# GLOBALIZATION AND HUMAN NUTRITION: OPPORTUNITIES AND RISKS FOR THE POOR IN DEVELOPING COUNTRIES[1]

*Per Pinstrup-Andersen and Julie Babinard*[2]

## ABSTRACT

**Globalization is here to stay. Those of us concerned about nutrition among low-income families should focus on how globalization can be guided for their benefit. This chapter provides a conceptual framework for assessing the linkages between globalization and nutrition, and suggests action to be taken by governments and civil society. Policy changes are needed in developing countries to give poor people access to productive resources and markets, and to assure that the poor are not marginalized in the globalization process. Policies are also needed to guide domestic markets for imported foods. Industrialized countries must open their markets for developing-country goods and services (including agricultural commodities and processed foods) and remove unfair trade practices. Globalization can help or hurt the poor and malnourished. Accompanying policies will help determine which it will be.**

## PROLOGUE

It is a great honor and privilege to give the Martin Forman lecture. Martin was a great person, a great professional, and a great colleague. I had the pleasure to work with him for several years before his untimely death. Alan Berg and Martin tried to teach me something about nutrition and it was a pleasure to work with them. I am privileged to have the opportunity to honor Martin's memory.

## INTRODUCTION

Globalization is a complex, multi-faceted, and yet elusive phenomenon often referred to as the world's economic, political, social and cultural integration (Theodoulou 1999; IMF 1997). Current trends towards globalization suggest that people, goods, assets, and information will move within and across national boundaries at an increasing rate. Globalization includes international trade liberalization as well as increasing flows of technology, information, and capital across country borders, and increasing international labor migration. While globalization may have become the catchword of the decade, it is a reality that is likely to continue and possibly accelerate in the future. As its impact on domestic policies and on the interaction between developed and developing countries is so far poorly understood, policy options will need to be considered to address its effects. For the nutrition community, the freer flow of finances, food, and information taking place in the world offers opportunities but also poses tremendous challenges and new risks.

New information confirms that the global nutrition situation is improving but the nutritional status is concurrently deteriorating in several countries, particularly in parts of Africa. Hunger, combined with low intake of major important micronutrients, remains widespread and this despite twenty years of rapidly declining world food prices (Conway 1997). As a result, prevalence rates of undernutrition, particularly of low birthweight, stunting, and underweight, remain high across most sub-regions. As globalization proceeds, employment opportunities, incomes, and food consumption patterns will be affected, creating better nutrition among some and new nutritional problems and associated diseases among others. A better understanding of the relationships between globalization and nutrition is a prerequisite for the design and implementation of policies and institutions that will enhance the positive effects on nutrition while reducing the risks.

## KEY FEATURES OF GLOBALIZATION

Globalization is a contentious term for which there is no agreed definition. The breadth of meaning attached to it has increased rather than narrowed over time. What has now come to be described as globalization first emerged due to growing international commerce in the late 19th century: global trade flows increased as colonial empires became entrenched, industrialization got underway, and railroads integrated most of North America, East and Central Europe, India, and Russia (Bonte-Friedheim, Tabor, and Tollini 1997). The early trends of globalization were however reversed in the first half of the 20th century by a period of protectionism triggered in part by the

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[2] Director General and Senior Research Assistant, respectively, of the International Food Policy Research Institute (IFPRI), 2033 K Street, N.W., Washington, D.C. 20006, U.S.A. Tel. 202-862-5600 Fax. 202-467-4439 Email: IFPRI@cgiar.org Web:www.ifpri.org.

economic and financial instability following the two world wars, the commodity price depression of the 1920s, and the great depression of the 1930s. National strife, revolutions, and rising authoritarian regimes also contributed to nearly halt free trade during that time. Beginning in the 1960s, the term then regained importance as governments everywhere reduced policy barriers that previously hampered international trade and investment. During this process of gradual trade liberalization, thousands of bilateral and regional trade agreements were signed, the number of transnational corporations soared, and financial flows across national borders rose at an unprecedented pace (Bonte-Friedheim, Tabor, and Tollini 1997). Between 1970 and 1998, foreign direct investment grew 15-fold, from $44 billion to $644 billion, and the number of multinational corporations worldwide grew from 7,000 to an estimated 53,600, with some 449,000 foreign subsidiaries (French 2000). Today, world markets are more integrated than ever before, with 25 percent of global output being exported, compared with some 7 percent 50 years ago (Smeets 1999). Due to the liberalization of markets including the gradual elimination of tariffs and nontariff barriers to trade –a process facilitated through the World Trade Organization (WTO), previously the General Agreement on Tariffs and Trade (GATT)- tariffs in international trade for industrial products now average less than 4 percent in industrialized countries compared to over 40 percent after the Second World War (Smeets 1999). The development of structural adjustment programs and regional cooperation schemes has also begun to remove policy bias against agriculture and foster the liberalization of agricultural markets. These measures, together with the Uruguay Round on Agriculture under the auspices of the WTO, have allowed the value of world agricultural trade to soar in recent decades, nearly doubling between 1972 and 1998 alone, from $224 billion to $438 billion; agriculture accounts for 11 percent of the value of all world exports (French 2000). Trade in basic food grains such as wheat, rice, and corn dominates international agricultural exports in volume terms, although nonessentials such as flowers, coffee, and sugar dominate in value terms (French 2000). The expansion of agricultural trade has helped provide greater quantity, wider variety, and better quality food to increasing numbers of people at lower prices.

