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The Role of International Trade in Achieving Food Security

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Deteriorating food security status is primarily a local phenomenon resulting from failures in food systems and inadequate incomes. Technological advances in agriculture have led to declining long-term trends in food prices, which have assisted in improving diets. It is projected that in the first half of the twenty-first century, food production increases will have a difficult time keeping pace with the increase in population, leading to increased incidents where local price spikes for food lead to deteriorations in the food security status of many locally resident individuals. International trade in food products will be key to mitigating the effects of local food systems failures.

Keywords: agricultural productivity, food security, international trade, price spikes

> The fields, although Wang Lung cultivated them desperately, dried and cracked, and the young wheat stalks, which had sprung up courageously with the coming of spring and had prepared their heads for grain, when they found nothing coming from the soil or the sky for them, ceased their growing and stood motionless at first under the sun and at last dwindled and yellowed into a barren harvest. …
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> They scarcely rose at all now, any of them. There was no need, and fitful sleep took the place, for a while, at least, of the food they had not. The cobs of the corn they had dried and eaten and they stripped the bark from the trees and all over the countryside people were eating what grass they could find on the wintry hills. There was not an animal anywhere. A man might walk for a handful of days and see not an ox nor an ass nor any kind of beast or fowl. The children's bellies were swollen with empty wind, and one never saw in these days a child playing upon the village street.
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> Pearl Buck, *The Good Earth*, p. 67 and p. 77

> The Irish crisis was used as an excuse by Peel in order for him to the repeal the Corn Laws in 1846, but their removal brought Ireland little benefit. The major problem was not that there was no food in Ireland — there was plenty of wheat, meat and dairy produce, much of which was being exported to England — but that the Irish peasants had no money with which to buy the food. The repeal of the Corn Laws had no effect on Ireland because however cheap grain was, without money the Irish peasants could not buy it.
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> MarjieBloy, The Irish Famine, 1845-9

When food prices spike, food security becomes a topic that garners much attention in the popular media and resonates with the wider populace. High food prices can impose real hardships for some individuals and generate a high degree of anxiety for many more. There are demands for action from governments. Historically, food prices have eventually moderated and food security ceases to be a topic that sparks much interest. The rapid and wide-ranging food price increases experienced in 2010 and 2011 have been true to form, with food security moving to the top of both individual concerns and the public policy agenda. It is likely that this spike in food prices will pass – but the opportunity for a dialogue on food security it provides should not be wasted. This is because the decades-long period of declining global food prices may finally be coming to an end. If it is, the food security status of a great many of the world's people may be negatively impacted. Long-term policy solutions are required, very different solutions from those that are often attempted when short-run food price spikes are experienced.

One of the problems is that food security, or the lack thereof, means different things to different people. Lack of food security follows a continuum from famine to

having to make hard choices in allocating individual resources. At one extreme there is a situation where high food prices exclude a significant proportion of the population from having access to food – this is a famine and results in starvation and death. Ireland's anGortaMór of the latter half of the 1840s and regional famines in China are those that come most easily to mind (Liu, n.d.), but localized famines can be identified somewhere on the globe every year. Further along the continuum, spikes in food prices move a significant proportion of the population from having diets with at least adequate nutrition to being malnourished or undernourished. This has been the case for those that earn less than US$2.00 per day when global food prices spike, as they have in 2010-11. Clearly, these individuals have suffered a considerable setback in their quality of life, and their plight is the bane of international development agencies.

For others, with a somewhat higher standard of living, hard choices have to be made as more of their budgets have to be allocated to food purchases. As incomes rise and food becomes a smaller and smaller proportion of household expenditures, eventually food price rises, even substantial food price rises, no longer represent a threat to security. These lucky few, however, are only a small proportion of the world's population. Further, even when famine is widespread, the rich always have access to food.

If spikes in food prices become more frequent or higher prices become the new normal then the food security status of a great number of the world's population will deteriorate, and along with it their quality of life. Much of the progress that has been made in raising standards of living over the last fifty years will be lost. This is why a dialogue on food security at this time is essential. It is a fact that long-term food prices have been declining for a century or more. This has been true in the face of a significant increase in global population, an obvious manifestation that mankind has been able to escape the *Malthusian Trap,* whereby a growing global population outstrips the ability to increase food production – at least thus far.

Although the fulfilment of the predictions of Thomas Malthus has been forecast with persistent regularity since Malthus's own dismal conclusions 200-odd years ago, there are a number of factors in the current agri-food environment that lead to pessimistic conclusions regarding the future. World population is predicted to grow by approximately one-third, to nine billion, by 2050. Thus, to even keep the current level of food security across the world, increases in agricultural production will have to keep pace. There is very little additional potential agricultural land that can contribute to the required increase in output. Further, much of the existing agricultural land is already stressed due to the heavy production demands already made on it. In a number of key producing areas, competition for water is already acute.

