2000). Still, Cape Verde and Maldives are two of the

most trade stressed countries in Cluster 7. Only Myanmar can be left out of the group of countries with clear food security problems.

On the other hand, countries, which are neither LDC nor NFIDC, have a food security profile similar to the more vulnerable ones, for example, El Salvador, Georgia, Mongolia, and Nicaragua (all WTO members). Limiting the special and differential treatment related to food security problems only to LDCs or NFIDCs would leave them out.

For the WTO negotiations, the analysis presented here suggests that to define specific rights and obligations in the WTO using the category of LDCs appears an appropriate starting point, even though food security issues are not part of the criteria for the definition of LDC. But it may not be enough. One approach would be to consider for special treatment under food security provisions both LDCs as defined by the United Nations and all other countries classified as food insecure according to some objective indicators, either using the ones presented in the cluster analysis or, less formally, using an average of the consumption of calories and proteins per capita as indicators of consumption vulnerability, and the food import bill as percentage of all exports (merchandise and services) as indicator of trade stress in order to identify the countries most at risk. Values of the indicators, computed from an average of the last three or five years, would be those yielding z -scores below -0.5 (around 2,380 calories and 62 grams of proteins per day per capita, and about 13 percent for the food import bill over total exports).³ Countries would move in and out of the food insecure category so defined, depending on their performance.

Those food insecure countries would receive a treatment similar to LDCs for rights and obligations related to domestic support and their own market access. Also, they would be considered for the food aid, financial support, and technical assistance envisaged in the Ministerial Decision on possible negative effects of the agricultural reform program on LDCs and NFIDCs. The issue of special access to other countries' markets for LDCs, and the additional benefits conferred upon LDCs because of reasons other than food security, would still be limited only to the countries specified by the United Nations. The quantitative limits suggested would help differentiate developing countries that may need special treatment in terms of food security from those that do not.

It is also relevant to ask about the food security situation of the developed countries. Several of them have advanced the notion of food security as part of the "multifunctionality" of agriculture, or, more generally, among non-trade concerns (Norway, 1998). Our typology, however, confirms the common-sense perception that all developed countries are food secure. The term "food security" appears to have a very different meaning in developed and developing countries. For policy implications and the agricultural negotiations, maintaining the same label to address two altogether different situations only obscures the issues being negotiated. The discussion of food security should be limited to the vulnerability of developing countries.

³ The corresponding values are computed using the mean and standard deviation of the population of 167 countries: 2,635 and 502 for CALCAP; 72 and 20 for PROTCAP; and 13 and 10 for EXPTOIMP.

4. Trade Liberalization and WTO negotiations

Given the proper classification, the next issue is what measures under the WTO related to industrialized and developing countries, would improve the food security of vulnerable countries.

4.1. Industrialized Countries.

The Agreement on Agriculture (AoA) of the WTO has been subject to several criticisms. A valid criticism is that there are important imbalances in the AoA because industrialized countries have been able to secure exemptions for some of their policies (like the Blue Box) and were allowed to continue using significant amounts of expenditures for domestic support and export subsidies. Rich countries have the legal room and the resources to implement the variety of policies allowed under that legal text, while developing countries, although having legal room of maneuver, lack the needed financial resources.

The combination of domestic support, market protection, and export subsidies in industrialized countries has reduced agricultural market opportunities for developing countries, including through unfair competition of subsidized production from rich countries in the domestic markets of developing countries. This is specially important for poor developing countries where 2/3 of the population live in rural areas, agriculture generates about 1/4 of the GDP, and a substantial percentage of employment and exports depend on agriculture (World Bank Development Indicators 2001). Different studies have shown that an agricultural-led growth strategy may have larger dynamic multipliers for the rest of the economy than other alternatives in poor developing countries (Delgado et al., 1998). Even 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). A key concern for developing countries, therefore, is the elimination of subsidies and protectionism in industrialized countries, particularly the practice of export subsidies.

Against this general proposition, three concerns have been raised:

- First, will the food bill of net importing countries be increased by the liberalization of agricultural policies in industrialized countries?
- Second, for those developing countries that have preferential access to the protected markets of rich countries, will the liberalization of trade in those markets lead to the erosion of trade preferences?
- Finally, will export expansion in developing countries have harmful effects on poverty and food security?