The rapid technological developments and innovations that have facilitated worldwide interactions and interdependence are probably the most important factors that have driven globalization (Smeets 1999). Indeed, by facilitating the de-linking of various economic activities from a fixed geographic location, the rapid development and proliferation of technology, transport, and communications is generating a gradual but major change in economic policies and activities (Smeets 1999). The extent to which communications have been facilitated on a global scale is partly due to the unprecedented decline in the last decade in the cost of transferring information. Transmitting information today costs 1/100th what it did in the mid-1980s. The revolution in information and communications technology, personal computers, microchips, optical fibers, and satellite communications now connect hundreds of millions of people to each other and to enormous amounts of information being transmitted via the internet. Likewise, improvements in transportation networks and technology are reducing the costs of shipping goods by water, ground, and air, and improvements in information technology have made it easier to manage the new interconnections (World Bank 1999).

Partly due to the various ways in which it is perceived to affect our lives, globalization is both praised and feared for the opportunities and challenges it brings. Globalization is altering the world economic landscape in fundamental ways and has profound implications for countries, both at the national and international level. It expands economic opportunities by creating wider markets for trade, greater array of tradables, larger private capital inflows, and improved access to technology. Globalization also increases the proportion of value and wealth that is produced and distributed worldwide through a system of interlinking private networks. Borderlines between previously fairly distinct channels and processes of international relationships have become increasingly blurred and companies are no longer bound to geographical proximity for the purpose of centralizing their activities (Smeets 1999).

Although it may be conducive to the integration of economies worldwide, globalization also presents significant challenges to traditional governance structure. The rising importance of international trade and commerce, combined with increasing supranational accords, rules, and regulations increasingly challenges economic control by national governments, leaving countries more vulnerable to international economic factors, including fluctuations in world prices. International economic disruptions are most likely to be magnified for smaller countries, which face tighter resource and market-size constraints. Yet, while globalization may gradually erode the scope for autonomous, national policymaking, facilitating the transition process and the changes triggered by globalization will nonetheless require policies to help the vulnerable adapt.

Indeed, globalization also poses the risk of leaving the poor and malnourished as well as countries that are less developed behind. As participation of countries in the globalization process is far from uniform, globalization may widen international disparities in the future. The main question is how can it be ensured that all countries participating in international trade and involved in the global economy can best take advantage of and participate in the globalization process? For many poor developing countries that are in general the least integrated internationally, a main problem is that they are not prepared to face globalization. If more adjustment policies are not implemented to protect them against disadvantage compared to other nations, these countries are in danger of being largely excluded from the potential opportunities of

globalization. Indeed, countries that do not successfully integrate in the global economy will be increasingly marginalized. Not only will the stream of new growth opportunities fed by surging international trade and investment continue to pass them by, but due to globalization, poor policies will be increasingly penalized by a flight of domestic resources (Qureshi 1995). Countries that will be best placed to capture the benefits offered by globalization are those that are rapidly transforming their policies to support outward-oriented growth, which involves, adopting trade, investment, and exchange rate policies conducive to greater openness and competitiveness (Qureshi 1995).

