Chapter 1

Globalization of Agriculture and Food: Causes, Consequences, and Policy Implications

Joachim von Braun and Eugenio Díaz-Bonilla

The world agrifood system is becoming increasingly globalized. As the majority of the world moves into cities, and as people who remain in rural areas adopt more urbanized lifestyles when they are better connected to infrastructure, consumption of food is changing to a more varied composition yet also to greater similarity around the world. The time-saving instant noodle soup in a plastic cup in Asia, as well as the hamburger and the prepared sandwich worldwide, are indicative of this tendency. Consumption of processed foods, soft drinks, and bottled water is expanding, and foods and beverages are increasingly transported long distances, catering to changing demands. The food processing and retail industries have become global players. Farmers increasingly specialize their production as a consequence of these changing markets, which requires change upstream in the food chain—that is, in such production inputs as water, seeds, feeds, and technical equipment, which has in turn created new organizational arrangements in the food system.

This book examines how such changes are affecting the poor by looking at specific factors that are driving change. The various chapters consider different angles to the following questions: How do these changes affect the roles and powers of various actors along the food chain? How relevant are these trends to the economic developments within the global agrifood system and, in particular, to the poor segments of society? How is the globalization of foods affecting human health? How can international and national policies address possible adverse direct and indirect effects of globalization of the world's agrifood system while strengthening positive ones?

Given the rich stream of writings on globalization in recent years, and with globalization coming of age (Osterhammel and Petersson 2005), a valid question to ask is, why produce this book? A line of work has addressed, in general, the growth and poverty effects of globalization (see, for example, Rodrik 1997; Aghion and Williamson 1999; Bhalla 2002; Stiglitz 2003; Bhagwati 2004; Harrison 2006), and the debate on whether it has been beneficial or detrimental to society is ongoing and vibrant (see Chapter 2 and Essay 6). Other literature has analyzed the changes in global food markets and the effect on national agrifood systems, but not in the context of developing countries and the poor within these countries (see, for example, Regmi and Gehlhar 2005). In this book, we attempt to combine both lines of inquiry, focusing more specifically on the globalization of agrifood systems, the actual and potential effects of these trends on the poor, and the implications for food and nutrition security in developing countries.

Although it may come at the cost of a definite message and policy prescription on globalization, this volume acknowledges the uncertainties and complexities involved and attempts to do justice to the current state of research (which is expanding daily) and to expose the unresolved debates and controversies. To accommodate a variety of views, the volume is composed of nine chapters that analyze in detail the main aspects of the links between the globalization of agrifood systems and poverty, and six essays that highlight primary issues in the lively ongoing debate. Taken as a whole, the volume avoids simplistic messages about globalization being "good" or "bad." The main audience is policy advisors; civil society organizations; individuals in the private sector; and students interested in globalization, the fast-changing agrifood system, and the actions needed to influence these developments to make globalization outcomes more pro-poor.

Figure 1.1 gives an overview on the book and provides the organizing framework of the analyses presented in the various chapters and essays: four broad globalization "drivers and changes" (see columns: political context and governance; markets, capital investment, and labor; information and innovation; and health, social policies, and conflicts) are considered, and their effects on cross-cutting issues and on the elements of the food chain are addressed (see the rows in Figure 1.1).

Accordingly, after the analyses and overview on globalization and poverty in Chapter 2, the next part of this book is broadly structured along the building blocks of the food chain, with Chapters 3–7 and Essays 1 and 2 covering issues in production, marketing, processing, and consumption. Those issues are in turn embedded in the discussion of more general governance and policy issues that affect the globalization of agrifood systems and whether they can be made more pro-poor, covered in Chapters 8 and 9 and Essays 3–6. Indeed, global and national policies and institutions are important determinants of how globalization affects different segments of

Figure 1.1 Overview of issues and coverage of book chapters by drivers of globalization and the food chain

society. Although powerful forces drive globalization in general and the agrifood system in particular, global and national policies do shape the potential benefits and risks of globalization.

This chapter provides a background for and overview of the topics covered in this book. It starts by defining the concept of globalization of agrifood systems. Subsequently, the second section provides an overview of the size and major transforma-

tions of agrifood systems resulting from globalization processes. And, drawing mainly from the essays and the other chapters in the book, the last sections look at the larger context of globalization and its implications for development and poverty reduction policies.

Because the topic of the links among globalization, agrifood systems, and poverty is so vast, this volume cannot cover all possible components. In particular, two topics, which require further research, are largely absent. First, migration issues, both nationally and internationally, have been central to the transformation of rural and agricultural economies. More recently, the growth in international remittances has further changed the economic and social dynamics in the countryside in several developing countries (see, for instance, Terry and Wilson 2005). A second important topic that is absent in this book refers to global environmental concerns—from climate change to global water management, stressed ecosystems, and losses in biodiversity.[1] These concerns are growing and will have an effect on the future sustainability of globalization of the agrifood system. In Essay 1, M. S. Swaminathan underlines the need for what he calls an "Ever-Green Revolution," whereby innovations that enable productivity improvements are developed without ecological and social harm. Costs and uncertainties should not obscure their important implications for the food security, health, and nutrition of the world's poor (see Wood 2001; Millennium Ecosystem Assessment 2005). Global climate change mainly caused by activities related to industrialized countries increases the risks and uncertainties in the agrifood system and will have increasingly adverse effects in terms of natural catastrophes and diseases that especially affect the poorest countries. Deteriorating environmental conditions may reinforce vicious cycles of conflict over resources and humanitarian crises (Chapter 9), and the poor will pay the highest price for further delays in remedial action. All countries, but industrialized countries in particular, must act responsibly to reduce the main causes of global climate change.

Defining Globalization of Agrifood Systems

There is a large body of literature on the possible nature and phases of globalization as well as a variety of definitions—from narrow notions that focus on trade liberalization to broader views, albeit still centered on economic aspects (such as the international expansion of capital, labor, and technology flows). It is important to distinguish between two very different features of globalization: the shrinkage of space and time resulting from advancements in transport and communication technologies, and the policy choices of economic and political change. As Helleiner (2001) points out, the former refers to an economic reality and is therefore a fact, whereas the latter refers to human choices. One may also distinguish globalization by its three major

manifestations: first, the multiplication and intensification of economic, political, social, and cultural linkages among people, organizations, and countries at the world level; second, the tendency toward the universal application of economic, institutional, legal, political, and cultural practices; and third, the emergence of significant spillovers from the behavior of individuals and societies to the rest of the world.[2]

Whatever the scope of the definition utilized, an important distinction is between those who consider globalization as an impersonal force (driven mostly from advances in technology and other factors, such as the expansion of population)[3] from those who understand globalization as a policy choice by governments. Of course, the policy implications of emphasizing one interpretation over the other are very different, as well as the assessment of the degrees of freedom governments may have to choose among policy alternatives[4] (see also Chapter 5 and Essay 2). In this book we use the idea of globalization of agriculture and the food system in a broad sense. We would thus see increased globalization in the agrifood system[5]

- when internationally traded foods—be they raw materials or processed—increase as a proportion of production;
- when traded agricultural inputs and transborder investments expand across countries;
- when the science, knowledge, and information content of the agrifood system become increasingly internationalized;
- when standardization and the related regulatory institutions increasingly reach across borders—be they corporate organizations, such as multinational companies, or public organizations, such as the World Trade Organization (WTO);
- when consumers' tastes, and the firms and organizational forms attending to them, show growing similarities across nations and global regions;
- when agrifood systems–related health and environmental externalities have transnational or global effects; and
- when social policies related to hunger and poverty reduction become global.

In view of the diverse implications of globalization along agrifood chains, any simplistic adding up of its effects on development, distribution, and poverty should

be avoided. The globalization of agrifood systems is not easily quantifiable because of the diversity of the processes involved, and because these processes do not always occur concurrently or lead in the same direction. Nonetheless, some aspects can be quantified individually, albeit imperfectly. We look first at the current size and composition of the food market and then at the evolution of some indicators of trade and foreign direct investment (FDI) in the agricultural sector, focusing mainly on developing countries.

Size and Composition of the Food Market

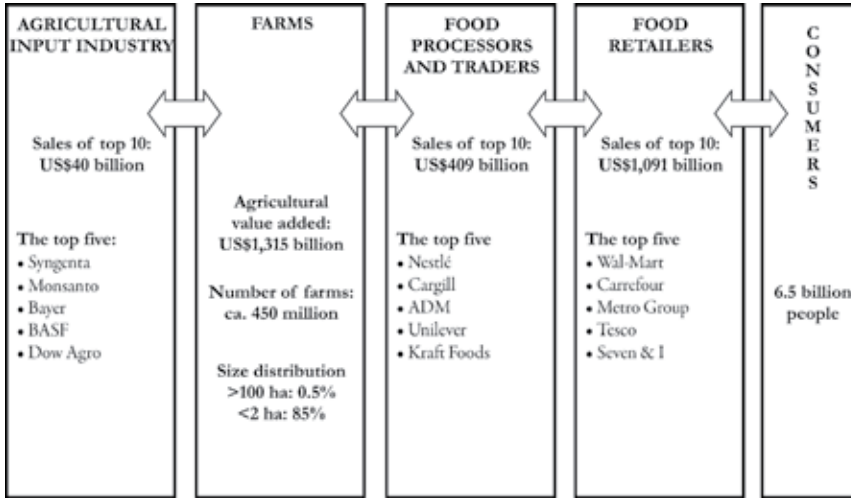
Historically, trade in food and agriculture has been a key driver of globalization. Long-distance trade of salt, spices, and sugar are examples from earlier centuries. The partly colonialist-driven trade in agricultural raw materials in the late nineteenth and early twentieth centuries was a central force in that early globalization episode. Today globalization of the agrifood system has a very different nature: more pervasive and deeper, less driven by raw materials, more service- and technology-intensive, and more integral to economic and societal changes.

Figure 1.2 gives an aggregate perspective of the current global agrifood system. The world population of more than 6.5 billion is served by food retailers (as well as by the restaurant industry and home production, not depicted here); the food processing and trading industry supplies the retail sector while procuring from the farm sector, which in turn is supplied by agriculture input industries. Transactions and trade occur between all these segments, and each becomes more integrated at a global scale, with big players in each of the industries (see the top five in each of the segments listed in Figure 1.2).

The value-added by the farm production sector (that is, revenue minus intermediate costs, not including factors of production) amounted to some US$1,300 billion[6] worldwide in 2003, including both food and nonfood components. Total food commercial sales (a broader concept than value-added in the food sector, but which does not include farm consumption of food products), was estimated at about US$4,000 billion around the same time (Table 1.1; Euromonitor International 2003, cited in Regmi and Gehlhar 2005).

World food sales to final consumers are in turn divided between fresh foods (about US$910 billion) and processed foods (almost US$3,200 billion; Table 1.1 from Regmi and Gehlhar 2005). About 56 percent of these sales take place at retail stores, and the rest occur in food service outlets, such as restaurants and hotels. Although these estimates exclude consumption on farms themselves (which leaves out important segments of food sales in developing countries), they do provide an approximation of the significant size of the food market at the consumer level.

Figure 1.2 The global agrifood business chain, 2006



Source: von Braun (2005), updated.

Table 1.1 Global food sales (US$ billions)

Category	Retail stores	Food service	Total
Fresh food	531	382	913
Processed products	1,762	1,420	3,182
Packaged food	1,148	828	1,976
Beverages	614	592	1,206
Alcoholic drinks	316	422	729
Hot drinks	53	12	65
Soft drinks	245	167	412
Total food	2,293	1,803	4,096

Source: Euromonitor (2003), cited in Regmi and Gehlhar (2005).