In the first two cases, a welfare-enhancing approach would be to proceed with the liberalization of markets in rich countries, along with cash grants or other financial schemes to compensate poor countries for higher prices and lost preferences.

The third question is linked to earlier criticisms of the Green Revolution, later extended to commercialization and international trade: first, the limited resources of small farmers could prevent them from participating in expanding markets and lead to worsening income distribution. Second, and more worrisome, if relative prices shift against the poor or if the power of already dominant actors (large landowners, big commercial enterprises) is reinforced to allow them to extract income from the poor or to appropriate their assets, the poor could become worse off in absolute terms. It has also been argued that food security could decrease if cash or export production displaces staple crops, and if these changes result in women having less decision-making power and fewer resources.

Yet, several studies have shown that the Green Revolution—and domestic and international commercialization—can yield benefits for the poor because of the effect on production, employment, and food prices, although any uniform attainment of benefits is by no means guaranteed. Trade expansion that creates income opportunities for women may also give them greater control over expenditures, with positive impact on child nutrition and development, as well as greater incentives to invest in girls. But there may be a trade-off between income-generating activities and the time allocated for childcare. IFPRI is currently analyzing through household surveys from various countries, these developments as well (see Paolisso et al., 2001). Generally, complementary policies are needed to increase the physical and human capital owned by the poor and by women, to build general infrastructures and services, to ensure that markets operate competitively, and to eliminate institutional, political, and social biases that discriminate against these groups.

4.2. Developing Countries.

During the current WTO agricultural negotiations (which began in March 2000), several developing countries indicated concerns that further trade liberalization could create problems for their large agricultural populations, where poverty is concentrated. Poor countries have argued for a slower pace in reducing tariffs (or maintaining their current levels) on the understandable premise that industrialized countries should first eliminate their higher levels of protection and subsidization. The aim is also to avoid any sudden negative impact on poor producers, whose vulnerable livelihoods may be irreparably damaged by drastic shocks (for instance, by forcing poor families to sell productive assets or to take children from school).

This policy debate reflects a permanent tension between maintaining high prices for producers versus assuring low prices for consumers. While industrialized countries have used transfers from consumers and taxpayers to maintain high prices for producers, developing countries have enforced low agricultural prices to further the process of industrialization. Several studies have shown that poverty alleviation in developing countries was impaired by policies that protected capital-intensive industrialization and

discriminated against agriculture. Post-1980s policy reforms in developing countries appear to have reduced or eliminated general policy biases against agriculture, but in some cases, they may have contributed to the decline of the infrastructure and institutions needed for agricultural production and commercialization. Further correction of market distortions may still be needed in some countries, but now the emphasis should be on policies for investing in the rural economy, focusing on the poor.

Out of concern for small farmers, some have argued that developing countries should move even further towards protection of the agricultural sector. However, considering that poor households may spend as much as 50 percent of their income on food, these recommendations could have a negative impact on the poverty and food security of not only the increasing number of poor urban households and landless rural workers, but also poor small farmers, who tend to be net buyers of food. Trade protection for food products is equivalent to a very regressive implicit tax on food consumption, mostly captured by large agricultural producers, with a greater impact on poor consumers. Also, trade protection for any sector usually implies negative employment and production effects in other sectors, and the general effect of widespread trade protection is a reduction in exports.

Rather than increase protection, the best approach for developing countries is to eliminate biases against the agricultural sector in the general policy framework, and to increase investments in human capital, property rights, management of land and water, technology, infrastructure, nonagricultural rural enterprises, organizations of small farmers, and other forms of expansion of social capital and political participation for the poor and vulnerable. At the same time, developing countries may legitimately insist that industrialized countries reduce their higher levels of subsidization and protection, and ask for policy instruments that allow the development of their rural sector and to protect the livelihoods of the rural poor from import shocks that could cause irreparable damage. These issues are currently being discussed in WTO agricultural negotiations. In what follows a more detailed discussion of possible changes in the WTO is presented.

