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To cite this article: Cecilia Rocha PhD (2007) Food Insecurity as Market Failure: A Contribution from Economics, Journal of Hunger & Environmental Nutrition, 1:4, 5-22, DOI: [10.1300/J477v01n04_02](https://doi.org/10.1300/J477v01n04_02)

To link to this article: https://doi.org/10.1300/J477v01n04_02



Published online: 11 Oct 2008.



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PERSPECTIVE

Food Insecurity as Market Failure: A Contribution from Economics

Cecilia Rocha, PhD

ABSTRACT. The complexity of food security requires an interdisciplinary approach in its study. For policy development and analysis, an essential element of this interdisciplinary approach is economics. At the center of the rationale provided by economics for government intervention is the idea of *market failure*. The paper argues that the economic theory of market failure, and in particular the concepts of *externalities* and *public goods*, can be effectively used for analyzing and criticizing the present food system. It also argues that through a better understanding of these economic concepts, governments can devise market-based policies for improving food security. doi:10.1300/J477v01n04_02 [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2007 by The Haworth Press, Inc. All rights reserved.]

KEYWORDS. Economics of food security, externalities, food policy, food security, market failure, public goods

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Journal of Hunger & Environmental Nutrition, Vol. 1(4) 2007

Available online at <http://jhen.haworthpress.com>

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doi:10.1300/J477v01n04_02

INTRODUCTION

The complexity of food security requires a multi-disciplinary approach in its study. Still, many who claim the need for a multi-disciplinary approach to the study of food security easily dismiss the contribution that economics can make. As pointed out by Holden,¹ economics is often seen as a “reductionist discipline that frequently justifies the marginalization of legitimate social concerns” (p. 173).

In this paper I argue that economics can greatly contribute to the analysis of the nature of food insecurity and, consequentially, to the development of policies towards its mitigation. Economics can be particularly important when providing the rationale for government intervention in market societies. It can help us answer questions such as when should governments intervene, and what is the best intervention. Rather than a justification for marginalizing social concerns, economics can be part of a useful approach to social policy.

The insights provided through the economics view of food insecurity can also help in the design of programs by civil society groups which want to “harness market forces to pursue social and environmental objectives”² (p. 129). Ecological labeling, fair trade, forest stewardship certification, farmer seed enterprises, and many other initiatives rely on markets to promote social, collective benefits. Economics can help understand how these markets function, enhancing the possibility for the success of those initiatives.

At the center of the rationale provided by economics for government intervention is the idea of *market failure*, defined as “a circumstance in which the pursuit of private interest does not lead to an efficient use of society’s resources or a fair distribution of society’s goods”³ (p. 41). It is argued in this paper that the presence of “externalities” and “public goods” in the production and distribution of food is the source of market failures leading to food insecurity. It thus follows that, without government intervention, unregulated (“free”) markets and profit-seeking behavior will often lead to food insecurity. The presence of market failures reveals the reality that, while markets are good mechanisms for organizing economic activities, they cannot work well for social welfare without government intervention. In the case of food security, identifying the types and sources of market failures in the food system can help us develop appropriate policies to deal with them.

THE RIGHT TO FOOD, FOOD SOVEREIGNTY, AND FOOD SECURITY

Although the right to food has been recognized as a basic human right since the adoption of the Universal Declaration of Human Rights in 1948, its implications and the means by which it can be achieved are still matters of much debate throughout the world.⁴ International bodies such as the United Nations Food and Agriculture Organization (FAO) recognize that the primary obligation to realize the right to food rests with national governments. For this reason, *food sovereignty*, defined simply as “the peoples’ right to define their own policies and strategies for sustainable production, distribution and consumption of food that guarantee the right to food for the entire population,”⁵ is essential for the right to food in democratic societies.

Food sovereignty, however, although a necessary condition, is not sufficient for the right to food to be realized. The right to food is not, as yet, enforceable by international law. Neither is it enforceable by domestic legislation in most countries. Hence, beyond food sovereignty, a necessary condition for the right to food is political will—governments and people (civil society) committed to the right to food as a human right and a right of citizenship. It is this commitment that will lead to policies and programs promoting food security.