The value of processed food sales is currently larger in industrialized countries (about 50–60 percent of total sales, but their population represents only 16 percent of the world total), but growth rates for food sales have been higher in middle-income countries (Regmi and Gehlhar 2005), a growth fueled by increased urbanization and rising incomes in developing regions. For instance, according to the projections of the International Food Policy Research Institute (IFPRI), by 2020, some 85 percent of the world increase in demand for cereals and meats will occur in developing countries (Rosegrant et al. 2001).

Global Trade in Agricultural Products

Table 1.2 shows the evolution of the globalization of agriculture (not the food system comprehensively), as represented by agricultural trade relative to domestic production, using the ratios of trade to agricultural production (import penetration ratio and export orientation ratio) for all agricultural products from 1961 to 2002 for different developing-country groupings.[7] Several points deserve mention. First, production for domestic use constitutes the largest component of agriculture in developing countries as a whole—that is, most of the agricultural production of developing countries is directed to their own markets. Overall, they export and import lower percentages of their production compared to industrialized countries (Díaz-Bonilla 2001).[8]

Second, the levels and trends of the import and export ratios for developing regions differ. Sub-Saharan Africa was the region with the highest initial export orientation during the 1960s but also had the deepest retraction from world export markets: the export orientation ratio stood in 2000–02 at less than half its initial value. The import penetration ratio, on the other hand, climbed from 8 percent at the beginning of the period to almost 14 percent in 2000–02. Asia has the lowest export and import ratios, and both have been trending upward very slowly until the 1980s; world integration has stopped or reversed (import penetration ratio) since then. The region consisting of Latin America and the Caribbean has become the most integrated region in world markets, surpassing Sub-Saharan Africa on both export and import ratios.

In summary, although agricultural integration in the world market (or "globalization") measured by these simple trade ratios appears to have increased for some regions and periods, the process has not been homogeneous across developing countries, with declines in international integration in some cases (such as export ratios in Sub-Saharan Africa for the whole period and imports ratios in Asia compared to the 1980s). Furthermore, local production for domestic utilization is still the dominant characteristic for the agricultural sector of developing countries as a whole. Although the above indicators show modest, rather than dramatic, changes in the integration of developing countries' agriculture in world markets, they may be too aggregated by country[9] and by product to properly assess the impact of globalization at the farm level.

Table 1.3 provides another angle to the issue of the globalization of agriculture by looking at disaggregates of export and import ratios for some of the main food products from all developing countries. Meat products, for which imports and exports represent only about 4 percent of production, appear less integrated with world markets than do cereals or, especially, vegetable oils.[10] In the case of meat and milk products, shelf life, sanitary measures, and trade protection tend to isolate domestic markets in many countries, making these products behave more like nontradables. Additionally, export ratios in meat and import ratios in milk products are currently below their peaks in the past. On the other hand, vegetable oils show a clear pattern of

Table 1.2 Agriculture trade (percent of production)

Region	1960s	1970s	1980s	1990s	2000–02
Export/production					
Latin America and the Caribbean	23.6	24.7	24.5	26.7	31.4
Sub-Saharan Africa[a]	28.5	23.0	17.2	15.3	13.2
Asia, developing	5.4	5.7	6.4	6.4	6.4
All three regions	12.1	11.8	11.3	11.0	11.6
Import/production					
Latin America and the Caribbean	6.7	8.6	11.2	14.0	15.7
Sub-Saharan Africa[a]	8.1	9.4	12.6	12.3	13.5
Asia, developing	7.1	7.7	9.2	8.9	8.8
All three regions	7.1	8.0	10.0	10.1	10.5

Source: Based on data from FAO (2006).

[a]Does not include South Africa.

Table 1.3 Developing countries' exports and imports over production (percent)

Category	1960s	1970s	1980s	1990s	2000–01
Meat					
Imports	1.4	2.4	4.1	4.1	5.4
Exports	4.9	4.6	3.8	3.7	4.4
Milk (no butter)					
Imports	7.7	11.1	15.1	11.5	10.2
Exports	0.3	0.6	0.5	1.2	1.9
Cereal					
Imports	9.3	10.5	14.2	14.7	17.3
Exports	4.7	4.0	4.3	4.7	6.1
Vegetable oil					
Imports	11.4	16.8	27.4	32.0	33.9
Exports	20.4	25.0	33.2	40.1	46.1

Source: Based on data from FAO (2006).

significant and increasing world integration. In general, world trade in processed and high-value goods expanded rapidly during the 1970s and 1980s but has somewhat stagnated since the mid-1990s, even though sales of processed food in domestic markets, both in industrialized and developing countries, has been growing strongly during the past few decades. Also, only 10 percent or so of the US$3,200 billion in sales of processed food products (representing about 78 percent of total world food sales) is traded, with the rest being produced locally, as is the case with agricultural products (Regmi and Gehlhar 2005).

All in all, these simple quantity indicators provide a more nuanced view about the extent and pace of globalization of agriculture in developing countries, which

does not seem to support the common perception of dramatic across-the-board increases in world integration. However, the quantity indicators used above may not capture the extent of integration between domestic and world markets, which may be better assessed by price indicators (Knetter and Slaughter 1999). In comparing the relation between domestic and world prices, at least three issues can be distinguished (each one reflecting a progressively weaker criteria for integration with world markets, or globalization): the ratio of these prices, which is an indicator of protection and subsidization or taxation;[11] whether trends in domestic and world prices are correlated; and whether volatility of both types of prices is correlated. In most of these issues the evidence is inconclusive: although several studies show that for some countries and commodities there is greater integration with world markets in one or more of these dimensions, particularly after the policy reforms of the 1980s, the reverse can also be true, even in the same country but for different commodities (see, for example, Kherallah et al. 2000; Akiyama et al. 2003; Baffes and Gardner 2003; Rapsomanikis, Hallam, and Conforti 2003).

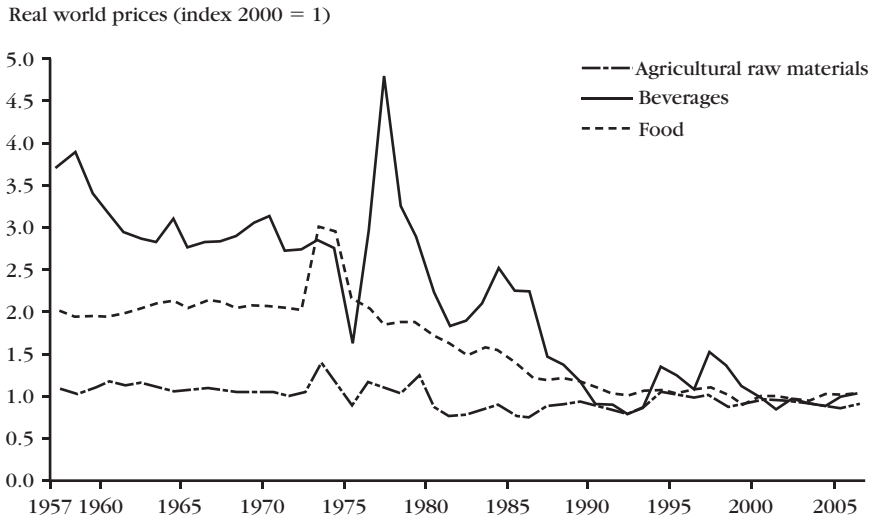
However, greater correlation between domestic and world prices (that is, increased globalization in some sense) may not say much about the effect on agricultural producers in developing countries of greater integration in global markets without looking at the evolution of world prices: the issue then may not be increased globalization per se, but the behavior of the world economy with which developing countries are integrating. In this regard it is important to note that since the second half of the 1980s, real world prices of agricultural products (deflated by the export unit values of industrialized countries; Figure 1.3) declined significantly (partly because of increases in subsidization and protection of agriculture in industrialized countries; see Díaz-Bonilla 2001 and Chapter 5).

World agricultural real prices have remained at a low plateau until recently, putting pressure on farmers worldwide, particularly those from nonsubsidizing countries. For instance, Akiyama et al. (2003) show that for several export commodities in Africa, the adjustments in agricultural and trade policies in the 1990s meant that producers were receiving a larger share of world prices than before (and in that sense producers were more integrated with world markets), but that net income at the producer level may not have improved because of, among other things, the decline in world prices.

So far we have looked at developments in world agricultural trade and prices to assess the extent and pace of the globalization of agriculture in developing countries. However, the process has to be considered in a broader perspective, looking at a host of global interactions with differentiated domestic implications to identify the far-reaching changes and influences on developing countries' agriculture.

Also, the past trends may not be a strong indicator of the future of agricultural globalization. New forces continuously come into play. For instance, the recent energy

Figure 1.3 World prices of agricultural products



Source: IMF (2007).

price increases, which are leading to considerable interest and expansion of investments in biofuel production in many developing countries, are adding a new dimension to the globalization of agriculture through price effects. When more resources (land and water) are diverted to biofuel production, agricultural prices will be driven more by the performance of globally integrated energy sectors—with all their political and economic uncertainty. This example also shows the already strong role of integration through investment, in addition to trade, in world agriculture, a theme to which we turn next.

Financial Integration and FDI in the Agrifood Sector

The level of capital flows has increased significantly in the past decade, suggesting a greater integration in financial markets. In terms of the structure of capital flows, the largest increase has been in FDI and in portfolio investments, whereas bank lending has declined slightly (Prasad et al. 2003). Industrialized countries experienced the largest increase in their ratio of gross private capital flows to gross domestic product (GDP), from approximately 11 percent in 1990 to almost 26 percent in 2003. For developing countries as a whole, the increase was also substantial, from 6 percent in 1990 to 13 percent in 2003 (World Bank 2005; see also Chapter 8). However, this increase happened in cycles and was accompanied by increased volatility of capital

flows to developing countries, generating a series of financial crises during the 1990s and early 2000s. The effects of these financial crises on world agricultural prices, competitiveness, and trade has been substantial (IMF 1999; USDA/ERS 2000; see also Chapter 8).

Within the general trend toward greater financial integration, FDI in the food and agricultural sector has increased in developing countries (including countries under the influence of the former Soviet Union): in nominal dollar value, between 1990 and 2004 FDI stock more than tripled in agriculture and roughly quadrupled in the food processing sector; the share of FDI in developing countries increased from 56 percent of world total FDI stock in agriculture and 13 percent in the food processing sector in 1990 to about 64 percent and 12 percent, respectively, in 2004 (Table 1.4).

Furthermore, FDI in services related to trade activities in developing countries increased from about US$23.4 billion in 1990 (11 percent of total FDI at the world level) to some US$190 billion in 2004 (18 percent of world share), while FDI in hotels and restaurants went from US$3.8 billion (17 percent share at the world level) in 1990 to some US$19.5 billion (24 percent) in 2004. These investments are linked to the expansion of international firms operating in food retail (mainly supermarkets) and food services (restaurants, mainly fast food, and hotels; UNCTAD 2006).

The globalization of food markets through FDI generates production and consumption dynamics that may lead to higher or lower globalization of trade, influencing the trade indicators discussed before in different directions. For instance, some characteristics of consumer-oriented FDI may seem to reduce globalization of agrifood systems from a trade standpoint, when—from the angle of FDI expansion—food firms are becoming more globalized. This divergence occurs because those firms must cater to local consumer needs, which in many cases requires sourcing products locally and/or maintaining specialized processing facilities that take into account local tastes, thus reducing (or at least not expanding) the value of trade flows (Regmi and Gehlhar 2005).