## GLOBAL NUTRITION: WHAT ARE THE CHALLENGES?

While dramatic progress has been made in some areas of nutrition in recent years—allowing the number of undernourished people to decrease by 40 million since 1990/92—there are still 790 million people in the developing world, and 34 million in developed countries, who do not have enough to eat (FAO 1999). Low birth weights continue to be a major problem, particularly in developing countries, where some 30 million infants are born each year with impaired growth due to poor nutrition during foetal life, representing 24 percent of all newborns in these countries. Low birth weight at term affects 21 percent of the newborns in South Central Asia, and is also common in Middle and Western Africa, where 15 percent and 11 percent of infants are born undernourished. Childhood undernutrition is a pervasive condition in many developing countries. Research shows that about 33 percent of preschool children in the developing world, or 182 million children under the age of five, are stunted (Pinstrup-Andersen, Pandya-Lorch, and Rosegrant 1999). The highest levels of stunting are estimated for Eastern Africa, where on average 48 percent of preschool children are affected, up from 47 percent ten years ago. This trend is further amplified by the high population growth rates in the region, leading to an increasing number of stunted children each year (ACC/SCN 2000). Stunting is widespread in South Central Asia where the estimated prevalence for the region as a whole is 44 percent. Anemia is also a pandemic issue. Iron deficiency and its anemia effect affect more than 3.5 billion people in the developing world, representing well over two persons out of every three. Anaemia during infancy, made worse by maternal undernutrition, impairs cognitive development, causes productivity and educational losses, and increases morbidity and maternal mortality. While it is on the decline in most regions, severe vitamin A deficiency continues to affect up to 250 million preschool children. This deficiency contributes to significant morbidity and mortality in at-risk population.

Reducing hunger and malnutrition will continue to remain a challenge. Results from IFPRI's global food model, the International Model for Policy Analysis of Commodities and Trade (IMPACT) projects that food and malnutrition will persist in 2020 and beyond. Under the most likely scenario, IMPACT projects that 135 million children under five years of age will be malnourished in 2020 (Pinstrup-Andersen, Rosegrant, and Pandya-Lorch 1999). This represents a decline of only 15 percent from 160 million in 1995. Hence, one out of every four children in developing countries will still be malnourished in 2020 compared with every third child in 1995. Child malnutrition is expected to decline in all major developing regions except Sub-Saharan Africa, where the number of malnourished children is forecast to increase by about 30 percent to reach 40 million by 2020. In South Asia, despite a reduction in the number of malnourished children by 18 million, as many as two out of five children will still be malnourished in 2020. With more than 77 percent of the developing world's malnourished children in 2020, up from 70 percent in 1995, Sub-Saharan Africa and South Asia will remain "hot spots" of child malnutrition and food insecurity. Many of the countries in these two regions are among the least-developed countries in the world; they will require special assistance to avert widespread hunger and malnutrition in the years to come.

## THE IMPACT OF GLOBALIZATION ON NUTRITION

Due to its complexity and magnitude, the globalization process may affect food security in a variety of ways, simultaneously offering opportunities to improve and negatively affect human nutrition in developing countries. Foods are moving more rapidly than ever before and are now produced, handled, processed, and packaged in a number of complex ways, using a variety of techniques. A single source of food from a developed or developing country may be used in over 100 different products, which in turn are sold thousands of kilometers away (ACC/SCN 2000a; ACC/SCN 2000b). An inevitable consequence is that the adequacy of food intake for millions of people hinges increasingly on the ebb and flow of the world economy and on the response of their own local economies to it (Timmer, Falcon, and Pearson 1983).

Changes triggered by globalization will affect nutrition primarily though changes in income and prices, especially those affecting households with at-risk members. In addition, as it will be addressed later in this paper, the effects of globalization on nutrition in poor countries will largely depend on developed countries' policies and on government intervention in developing countries. There are five major pathways by which globalization may affect food consumption and nutrition: (1) trade flows generate rural income, increase foreign exchange through agricultural exports, and alter prices in domestic markets—these changes in turn affect dietary patterns and food production composition; (2) financial flows affect foreign exchange rates which ultimately affect the real incomes of farmers and households, which in turn affect a country's capacity to buy food imports; (3) the major advances in technology, transport systems, and other new technologies

such as genomic and molecular breeding, transform the traditional organization of production and marketing, facilitate agricultural and rural development, and enable a more micro-nutrient-rich diet to be achieved; (4) improved access to information and easier communications allow to find out about new nutrition initiatives, help determine the latest thinking on existing nutrition problems, provide a forum for debate on nutritional issues and help mapping food production and malnutrition by country and region within country; and (5) the increasing integration of labor markets implies opportunities for nonfarm income, promising new avenues for exports and nonfarm work. Benefits are nonetheless tied to educational levels, skills, and partly, nutritional and health status.