Difficulties in enacting legislation and designing policies to guarantee the right to food are related to what can be identified as the political economy of the problem—the ideological and power struggles in the design and implementation of policies that can advance the right to food for all. While the right to food can be used as a guiding principle, can it “result in appropriate action?”⁶ Does it have the potential “to achieve a positive transformation of power relations”⁷ necessary for the realization of food security within a country or worldwide?

The right to food is more than the right to be free from hunger. The “Rome Declaration on World Food Security” asserts the commitment from governments around the world to “the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger.”⁸ From this declaration, a definition of food security has emerged which emphasizes four components of the concept, all of which must be present for complete food security:⁹

- *Availability*—food in sufficient amounts to meet people’s needs;
- *Accessibility*—assured physical and economic access to food;

- *Adequacy*—food that is nutritious and safe, needed to maintain healthy lifestyles, and produced in environmentally sustainable ways;
- *Acceptability*—food that is culturally acceptable, produced and obtained in ways that do not compromise people’s dignity, self-respect and human rights.

When the Food and Agriculture Organization refers to countries as food insecure, it is often referring to the *availability* component of food security. Due to extensive crop failures or wars, for example, these countries are in danger of not having enough food (in quantity) available to feed their populations. Famines may be the result.

The vast majority of people that are food insecure around the world, however, do have enough food available in their regions or countries, but they cannot *access* that food. Food is sold in markets, and a great number of people do not have the economic means to access enough of it. We find large groups of people suffering food insecurity in food-abundant countries, including some of the richest countries in the world.¹⁰ According to FAO’s “The State of Food Insecurity in the World 2004,” of the 852 million people around the world not getting enough to eat in 2000-2002, 9 million lived in industrialized countries.¹¹

Of course, most people suffering from food insecurity and its worst manifestation, hunger, live in developing countries. Economic accessibility to food is intimately related to income security. Lack of participation in markets as consumers of food due to poverty is the most prevalent cause of food insecurity. It is also one of the most important factors in health insecurity, as it leads to malnutrition and related illnesses.

Malnutrition, however, can result from conditions other than the lack of food. Food insecurity due to the *inadequacy* of the food available for consumption threatens another large portion of populations worldwide.¹² This refers to the quality of food and the quality of diets. It addresses the question of food safety and the nutritional content of foods, as well as the appropriate nutritional balance of what we eat. The importance of this factor in food security has been recently highlighted by studies which indicate that for the first time in human history the number of overweight people rivals the number of underweight people.¹³ In western countries many are talking of an “obesity crisis.”¹⁴ In 1991, 15% of Americans were obese; by 1999, that proportion had grown to 27%.¹⁵ In Canada, the number of obese children has almost tripled to 13% between 1981 and 2001.¹⁶ But this “dietary transition” is also affecting developing countries, exacerbating public health problems with the

appearance of a double burden of under-nutrition and chronic diseases related to overweight and obesity.¹⁷ Countries such as South Africa, Egypt, Brazil, and Mexico are now showing obesity rates close to those of richer countries, and the percentage of people that become obese each year in developing countries such as China, India and Indonesia has also been increasing.^{15,18}

The adequacy of the food system is also reflected in its environmental impact. Soil erosion, contamination of ground and surface water, deforestation and loss of biodiversity are just a few of the environmental impacts of modern food production. In fact, the environmental degradation created by modern agriculture is threatening its capacity to continue feeding the world. Indeed, “the environmentally degrading activity that has the strongest effect on agriculture is probably agriculture itself”¹⁹ (p. 436).

The last piece of the food security puzzle is that adequate food should be produced and accessed in ways that do not compromise people’s dignity and self-respect. Shared food fulfills this condition when people feel reciprocity in the sharing. When food, however, is donated rather than shared, the reciprocity is broken. Food aid, through international donations, food banks, and charitable drives, while necessary for the survival of so many people, is one of the clearest indicators of food insecurity. In market economies, accepted, dignified ways of accessing food is often through markets. But when markets fail, the dignity and human rights of many people are put in jeopardy.