Another factor that shifts the composition of globalization from trade to foreign investment is tariff escalation (Yeats 1974; Lindland 1997; OECD 1997).[12] The practice of imposing high import taxes on processed goods and low or no tariffs on primary products (thus granting higher effective rates of protection to their own value-added) reduces significantly the processing margin of the primary producers, placing agro-industrial production at a considerable disadvantage and strongly tilting the export profile toward raw materials (Balassa and Michalopoulos 1986). This practice shifts processing investments toward the country that has demand for the processed product, leading to trade in lower value raw materials, while the higher value processed items[13] are produced locally. In terms of value, this shift may generate less trade.

Table 1.4 Foreign direct investment stock in the food and agricultural sectors, 1990 and 2004

	1990			2004			
Sector	Industrialized countries	Developing countries	World	Industrialized countries	Developing countries	South-East Europe and Commonwealth ofIndependent States	World
Agriculture,hunting,forestry,andfishing(US$millions)	3,193	4,063	7,256	7,739	14,339	483	22,561
Food, beverages, and tobacco (US$ millions)	64,427	9,612	74,039	238,066	33,337	6,948	278,351
Agriculture,hunting,forestry,andfishing(percentofworld)	44	56	100	34	64	2	100
Food, beverages, and tobacco (percent of world)	87	13	100	86	12	2	100

Source: Based on data from UNCTAD (2006).

Yet another trend to be considered is the expansion of food sales and services linked to hotels and restaurants and to the increased presence of supermarkets in developing countries. In this volume, Reardon and Timmer (Chapter 6) explain the explosive expansion of supermarkets in the early to mid-1990s in middle-income countries in South America and East Asia (what they call the "first wave"), where the average share of supermarkets in food retail went from roughly only 10–20 percent at the beginning of the 1990s to 50–60 percent by early in this decade. The point considered here is that retailers and food services add value to food through economic activities that, by their own nature, are nontradable. It may, however, lead to more trade in some commodities, such as fresh fruits and vegetables, when supermarkets put together a year-round supply chain.

In summary, the expansion of FDI in the agrifood system may not necessarily lead to a large expansion of trade—rather, the opposite may be the case. Therefore, the trends in quantitative indicators of trade discussed in the previous section may not detect the main channels through which globalization affects the agrifood system in developing countries. In fact, Reardon and Timmer (Chapter 6) argue that trade liberalization has not been the only factor, and probably not even the most important one, by which globalization has changed agrifood systems in developing countries since the 1990s. Instead they see fundamental restructurings of domestic food markets that were linked to changes in the processing, retail, and food service segments. These changes were in turn influenced by an increase in FDI in upstream markets, when financial markets were liberalized in many developing countries during the 1990s.

Agricultural Performance in Developing Countries during Globalization

In view of all these changes during globalization, how did agriculture perform? The agricultural performance of developing countries is uneven across regions and decades (Table 1.5). Sub-Saharan Africa had high total growth rates in the 1960s, which declined significantly in the 1970s and recovered during the 1980s and 1990s—only to drop again in the early 2000s. Asia has maintained higher total growth rates, but they declined in South Asia during 2000–04, pulling averages down. Latin America and the Caribbean has sustained total growth rates at around 3 percent except during the 1980s. Agriculture in transition economies collapsed in the 1990s during the transformation of the planned economies of the former Soviet Union and Eastern Europe. The movements in per capita agricultural rates reflect the declines in population growth in developing countries.

The simple presentation of growth statistics does not, of course, capture causality regarding the role of globalization. Many factors of political and economic changes

Table 1.5 Agricultural and food production growth, total and per capita, 1960s to 2004 (percent per year)

	1960s	1970s	1980s	1990s	2000–04	1962–79	1980–2004
Total							
Africa, developing	3.4	1.2	2.9	3.4	1.5	2.2	2.9
Sub-Saharan Africa	3.3	1.1	2.9	3.3	1.4	2.1	2.8
Asia, developing	3.0	3.1	4.1	4.1	2.9	3.1	3.9
East and Southeast Asia	3.1	3.8	3.4	2.7	3.0	3.5	3.1
South Asia	2.1	2.4	3.9	3.0	1.3	2.3	3.1
China	4.1	3.5	4.8	5.7	4.1	3.7	4.9
Latin America and the Caribbean	3.1	3.1	2.7	3.1	3.0	3.1	2.8
Transition markets	2.5	1.9	1.1	–3.9	2.6	2.2	–0.5
Developing countries	3.1	2.8	3.7	3.8	2.8	2.9	3.5
Industrialized countries	2.2	2.2	0.6	0.0	0.9	2.2	0.6
Per capita							
Africa, developing	0.8	–1.5	0.0	0.9	–0.8	–0.5	0.2
Sub-Saharan Africa	0.7	–1.7	–0.1	0.6	–1.1	–0.6	0.0
Asia, developing	0.6	0.9	2.1	2.5	1.6	0.8	2.1
East and Southeast Asia	0.6	1.5	1.4	1.0	1.6	1.1	1.3
South Asia	–0.2	0.1	1.6	1.0	–0.4	0.0	1.1
China	1.6	1.5	3.3	4.5	3.4	1.5	3.7
Latin America and the Caribbean	0.4	0.6	0.6	1.4	1.5	0.5	1.0
Transition markets	1.4	1.0	0.3	–4.0	2.8	1.2	–0.8
Developing countries	0.6	0.5	1.5	2.0	1.2	0.6	1.7
Industrialized countries	1.1	1.3	–0.2	–0.5	0.6	1.2	0.0

Source: FAO (2006).

that influenced agricultural growth were at work in the different world regions during these decades. However, a few observations based on these figures may be useful. First, since the 1980s (which many consider the period of increased globalization), agriculture grew faster in developing countries compared to the average of the 1960s and 1970s, both in the aggregate (3.5 versus 2.9 percent) and per capita (1.7 versus 0.6 percent; see the last two columns in Table 1.5). Second, growth of agricultural production in developing countries since the 1980s also surpassed that in industrialized ones, both in the aggregate (3.5 versus 0.6 percent) and per capita (1.7 versus 0.0 percent; see the last column in Table 1.5). Third, looking at individual regions, agricultural growth per capita also accelerated in all developing-country regions during 1980–2004 compared to 1962–79 (on average); the picture is mixed for per capita

growth rates when 1962–79 is compared to 2000–04 (compare the bottom and top halves of Table 1.5). These trends do not seem to indicate that the developing countries have been, in general, "losers" of the globalization of agriculture, if the years since the 1980s as a whole are considered as the reference period. However, it is also clear that there was some deceleration in the first half of the 2000s. The more challenging questions are whether the changes in agricultural growth were actually related to globalization and whether such agricultural growth has been pro-poor. The next sections look at links among globalization, agriculture, and poverty in greater detail, drawing mainly from the rest of the chapters in this book.

Implications of the Globalized Agrifood System for Development and Poverty

As a result of the globalization processes, the world food system has experienced significant transformations since the 1980s. These changes can be summarized as follows:

- Innovation has accelerated, with the private sector and civil society becoming more engaged in agricultural research and development (R&D), which in turn has induced fundamental changes in the global innovation system.

- Small farmers are being immersed in more commercialized agrifood systems nationally and globally.

- Markets and retail industries are displaying important changes in trade and are defining the emergence and evolution of a global agrifood chain.

- Consumers in industrialized and developing countries are becoming a driving force for changes in the global food system, beyond their domestic markets.

This section reviews each of these major changes and gives a preview of the related chapters that address these developments and their implications. Moreover, policies and institutions are evolving at global and domestic levels and a large number of new players are shaping the globalization process of agrifood systems, and that evolution is described, too. Chapter 2 provides details on globalization–poverty linkages using a conceptual framework that traces drivers of globalization via domestic policy, institutional and market responses to community, and household poverty outcomes.

A Changing Environment for Innovation and Information

Agricultural R&D in the past has been essential to enhancing agricultural productivity, ensuring food security, and advancing economic growth in many developing countries. For instance, technological progress achieved during the Green Revolution enabled the development of high-yielding crop varieties, which in turn brought about direct benefits to consumers in the form of lower food prices and indirect benefits to landless farmers in the form of increased employment opportunities (Chapter 3). More recently, the agrifood system has become increasingly science-driven, and research and innovation have become even more vital for productivity increases along the whole food chain. The agricultural research environment has also experienced considerable change in recent decades. Chapter 3 and Essay 1 review these changes and explore the implications for poverty reduction and food security.

Pinstrup-Andersen and Mengistu (Chapter 3) highlight three trends. The first two—the growing level of involvement of the private sector in industrialized nations in agricultural R&D and the increasingly proprietary and competitive research environment—are driven by the introduction of intellectual property rights (IPR) protection for plant varieties and biotechnology products. The third trend is the slowing down of public-sector research expenditure in both developed and developing countries.

The main argument behind the extension of IPRs to plant varieties is to provide an incentive for the private sector to invest in agricultural R&D: if private firms are given exclusive rights to their innovations for a limited time, it would enable them to recover their R&D investment costs and to generate profits in the short-run. This recoupment should in turn encourage more spending on R&D that would, in the long run, be beneficial to society as a whole. The WTO's Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, which requires that each member country of the WTO give "minimum levels of protection" to other members' intellectual property, further extends these exclusive rights across the globe, giving companies even more incentive to innovate.

However, this rationale has been subject to intense debate. At the most basic level, IPRs have been criticized as constraining the amount of innovation, because the potential of extracting profits induces firms to concentrate on filing for new patents on minor improvements to previous innovations, to the detriment of sharing and applying significant new innovations. Additionally, as the drive toward patenting each step of the innovation process intensifies, the free flow of information among researchers, which is essential to new innovations (as the latter often advance or improve on existing ones), is being curtailed. Moreover, as the number of patents accorded multiplies, the IPR system is becoming more sophisticated and costly, concentrating

patents in a few large global firms and making them inaccessible to parties that do not have the know-how and resources to file for new patents and enforce their IPR (Macdonald 2001). On the global level, there is some contention that TRIPS may be highly unjust, as developed countries, where the majority of patents are awarded, historically did not abide by any type of global IPR protection when they began industrializing (Drahos and Mayne 2002).

The risk here is that this trend could not only increase corporate control over seed production and distribution, potentially creating monopolistic market structures (Boyle 2003), but also, in the context of falling public investment in agricultural R&D in developing countries, may increase the already large knowledge gap between industrialized and developing countries (Chapter 3). A related risk is that because of the shift of industrialized-country consumers on food safety and environmental issues, agricultural R&D in industrialized countries is tackling these topics, meaning that the larger part of agricultural R&D may become less pertinent to the requirements of developing countries. Pinstrup-Andersen and Mengistu (Chapter 3) emphasize the need to revisit international research priorities and implement participatory approaches to research, involving national, regional, and international research institutions as well as the private sector and farmers themselves.

In Essay 1, Swaminathan discusses the agricultural research environment in the context of the rules that govern intellectual property. He calls for the revision of TRIPS to be compatible with the equity and ethics provisions of the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture. More specifically, he calls for compulsory licensing of rights for inventions of great importance to food and health security, and for benefit sharing with the primary conservators of genetic resources and holders of traditional knowledge. He also proposes the establishment of an International Patents Bank for Poverty Eradication and Sustainable Development within the United Nations, which would encourage scientists all over the world to share their inventions by registering their patents there to make them available for the public good. Another proposed solution to the increasing knowledge gap between developed and developing countries may be differentiated IPR rules within the WTO, at least in the short-to-medium run, to allow developing countries to set up the legal infrastructure needed to implement well-functioning IPR systems (Essay 3). In particular, Ahluwalia, in Essay 3, makes the case for the revision of TRIPS to provide more flexibility for developing countries coping with public health emergencies.