First, increasing trade plays a central role in food security and human nutrition: it can ensure stability in food supplies and consumption. When domestic or local food supplies are short, domestic prices rise and people respond by reducing the amount they consume. Increasing trade can allow food supplies to meet consumption needs and prevent variability in food supplies. Increasing trade also has the potential to foster economic growth by permitting agricultural and food products to be exported for foreign exchange earnings. This is particularly relevant for reducing food insecurity and reducing malnutrition as most of the world's food insecure are rural-based and rely on farm and nonfarm employment for income, which depends in one way or another on agriculture. In about 25 percent of the developing countries, agricultural commodities exceed two-thirds of total exports, while in a further 20 percent the share exceeds one-third. Another feature of globalization related to increasing trade is the acceleration of a major shift in the structure of the diet, resulting in a growing epidemic of the so-called "diseases of affluence" (Darnton-Hill and Coyne 1997). Once restricted to the rich industrialized nations, high fat diets and Western eating habits are now increasingly entering the diet of low-income countries and fostering new nutrition problems. Traditional diets, rich in fiber and grain, are being replaced with diets that include a greater consumption of sugars, oils, and animal fats, giving rise to increasing rates of overweight, obesity, and associated chronic diseases in all regions, and affecting children and adults alike (Drewnowski and Popkin 1997). As a result, undernutrition and overnutrition now coexist in many countries, creating a double nutritional burden. In addition, patterns of disease are now shifting away from infectious and nutrient deficiency diseases toward higher rates of coronary heart disease and some types of cancer. Not surprisingly, it is the poor and relatively disadvantaged sectors of the population who are suffering both. A 1999 United Nations study found increasing incidence of obesity in all developing regions, and growing rapidly, even in countries where hunger persists. In China, for example, the share of adults who are overweight jumped by more than half—from 9 to 15 percent—between 1989 and 1992. In several Latin American nations, such as Brazil and Columbia, the prevalence of overweight people –at 36 and 41 percent, respectively-approaches the share in some of Europe (Gardner and Halweil 2000).

The second major manifestation of the globalization process is the increasing integration of financial markets. As capital moves more freely internationally due to modern communications and a sophisticated banking system, billions of dollars can be now moved anywhere in the world at a moment's notice. These flows of international capital affect foreign exchange rates. With more flexible exchange rates and interest rates than in the past, changes in international prices and trade flows ultimately affect the real incomes of producers and consumers whose real incomes are very sensitive to prices of traded goods, such as farmers who produce food and consumers who buy it (Timmer, Falcon, and Pearson 1983). The effects of the globalization of finances have been highlighted by the recent East Asian financial crisis of 1997 and 1998. Until 1997, many developing countries were benefiting from both reductions in poverty and improvement in the nutrition and health of their children and adults (ACC/SCN 2000 b). The sudden emergence of financial crises and the subsequent disruption of the economies of many Asian and South American countries threaten to eradicate the gains in nutritional status made over the last decade (ACC/SCN 2000). Several studies seeking to demonstrate the effects of the crisis on indicators such as nutrition and poverty showed that the impact plays out well beyond the upturn in GDP per capita. Recent evidence from Indonesia, whose economy was badly hit in the region, shows an increase in nutrition deficiencies between 1997 and 1998. High inflation, massive unemployment and decline in consumer spending power have led both to a fall in the ability to buy expensive but micronutrient-rich foods such as eggs, meat and milk, and a fall in vitamin A and iron intake. Surveys suggest that four-fold increases in anaemia are likely, as well as increases in wasting, night blindness and diarrhea in children, adolescents, and women.

The globalization of the major advances in communications, transport and new technical opportunities can help developing countries improve market efficiency and food security. While the role played by traditional infrastructure, channels of communications, and other logistics services remain important, the new information and technological improvements that have occurred in the last two decades hold great potential. Most developing countries lag behind developed countries in power, transport, and telecommunications, leaving them at a competitive disadvantage in world markets (Pinstrup-Andersen and Babinard 1999). The state of infrastructure and logistics services in developing countries is in relatively poor condition compared to that of developed countries and the infrastructure that exists tends to be poorly maintained and can be subject to operating deficiencies. Many national transport systems fail to deliver the logistical support that firms need, and poorly maintained roads add to the already high transport costs. Only 30 percent of the

roads in developing countries are paved compared with about 91 percent in developed countries. While the number of telephones per 100 people in developing countries rose from one to two between 1975 and 1985, and jumped to six by 1997, disparities in telephone access between developed and developing countries remain important. New wireless technologies offer quick ways to bring more telephones to developing countries and are particularly adapted to remote locations because it is usually cheaper to set up radio antennae for cellular systems than to string wire from poles or bury it underground (Brown et al. 1999). Access to global information systems (GIS), global positioning systems (GPS), and remote sensing could help agricultural sectors in developing countries. Likewise, the current developments in modern biotechnology can contribute to the achievement of food security and better nutrition. The new techniques of genomic and molecular breeding can be applied in the search for sustainable advances in crop and farm-animal productivity and quality.