5. Topics in the WTO Negotiations

5.1. Export Subsidies

A specific trade practice that has been widely criticized as unfair and disruptive of international trade is the use of export subsidies. In complete contrast with industrial goods, this practice has not yet been completely eliminated for agricultural products, many of which are processed products. Therefore, the differential treatment of export subsidies under the current agreements of the World Trade Organization (WTO) is not only between primary agriculture and industry, but also between those industries based on agricultural raw materials (for which export subsidies are allowed) and the rest of the manufacturing sector (for which those unfair trade practices have been banned) (Diaz-Bonilla and Reza, 2000). Industrialized countries have been the main source of subsidized agricultural exports over the years: 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). Agricultural export subsidies have proved very disruptive both for developing countries that are net agricultural exporters, but also for the agricultural producers in net importing developing countries, which are displaced by this unfair competition. An important percentage of those export subsidies do not go to the poorest countries, and some of the products covered are not necessarily those that may be more directly linked to the alleviation of food security problems.

A related subject is the operation of state trading enterprises, which may require increasing disciplines and transparency on practices that may be equivalent to subsidies or dumping on the export side, or hidden trade barriers, on the import side. Finally, it is important to integrate in a unified framework the disciplines related to the continuum of transactions involving agricultural products, particularly the interface of export subsidies with food aid and export credits.

The developing countries' position is to maintain the special and differential treatment exempting them from lowering subsidies related to marketing costs and internal transport and freight charges (in Article 9 d, and e). At the same time, developing countries have an interest in stricter disciplines on export taxes and export controls, practices that may exacerbate price fluctuations in world markets and limit access to food.

5.2. Market Access

A second set of issues is the opportunities for expanded market access. They will depend on increasing the volume of imports allowed under the current regime of tariff-rate quotas (TRQs); on a more transparent and equitable administration of those TRQs; on 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; on 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; and on completing the process of tariffication in the cases where exemptions were granted.

Within market access, the elimination of tariff escalation is an important subject for developing countries: this practice undermines their possibilities of generating local employment and increasing the value added of their products. Tariff escalation has been discussed at least since the Kennedy Round (Yeats, 1974). Although this characteristic of the tariff structure has diminished somewhat after the Uruguay Round, significant levels of tariff escalation will still remain after the full implementation of the Uruguay Round (Lindland, 1997; OECD, 1997). In particular, the OECD (1997) documents important tariff escalation in coffee and cocoa products, which can in part explain the increasing share of industrialized countries in the international trade of processed goods using those raw materials (Diaz-Bonilla and Reca 2000).

Another issue of market access is the continuation of the Special Safeguard (SSG) established in the AoA. It was allowed for products that underwent tariffication, but it had to be specifically designated for the eligible products. A total of 38 countries have established SSG for about 6072 tariff items; about 3600 tariff items belong to industrialized countries (WTO, 2000c). Developing countries, by and large, resorted to binding commitments as an alternative to the tariff equivalent of the existing border measures, and therefore could not invoke the SSG.

While some developing countries want to eliminate the SSG, others are asking to be able to use it. In general, the SSG acts as a variable levy, is not transparent, and has the potential of being very disruptive of trade. Probably for developing countries it would be more adequate to ask for the termination of the SSG, while reserving the possibility of a streamlined safeguard for a very limited number of products for food security reasons only, or when important components of the rural population are affected (see below).

As already mentioned, a delicate matter related to market access is the erosion of preferences for a number of developing countries that have special market access arrangements with industrialized countries. For poor income developing countries, the preferential access usually represents a large percentage of agricultural exports and sectoral value added. Some have argued that the continuation of those preferences is already under threat for products such as sugar, both in the US and the EU. In the US market, Mexico has expanded access under NAFTA, and will reach total liberalization by 2007/8, while in the EU market, the inclusion of Eastern European countries, will reduce the margin of preferences (ABARE, 1999). The EU is also struggling to implement the WTO rulings related to bananas.

Yet, whatever the uncertain prospects for some of those preferential arrangements, there are several options to compensate poor countries for the erosion in preferences. In some cases, changing the way TRQs operate could compensate the erosion of preferences in the short run. One possibility would be to grant licenses to the exporting countries instead of giving them to importers, and reduce to zero the “in quota” tariff for those exporting countries. Another possibility is to distribute in annual payment to the exporting countries, the equivalent value of the trade preferences. This means extending to the affected poor developing countries the same logic applied when industrialized countries compensate domestic producers for the reduction in direct support. Considering that a policy of liberalization acts as a tax cut for consumers in the liberalizing countries, recapturing part of those funds may serve to finance the compensations to poor developing countries for the lost access.