The global market integration processes discussed earlier would be impossible without the revolution in information and communication technologies (ICTs). Indeed, as summarized by Muhammad Yunus (2006, xix), ICT "connects everybody and everything at a very basic level, and it is borderless, timeless, and best of all, almost

costless. With all these attributes combined, ICT has enormous potential to create a new human society, and a new civilization." In the next chapter, von Braun looks at how advancements in ICTs have shaped the globalization of agrifood systems, focusing particularly on the effects on poor rural households. Many of the national telecommunications monopolies in developing countries were privatized in the 1980s and 1990s, introducing them to competition, and this stimulus, combined with ongoing technological change, prompted the development of new services in some developing countries, manifested especially in the exponential increase of cellular telephone penetration in poor countries. But this increase has not occurred in all countries; in some, the stimulus is taking effect slowly and erratically. Within countries, the inequality is even greater. Von Braun finds that even though access is still very restricted in rural areas, ICTs have had an important positive effect on rural households. Indeed, the potential benefits of ICTs include:

- economies of scale that stimulate network building and consequent spillover benefits;
- greater inclusion of individuals within networks and, even more important, increased diversity of participants by overcoming the barriers of physical distance and social standing; and
- facilitation of faster, more efficient, and ultimately better decisionmaking in all fields of endeavor, especially the integration of markets through interactive communication unhindered by distance, volume, medium, or time.

Von Braun stresses that access to information through ICTs is a question not only of connectivity but also of capability to use the new tools and relevant content provided in accessible and useful forms (Torero and von Braun 2006). Connectivity has been a priority, as a prerequisite for capability and content, but given the speed at which technologies can evolve—unconstrained by overly restrictive licenses and global patenting—costs could fall significantly, facilitating adoption. He concludes that policymakers should not overlook the need for all three "Cs" (connectivity, capabilities, and content) to progress in tandem.

Increasing Commercialization of Small Producers

Technological progress, improvements in infrastructure, and the creation of markets are facilitating the commercialization of traditional agriculture. In addition, demographic changes, such as population growth and increasing urbanization, are contributing to further commercialization (von Braun and Kennedy 1995).

In Chapter 4, Narayanan and Gulati look at the effect of globalization and more specifically the commercialization of agrifood systems on smallholders. They note that there are significant differences in the level of integration of smallholders across regions and that the effects vary. They argue that globalization, and trade liberalization in particular, could adversely affect smallholders who are net sellers of food in inefficient sectors (or in sectors where a country does not have a competitive advantage, given the trade environment and other nonprice factors). Net buyers of food working in efficient sectors in exporting countries may also face adverse circumstances if food prices go up. These smallholders can shift to other crops or livestock activities, or look for jobs elsewhere, even leaving agriculture. For instance, smallholders who have been able to successfully switch their production to high-value agriculture have gained from globalization. However, alternative choices outside of agriculture may not always be available, while deteriorating environmental conditions and low productivity gains in some resource-poor regions offer few options to shift cropping patterns.

Narayanan and Gulati observe that the winners have been smallholders who have either vertically integrated with agribusinesses (exporters or otherwise) or have devised institutional innovations (such as cooperatives or farmer companies) for collective action. Thus, it seems that greater vertical coordination with agroindustry (which can be enhanced through cooperatives, contract farming, and/or clustering) facilitates participation of small farmers in the growing processed-food trade, particularly in meeting food safety and quality standards. Also, smallholders who had access to better physical infrastructure and credit and/or those who have benefited from capacity-building activities by the public sector, private industry, or international cooperation managed to integrate successfully. Conversely, those who have failed to capitalize on the opportunities opened up by globalization or have been adversely affected were farmers who were poorly endowed in terms of natural resources, assets, and infrastructure. They lack access to markets for output, input, and land, as well as credit and insurance, and they have limited alternatives for off-farm employment, including agroindustries or other activities, in rural and urban areas. The authors note that conditions regarding these variables differ across developing regions, with Africa suffering from serious structural and institutional constraints.

Another issue that Narayanan and Gulati highlight is that in large parts of the developing world, especially Asia and Africa, average farm size decreased further in the past two decades (with average farm size in both regions reduced to about 1.5 hectares). This reduction poses a growing challenge for connecting farms to the processing and retail industries, both of which show the opposite trend of increasing size. Moreover, the growing scale of operations and recent trends in mergers both globally and nationally have drawn attention to problems with monopolistic competition all along the agrifood chain. The authors suggest that in this context, domestic policy

and legislation (such as antitrust laws) may have to be established to govern monopolistic structures (see also Essay 2), while making sure that these instruments do not constrain the growth of the agribusiness sector in developing countries. And, as developing-country governments may not have the resources to invest in the required infrastructure, institutions, and capacity-building programs to facilitate smallholders' access to markets, industrialized countries can play a role by providing financial and technical support for these endeavors.

Changes in Trade and Domestic Markets: Toward a Global Agrifood Business Chain

The evolution of world and domestic food markets has important effects on growth, rural development, and poverty alleviation in developing countries. Trade and agricultural policies, which are influenced by multilateral, regional, and bilateral agreement, provide a general framework for the operation of those markets. The negotiations within WTO and a variety of regional trade agreements are redefining the parameters for trade and agricultural policies. In addition to these public-sector rules, trade patterns and the possibility of rural development and poverty alleviation will also be influenced by changes in the private rules (such as quality standards) that shape the operation of markets. Watkins (Chapter 5), Murphy (Essay 2), and Reardon and Timmer (Chapter 6) address these different aspects of public-policy and private-market changes.

Watkins discusses the agricultural trade and domestic farm policies of industrialized countries and their adverse effects on developing ones and on poor rural households (these are also mentioned in several other chapters). He notes that the United States and the European Union dominate global markets for a wide range of commodities, such as meat, dairy, sugar, and cereals, which they also subsidize or protect heavily. He argues that the subsidies and protection, besides benefiting mostly a small percentage of farmers who are already relatively rich while hurting small farmers and the environment in industrialized countries, have important negative implications for developing countries. Indeed, subsidies and protection artificially depress world prices for staple food producers and may drive them out of their own domestic markets, undermining incentives for agricultural investment, creating additional employment problems in rural areas, and promoting dependence on imports (with food imports representing significant foreign exchange costs in many low-income countries). And, according to Watkins, the potential welfare gains for consumers from lower prices, when viewed in a broader context of poverty reduction, may not compensate for the negative effects. Further, as a result of these industrialized-country practices that insulate their producers from world market trends, world prices may become more volatile. Finally, these practices also restrict market access for exports, denying opportuni-

ties for poverty reduction in developing countries by limiting opportunities for livelihood diversification and reducing incentives for investment in developing countries. The points highlighted by Watkins in his criticisms of industrialized countries' agricultural policies are crucial and have been ignored by some studies (see, for instance, Panagariya 2004), which argue that they benefit some poor countries as consumers. These studies often tend to take short-term and static views of the effects of such policies (see a more detailed discussion in Díaz-Bonilla, Frandsen, and Robinson 2006).

Watkins also warns about redefinition of subsidies that maintain substantial support for agriculture in rich countries. In particular, he criticizes so-called decoupled payments that are not truly trade neutral, to the extent that they provide liquidity that can be utilized to finance investments that increase production and shield farmers against risk, which also supports investment and production. Therefore, Watkins argues that their exclusion from future WTO disciplines may negatively affect developing countries. He calls for the progressive elimination of direct and indirect export subsidies in industrialized countries (such as the implicit subsidies and nominally decoupled support measures for production levels that exceed domestic demand).

He also recommends the recognition of the special status of developing countries, and, where necessary, he argues that they should be allowed to protect their food systems through tariffs and quotas for purposes of rural poverty reduction and food security, even when all market distortions caused by developed-country subsidies are removed. He suggests two ways of building these provisions into the world trade system rules within the WTO; either introducing a "development box," under which food security would take priority over liberalization commitments, or a special safeguards provision, to be used in the case of market shocks, such as a fall in import prices or a surge in imports. Although some of these measures may be needed to shield vulnerable subsistence farmers from catastrophic shocks, other studies have cautioned that they need to be carefully designed to avoid becoming protectionist devices that ultimately hurt the poor (to the extent that protection is mostly a privately collected tax on food). Usually, protecting the income of the poor rather than protecting a crop is better for poverty reduction and equity (see Díaz-Bonilla, Diao, and Robinson 2006).

Murphy (Essay 2) highlights the noncompetitive nature of world and domestic markets as the main basis for her conclusions about the negative effects of current agricultural trade rules (specifically, the Agreement on Agriculture [AoA] of the WTO) on developing countries and the poor. Murphy suggests that the problem with the AoA goes beyond the lack of political will to implement the agreement or the capacity of rich countries to create exceptions to the rules for themselves. She believes that even if industrialized countries ended direct export subsidies and ceased

all payments to farmers, and if all countries established duty-free market access for all agricultural products, food security or decent livelihoods for those depending on agriculture would not be ensured. This failure is because (1) the AoA does not take into account that food is a basic human need and right, (2) market distortions persist in many countries, and (3) horizontal and vertical integration of the agrifood system is making the system less competitive.

To correct for the distortions in world trade, Murphy proposes the creation of a multilateral working group to discuss competition issues specifically related to international agricultural trade. She also highlights the need to document transnational agribusiness to better understand its global market reach, and to continuously evaluate the sources of market distortion, whether public or private, including the selling in world markets at prices below the cost of production prices (plus a reasonable profit). This discussion raises implicitly the issue of appropriate organizational arrangements for competition policies, such as forming a global agency or strengthening formal networks of national competition and antitrust agencies. Efficient functioning of the global agrifood system may well need such a policy framework in the future.

Murphy and Watkins focus their discussions on the public rules of world agricultural trade system and its uncompetitive nature, but Reardon and Timmer point out in Chapter 6 that although public attention is focused on public standards and market policies (such as those of the WTO), there has been a rapid rise in private standards that have reshaped markets in developing countries. In particular, Reardon and Timmer look at what they call the "supermarket revolution." The transformation of the retail sector, with multinational corporations as its key players, has important implications for consumers and farmers in developing countries. The authors find that consumers across the globe have benefited from the highly competitive supermarket supply chain. Indeed, multinational corporations have used their market power to drive down costs and, because the whole system appears competitive (or at least contestable), they have transmitted the savings to consumers through lower prices while supplying higher quality goods. However, these competitive pressures have resulted in increased pressure for farm producers to supply larger volumes of higher quality goods at lower prices. Nonetheless, this pressure has not meant the widespread exclusion of small farmers. Chapter 6 cites studies showing that, under certain circumstances, small farmers are well represented in procurement systems of large-scale agroprocessors and supermarket chains, particularly in fresh food items, such as fruit and vegetables, although they tend to operate at higher levels of physical, human, and organizational capital within that group (see also Chapter 4).