The *acceptability* of our food systems also depends on food being produced in ways that respect human rights. Too many food commodities in both local and international markets have been produced by workers laboring under very poor conditions, in some cases bordering on slavery. Agricultural workers tend to work long hours, with little protection against exposure to hazardous conditions.²⁰ They are among the poorest people in the world, suffering the worst manifestations of food insecurity. These are unacceptable conditions, and interventions to eliminate them are urgently needed.

FOOD INSECURITY AS MARKET FAILURE

Market failure is a traditional argument used for the necessity of public policies and government interventions in the areas of health, education, public safety and national defense. Food security should also be included in this list. Market failure happens when free markets are

“socially inefficient” (when the social benefits of market outcomes are less than the cost paid by society as a whole for that outcome, or when the full benefits for the use of social resources are not realized). In the case of market failure, the “market clearing forces do not maximize social net benefits”¹⁹ (p. 14). Two of the most important causes of market failure are the presence of negative externalities and of public goods.

Negative Externalities in the Food System

A clear case of market failure emerges in situations where the costs society pays for a given activity are greater than the social benefits that activity brings. This is often what happens when an economic activity creates pollution or environmental degradation; for example, the use of environmental resources (water, land, or air) to dispose of wastes generated in the process of producing, transporting, or consuming a given commodity frequently imposes costs to society that are not compensated by the benefits that commodity creates. These pollution costs are called *externalities* because neither the producer nor the consumer of this commodity had to account for them—they are external to the market transaction. Externalities are social costs that are not reflected in the private costs and prices of market goods.²¹

The emergence of “factory farms” in animal food production (such as huge feeding lots for cattle and gigantic hog and chicken farms) has created much controversy and debate in North America.²²⁻²⁴ Producers in such operations blame the push for lower and lower food prices in world food markets (and the need for higher and higher profits for corporate shareholders) for the trend. They claim (with some reason) that consumers’ demand for cheap food makes it impossible for smaller scale, family farms to compete effectively. Economies of scale (being big) tend to lower the cost of production, and hence, the price of food to consumers.

This is a clear case in which business efficiency is not the same as social efficiency. North American consumers get cheap food, but at what social costs? Factory farms create many and very significant negative market externalities through their operations. Pollution of ground water (increasing the cost of purifying water for communities nearby), and the foul smell (reducing the value of neighboring properties) are just a few of the examples of the negative externalities factory farms can create. Thus, while consumers pay a lower price for the meat produced by factory farms, society at large is incurring a much higher cost for food produced in this way—a cost that is not captured by the market price. While

from a market perspective factory farms seem efficient (as they can produce food at a lower cost to producers and lower price to consumers), from a social perspective, unregulated operation of factory farms is often inefficient.

There is a need for policy to intervene in reducing the social costs that such food production system generates, either by regulating such operations, or by imposing high pollution taxes, or both. Governments can closely regulate feeding lots by setting maximum limits on the number of animals per farm, or by setting rules on what type of waste treatment must be used to prevent pollution. The effect of regulations and taxes is to create “compliance costs” to producers, increasing their private cost of operation. Until emission taxes or standards are set, producers are able to use the waste-disposal services of the environment virtually without cost. Without taxes or regulation there is little economic incentive for producers to think about the environmental consequences of their actions and to economize on the use of environmental resources.

The externalities created in the process of food production are neither a recent phenomenon nor are they exclusive to North America. The strict market efficiency gains brought about by conventional agricultural techniques since the 1960s (and the “green revolution”), while evidenced and often praised by the significant increase in food production, have masked important social losses in the form of environmental degradation throughout the world. Ironically (and tragically) those same techniques that had once allowed for greater food production are now threatening the capability of many countries and regions to continue producing food given the deterioration of their environmental resources. Table 1 summarizes some of the most common environmental problems associated with modern food systems, the sources of the externalities generated, and their social impacts.

While the environmental problems created by modern food systems can be found throughout the world, their consequences are more severely felt by people in developing countries. Take the case of soil erosion, where small farmers in developing countries could avoid soil erosion by adopting more appropriate agricultural techniques (crop rotation, less intensive plowing, etc.). There are many reasons, however, preventing this from happening. First, farmers may not be aware of this information. They may not know that the technique they are using will lead to soil erosion, and/or they may not be aware of other appropriate techniques to use. This is an example of *imperfect information*, another source of market failure preventing producers (farmers, in this case) to make the best decision for their situation.