5.3.Domestic Support

A third set of issues relates to domestic support. The final agreement reached at the Uruguay Round was weakened when the measure of support was transformed from a product-based one to an aggregate value for the whole agricultural sector, and when the main domestic subsidies of the European Union and the US (at that time) were kept

outside the disciplines in what was called the "blue box". With the changes in the 1996 Farm Bill in the US, the most important user of Blue Box measures is the European Union.

On the other hand, many developing countries have dismantled or significantly reduced their own domestic support for agricultural producers, mainly because of fiscal constraints and concerns about inefficient policies, usually as part of structural adjustment programs supported by financial international organizations and aid donors. But the possible benefits that these countries and the world may gain from following their comparative advantages are drastically thwarted by the subsidies of developed countries.

In an attempt to discipline further domestic supports, some countries have proposed to tighten the criteria for the Green Box, the reduction of the measure of support by product, and the elimination of the exemptions considered under the Blue Box.

Some countries have suggested a cap to all or a specially defined subset of domestic support measures as a percentage of the total value of agricultural production (WTO, 2000a and 2000b). They argue that a uniform cap defined in percentages would contribute to level the playing field that is now heavily tilted in favor of industrialized countries, which have the legal room under the WTO and the money to distort production and trade in their favor.

Least developed and low-income developing countries should still be allowed special and differential treatment in this regard. In general, the negotiations of the Uruguay Round allowed developing countries to retain the great majority of agricultural and social policies linked to poverty alleviation and agricultural development. For low-income developing countries the main concern here should be the provision of adequate levels of technical assistance and financial support to help develop their agricultural sector, as indicated in the Ministerial Declaration on the subject.

5.4.Sanitary and Phytosanitary Measures

A fourth set of issues relates to sanitary and phytosanitary measures (SPS), as well as other technical, quality, and environmental standards. These measures can be, and have been, used as barriers to trade. Concerns about the possibility that the liberalization of agricultural trade achieved under the AoA could be negated by manipulation of those regulations led to the negotiation during the Uruguay Round of two separate documents. The first was the Agreement on SPS measures, directly related to human, plant and animal health issues linked to trade in agricultural products. The second was the Agreement on Technical Barriers to Trade (TBT), which covered technical regulations and standards, and conformity assessment procedures.

Developing countries have complained over the years that SPS measures and inspections tend to become stricter when there are agricultural surpluses in the domestic markets of industrialized countries. They have also criticized the long periods required by industrialized countries to complete the pest and disease studies needed to allow the

import of new agricultural products from developing countries (see Matthews, 1994 for other SPS issues). Since the Uruguay Round Agreement, and in the preliminary discussions related to the continuation of the negotiations mandated in Article 20 of the AoA, some developing countries have argued for greater flexibility in the implementation of their obligations under the SPS Agreement. Finger and Schuler (2000) have calculated the relatively important budgetary costs that some of the operational requirements of different WTO commitments (and not only the SPS Agreement) may impose on low income developing countries. They argued that WTO regulatory issues should be in alignment with the real developmental needs of developing countries, separately from compliance with WTO legal texts.

For instance, SPS issues related to human health should be approached as part of the improvements needed to protect the local population from food-borne diseases and not only as a way to comply with trade regulations. Similarly, tackling animal and plant health problems must be seen as part of SPS requirements to increase production and productivity in developing countries. If the costs to implement the administrative machinery needed to deal with SPS issues are seen by developing countries as simply “how best to allow poultry imports from industrialized countries” (as an African participant of an SPS technical assistance course sponsored by industrialized countries indicated), then the complaints about the need of flexibility appear justified.

As a general proposition, it seems imbalanced to ask low-income countries to devote to the administrative machinery required to implement WTO obligations resources that represent, as a percentage of the GDP, a larger share than what industrialized countries assign to similar functions.