Reardon and Timmer also note that the rise of supermarkets, which took decades in industrialized countries, has occurred much faster in developing countries, making the adjustment pressures for farmers, processors, wholesalers, and traditional small-

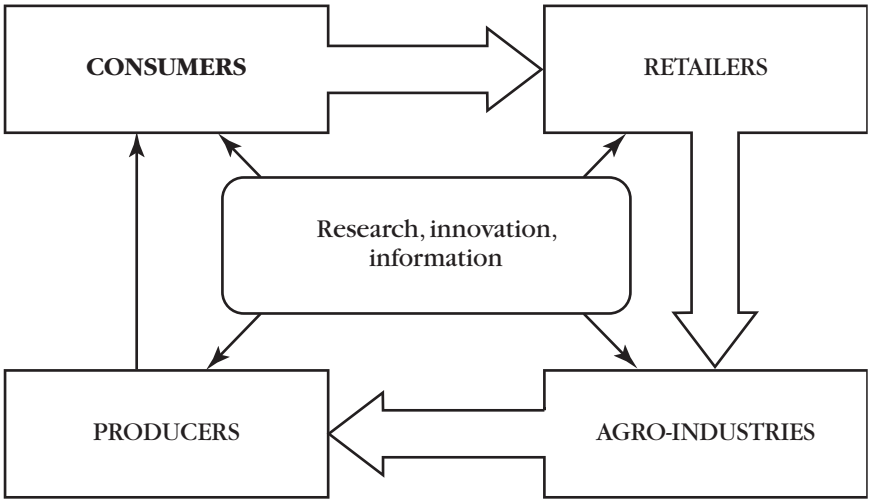
scale retailers more severe. It has been a transformation led by multinational corporations, including global retailers and food manufacturers, which are increasingly dominant in the global food supply chain. Echoing in part the issue of imperfect markets mentioned by Murphy, Reardon and Timmer highlight the need to pay attention to the relative power of price determination between supermarkets and processors and to explore price formation in oligopsonistic or oligopolistic settings.

Reardon and Timmer highlight that instigating market-oriented development assistance programs now means dealing with multinational companies. Thus, they urge the development community to reorient development programs and researchers to this fundamentally different reality. More specifically, although supporting export markets remains a key policy objective, focusing development programs on supermarkets is becoming increasingly vital, as in many cases the "supermarket market" is growing much faster than the export market. In fact they note that according to some calculations, supermarkets in Latin America buy 2.5 times more fruits and vegetables from local producers than do all exporters of produce in that region. However, they warn that structuring development programs in this way to help small farmers would not be easy because of the variety of circumstances in the development world.

Consumer-Driven Agrifood Systems

The global change in agrifood systems was until recently largely driven by middle- to high-income consumers in high-income countries, but in recent years consumers in low-income countries have joined the driving forces of change. With rising incomes, along with the greater availability of a variety of foods, consumers in high-income countries have increasingly become specific in their demands for higher quality and safety of food products, and they are also increasingly concerned about other attributes, such as animal welfare and the long-term environmental effects of current food production processes. Greater food safety concerns in industrialized countries, in the wake of animal health problems, such as mad cow disease and avian bird flu, have also played a role, as have the risk perceptions around genetically modified organisms. Such concerns are leading to more demands for publicly mandated or privately supplied labeling and to a greater emphasis on quality control and assurance schemes, with requirements for traceability. Generally, the growing consumer influence in the agrifood chain has led to the reorganization of food chains, including supermarkets and agroprocessors, with the power shifting to the consumer, as discussed by Reardon and Timmer in Chapter 6. More specifically, producers are going beyond their traditional focus on increasing output through productivity and efficiency gains to respond to these consumer needs by implementing, monitoring, and enforcing production methods to ensure food quality and safety, leading to standards stricter than legal ones

Figure 1.4 Consumer-driven agrifood systems



Source: von Braun and Mengistu (2004).

(Variyam and Golan 2002; Lang 2004). Narayanan and Gulati in Chapter 4 analyze the challenges these developments present for small farmers in developing countries.

Additionally, producers are trying to address consumer demands through investments in technological innovations, making all elements of the consumer-driven agrifood system increasingly affected by innovation (Figure 1.4). This trend, along with its implications for the poor in developing countries, is explored in more detail by Pinstrup-Andersen and Mengistu in Chapter 3.

There may also be pressures to move in the opposite direction, with the globalization of food markets shaping consumers' habits in developing countries. In Chapter 7, Hawkes looks at these linkages and discusses the implications for health and nutrition. While others have maintained that the increased differentiation brought about by globalization promotes good diet quality through greater diversity and perhaps lower prices, she argues that the process has led to a bifurcation of consumption habits, where poor diets among low-income groups predominate (based on mass consumption of low-quality vegetable oils, fats, and sweeteners), but a small niche market of healthy food products exists. In her view, this nutrition transition in developing countries is leading to low-quality diets associated with rising rates of obesity and diet-related chronic diseases, such as heart disease (more people now die of heart disease in developing countries than in industrialized ones), diabetes, and some cancers.

Low-quality diets are also associated with undernutrition in the form of micronutrient deficiency, which in turn lowers immunity to infectious diseases.

According to Hawkes, the changes in diets are influenced by globalization both through the associated changes in incomes and lifestyles and through alterations of the nature of agrifood systems, which modify the quantity, type, cost, and desirability of foods available for consumption. She looks at three cases that highlight channels of influence linked to global trade (liberalization of markets for vegetable oils in Brazil, China, and India), FDI (financial liberalization and U.S. agrifood investments in Mexico under the North American Free Trade Agreement [NAFTA]), and advertisement and promotion (increased consumption of oils, meats, and sweeteners along with the creation of niche health markets in Thailand).

She finds reasons for concern about the effects of market integration for the diets of the poor, although recognizing that the links between globalization and diet are complex, and that there are positive and negative implications for diet change. She also notes that although the mechanisms are operating globally, their effects depend on the specific contexts: the same globalization processes will have different outcomes for people at risk from undernutrition relative to those at risk from overnutrition, for urban compared to rural populations, and for the poor relative to the rich. Additionally, she suggests that normal business practices fostered by national and global market liberalization policies could be facilitating the uneven development of dietary habits. She highlights the risk that poor consumers are more susceptible to adopting unhealthy diets relative to wealthier consumers, who are better educated and have access to more resources and information. She therefore argues for upstream changes in the global marketplace, aimed at widespread improvement in diet quality, which would require stronger policy responses than just consumer-oriented policy options (such as education and nutrition labeling) and that also go beyond the health food sector. She points to the need for cross-sectoral response within a broader set of policy arenas involving all relevant disciplines.

Evolving National and International Policies and Institutions

In the previous section we discussed different issues, following the sequence of agrifood production, processing, marketing, and consumption, as in Figure 1.1. Here we move to the more general policies and context for the agrifood system. Such context is complex:

- The shaping of international policy is increasingly polycentric, involving more than just governments of developing countries on the one hand and multilateral and bilateral donors on the other. International institutional arrangements for the

management of public goods (rights and natural resources), for IPR, and for trade have an increased prominence.

- Formal and informal networks, such as civil society organizations (which include such positive agents as credit cooperatives), parliamentary groups, social institutions, global virtual networks and forums, and anticorruption networks play an increasingly important role.

- Transnational corporations and institutional capital investors are extending their influence around the world through worldwide strategies for production, investment, and marketing.

The interactions among these actors may determine the need for regulations at the global level (such as the missing international competition policy), national levels (for instance, the management of short-term capital flows), or local levels (protection of cultural assets). They also affect the role of the state and the international community in supplying public goods, including those that are particularly significant for food security (such as infrastructure, agricultural research, education, social security programs, rule of law, and peace). Both of these sets of feedbacks often find small farmers and the rural poor in a weakened political position. But there are also opportunities that may arise from an increased freedom to operate, as market-oriented forces open up political space. Many more countries have meaningful political participation and democratic elections at the central and local level than in the 1960s and 1980s (see Chapter 8). For those individuals engaged in agrifood systems and the farming sector, elections at a decentralized level may be more relevant than central government elections in view of the special nature of agriculture. Decentralization and democratization, including of rural populations, have paralleled globalization.

These complex interactions are addressed in this section—particularly whether globalization has affected governance at the national level and whether it has affected the likelihood of conflicts. In addition, because the net effect of globalization trends on the poor depends on a variety of political, economic, and social factors specific to the circumstances of each country, the role and responsibility of national governments in ensuring food security and fostering pro-poor growth are discussed.

General Macroeconomic and Development Policies

Adequate development and macroeconomic policies at the national level, along with pro-poor policies at the international level, are also crucial to ensure that globalization helps the poor. Aziz (Essay 4) and Ahluwalia (Essay 3) debate the problems of the international trade and financial environment and discuss different domestic macro-

economic and development policies, emphasizing the need to balance the forces of globalization to include the poor.

In Essay 4, Aziz focuses his attention mainly on the international arena. He finds that the present trading and financial systems do not provide a level playing field for developing countries and poor people; aid flows and debt relief are not only inadequate but also poorly targeted to address poverty problems, and the policy prescriptions of multilateral institutions are generally inappropriate. Industrialized countries, which encourage the international financial institutions to put pressure on developing countries to pursue certain economic policies, do not practice what they preach (as in the case of protectionism in agriculture and textiles). He also condemns the disingenuous approach of industrialized countries that have created laws and institutions to address the inherent inadequacies in their domestic market (for example, laws against monopolies, taxation and social security to protect the weak and assist the poor), but at the global level, refuse to recognize that developing countries need similar compensating mechanisms and polices. Aziz calls for recognition of the role of governments: even accepting the superiority of the market system in determining resource allocation and prices, the state must play a significant role in protecting the rights and supplying the needs of the weaker and poorer segments of the population.

Aziz highlights the weakness of the Bretton Woods institutions (the International Monetary Fund [IMF] and the World Bank), particularly in the case of poverty reduction strategies that are being adopted by developing countries under their guidance. These strategies are not enough, as they focus primarily on stabilization policies (accompanied by social safety nets or targeted interventions to counter any negative fallout from these strategies on the poor) in the expectation that lower budget deficits and inflation will automatically lead to higher investment and growth. Aziz urges the international economic institutions to modify their free-market philosophies, which impose a standardized policy to achieve macroeconomic stability by reducing government spending, raising utility charges, and eliminating all subsidies. According to him, this policy results in a degree of economic liberalization in trade and financial sectors that is inconsistent with the institutions and regulatory mechanisms of the country concerned, thereby imposing heavy economic and social costs. He suggests that the focus should rather be directly on improving the incomes of the poor through mainstream interventions in the growth process and through policies that benefit the poor substantially rather than marginally—for instance, by focusing on sectors in which the poor earn their livelihoods (such as agriculture, small-scale irrigation, and livestock) and by relying on those factors of production they possess.

Ahluwalia, in Essay 3, looks mainly at domestic macroeconomic and development policies. She argues, on a somewhat different note from Aziz, that policymakers in developing countries have to prepare their economies to compete in the global

marketplace. This process, according to her, often requires market-oriented reforms, sound macroeconomic policies, and—at the same time—adequate safety nets for those who are adversely affected, particularly the poor. She emphasizes the need for the public sector to focus on improvements in economic and political governance, resource mobilization, human capital accumulation, empowerment of the poor, and creation of an investment climate in which the private sector can help generate higher growth. Reforms in infrastructure and the financial sector are especially important for building a healthy investment climate for growth, as are policies and institutions that encourage R&D. At the macroeconomic level, it is important to have realistic tax rates, a very good tax administration, and an emphasis on quality for government expenditures, coupled with monetary policies that make sure that the gains in competitiveness attained through policy reforms are not eroded by high inflation rates.

Ahluwalia urges a greater engagement in international trade and trade negotiations, but cautions about a hasty or badly sequenced opening of the capital account. She adds that developing-country governments need to cut unproductive and wasteful expenditure, and concentrate on quality, which entails improving delivery of public goods and services.

In terms of the role and responsibilities of the international community, Aziz argues for the need to implement many ideas for innovative sources of financing development that have been under discussion for a long time (such as the proposal for a carbon tax on petroleum consumption, some form of the Tobin tax, and the idea of generating revenues from global commons like seabed mineral and fishing rights). Ahluwalia recognizes the need for increased aid but also urges industrialized countries to open up their trade barriers to developing countries, so as to enable them to fully exploit the new opportunities offered by globalization.