The globalization of information technology provides several opportunities for accelerating the reduction in malnutrition. First, a vast amount of food and nutrition information and data is already available to anyone via access to the Internet. Such information can be fairly easily accessed to find out about new nutrition initiatives, determine the latest thinking on existing nutrition problems, obtain best practices, and map food production and undernutrition by country and region within country. The Internet also provides a forum for debate on issues that require discussion. Third, the wide availability of information makes organization based on the centralized control of information much harder to sustain. Easier access to information also makes it easier to hold institutions and other duty bearers accountable for their actions. Finally, the expansion of the ability to gather, analyze, and share knowledge can guide future initiatives to increase access to food for all (ACC/SCN 2000a).

Finally, trade liberalization is encouraging a shift of labor from import-competing industries to expanding, newly competitive export industries. While the phenomenon may create transitional unemployment, it is temporary and expected to be offset by job creation in new sectors of the world economy. While these adjustments costs are expected to be small compared to the costs of continued economic stagnation and isolation without opening up, they can still be a serious issue in many countries because they are often concentrated in a geographical area or in a few industries. For developing countries, the internationalization of labor can expand the opportunities to acquire income and improve nutrition. There are growing opportunities in relatively labor-intensive long-distance services—data processing, software programming, clerical, and professional services—that alone could double these countries' commercial service exports, now valued at about $180 billion (Qureshi 1995). The ability of the poor to cope with the new developments in the labor market will depend critically on their initial level of skills and their health. Women, who often fare worse than men in the labor market because they have less access to formal-sector jobs, might be less affected in the short-term.

Despite its opportunities for nutrition, globalization also presents risks and new challenges. In addition to potentially harmful dietary changes, the increasingly speculative nature of financial trading and the huge cross-border flows have serious impact on national financial markets and currency valuations. Losses in foreign exchange for example can reduce income, which in turn can reduce a country's capacity to buy food imports. This may also result in increasing dependency on aid, which is itself under pressure. Further, the fate of developing countries and the positive impact of globalization depend on the domestic policies of industrialized countries. In response to the Uruguay Round Agreement on Agriculture (URAA) and structural adjustment, a large number of developing countries have liberalized foreign trade in food and agricultural commodities. Unfortunately, the opening up of markets in developing countries has not been matched by market openings in Europe, the United States, and Japan. A lot remains to be done to liberalize trade in agriculture and improve market access by developing countries (Pinstrup-Andersen and Babinard 2000). The EU, like the rest of the OECD countries, are reluctant to open up their domestic markets for imports from developing countries of high-value commodities. This failure to reciprocate increasing openness may well produce a situation that denies developing countries to benefit from trade liberalization and increasing globalization. The majority of developing countries depends on imported agricultural commodities and need assurances that supplies will not be arbitrarily restricted or taxed (Josling 1997).

In addition, different standards of food safety between importers and exporters may lead to concerns about the safety of imported food, influencing public perceptions and policies regarding the production, processing, transportation, storage, international trade, and preparation of food products (Pinstrup-Andersen 1999). In Western societies, growing epidemics of food poisoning associated with huge changes in the distribution and use of farm products are in part triggering these fears. Animal foods are seen as a particular problem, with for example, *bovine spongiform encephalopathy* (BSE), Salmonella, and listeria becoming increasing threats to the food systems in many countries. Efforts to combat these epidemics may however restrict market access for meat products from many developing countries, which do not have adequate animal health surveillance systems. In developing countries however, while safety concerns are not as prominent, increased concerns in developed countries will have an impact. First, exports of food commodities from developing countries will be exposed to new and more demanding food safety standards partly through unilateral changes in

the Codex Alimentarius, which is designed to ensure the quality and safety of the world's food supply, and partly through unilateral demands by importers (Pinstrup-Andersen 1999). Also, it is likely that changing attitudes and new legislation for food safety in developed countries will spill over into developing countries. As a result, positive effects of globalization on increasing exports by developing countries may be hindered, either because reasonable standards cannot be met, or because food safety will be used as nontariff barriers by importing countries.

Despite its numerous benefits, improved access to information can likewise have negative effects on efforts to eliminate malnutrition. As the generators of much of the information available on the Web reside in industrialized countries, there is a danger that proprietary concerns will restrict public access to that information. Second, information is frequently incorrect, either through error or by design. Misleading information from advertising or poor training about breastfeeding or HIV prevention, for example, could prove fatal. Balance will lack if information is generated solely by people who do not experience poverty and malnutrition themselves. New technologies allow to link national information systems and establish global networks, to examine entire oceans or one drop of water, to punch buttons and create graphs and flow charts that show instantly and clearly the kind of progress being made.