Thus, the solution to escaping the *Malthusian Trap* lies in increasing the productivity of the agri-food system. Such increases have been the reason why the *Malthusian Trap* has been avoided in the past. Increasing agri-food productivity requires investment in new and better technology. Unfortunately, there is mounting evidence that for a considerable period there has been significant underinvestment, both private and public, in research and development activities in the agri-food system (Pardy and Alston, 2010).There are often decades-long lags between expenditures on agri-food research and the resulting significant increases in productivity. Given the chronic underinvestment in agri-food research and development, the prospects for achieving the medium-term increases in productivity necessary to maintain current levels of food security seem problematic, at best. A major expansion in agri-food research and development certainly appears warranted, but thus far governments have not shown much inclination to alter their priorities.

Two other new competitive factors are likely to alter the food security status of a significant number of the world's population – and those who are the poorest and least able to absorb adeterioration in their status. First, incomes are rising rapidly in some countries with very large populations – China and India in particular. As incomes rise, the composition of food demand changes. The demand for animal-based protein increases. Given that a considerable proportion of livestock, poultry and fish are fed grain-based diets, demand for cereals tends to rise, driving up prices of grains for those who have yet to have the incomes to transition to a diet partially based on animal protein.

Second, the production of biofuels is being fostered by developed-country governments, particularly the European Union and the United States. The reasons for fostering biofuels vary, the effects do not (Viju and Kerr, 2010). The effect is to drive up the prices of grains and oilseeds. One of the reasons that food has been relatively inexpensive over the last seventy years is that much of the land previously used to produce biofuels was released for food production. This change arose from the transformative technological shift whereby animal power was replaced by gasoline and diesel engines fueled by non-renewable petroleum resources. Previously, the fuel was animal feed, and somewhere between 30 and 40 percent of cropland was devoted to its production. In the United States recently about 40 percent of corn acreage has been returned to fuel production. The European Union is struggling with the problem of how to increase biodiesel production without competing for land resources used to produce food (Williams, 2011). While governments are putting considerable faith in what are called *second generation* biofuels that do not compete for the food-producing land base, the full commercialization of such technologies appears to be decades into

the future (Williams, 2011). Most of those who choose (or are mandated) to consume biofuels are those best able to absorb large rises in food prices. They are unlikely to drive their cars less because they are driving up the price of food.

Into this potent mix, one also has to add the uncertainties associated with global warming and the resultant climate change. While debates continue to rage regarding climate change outcomes, if the predictions accepted by many are borne out, the relative productivity of various land masses is likely to change and the variance in yields is likely to increase (Sauchyn, Diaz and Kulshreshtha, 2010). The former will lead to a deterioration in the food security status of some and an improvement in the status of others. The latter will lead to a deterioration in food security status as the lean years will be both more frequent and leaner.

Over the longer term, food security depends on two things: (1) ongoing improvements in agri-food productivity and; (2) ensuring access to food. International trade is a major contributor to the latter. A central element of food security is the ability to move food from where it is available to where it is needed. That can be true locally, regionally within a country or through international trade. Food price spikes provide the incentive to move food to where it is in short supply – and this ability to arbitrage will moderate food prices. One of the unfortunate solutions often put forward as a way to increase food security is to promote local self-sufficiency. While there may be many legitimate reasons for a preference for local production, providing food security is not one of them. Famines arise because of local system failures – as the quote from *The Good Earth* that started this article illustrates. Local production cannot be completely isolated from drought, frost, pests, diseases (of both crops and livestock), floods, input shortages, war and the myriad of other ills that affect agricultural production. If anything, stressing reliance on local production can exacerbate the effects of a local systems failure because the infrastructure to facilitate the relieving of local shortages through arbitrage-based movements of food will not exist or will remain underdeveloped. Famines arise because food cannot move to where the local systems failure has occurred.

As the global population becomes increasingly urbanized, promoting local production as a means to improve food security status has even less validity. Large urban conurbations can easily outstrip the ability of their hinterland to supply them. Access to international supplies of food is the best way to limit the effects of price spikes and to shorten their duration.

Of course, having the ability to access food supplies through trade does not provide a unilateral solution to food security problems. If individuals do not have the income to purchase imported food, then poor food security outcomes will persist.

Redistribution policies will be needed to transfer income to those in need. Of course, food aid can sometimes be a viable alternative (Cardwell and Kerr, 2009) if domestic income transfers cannot be made.

In the years to come, international trade will have to take on a greater role in the provision of food security than has been the case in the past. There are a number of reasons for this. First, the major growth in global population will take place where agricultural land is already heavily stressed. Less populated lands in North and South America and the Eurasian steppes are the only likely areas where surpluses available for trade can be grown.