TABLE 1. Common Environmental Externalities in Modern Food Systems

Environmental Problem	Source	Social Costs
Water pollution and water scarcity	Chemical pesticides and herbicides; organic waste runoffs; irrigation	Water-borne illnesses; higher costs for drinking water; declining fisheries; disputes over water access
Soil degradation and erosion	Monocultures; intensive plowing and cropping; intensive irrigation leading to greater soil salinity	Soil becomes less productive for further food production; crop productivity declines; declining ground water quality; greater susceptibility to drought
Deforestation	Expansion of agricultural activities; use of chemical pesticides and herbicides	Localized flooding; soil erosion; loss of biodiversity; loss of local foods and local food habits; loss of "carbon sinks" to combat air pollution and climate change
Depletion of fish stocks	Over-fishing by modern fishing vessels	Declining fisheries; disputes over fishing stocks; economic and social decline of coastal communities; loss of local food habits
Climate change	Increased emissions of methane, carbon dioxide (agricultural machinery and transportation), and nitrous oxides (by chemical and organic fertilizers)	Higher risks and uncertainties for coastal communities; changes in soil fertility; localized flooding; greater vulnerability to severe weather changes

Most often, however, farmers are aware and do have the information they need to prevent soil erosion. It is the conditions under which many of them live that limit their choices in techniques of production. If protecting soil fertility comes at a cost of lower food productivity today, many farmers will continue using the techniques that they know will lead to soil erosion. This is because, when so many of them live in poverty, their very survival and the survival of their families depend on the agricultural products they produce today. They cannot afford risking lower production at present for the sake of continuing food production in the future. The cost of preservation today for poor farmers is too high. This perverse situation is exacerbated when land rights are inexistent or uncertain.²⁵ Poor farmers will have even less of an incentive to invest in soil preserving techniques if the land they work on are not theirs or if it can be taken from them at any moment.

Agricultural extension programs that inform and educate farmers, rural credit for adopting soil preservation techniques, and secure land rights are some of the policies that would help small farmers make the right decisions concerning the environmental impacts of their practices and the continuing productivity of their lands for future food production.

Another important form of negative externality found in food production is that related to ocean fisheries. Fish in the ocean are an example of *common-property resources*. Indeed, most environmental resources can be characterized as common-property resources—resources that are commonly held by a community. No individual private ownership applies to them. The environmental problem created by common-property resources (or “common resources” or “the commons”) is the tendency for them to be overexploited to the point of exhaustion or extinction, if there is free and open access to them. The social ecologist Garrett Hardin first drew attention to this idea in his famous article “The Tragedy of the Commons.”²⁶

Fish in the oceans are renewable resources in that their stocks can be replenished as long as the rate at which they are harvested is lower than the rate at which they can reproduce themselves. The problem with free, open-access common resources is that they tend to be harvested at a faster rate than they can naturally replenish themselves. Without controls, each fishing vessel has an incentive to take as much fish from the ocean as it can (and as fast as it can). Individually, no fisher has an incentive to conserve the present stock by not taking as much from the ocean because his/her sacrifice (or investment) will not pay off if others (“free-riders”) are not doing the same. Without control of some sort all individual fishers will attempt to catch as much as possible, leading thus to a depletion of that once renewable resource and hence the tragedy of the commons.

While Garrett Hardin and others have argued for private property as a solution to the tragedy of the commons (private owners of fish stocks would have a legal right to bar access to their resources, and they would have an incentive to preserve them for future uses), private property is not the only (or the most practical, or fair, or effective) way of dealing with this externality problem. Evidence from Africa suggests that privatization schemes to control overgrazing of tribal rangelands, for example, have not been successful in increasing productivity, and have in fact worsen inequalities.²⁷ In general,

grazing and fishing grounds in most traditional societies have often been commonly held and managed quite sustainably for centuries.