## SHAPING GLOBALIZATION TO IMPROVE NUTRITION

A powerful engine of growth, globalization promises ample rewards for those most able to take advantage of new technologies and expanding market opportunities. For many poor countries however, globalization may come as a shock—if not a setback—particularly in those instances in which agriculture is far from being globally competitive. As the institutional fabric of globalization, or the rules and regulations governing global exchange, is still evolving, and is doing so at vastly different paces in different countries, it is important to realize in which ways the influences of globalization could be framed to reduce negative impact on and instead improve human nutrition. The first step is at the global level and consists in catalyzing the effects of globalization before they begin to negatively impact developing countries. This task requires the involvement of the international community and policymakers in industrialized countries in particular.

An urgent task for the international community is to help developing countries become better integrated in the world economy, providing assistance to help them build up needed supporting institutions and policies, as well as continuing to enhance their access to world markets (PREM 2000). While harmonization with science-based international standards is important, developing countries need time, resources, and technical capacity to adjust their domestic policies and agricultural regulatory systems to comply with such standards. This would not only enable them to respond more expeditiously to emerging export opportunities but would also benefit domestic consumers and protect animal and plant health (FAO 1999). To gain from trade talks, developing countries must be allowed to participate effectively in the negotiations and given enough flexibility to fully develop their agriculture and promote economic growth. For the countries that lag behind, access to foreign private investment remains negligible. Also, given the much greater dependence on agricultural trade of many developing countries, both as exporters and as importers, it is important that the globalization process ensures that agricultural policies and trade facilitate agricultural development and thereby improve food security. Further improvements to increase access to developed country markets for developing countries need to be made. Progress has been made in reducing tariff barriers on unprocessed tropical products like coffee, tea, and cocoa but many more developing countries would benefit if similar improvements in market access were granted for other agricultural products such as temperate zone horticulture, sugar, cereals, and meat, as well as for processed agricultural products. Many developed countries have found new ways to close their markets, most notably by imposing anti-dumping duties on imports they deem unfairly cheap (*The Economist* 1999a). Also, sharply reducing the high trade-distorting support in many industrialized countries would contribute to create an unfavorable environment for agricultural development in these countries. Persistence in the use of export subsidies raises concerns for both competitive exporters and other countries that are trying to develop domestic sectors that are competitive with imports.

Much of the recently developed technology also needs to be adapted to the conditions within which small farmers and poor consumers operate. Molecular biology based innovations in agriculture and health as well as new technology in information, communications, and energy continue to be focused on markets in high-income countries. For example, while molecular biology based science is moving at great speed, its application to agriculture has been mostly limited to solving problems facing farmers in the United States and large farmers in a few developing countries. Most of the commercialization of transgenic seeds has occurred for soybeans, maize, and cotton in the United States, and to a lesser extent in Argentina, Canada, Mexico, China, and South Africa. If focused on solving small farmer's problems, biotechnology could help reduce production risks and increase productivity, which will result in higher incomes for smaller farmers and lower food prices for poor consumers. Biotechnology to make food grains more nutritious could help combat widespread nutritional problems such as iron and vitamin A deficiencies among the poor in developing countries. In the future, if their use could be made applicable to the needs of developing countries, productivity could improve, and developing countries could better compete on the global market. Biotechnology could help in diarrhea control, reduce postharvest losses, facilitate storage, and

transportation, and increase food safety. Policy research is therefore urgently needed to help guide and support technological development for the benefit of the poor. Such research should focus on intellectual property questions, particularly as they relate to institutional requirements in developing countries, biosafety and food safety requirements in developing regulations and markets for improved seeds. Research is also needed to explore how new communication technology and energy resources like solar panel based electricity can be used to improved rural infrastructure in low-income countries and remote regions.

One issue that also must be addressed is how the nutrition and health communities respond to problems of overnutrition. Humanitarian assistance that is partly driven by appeals to prevent starvation will be unable to obtain similar resources to address problems of dietary excess among the poor in developing countries; this is because too often, developed country societies view obesity as a problem of idleness and personal failure and not of public policy. As a result, there is no equivalent enthusiasm in attacking obesity in terms of drawing attention and sympathy of the public (Popkin 1994). While in most developing countries the stigma against obesity is absent as obesity is often viewed as a symbol of beauty and status, it is important to consider that these people will be hurt in the long run if we do not begin to develop solutions for addressing their emerging problems now (Popkin 1994). The problem of inappropriate diets cannot however be solved on the supply side as the market will continue to deliver what consumers want. On the demand side, it is important to counter inappropriate advertisement and access to foods that are either too expensive and therefore cause undernutrition or contain too much sugar and high fat content and therefore causes obesity and heart disease.