On the other hand, a strong SPS framework may be important for developing countries, not only because a competitive export position requires establishing and maintaining the sanitary and quality requirements for their products, but also as a way of improving health conditions in the developing countries, to the extent that best practices and standards would then be more widely applied in those countries. Probably the most adequate approach for developing countries is to insist on receiving the technical and financial assistance considered in the SPS Agreement (Articles 29 and 30) to build and improve their own systems of quality control and health and safety standards. These systems should be centered on their own needs to improve health and sanitary domestic conditions, and the regulatory burdens of compliance should, at the very least, not represent shares of the GDP larger than what industrialized countries devote to similar functions.

5.5. Food Security and Poverty

The AoA includes different clauses that are directly or indirectly related to food security and poverty issues. The discussion would mostly indicate the legal aspects, without necessarily analyzing the economic advantages or disadvantages.

Food Security Stock. The most obvious instrument available in the AoA is the use of stocks for food security reasons.

The Green Box measures (Annex 2 of the AoA) include “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”. They are exempted from reductions provided they comply with other specific criteria established in that Annex (Annex 2, paragraph 1, of the AoA).

The list of those programs and the specific policy criteria and conditions include, among others public stockholding for food security purposes. The stocks must be an integral part of a food security program identified in national legislation. It may include government aid to private storage of products as part of such a program. 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).

A footnote in the Annex 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.”

Emergency food stocks may have an important role to play in food security arrangements. Carrying stocks as an insurance mechanism is different from using stocks to stabilize domestic grain prices, which has proved expensive and relatively ineffective (Hazell, 1993; Knudsen and Nash, 1990). The AoA establishes the conditions for those stocks, which must be built based on clearly defined targets, for instance as a percentage of total consumption. Also, it would help to limit the number of key food items (no more than three to five) to be stocked. Hazell (1993) suggests that relatively small percentages of total consumption may suffice to act as an insurance mechanism, referring to McIntire (1981), which calculates that stocks of five percent of total consumption may be enough for SSA countries. Also the AoA requires transparent financial arrangements, a sensible requirement to avoid waste and corruption.

The key point, though, is that those stocks must be bought and sold at market prices. The language is clear on sales from the stock: those prices are “current domestic market prices” (which includes whatever level of tariff protection the country may have). But it can also be true for buying food products. For poor countries it makes sense not to add to the costs of the food security program through the use of 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 percent of the production of a crop paying market prices to achieve the stock to consumption ratio, that would give some price support with respect to the counterfactual of no intervention (Islam and

Thomas, 1996: p 58-61). But all the operations will be conducted at market price, ideally using some sort of auction. Following those rules, the program is part of the Green Box and it is not subject to any discipline under the AoA.

Some appear to have interpreted the wording of the AoA as either forcing the purchase of food items at world prices (because of the reference to the external price, which is the one cited in the Schedule of the countries but it is not the current world price) or that there are no alternatives to buying at administered prices. Here a different interpretation is offered where buying at the domestic market price the intervention remains under the Green Box.

Added language could make the text clearer to avoid any doubts about the applicability of this Green Box measure: one possibility is that LDCs and countries that are food insecure as defined by some objective indicators (such as the ones suggested in section 3.2) are presumed to be in compliance with the AoA when they build food security stocks within the framework suggested above (i.e. stocks for not more than 10 percent of domestic consumption for up to 3 products).

If a developing country decides to use administered prices instead of the prices prevailing in the domestic market, then, according to the footnote, the difference with the external reference price (which, again, is not the current world price, but the 1986-88 price established for the original calculations) must be counted as part of the AMS. Yet, if the food security stock does not exceed, say, 10 percent of consumption, it would take a relatively large price subsidy (along with a large percentage of imports in domestic consumption), for a developing country to exceed the 10 percent de minimis exemption per product. In that case, the program would have changed from food security to price support, and it would most likely become financially unsustainable, regardless of its status under the AoA.

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 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 to have 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 many instances, the issue is not legal restraints under the AoA, but rather how to design and finance adequate

interventions (see Coady and Skoufias, 2001 for analysis of different 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 (Islam and Thomas, 1996), the two measures discussed so far operate mostly from the consumption, or demand, side. But developing countries usually emphasize the production side of food security. Several of them have expressed concern that agricultural and trade policies may create problems for their large rural populations, where poverty is still concentrated and which are basically agricultural producers (WTO 2000a, 2000b, and 2001). These concerns are related to issues of domestic support (how to provide meaningful support to agricultural producers, specially small farmers), market access (particularly the impact of further liberalization and how to manage import surges), and export subsidies (that may displace local producers).