This was achieved by means of informal social restraints and traditions which prevented overexploitation. However, when such restraints break down as a result of modernization or population pressures, the free-access problem emerges, and a tragedy in the commons is likely to result.²⁸ (p. 34)

In North America, recent problems with salmon, cod, and snow crab fishing illustrate situations in which common-property resources in food production are involved. Throughout the world, natural fisheries, common grazing pastures, and forest resources are also examples of open-access resources prone to the tragedy of the commons. They require policy interventions from governments that can be derived from an understanding of the economic nature of such situations as market failures.

Setting quotas might be a way to address the problem of open-access resources (such as in fisheries), although the technical and political complexities in each particular case must be carefully considered.²⁹ In many cases, setting appropriate quota levels requires governments to collect and analyze high amounts of information, adding to the cost of this policy. Combined with the cost of monitoring and enforcing regulations, setting quotas may not always be the best policy to follow in such cases. This is a particular concern for governments in poorer countries, where monitoring and enforcement mechanisms are not securely in place for lack of appropriate human, technical, and financial resources.

As an alternative, more cost-effective policy to preserve common-property resources avoiding their overexploitation, governments throughout the world are experimenting with “developing markets” for the services these resources provide. For example, the Kyoto agreement of 1997 was the first attempt to create an international market for permits for greenhouse gases.³⁰ But there are many examples of innovative attempts at national levels.

Some of the most interesting examples can be found in developing markets for forest environmental services. These have taken various forms, such as debt-for-nature swaps, trust funds, shade coffee and shade cocoa programs, eco-tourism, and the processing and commercialization of native forest products (e.g., creams, crafts, juices, jams, and cookies) under concession fees. However, despite the potential benefits that such markets may create, they themselves are prone to market failures, especially those detrimental to poor communities.

Landell-Mills and Porras³¹ suggest a number of steps governments should take for promoting the development of pro-poor markets. Among

those, some of the most important, applicable to many of the situations throughout developing countries, include:

- *Formalizing and securing property rights held by the poor:* Poor, marginalized groups risk losing their control over environmental resources when markets start to develop and property rights are not secured. Furthermore, just as in the case of land-tenure conditions, poor groups will not be willing to engage in activities that may put in risk their control over the resources they have.
- *Strengthening cooperative institutions:* Market participation is often costly. Many small landowners, fishers, and producers cannot afford, by themselves, to participate in markets. Through cooperatives, however, these costs can be shared by many producers, making market participation feasible. Governments can help by facilitating the formation of cooperatives, and securing their institutional (legal and economic) status.
- *Investing in training and education:* Effective market participation requires skills that are not immediately available among poor groups. Marketing, negotiation, management, financial accounting, contract formulation, and conflict resolution are some of the most important skills poor groups must acquire to benefit from market participation.
- *Establishing market support information:* As mentioned above, imperfect information is another source of market failure. Governments can help by providing information on prices, potential buyers and suppliers, legal contracts, and sources of funding.
- *Improving access to finance:* Facilitating credit will also increase the possibility of poor groups to invest in participating in new markets. Micro-credit schemes and subsidies to financial institutions willing to support poorer groups may be required.

The above list emphasizes the importance of governments as facilitators rather than just regulators and/or providers of last resort. It suggests policies for governments to use in improving market functioning, rather than policies to substitute or eliminate markets. The proposition here is that governments can and should use markets as tools to improve social welfare. While it is true that “the free market cannot solve free market problems,”³² it does not follow that market-based solutions cannot be successful in addressing many of those problems. On the contrary, markets can be effective tools for social policies if they are properly understood and manipulated by governments.

Food Security as a Public Good

While the above examples illustrate problems in food security arising from negative market externalities, inefficiency also emerges in situations where private markets do not provide enough of an activity or good even when the benefits it brings grossly outweighs its social costs (the case of *positive* externalities). In such cases there would be under-allocation of social resources through free markets, indicating market failure.

“Public goods” is the term used to describe goods characterized by two features: they are *non-rival* and *non-exclusive*. Being non-rival means that, once available, they can be simultaneously enjoyed by many people. As non-exclusive goods, once available, it is very difficult to prevent people from using them, even those who have not paid for them. The opposite of public goods are “private goods,” which are rival and exclusive. Private goods cannot be enjoyed simultaneously by many people, and individuals can be prevented from using them (if, for example, they don’t pay for their purchase).