Roles and Responsibility of National Governments in Ensuring Food Security

Paarlberg (Essay 5) discusses further the general governance and policy conditions at the national level. He argues that the causes of poverty and food insecurity are highly localized. Because the causes of poverty and hunger are local rather than global, he argues that national governments have the chief responsibility for combating hunger and poverty. He considers that the greatest governance deficits are still found at the level of the nation-state: in countries where national governments have performed well in the developing world, hunger has been reduced significantly; in those with serious hunger problems, improving governance at the national level should be now the highest priority. Paarlberg argues that although democracy helps, good governance must also be measured at a more basic level: whether a government is providing basic public goods (such as internal peace, rule of law, and public investment in infrastructure and research) to all of its citizens, including those in rural areas. International organiza-

tions and donor countries should do more to help governments in poor countries finance rural roads, health and education services, and public agricultural research. He finds these investments much more important than concentrating on loans to governments in return for promises of market-oriented policy reforms. What is important is assistance for more tangible investments in doctors, clinics, teachers, schools, scientists, laboratories, irrigation maintenance, electricity, and roads.

He concludes that the localized causes of hunger are not linked in any convincing way to globalization: those countries that are most food insecure (located mainly in South Asia and Sub-Saharan Africa) still feature relatively weak connections to the international markets and private investment flows that define modern globalization. In his view the effect of globalization on food security is positive but is fairly weak, and globalization is not likely by itself to end hunger: he notes that if a poor country with high rates of illiteracy and disease, inadequate railroads, a high incidence of ethnic conflict, unstable government, and no rule of law decides to open its borders to trade and foreign direct investment, the results will be disappointing. Paarlberg considers that for poverty alleviation and food security it is better to modify the motto "think globally and then act locally" to "think locally and then act nationally."

Considering possible interventions by the international community, Paarlberg makes two main points. First, he notes that international laws and norms on state sovereignty have traditionally restricted external intervention in the domestic affairs of other states, even when those states fail to provide their own citizens with basic public goods (which reinforces his conclusion that good governance at the national level is of paramount importance if a country is to achieve food security and poverty reduction). Second, Paarlberg contends that, although improved governance at the global level is often called for, there are solid organizations operating at that level—for instance, the famine early warning and emergency food-aid system (through the World Food Programme) and international agricultural research (through the Consultative Group on International Agricultural Research [CGIAR]). He nevertheless suggests that international organizations and donor countries should do more to help governments in poor countries finance rural roads, health and education services, and public agricultural research.

These policy and institutional suggestions, as well as those mentioned in other chapters, raise a number of questions about the role of national governments and their room for maneuver under globalization. This topic is discussed next.

Governance of Food and Agriculture under Globalization

Some analysts ask whether nation-states may be losing relevance as policy and institutional centers for the advancement of their citizens' welfare, as a result of globalization. In Chapter 8, Díaz-Bonilla reviews some of the discussions of how globalization

may be shaping the way governments design and implement policies and the possible effects on the agricultural sector and the poor. He looks at the effects of globalization on two dimensions of governance: first, on government's responsiveness to the needs of the people; and second, on government's effectiveness in the design and implementation of policies and programs, particularly those in support of rural and agricultural development.

The first aspect (responsiveness) is linked to institutional improvements, such as the advance of democracy, transparency, and the rule of law. Díaz-Bonilla shows data that document the advance of democracy in developing countries, particularly since the 1980s, and reviews different studies that tried to assess the links of those developments to globalization. The conclusion is that globalization, particularly in the form of increased information and communications, seems to have been associated with more open and democratic societies, which should be good for the poor.

On governments' effectiveness responding to the needs of their citizens in a more globalized economy, Díaz-Bonilla looks at some of the arguments related to legal and institutional constraints (policy space) and the availability of resources by focusing on three issues related, respectively, to trade, fiscal, and monetary policies. Regarding trade issues, he concludes from an examination of the WTO AoA that in legal terms, developing countries do not seem particularly constrained in the implementation of a range of possible investment and financial policies in support of agriculture. But industrialized countries are not that constrained either, and, as opposed to developing nations, they have the financial, human, and institutional resources to implement highly distorting policies, with significant negative effects on agriculture in many developing countries (see Chapter 5 and Essays 2–4).

In addition to formal legal constraints on the implementation of pro-poor policies, at issue is whether developing countries lack the financial resources to carry out such policies because of some limits that globalization may impose on fiscal, monetary, financial, or exchange rate policies. Regarding fiscal issues (the second area of effectiveness) Díaz-Bonilla notes that developing countries suffered fiscal retrenchment in the 1980s and 1990s, which seems to have affected agricultural expenditures during those years. The fiscal position appears to have improved somewhat in the 2000s, when government expenditures in the agricultural sector seem to have been increasingly directed toward public goods. There seems to be less explicit taxation of agriculture, at least in the form of export taxes. Whatever the opinion on the adequacy of expenditure and taxation levels related to agriculture in developing countries, it seems that at least they have been moving toward more welfare-enhancing configurations.

When exploring the effect of financial globalization on monetary, credit, and exchange rate policies and the possible implications for agriculture and rural develop-

ment, Díaz-Bonilla notes the expansion of monetary aggregates and larger availability of overall credit. He finds that the effect of these developments on availability of agricultural credit is not clear. Also, increased financial globalization appears to have been accompanied by higher interest rates and an increased likelihood of bank crises (with their negative effects on agriculture), but also by other, more positive, developments, such as lower and less-volatile inflation and more flexible exchange rate regimes. Therefore, the effect of globalization on the agricultural sector of developing countries may vary. In general, the author notes that empirical studies provide a muddled image about the connections, positive or negative, of the fiscal and monetary trends and globalization, in part because of the very different indicators utilized to characterize the dependent and explanatory variables.

Conflicts and Globalization of the Agrifood System

Arguably, the greatest possible constraint to the effectiveness of governments is internal conflict and war. Paarlberg (Essay 5) calls attention to the highly localized causes of many famines, such as civil wars, and argues that such localized factors are not necessarily linked to globalization. Messer and Cohen (Chapter 9), on the other hand, look at the possible relations among conflict, food insecurity, and globalization in failed states and countries in crisis. They find that it is a complex relationship. Although it is clear that international trade in arms and "blood commodities" fosters war, they find that trade in food commodities can be a source of peace or conflict; trade sometimes contributes to conflicts when it increases price volatility of key commodities, destabilizing household and national incomes, and also when revenues from agricultural trade directly fund war activities. They further argue that conflict potential is especially high when inequalities or environmental degradation lead to extreme marginalization of large segments of populations that suffer losses of livelihoods. Additionally, they point to armed conflicts frequently becoming "food wars" when opposing factions destroy food systems and use food as a weapon, leaving a legacy of food insecurity and a source of future grievances and conflict.

Messer and Cohen recognize that developing countries need peace to ensure food security and take advantage of the new opportunities opened up by globalization. Thus, they suggest that policymakers pay more attention to low-intensity conflicts, even if they remain local, because they establish pockets of food insecurity and may become the source of future, longer, conflicts. It is important to analyze structures of production and markets and to monitor the effects of world prices for key agricultural exports of developing countries, as well as the impact of other macro, trade, and agricultural policies that determine local household livelihood options in manners that are perceived as equitable and sustainable. Additionally, they suggest the implementation of more global political and social actions, such as humanitarian

operations, and human-rights norms to influence more peaceful and food-secure outcomes. Development assistance, including aid to agriculture and rural development, can play a role in this effort and can deter conflict if such aid is integrated into the construction of social contexts that promote equity.

The Larger Context of the Debate on Poverty, Hunger, and Globalization

So far we have discussed the driving forces and implications of globalization of agrifood systems. This process needs to be assessed in a broader context, as globalization of agrifood systems does not occur in isolation. As shown in Figure 1.1, several chapters (2, 5, and 8) and essays (1–4 and 6) take a more general view and look at cross-cutting issues. Von Braun (in Chapter 2) studies poverty, hunger, and income distribution trends and examines the links between these trends and globalization processes, while Birdsall (in Essay 6) looks at the general debate on globalization and explores the structural asymmetries of globalization processes.

Poverty in the context of globalization shows mixed patterns of change across developing regions (see Chapter 2): the number of people living on less than US$2 a day (purchasing power parity [PPP]) from 1981 to 2002 for all developing countries has increased by approximately 164 million people, but if we take the number of people living on less than US$1 a day (PPP), poverty has decreased by approximately 467 million people (World Bank 2006). These aggregate numbers also mask large regional and cross-country disparities; although the number of poor people in East Asia (particularly in China), the Pacific, and South Asia has declined substantially, it has increased in Sub-Saharan Africa, Europe, and Central Asia. The picture is also mixed with regard to hunger: from the early 1980s to 2004, the proportion of undernourished people in developing countries decreased from 28 to 17 percent, but 830 million people still remained food insecure in 2004, with more than 213 million of them living in Sub-Saharan Africa (FAO 2006). The nutritional situation has shown improvement outside of Sub-Saharan Africa, although the progress achieved in South Asia from 1970 to 1980 has been eroding since the 1990s (FAO 2006). In sum, hunger and food insecurity continues to decline, but not at a pace that anyone finds satisfying from a global perspective—and even less so in specific regions and countries, where the food and health sectors have been neglected by policy. Regarding income distribution, Ravallion (2003) finds that trends may depend on whether an absolute or relative definition is used. Finally, looking at the Human Development Index (HDI), it seems that the overall situation in developing countries has been improving: since 1980, the HDI has shown a continuous positive trend in all developing and newly industrialized countries with large popula-

tions; the HDI for countries with the lowest human development rankings went from 0.379 in 1980 to 0.423 in 2004 (UNDP 2006). Nevertheless, since the mid-1980s and early 1990s, some countries (such as Botswana, Kenya, Russia, South Africa, Ukraine, and Zimbabwe) have been experiencing negative or stagnant HDI trends.

Looking at the relationship between these trends and globalization, the review in Chapter 2 suggests that in general globalization appears to have helped little in reducing poverty, but gainer-loser patterns are complex between and within countries. Indeed, because both globalization and poverty are multidimensional concepts, their linkages are also multidimensional. As such, globalization may affect the poor and populations in developing countries in different ways; hence, it is not surprising that assessments of the relationship between globalization and poverty vary dramatically, ranging from very negative to very positive.[14] The complexity is also evident in cases for which economic growth has had diminishing positive effects on poverty reduction because of growing inequality, for instance, in parts of Asia (such as Pakistan) and Latin America (such as Peru). Food and nutrition security does not improve under such circumstances (Chapter 2).

On the whole, these different analyses seem to lead to ambiguous conclusions, fueling the already intense debate on globalization's effects on poverty. Birdsall (Essay 6) presents conflicting views within that debate. She distinguishes three groups: cheerleaders for globalization, cynics, and worriers. The cheerleaders look at countries like China and India now, and Japan and East Asia in the past, for which integration into the global economy has brought about rapid economic growth and poverty reduction. The cynics think that global rules are rigged against the poor, to the extent that they are shaped, in good measure, by corporate and financial insiders (the best example being agricultural policies, but also the intellectual property regime and the contrast between liberalizing capital markets and restricting migration). The worriers are concerned that neither liberalization and international integration nor fairer rules may be enough. They note that China and India are exceptional cases and do not necessarily represent good examples of liberalization.

Birdsall places herself more on the side of the worriers by pointing to the structural asymmetries of globalization. One such asymmetry is linked to market imperfections and failures, as in the case of global financial markets, where volatility could lead to major crises that could be devastating for the poor and the incipient middle class in emerging markets. Ironically, the other asymmetry appears because of the proper operation of markets, which rewards those who already have productive assets (financial and human capital) and often leaves the poor, who lack those assets, behind. Birdsall concludes that, beyond the integration of poor countries within the world economy and fairer trade and financial rules, international concerted action—with

strong leadership and resources provided by industrialized countries—is needed to tackle the issue of structural asymmetries.