Finally, the new information technology affords an opportunity for the poor and malnourished to have a voice in policymaking and program design. However, the nutrition community needs to accentuate the potentially positive aspects of the information and communications revolution while minimizing the potentially negative ones. A number of mechanisms exist. For example, public institutions can share as much nutrition data and information as possible via the Internet and other mechanisms. They can undertake quality control of that information via per review and open and transparent debate. They can subject themselves to accountability mechanisms to make the rationale decisions more transparent. Finally, they can serve as active partners with private organizations to ensure that private data and information resources generate positive benefits for the poor and malnourished.

## NATIONAL POLICIES TO IMPROVE THE NUTRITIONAL EFFECTS OF GLOBALIZATION

In addition to trying to alter globalization and changing its impact at the international level, two sets of national policies can help ensure that the poor will benefit. Governments can either design and implement policies that will change the impact of globalization, or they can introduce separate policies and programs such as social safety nets to compensate the poor for any adverse effects. First, governments need to ensure that their economies are ready to compete on the global market and have the ability to take advantage of the new opportunities available. While the role of new information and technological improvements that have occurred in the last two decades hold great potential for improving market efficiency and improving food security in developing countries, infrastructure, communications, and other logistics services will need to be in place for developing countries to benefit. With greater access to developed-country markets, developing countries may emphasize the production of high-value commodities for export. Many new activities will still be linked to agriculture and food production but could have a more substantial share of postharvest added-value with greater reliance on processing, storage, transportation, and marketing (Goletti et al. 1999). In addition, although costs have decreased for new technologies, this does not guarantee their access by poor people. Governments have to ensure appropriate regulation to facilitate a well-functioning competitive market system that will serve the poor. Lack of competition in telecommunication services for example prevents a majority of poor people from having access to the new technologies available. In developing countries where some 40 million people are currently waiting for fixed-line telephones, access to mobile phones can make a crucial difference to improve market efficiency. Yet, the cost of calls placed on mobile phones remains exorbitant, as much as ten times the cost of a call placed on a regular phone, simply because governments have been reluctant to take on the established monopolies (*The Economist* 1999b).

The ability of developing countries and poor people within to benefit from globalization requires good governance. In many countries exposed to globalization, the role of the public sector appears to be shrinking in many aspects of food security, while civil society and the private sector have taken an increasing importance. While such a shift may be appropriate, recent research and experience clearly show the importance of an effective public sector in many areas related to food security such as agricultural research to develop appropriate technology for small farmers, rural infrastructure, health care, education, development and enforcement of a legal system, and the creation of public goods in general (Pinstrup-Andersen 1999). Market liberalization and global forces require new institutions, rules, and regulations. Effective governments are needed to guide the transformation of the agricultural sector in a direction beneficial to the poor. Governments can improve the competitiveness of the marketing system by creating better access to the providers of marketing services, and by distributing better information on the factors affecting price formation to consumers, farmers, and marketing agents (Timmer, Falcon, and Pearson 1983). At the same

time, governments should facilitate price transmission between international and domestic markets to allow farmers to respond to price signals.

In designing policies to accompany globalization, governments should focus on seven factors that may mediate the impact of globalization on nutrition. These are (1) incomes and employment of the poor; (2) the sources and cost of food; (3) advertisement and dietary preferences; (4) access to primary health care; (5) child care giving practices; (6) status of women; and (7) safety nets and transfer programs. Each of these seven factors may be affected by globalization and may in turn affect nutrition. Many aspects of globalization such as trade liberalization and technology flows will change the relative prices facing producers and consumers as well as costs of production. Corresponding changes in employment, wages, and prices will affect incomes of groups of people in different ways. Some will lose and others will gain. There is evidence from several countries showing that employment, wage, and price effects of trade liberalization in low-income developing countries are negative for a large share of the poor (Madeley 1999). However, there is also evidence showing that a large share of the rural poor tends to benefit. The outcome will depend on the nature of globalization, existing infrastructure, market conditions, and institutions, and cannot be generalized.

While promoting the right set of policies to enhance positive and minimize negative nutritional impact of globalization, governments can protect the poor from the shocks inherent in globalization by implementing accommodating compensatory measures. While these measures would be less appropriate than fostering structural changes in the economy and reorienting the development strategy of developing countries to face the new challenges brought by globalization, they may compensate the poor in the adjustment process and temporary prevent further declines in nutrition. The principal opportunities for compensation could first seek to enhance the income-generating ability of the poor so that they can still afford their food and also acquire adequate nutrition (Pinstrup-Andersen 1983). The possible ways to increase income include generating employment in the private or public sector, increasing farmers' productivity by means of larger investments in health, primary education, vocational training, and skill development. Another approach consists in expanding programs for credit, technical assistance, modern technology, and other inputs for low-income self-employed people in the informal and agricultural sectors. Finally, compensatory measures may involve increasing income transfer, whether in cash, food and other forms, to the poor by improved targeting of existing programs or by the design of new ones. These programs can involve food supplementation, food price subsidies, food stamp programs, and poverty relief programs.