Free markets fail to provide an efficient quantity of public goods because these goods tend to create very high beneficial externalities (as many people can enjoy them at the same time) that cannot be captured by private markets. Free markets are not effective in producing public goods because producers cannot prevent non-payers from enjoying them. There is, in general, no profit motivation to lead private firms to supply a socially efficient quantity of such goods. In many cases, markets for public goods will not even exist. Public goods generate high benefits to society, but free markets, governed by private, individual self-interest, will not provide them. Hence, the existence of a public good “presumes a legitimation of governmental activity.”³³

Food itself is not a public good. It is a private good and, as such, private producers do have an incentive to produce it as they can prevent non-payers from accessing it. Food security, however, is a public good. All individuals living in a food-secure society benefit from that condition, even if they were not contributing (paying) for its provision. In other words, food security can be simultaneously enjoyed by many people (a public good), in contrast to private goods (e.g., food), “which are marked by rivalness in consumption . . . (and for which) property right enforcements prevent consumption if one does not pay”³³ (p. 141).

The public-good nature of food security can be seen in its many public-good components. Environmental quality and food safety are examples of clear public goods. And while nutritious foods and healthy diets

can be *rival* and *exclusive* (private goods), their insufficiency can create significant consequences for public health (a public good), through increased social and economic costs of malnutrition and diet-related illnesses such as diabetes and heart disease.^{17,34}

Traditionally, the solution for the absence of efficient markets for public goods has been to have these goods produced and delivered by governments. As we have seen in the case of environmental protection, however, many innovative policies such as the facilitation of new markets, are being attempted. This new approach allows for partnerships among governments, private sectors, non-governmental organizations, and communities to devise ways in which public goods can be produced and delivered. Free markets will not generate efficient quantities of public goods. But that does not mean that public goods can only be produced and delivered by governments.

Another important policy consequence of food security as a public good is that unregulated markets may still not provide a socially efficient quantity of it even if enough income were distributed to low-income groups. Food security incorporates the notion of accessibility to food (which could be increased by providing enough income to all), but it goes beyond that to include food safety, quality, and diversity according to social/cultural norms. It also encompasses the environmental sustainability of food production and distribution systems, and the human dignity in producing and accessing food. Access to food will improve with more income allocated to the poor, but market failures do not disappear simply by turning people into consumers. Income security can increase food security, but it cannot eliminate all conditions leading to food insecurity.

SUBSIDIES, MARKET POWER, AND INTERNATIONAL TRADE

The logic of policy to mitigate or prevent food insecurity due to market failures is predicated on the assumption of *food sovereignty*. Governments must be able to act in promoting and guaranteeing food security and the right to food. This necessity, however, often collides with established rules for international trade. By definition, any government agreeing to partake in any international agreement is abdicating some of its sovereignty. This, of course, is not necessarily negative, as long as the gains from such agreements outweigh their costs.

While the win-win scenario of international trade proposed in the neo-liberal view is often predicted from an assumption that there will be efficiency gains from trade among free markets, such gains may not be realized in the presence of market failures. Thus, identifying the sources of market failures in international trade and the appropriate policies to correct them may be key in designing a successful (truly efficient) trade regime. Important market failures in international trade may emerge from two sources: *perverse subsidies* and *market power*.

Subsidies are fiscal tools available to governments which can be used to reduce inefficiencies in free markets. Quite often, however, the use of subsidies has aggravated food insecurity. While subsidies may be effectively used to correct market failures, they are frequently used to create *government failure*. “Perverse subsidies” is the term used to describe the effect of subsidies in *decreasing* social efficiency by leading to higher social costs. Those are subsidies that create negative externalities instead of combating them.

Kent and Myers³⁵ suggest that perverse subsidies amount to around US\$2 trillion per year worldwide. Some of the sectors in which most perverse subsidies are concentrated are agriculture, fossil fuels, transportation, water, fisheries, and forestry—all of which significantly impact food systems worldwide. Subsidies to agri-business corporations have created significant negative externalities, costing societies the deterioration of their natural environments, increasing health costs, and disruption of rural communities.