How we define desirable outcomes (including policy objectives) is a matter of values that of course influence our judgments about whether globalization is helping to reduce poverty. Different ethical approaches emphasize the importance of considering the needs of the poor. For instance, Swaminathan (Essay 1) reminds us of two of Gandhi's simple ground rules to help the poor: *antyodaya* (which Swaminathan translates as "start with the poorest of the poor") and *sarvodaya* (interpreted as a society with high social synergy—one in which there are no winners and losers). In economic terms, Rawls's "maximin" principle of justice similarly prescribes improving the situation of the worst off first (Rawls 1971). Conversely, a general Pareto criterion suggests that reforms should be done with the objective of making some better off without leaving anyone worse off. But with Pareto optimal reforms, optimality is likely to be achieved only in the medium term, when all transitional adjustments have played out, while in the immediate aftermath of policy change, the more realistic scenario is one with both winners and losers.

What Can Be Done, Then?

Two general implications of the discussions reviewed in the previous sections are the need for complementary domestic policies in developing countries to benefit from globalization and the responsibility of industrialized countries in shaping the operation of a pro-poor world economy in general and the agriculture and food system in particular, as the poor are closely linked to agriculture. That connection works through production to poor small farmers, through wages and jobs in the food system to workers, and through spending on food to consumers (who spend a large share of their budgets on food if they are poor).

Domestic Policies and Conditions in Developing Countries

At the most fundamental level one of the important causes of poverty in some low-income countries is military and social conflict; thus, peace and security are essential for growth, poverty reduction, and food security (see Chapter 9). National policy actions and sustained international diplomatic and political engagement and financial support are therefore crucial to bringing peace and reconciliation to countries affected by conflict and to sustain fragile political transitions.

Further, a strong macroeconomic foundation and prudent macroeconomic policies[15] are necessary to promote growth and accelerate poverty reduction, as vulnerable populations tend to suffer disproportionately from increased volatility and macroeconomic crises (see Chapter 8 and Essay 3). And although growth is a precon-

dition for tackling poverty and hunger, it is not always enough to bring about poverty reduction. Pro-poor economic growth has to be distribution-neutral, and must improve the incomes of the poor by supporting those sectors in which they earn their livelihoods (such as agriculture in many low-income countries) and expanding the demand for factors of production they possess (see Chapter 2 and Essay 4).

In effect, because three-quarters of the world's poor depend directly or indirectly on agriculture (as small farmers, artisans, small entrepreneurs, and landless rural workers), broad-based rural development needs special attention. This effort should include public good investment—especially roads, transportation, communications (including ICT), marketing institutions, and information—to reduce transaction costs, facilitate employment, and generate investments in rural areas, particularly in the rural nonfarm sector. Additionally, particular policies targeting small farmers are needed to enable them to cope with the rapidly changing agrifood supply system and its value chains (see Chapters 4 and 6). Some basic interventions include

- providing support for research and extension for products with potential for diversification;
- promoting greater vertical coordination with agro-industry and retailers and/or supermarkets through cooperatives, contract farming, and clustering;
- strengthening institutions that ensure food quality and safety;
- facilitating access to credit and to instruments to smooth incomes and manage price risk; and
- facilitating land ownership by small producers and landless workers through adequate schemes that may include agrarian reform, titling of informal settlements, and improvement in the functioning land markets (see Chapter 4).

Furthermore, implementing market-oriented reform policies that facilitate smallholder investment and avoid differential subsidies to large-scale operations is important. And, as highlighted in Essay 2, market-oriented reforms must ensure competition along the agrifood chain, where recent trends in mergers both nationally and internationally call for particular attention to problems with oligopolies and oligopsonies in key input and output markets.

Pro-poor, stable growth and a focus on rural development may not be enough. Other horizontal and targeted interventions are needed to help the poor deal with change in the short to medium run. Chapters 2 and 7 and Essay 1 point to the need for

improving access to health and education services of good quality for the poor to build human capital and stress the need for adequate safety nets to reduce the vulnerability of the poor in times of economic stress. Such protection can be provided through the provision of food-related transfers (such as coupons) to ensure availability of food or through employment-generation schemes (such as rural works or food-for-work programs). Conditional cash-transfer programs, which are increasingly being implemented across the developing world, are another type of safety net program which appears to be promising.[16] Broad and comprehensive social protection programs and policies (such as old age pensions and social security systems) may be needed for the rural and urban populations when covariate risks for income and employment increase because of rising probabilities of exogenous shocks, including shocks that may result from globalization-related instabilities in markets and exchange rates.

International Policies and Institutions

Developing countries cannot confront the challenges of building a more developed and inclusive society with internal policies only. Even when they implement the best policies, some issues are global in nature and cannot be resolved until industrialized countries are more committed to building a pro-poor world economy. This requirement applies to world agriculture in particular. Thus, a number of global policy issues require attention, ranging from the architecture of global decisionmaking on the agri-food system to actions in some broad policy domains:

- Global governance architecture of the food system. The inherited organizational and institutional structure of the world food system is outdated and does not serve effectively food safety, global health, and food security of the poor. The minimum roles and structures of the global organizations serving food, agriculture, and related health issues that evolved over the past six decades (Food and Agriculture Organization of the United Nations [FAO], World Food Programme, International Fund for Agriculture Development, and World Health Organization [WHO]) require rethinking and adjustment to provide the needed global public goods (such as information; standards; emergency response; facilitation of pro-poor transformation of the smallholder farming, food, and agriculture-health linkages). The traditional roles of the global public investment agencies (World Bank and regional development banks) and the trade agency (WTO) also need consideration in this context. The architecture governing the global food system must consider the growing complexity of roles of actors in the world food system, which include (1) the current international organizations, (2) the evermore important intergovernmental and regional machinery, (3) food industry representatives, and (4) civil society (farmer and consumer representatives).

- Global trade policy reform in the interest of developing countries. Trade negotiations must reduce the combination of agricultural protectionism and high subsidies in industrialized countries that has limited agricultural growth in the developing world and weakened food security in vulnerable countries by competing with domestic production. Trade barriers between and within developing countries must be reduced as well. More, rather than less, globalization is called for in these domains. Of particular interest is a revision of the intellectual property regime to accommodate the limitations and needs of low-income countries (Chapter 3). The issue of noncompetitive markets at the international level may require a better global coordination of competition institutions at the national level and support for developing countries to establish adequate agencies for their own markets.

- International capital and aid. Although developing countries must reduce their vulnerability to global financial crises through better macroeconomic and financial policies, these may not be enough if the main industrialized countries do not foster world financial stability with adequate macroeconomic policies and help establish a more equitable international system to cope with financial crises. Although these issues may be more important for middle-income developing countries, the poorest nations, lacking access to international capital markets, need expanded aid (Essay 4). Those countries would benefit from the acceleration, extension, and proper implementation of the initiatives for debt reduction and from additional financial aid to reach the objectives of the U.N. Millennium Development Goals (MDGs) by 2015. In particular, international financial institutions should increase funding for rural and agricultural development; poverty alleviation; and health, nutrition, and education interventions.

- Employment and social policy. Most social protection and employment policies are in the domain of national policy. However, the global dimensions of food insecurity, poverty, and unemployment call for additional global actions, especially in low-income countries. However, international support will be most useful when public policies at the national level are designed to be more efficient and effective. Transnational learning about social protection policies that reach the poor and hungry in rural areas is called for. This effort warrants state–civil society cooperation.

- Global agricultural innovation and technology and environmental policy serving the poor. Expanded adaptive research for productivity-enhancing agricultural technology that is focused on the needs of poor farmers and consumers in

developing countries can contribute to enhanced food security, nutrition, and health. Industrialized countries can help by fostering a serious debate on environmental, health, ethical, and equity concerns with respect to both agricultural biotechnology and agricultural research in general. Most importantly, they can provide scientific and financial support for technology development in poor countries and in Africa in particular. Similar arguments apply to research on health issues that overwhelmingly affect the world's poor.

Final Comments

The present implementation of the policies suggested above, at the national or international level, is less than adequate or complete. This inadequacy is due partly to the existing controversies around (1) the desirability of the general approach of integrating into world markets rather than trying to severe or drastically reduce the links to them, and (2) some of the specific policies (for instance, trade and IPR; see Essay 6). But there are also strong political economic reasons, both at the national and international levels, which constrain the formation of the social and political coalitions needed to implement those policies. An analysis of those forces and constraints exceeds the scope of this book.

Given the mixed results of globalization of the agrifood system for the poor, in this volume we highlight the need for a value-based approach to continue the construction of a better world. Different religious traditions and ethical approaches emphasize the importance of considering the needs of the poor. It is necessary to devise and embrace new relevant norms and values at both the national and international levels. Globalization of social policies has, to some extent, emerged with the globalization of markets, such as in the fields of economic rights (right to food, limitations on child labor), health policies, and MDGs, but lags far behind economic globalization drivers (see Chapter 2). Economic analyses of the realities of poverty and food insecurity and their causes must be coupled with ethical reflection on current social and economic structures. The process of world economic integration has indeed generated levels of wealth never seen before, potentially providing the resources with which to confront global poverty and hunger. The positive side of this process is that the accumulation of wealth supported by globalization is making possible—and therefore, morally inescapable—the previously utopian task of eliminating poverty and hunger on our planet.

Notes

1. Other topics not covered include the globalization of agro-industrial input producers and the implications of international migrations for rural poverty.

2. For a review of differing definitions, see Díaz-Bonilla and Robinson (2001); see also Lechner and Boli (2000); Guillén (2001); Waters (2001); Díaz-Bonilla (2002).

3. That the number of people on the planet has more than doubled since the 1960s is, by itself, significantly increasing the density of international economic, social, and environmental linkages (Díaz-Bonilla 2002).

4. For instance, those who believe that globalization has negative effects on society and exposure to those forces is the result of active government policies tend to call for the governments to reverse the liberalizing policies they fault, hoping the country can be isolated or "protected." On the other hand, those who think that globalization is the inexorable result of more general trends that governments do not necessarily control (such as technology) are much more skeptical about the effects of government policies that try to isolate countries and favor policies facilitating the integration into the inevitable international trends (Díaz-Bonilla 2002).

5. This list provides a broad archetype of the globalization of the agrifood system. It is not meant to unify the various definitions used by the different authors in this volume. Thus, some of the definitions in the other chapters may be slightly different from the one presented here.

6. Value-added is of course less than the market value of total agricultural production, as the former includes only payments to the factors of production (labor, capital, and natural resources) involved in the primary production.

7. All variables are from FAOSTAT (FAO 2006), measured in 1989–91 world prices. China is excluded from developing nations, because, given its size, it would dominate any indicator for that category of countries. Instead of using trade and total production over trade, value-added could have been used. For instance, World Bank (2005) shows that the average growth rate of global agricultural trade from 1985 to 2003 was 4.8 percent, while that of global agriculture value-added was only 1.9 percent, suggesting that the ratio of trade to value-added increased. FAOSTAT data for exports, imports, and production are calculated at fixed world prices in U.S. dollars for a benchmark year, avoiding all measurement issues related to value-added in domestic currency and problems of conversion with local exchange rate currencies.

8. Import penetration ratios and export orientation ratios for agricultural products in industrialized countries are noticeably larger than the corresponding values for developing countries. Also, the divergence in trade ratios between industrialized and developing countries increased during the period, particularly on the export side, as the export orientation ratio of developing countries barely moved (hovering around 15 percent), whereas the export orientation ratio for industrialized countries jumped from about 20 percent in the 1960s to about 55 percent in the 1990s (Díaz-Bonilla 2001).