## CONCLUSION

Globalization consists of a set of changes, each of which may affect human nutrition differently. Thus, in order to understand the nutritional effects of globalization, each of these changes and the pathways by which they may affect nutrition must be analyzed. The current debate about the impact of globalization on the poor is based on widely varying assumptions and is of little utility for policymaking. Attempts to generalize on the basis of available evidence is unlikely to be useful.

Globalization can be harmful or beneficial for nutrition, depending on its nature and existing and accompanying institutions and policies. Grouping all malnourished people together conceals important differences in the nutrition impact among groups. A particular aspect of globalization can do damage to the nutrition of some groups while others can benefit. An average across all groups of groups is of little practical value.

The degree of penetration of globalization into a society is of critical importance to the nutrition effects. National institutions, infrastructure, and policies may prevent potential harms or benefits from reaching the nutritionally at risk groups. For example, higher agricultural output prices resulting from trade liberalization may not be transmitted to low-income farmers and appropriate technology may not flow to them, while higher prices of imported consumer goods, fertilizers and other inputs may be readily transmitted. Effective, competitive domestic markets for agricultural inputs and outputs, labor, technology, and capital are of critical importance as is good governance. The at-risk groups may be cut off from potential benefits as the high-income, politically powerful, urban elite form coalitions with industrialized countries in an attempt to capture the benefits from globalization.

Before entering into a particular aspect of globalization, a national government should (a) assess how the change will affect the at-risk population, both in the aggregate and by subgroups, (b) determine whether the change or the ways in which it is implemented can be modified to enhance the benefits to the at-risk groups and avoid harm, and (c) design and implement compensatory schemes and safety nets where needed in order to protect particular subgroups.

Globalization does not substitute for appropriate national policies. On the contrary, to fully benefit from trade liberalization, access to new technology and other aspects of globalization, it is of paramount importance that low-income countries develop appropriate national policies. Similarly, the impact on nutrition will depend to a very large extent on whether domestic institutions and policies facilitate or hinder the participation by the at-risk groups in the new opportunities created. Access to land and other resources, primary education, primary health care, and other pro-poor policies become even more important as the at-risk groups are exposed to the competitive forces, risks, and opportunities brought about by globalization.

As globalization proceeds, food safety standards,

labor standards, and other "rules of the game" will tend to be more uniform across countries. International trade agreements will set standards for internationally traded foods. Two questions are important for nutrition. First, whose standards will be used as the norm and second, will there be a trade-off between food safety and food security for the at-risk groups? Food safety standards set by high-income countries (or rich people) may be inappropriate for low-income countries (or poor people) if they result in higher food prices to poor consumers. Furthermore, small farmers may not be able to meet high food safety standards, giving an advantage to larger capital-intensive farming. Complying with the food safety wishes of the rich without hurting the food security of the poor in a more integrated world, will be a challenge.

The potential impact of globalization on the poor and their nutrition is poorly understood. Additional research is urgently needed to bring sound empirical evidence to the debate and decision-making both at the international and the national levels. Because of a void of such empirical evidence, rhetoric, sterile theoretical arguments, and ideology are dominating the debate.

Modern science and technology, including molecular biology, information, and communications technology, offer tremendous opportunities for improving nutrition. For such opportunities to materialize, science and technology must be focused on solving nutrition problems. Governments must play a much stronger role in such research than is currently the case.

Through advertising and other means, globalization will promote processed, expensive foods with high sugar content and foods of animal origin. Government regulation must assure truth in advertising. Furthermore, to help foster a balanced low-cost diet and reduce the risks of obesity and coronary diseases, cost-effective nutrition education campaigns, and other knowledge sharing and information dissemination, will be needed to counter the increasing pressures from the private sector.

What can we, the global health, nutrition, and agriculture community, do? We can generate and bring to the debate, the best empirical evidence on how globalization can benefit nutrition while identifying ways to avoid negative effects, we can participate in the debate and actively promote nutrition goals and action to achieve them, we can help design community-level programs that will either enhance positive and avoid negative effects or compensate for losses, and we can influence international and national decisions. Several international vehicles are available to us including the FAO, the ACC/SCN, the CGIAR, and professional associations. We should participate in the national delegations to the WTO and related fora, and last but by no means least, we should try to influence national governments in their policymaking.

Will the tremendous potential for improved nutrition embodied in globalization materialize or will the poor and malnourished suffer another blow while nutritional deficiencies, hunger, and obesity continue unabated? The answer will be found not in globalization per se but in the way in which it is implemented and the accompanying policies.

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