Regarding domestic support, it has been already argued that for industrialized and developing countries, the AoA allows a great latitude in domestic support policies: Green Box measures (Annex 2), 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) was changed from being product specific to an aggregate for all products (Article 6 paragraph 1). Developing countries, in addition to a *de minimis* exemption of 10 percent (as already indicated), 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, as defined by the United Nations, are completely exempt from any reduction in domestic support (Article 15, paragraph 2).

Additionally, Article 6 paragraph 2 exempts developing countries from reduction commitments in yet other categories of domestic support. They 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 a developing country is legally entitled under WTO 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 compels 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.

The only restriction is that those subsidies may be actionable under Article 13b, particularly if they exceed the budgetary limit of subsidies decided (not necessarily granted) in 1992 by product (13b, ii and iii). As an example, suppose that a low-income country decides to subsidize poor farmers for their use of fertilizers in a specific staple crop. Suppose that the program is so highly successful that, as a result, poor farmers not only supply the additional domestic demand (beginning with their own requirements and including urban population) but also displace previous imports in that product. Suppose further that the expenditures of the program in that low-income country have exceeded those approved for that crop in 1992. Then those countries that were suppliers of that market and that now may have been displaced, may claim “serious prejudice” (as in Article XVI, paragraph 1, of GATT 1994 or Articles 5 and 6 of the Subsidies Agreement), or “non-violation nullification” or “impairment of the benefits of tariff concessions” (as in Article XXIII, paragraph 1(b) of GATT, 1994).

Some have interpreted Article 13 as prohibiting domestic subsidies in excess of 1992 budgetary limits (Solagral, 1999). In fact, those subsidies are not prohibited, but may be “actionable”, meaning that the complaining WTO member must support its claim proving either serious prejudice, on one hand, or nullification or impairment of benefits, on the other.

The whole scenario for such complaints appears unlikely in most, if not all, poor developing countries, because it must combine a highly successful program that displaces imports (when in fact most of the production of such a product would go to expanded domestic consumption) or reduces prices significantly in the domestic market, and the existence of a significant export market prior to the program (to make it commercially worthwhile to initiate a WTO complaint). Also, there must be a WTO member (basically an industrialized country or a higher income developing country, considering the origin of most food exports), willing to incur in the public relations costs to sue a poor country on a program aimed at poor farmers for production of food. Yet because the unlikely sometimes happen (particularly difficult to judge given the willingness of different governments in the WTO members to place human decency concerns above other considerations), the current agricultural negotiations may be well advised to clarify in greater detail the interface between the “de minimis” exemption (Article 6.2, and Article 13) particularly for poor countries with problems of food insecurity.

A possibility is to follow the same approach as for food stocks and include language in the AoA specifying that LDCs and countries that are food insecure as defined by some objectives indicators, are exempted from the 1992 limits of Article 13, not only in regard

to Article 6.2, but also regarding the de minimis exemption. Another issue linked to Article 6.2 is the meaning of “low-income or resource poor producers”. A possibility is to take the usual measure of one dollar (or two dollars) a day, as the poverty line used for international comparisons, or a relative measure within the country (for instance, producers with less than 40 percent of national income per capita). In general, if food insecure countries are defined according to objective criteria, some language can be included to the effect that they are presumed in compliance with the criteria of Article 6.2.

Special Safeguard (SSG) for Food Security. The SSG is available only to countries, mostly developed ones, which have border tariffs. Some developing countries have argued for extending the utilization of the SSG also to them. Other developing countries, however, want the SSG eliminated and a new special safeguard created for food security reasons. Conceivably this can be done under the common safeguard of the Emergency Action on Imports of Particular Products (Article XIX of GATT 1994), and including some modifications such as (i) streamlined and faster procedures for a limited number of designated crops for food security reasons, and (ii) exemptions from the need to offer compensations, linked to the temporary use of the safeguard (see Sharma 2000).