9. The data on exports and imports by region are not net of the value of trade that takes place within a region (say, Latin America and the Caribbean): the regional aggregates of exports and the regional aggregate of imports refer to all destinations (including those in the region). In that sense, there is no aggregation (netting-out) problem at the country level. The aggregation problem is that, by taking the region as a whole (instead of calculating country by country and then calculating the average or median), individual cases are subsumed within regional averages that may be dominated by the larger players.

10. For a comparison of export and import ratios for industrialized and developing countries and different products, see Díaz-Bonilla (2001).

11. The price that producers receive, properly adjusted for quality and marketing costs, may be above (if the product is subsidized) or below (if taxed) the comparable world price. Thus agriculture would become more globalized to the extent that the ratio of domestic and world prices, properly adjusted by quality and transportation costs, approaches 1.

12. In particular, 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 these raw materials.

13. It must be noted that for some products, such as fruits and vegetables, the fresh, non-processed product may be the one with higher value compared with, say, canned products.

14. Von Braun (Chapter 2) explores these issues through a literature review of empirical studies examining the poverty implications of certain aspects of globalization (particularly increased trade and FDI flows). He points to the diversity in methodological approaches and also notes the differences in methodological preferences of researchers at nongovernmental organizations (NGOs), who tend to rely mostly on case studies, versus development economists and workers at international organizations, who tend to prefer more quantitative studies based on cross-section and panel econometrics and model-based simulations.

15. Unsustainable macroeconomic policies include large and unsustainable public sector deficits, unmanaged expansions of monetary supply, unrealistic exchange rates, and trade protectionism that taxes consumers (and thus acts as a regressive tax) and/or tends to appreciate the real exchange rate (see Chapter 8 and Essay 3).

16. Conditional cash-transfer programs, which began in Latin America in the early 1990s, provide money to poor families on the condition that the families invest in human capital through, for example, sending their children to school and bringing them to healthcare centers regularly.

References

Aghion, P., and J. G. Williamson. 1999. *Growth, inequality and globalization: Theory, history and policy*. New York: Cambridge University Press.

Akiyama, T., J. Baffes, D. Larson, and P. Varangis. 2003. *Commodity market reform in Africa: Some recent experience*. Policy Research Working Paper 2995. Washington, D.C.: World Bank.

Baffes, J., and B. Gardner. 2003. The transmission of world commodity prices to domestic markets under policy reforms in developing countries. *Journal of Policy Reform* 6 (3): 159–180.

Balassa, B., and C. Michalopoulos. 1986. Liberalizing trade between developed and developing countries. *Journal of World Trade Law* 20 (1): 3–28.

Bhagwati, J. 2004. *In defense of globalization*. New York: Oxford University Press.

Bhalla, S. S. 2002. *Imagine there's no country: Poverty, inequality and growth in the era of globalization*. Washington, D.C.: Institute for International Economics.

Boyle, J. 2003. The second enclosure movement and the construction of the public domain. *Law and Contemporary Problems* 66 (1 and 2): 33–75.

Díaz-Bonilla, E. 2001. Globalization and agriculture: Some facts, interpretations, and policy issue. In *Globalization and rural development,* ed. O. Solbrig, R. Paarlberg, and F. Di Castri. Cambridge, Mass., U.S.A.: Harvard University Press.

———. 2002. Globalization, poverty and food security. In *Sustainable food security for all by 2020.* Proceedings and summary paper of the 2020 Vision International Conference, September 4–6, 2001, Bonn. Washington, D.C.: International Food Policy Research Institute. Available at http://www.ifpri.org/2020conference/PDF/summary_diaz-bonilla.pdf.

Díaz-Bonilla, E., and S. Robinson. 2001. *Shaping globalization for poverty alleviation and food security*. 2020 Vision Focus 8. Washington, D.C.: International Food Policy Research Institute.

Díaz-Bonilla, E., X. Diao, and S. Robinson. 2006. Thinking inside the boxes: Protection in the development and food security boxes versus investment in the green box. In *WTO negotiations and agricultural trade liberalization. The effects of developed countries' policies on developing countries,* ed. E. Díaz-Bonilla, S. Frandsen, and S. Robinson. Oxon, U.K., and Cambridge, Mass., U.S.A.: CAB International.

Díaz-Bonilla, E., S. Frandsen, and S. Robinson. 2006. Overview. In *WTO negotiations and agricultural trade liberalization. The effects of developed countries' policies on developing countries,* ed. E. Díaz-Bonilla, S. Frandsen, and S. Robinson. Oxon, U.K., and Cambridge, Mass., U.S.A.: CAB International.

Drahos, P., and R. Mayne. 2002. *Global intellectual property rights: Knowledge, access and development*. New York: Palgrave Macmillan.

Euromonitor International. Global market information database. Available at http://www.euromointor.com.

FAO (Food and Agriculture Organization of the United Nations). 2006. FAOSTAT. Rome. Available at http://faostat.fao.org/default.aspx.

G8 Task Force. 2001. *Digital opportunity for all: Meeting the challenge*. Report of the Digital Opportunity Task Force (DOT Force) including a proposal for a Genoa Plan of Action, May 11, Genoa.

Guillén, M. F. 2001. Is globalization civilizing, destructive or feeble? A critique of five key debates in the social-science literature. *Annual Review of Sociology* 27: 235–260.

Harrison, A. 2006. *Globalization and poverty*. NBER Working Paper 12347. Cambridge, Mass., U.S.A.: National Bureau of Economic Research.

Helleiner, G. K. 2001. Markets, politics and globalization: Can the global economy be civilized? *Journal of Human Development* 2 (1): 27–46.

IMF (International Monetary Fund). 1999. *World economic outlook (WEO): International financial contagion*. Washington, D.C.

———. 2007. *International financial statistics.* Washington, D.C. Available at http://www.imfstatistics.org.imf.

Kherallah, M., C. Delgado, E. Gabre-Madhin, N. Minot, and M. Johnson. 2000. *Agricultural market reforms in Sub-Saharan Africa: A synthesis of research findings*. Washington, D.C.: International Food Policy Research Institute.

Knetter, M., and M. J. Slaughter. 1999. *Measuring market-product integration*. NBER Working Paper 6969. Cambridge, Mass., U.S.A.: National Bureau of Economic Research.

Krueger, A. O., M. W. Schiff, and A. Valdés. 1990. *Economía política de las intervenciones de precios agrícolas en América Latina*. San Francisco: Banco Mundial, Centro Internacional para el Desarrollo Económico, afiliado al Instituto de Estudios Contemporáneos.

Lang, T. 2004. Food and health wars: A modern drama of consumer sovereignty. Cultures of Consumption Working Paper 14. London: Birkbeck College, Cultures of Consumption, and Economic and Social Research Council (ESRC)–Arts and Humanities Research Board (AHRB) Research Programme.

Lechner, F. J., and J. Boli. 2000. The globalization reader: General introduction. In *The globalization reader,* ed. F. J. Lechner and J. Boli. Malden, Mass., U.S.A.: Blackwell Publishers.

Lindland, J. 1997. The impact of the Uruguay Round on tariff escalation in agricultural products. *Food Policy* 22 (6): 487–500.

Macdonald, S. 2001. Exploring the hidden costs of patents. Notes of a talk given at Quaker House, May 16, Geneva. Mimeo.

Millennium Ecosystem Assessment. 2005. *Ecosystems and human well-being: Synthesis*. Washington, D.C.: Island Press.

OECD (Organisation for Economic Co-operation and Development). 1997. *The Uruguay Round agreement on agriculture and processed agricultural products*. Paris.

Osterhammel, J., and N. Petersson. 2005. *Globalization: A short history*. English translation ed. Princeton, N.J., U.S.A.: Princeton University Press.

Panagariya, A. 2004. The miracles of globalization. *Foreign Affairs,* 85 (5): 146–151.

Prasad, E., K. Rogoff, S.-J. Wei, and M. A. Kose. 2003. *Effects of financial globalization on developing countries: Some empirical evidence*. Washington, D.C.: International Monetary Fund.

Rapsomanikis, G., D. Hallam, and P. Conforti. 2003. *Market integration and price transmission in selected food and cash crop markets of developing countries: Review and applications*. Commodity Market Review 2003–2004. Rome: Food and Agriculture Organization of the United Nations.

Ravallion, M. 2003. The debate on globalization, poverty and inequality: Why measurement matters. *International Affairs* 79 (4): 739–753.

Rawls, J. 1971. *A theory of justice*. Cambridge, Mass., U.S.A.: Belknap Press of Harvard University Press.

Regmi, A., and M. Gehlhar, eds. 2005. *New directions in global food markets.* Agriculture Information Bulletin AIB794. Washington, D.C.: Economic Research Service, U.S. Department of Agriculture.

Rodrik, D. 1997. *Has globalization gone too far?* Washington, D.C.: Institute for International Economics.

Rosegrant, M. W., M. S. Paisner, S. Meijer, and J. Witcover. 2001. *2020 global food outlook: Trends, alternatives and choices*. Washington, D.C.: International Food Policy Research Institute.

Stiglitz, J. E. 2003. *Globalization and its discontents.* New York: W. W. Norton.

Terry, D., and S. Wilson. 2005. Beyond small change. Making migrant remittances count. Inter-American Development Bank, Washington, D.C. Mimeo.

Torero, M., and J. von Braun, eds. 2006. *Information and communication technologies for development and poverty reduction*. Baltimore: The Johns Hopkins University Press for the International Food Policy Research Institute.

UNCTAD (United Nations Conference on Trade and Development). 2006. *World investment report 2006: FDI from developing and transition economies; Implications for development.* New York: United Nations.

UNDP (United Nations Development Programme). 2006. *Human development report 2006.* New York: Oxford University Press.

USDA/ERS (U.S. Department of Agriculture/Economic Research Service). 2000. *International financial crises and agriculture. International agriculture and trade.* ERS-WRS-99-3. Washington, D.C.

Variyam, J. N., and E. Golan. 2002. New health information is reshaping food choices. *Food Review* 25 (1): 13–18.

von Braun, J. 2005. The world food situation: An overview. Paper prepared for CGIAR annual general meetings, December 6, Marrakech, Morocco.

von Braun, J., and E. Kennedy, eds. 1995. *Agricultural commercialization, economic development and nutrition.* Baltimore: The Johns Hopkins University Press.

von Braun, J., and T. Mengistu. 2004. On ethics and economics of changing behavior in food and agricultural production, consumption, and trade: Some reflections on what to do. Paper prepared for a workshop on Ethics, Globalization and Hunger, November 17–19, Ithaca, N.Y.

Waters, M. 2001. *Globalization,* 2nd ed. New York: Routledge.

Wood, S. 2001. Environment (Brief 10). In *Shaping globalization for poverty alleviation and food security,* ed. E. Díaz-Bonilla and S. Robinson. 2020 Vision Focus 8. Washington, D.C.: International Food Policy Research Institute.

World Bank. 2005. *World development indicators 2005*. Washington, D.C.

World Bank. 2005. *World development indicators 2005*. Washington, D.C.

———. 2006. PovcalNet. Washington, D.C. Available at http://iresearch.worldbank.org/povcalnet/jsp/index.jsp.

Yeats, A. J. 1974. Effective tariff protection in the United States, the European Economic Community and Japan. *Quarterly Review of Economics and Business* 14 (Summer): 41–50.

Yunus, M. 2006. Foreword. In *Information and communication technologies for development and poverty reduction,* ed. M. Torero and J. von Braun. Baltimore: The Johns Hopkins University Press for the International Food Policy Research Institute.