At the international level, subsidies (and protectionist policies) have been often justified in terms of reducing the vulnerability of countries to the vagaries of global food systems. Many authors have argued, however, that more open international trade can in fact smooth out the fluctuations and uncertainties inherited in local food production.³⁶ Furthermore, the use of subsidies in recent years has significantly moved from promoting food self-sufficiency to promoting exports, especially in the European Union and the United States, where agriculture is grossly subsidized. This has had deteriorating consequences in many poor countries which see their farmers undermined by the unfair competition of dumped commodities in their markets.

While there seems to be growing consensus on the need for the reduction of agricultural subsidies in the European Union and the United States for a better food trade system to emerge, negotiations on international agreements are bogged down by the market power and lobbying pressures of special groups which dominate food systems in the global market. Market concentration in the past 20 years has been significant

not only in food production, but also in food transportation and retailing, and in agrochemicals where in 2001 seven companies accounted for 90% of worldwide sales.³⁷ The purchase of Seminis, the world leader in the conventional (non-genetically modified) creation of vegetable seeds, by Monsanto has given the latter transnational company much of the control over global markets for seeds (both genetically modified and conventional).³⁸

While within countries policies to counteract the market failures created by monopolistic powers can range from price regulation to anti-trust laws and state ownership, on the international stage measures to counterbalance market concentration must be managed through international institutions (UN agencies, the World Trade Organization), and negotiated into international agreements. Effective and fair international agreements, which would benefit the poorest countries and groups of people in the world, require attention to much of the same factors as those for the creation of pro-poor markets for public goods (as described above in this paper). For the effective participation of poor countries and groups in international trade, negotiations on international agreements must:

- Respect and secure property rights held by the poor (e.g., farmers' rights, protection of traditional knowledge and genetic resources).
- Allow and support strengthening cooperation among poor nations (e.g., G20 group in the negotiations of the World Trade Organization) and among the poor within nations (e.g., producers' cooperatives, labor unions).
- Stimulate and protect the public good (and non-profit) nature of scientific research on issues which affect the livelihoods of poor groups, and which are specific to developing countries' needs.
- Have mechanisms to guarantee transparency and access of information.
- Have mechanisms to guarantee that poor countries and poor groups can effectively use the information they access.

In parallel to the creation of pro-poor markets for public goods, the role of international agreements would be to facilitate the incorporation of poor countries and groups in the process of globalization in a manner to benefit them. In the absence of a supra-national government, this can only be accomplished through negotiations and partnerships among country governments, and through institutions of global governance³⁹ bringing together international institutions and donor

agencies, non-governmental organizations, private sectors and different communities around the world.

CONCLUDING REMARKS

This paper argues that effective policy for food security requires an understanding of market failures found in today's food systems. It highlighted some common sources of market failures leading to food insecurity: negative externalities (pollution and public health problems), corporate market concentration (and market power), unregulated use of commons resources (fisheries, forests, etc.), and the incapacity of unregulated markets to provide public goods such as food security in socially efficient quantities.

Defining food insecurity as market failure does not, in any way, undermine the notion of food as a human right. It simply points out that the right to food cannot be realized in free markets. It is based on the premise that "improving food security will lead to progressive realization of the right to food"⁴⁰ (p. 648). The market failure argument also identifies which policies may be more appropriate to address food insecurity. There will be situations in which the only way of guaranteeing the right to food is by bypassing markets and having direct state provision of food and nutrition programs. The challenge, however, is to determine the *best* ways to achieve the goals of food security and the right to food. Many of those may be through facilitating (or even creating) market mechanisms, forging competition, and decentralizing service provisions. Understanding food insecurity as market failure allows for the use of markets as effective tools of policy. The recognition that modern food systems are ripe with market failures should not, thus, lead to the conclusion that markets should not be used (or that they should be abolished). The presence of market failures only suggests that it is foolish to trust the invisible hand of markets to govern our societies. Intelligent policy can use markets as tools for improving social efficiency.

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Received: April, 2006
Revised: January, 2007
Accepted: February, 2007

doi:10.1300/J477v01n02_02