Special Treatment for Natural and Human Disasters. An additional issue, also raised by several developing countries is the possibility that expenditures aimed at reconstruction of the agricultural sector after natural disasters or wars, be completely exempted from disciplines until the previous levels are reached.

Food Aid, Access to Food, and Price Volatility. Finally, current negotiations should also consider carefully other issues of food availability and price volatility. A general concern is the provision of adequate levels of food aid, which have declined in recent years, 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. Badly managed food aid, or cheap food imports due to export subsidies, may just reinforce the bias of economic policies against the rural sector, with its negative impact on poor agricultural producers in developing countries.

It is also necessary to provide technical assistance and financial support to develop agriculture in food insecure countries, and to maintain and expand financial facilities (both multilateral and bilateral) to help with short-term difficulties in financing food imports. A special aspect is to make sure that export controls and export bans on food items are tightly disciplined so as not to hamper access to food by importing countries.

The issue of volatility in agricultural prices must also be monitored carefully: while expansion of world agricultural trade should help to spread supply or demand shocks over larger areas (thus limiting overall fluctuations), world public stocks have been declining as a percentage of consumption, which may increase price volatility.

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.

6. Conclusion

Overall, changes in food security in developing countries over the last decades have been positive but uneven. Populations in several countries and regions remain seriously at risk, even in cases where aggregate food supplies appear adequate, and the international targets to cut hunger in half by 2015 do not appear to be on track of being met. The attainment of those targets must provide an important background to the current WTO negotiations.

Food security cannot be increased unless agricultural subsidies and protectionism in developed countries are substantially lowered. To address poverty and food security concerns, the AoA allows interventions such as stocks for food security and domestic food aid for populations in need and, under Article 6.2, developing countries must make serious efforts to structure well-defined programs for poverty alleviation.

Yet, the AoA texts may require added language to clarify and extend its provisions about food security concerns, along with a better definition of groups of countries based on objective indicators of food insecurity. The categories currently used by the WTO mask important heterogeneity and may leave out some food-insecure countries. Also there appears to be a very different meaning of the term “food security” in developed and developing countries. In terms of policy implications and the agricultural negotiations, maintaining the same label for two altogether different situations only obscures the issues being negotiated. The discussion of food security should be limited to the vulnerability of developing countries, using a different terminology for developed countries.

Finally, developing countries need international funding to support rural development, food security, and rural poverty-alleviation programs. The problems facing developing countries in ensuring food security are mostly the lack of financial, human, and institutional resources. This should be recognized by linking agricultural trade negotiations to increased funding by international and bilateral organizations for agricultural and rural development, food security, and rural poverty alleviation. Also attention must be given to the continuation and enhancement of the reduction or cancellation of the external debt of Heavily Indebted Poor Countries (the HIPC initiative), further liberalizing trade in textiles, and adequately managing capital flows.

At the same time, improved international conditions should go hand in hand with a better domestic framework in developing countries. This includes stable macroeconomic policies, open and effective markets, good governance and the rule of law, a vibrant civil society, and programs and investments that expand opportunities for all, with special consideration for disadvantaged groups and especially poor women. Additional investments and policy reform efforts will be required to improve infrastructure,

strengthen internal financial markets, develop institutions to manage risks and reduce transaction costs, and expand entrepreneurial and labor skills.

However, in countries affected by violence and war, and their neighbors suffering from the spillover of conflicts, a more supportive international environment and better macroeconomic, trade and investment policies will not help ensure agricultural and rural development, substantial reductions in poverty and enhanced food security, until military confrontations stop. Continued international diplomatic and political engagement and financial support is crucial to bring peace and reconciliation to countries affected by conflict and to sustain fragile transitions towards democracy. Otherwise, regional security problems and humanitarian crises will keep recurring. Improved codes of conduct and control regimes governing trade in conventional weapons appear essential. Rich nations must also ensure that their firms abide by anti-bribery codes and that there are no safe havens for money laundering, while strongly supporting anticorruption efforts in developing countries.

The persistence of poverty and hunger amidst affluence is an avoidable moral tragedy and a drag on the world economy. Poverty and hunger are problems that can be addressed, if humanity, particularly those better off, can summon the political will to do so.

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