This mismatch between the location of rapid population growth and agricultural potential will likely be exacerbated by the concentration of agri-food productivity–enhancing investments in temperate crops and other technologies best suited for developed-country agriculture. There has been little investment in tropical crops research – particularly in biotechnology – and tropical livestock systems research (Smyth, Kerr and Phillips, 2011). In part, this lack of investment relates to poor protection of intellectual property in developing countries (Cardwell and Kerr, 2008; Perdikis, Boyd and Kerr, 2004) and, in part, to the resource constraints faced by the network of international public institutions that exist to enhance agricultural productivity in developing countries –the Consultative Group on International Agricultural Research (CGIAR) system. The ongoing disagreement over how to regulate trade in the products of biotechnology, primarily between the European Union and the United States, makes investment in biotechnology that might be applicable to developing countries extremely risky (Isaac and Kerr, 2007; Hobbs, Hobbs and Kerr, 2005). As a result, whatever increases in agricultural productivity do occur in the intermediate term are likely to be concentrated in developed countries, not where population is growing. Food will have to be moved to where the growing populations reside.

Of course, the rules that govern international trade are far from perfect, particularly those that govern trade in agricultural goods. Global agricultural markets are greatly distorted due to interventionist domestic agricultural policy regimes that are supported by trade policies that are little disciplined by trade agreements, including the WTO (Gaisford and Kerr, 2001). After a decade of negotiating at the WTO, an agreement in the Doha Roundnegotiations remains elusive, with agriculture one of the major stumbling blocks (Kerr, 2010).The degree of distortion inhibits trade and leads to a considerable misallocation of resources.

One aspect of international trade law that impinges on food security is particularly weak, namely, disciplines on export bans and export taxes. The result is that

sometimes exporting countries, when faced with rising international prices for the foods they produce, restrict exports. These export restrictions reduce prices in their domestic market. The intent is to improve the food security status of their consumers. While in the short run consumers may benefit, in the long run the lower prices received by farmers discourage them from expanding production. This is likely to lead to a deterioration in food security status in the future. Such poor public policy results from food security being perceived by policy makers as a problem of prices rather than income.

Irrespective of the merits of export bans and export taxes, countries are unlikely to agree to strengthening disciplines on them at the WTO. Even if the disciplines were to be strengthened, it is unlikely that the international community could effectively enforce them; governments are unlikely to worry too much about their international commitments when faced with consumers expressing dismay over rising food prices.

Restrictions on exports, however, raise the degree of angst policy makers feel about relying on trade to limit price spikes and add credibility to those favouring self-sufficiency. Given the degree of globalization in food markets, however, there is little evidence that isolated incidents of export restrictions have a significant impact on world prices (Smyth, Kerr and Davey, 2006). In the short run, such border restrictions may negatively impact *near neighbours,* but any effects can likely be more readily mitigated by the strategic use of storage and stockpiles than by promoting self-sufficiency that raises prices for consumers over the long run.

Food systems failures are local phenomena. If they can reasonably be expected to remain isolated, then an incentive is created for the hoarding of food and the withholding of supplies for speculative purposes – so that higher prices can be reaped in the future. Of course, hoarding and speculative activities lead to higher prices in the short run – so that price spikes are magnified. Hoarders and speculators vex both consumers and policy makers. Policies to control such activities are, however, seldom effective. The threat of new supplies of food moving into markets– through inter-local, inter-regional or international trade – where there has been a local food systems failure is the most effective way to remove the incentives for hoarding and speculative activities.

Consumers in developed countries seldom feel the effects of local systems failures. Of course, they are not totally isolated from price fluctuations. The reason for their being relatively immune from local systems failures is that they shop for food primarily in well diversified supermarkets. Supermarketsconservatively stock in excess of 30,000 different products. These products come from all over the world through trade. The supply chains that feed supermarkets deal with local food systems

failures every day. A problem in one locale is dealt with by sourcing from another locale. Even if, for example, there is a disease problem in bean sprouts or cucumbers, there are a host of alternative products that consumers can substitute. Sometimes individual items are not available or prices spike for a particular product, but consumers have lots of substitutes to choose from. Local food systems failures are, of course, costly for producers but they do not lead to declines in food security for consumers. The same cannot be said for many consumers in developing countries who are isolated from world markets and dependent on one, or a few, locally produced crops.

If the world is moving to a situation where the *Malthusian Trap* is becoming a real threat due to rapidly rising population and falling rates of improvement in agricultural productivity, then there needs to be a firm commitment to increase investment in agricultural research and development. To mitigate the effects of the potential for more frequent failures in local food systems as a result of the increased stress that will be put on agricultural resources due to the pressures created by the *Malthusian Trap*, as well as climate change, efforts should be made to ensure that international flows of food move smoothly. The access to food provided by trade is the co-requisite to enhancing agricultural productivity in providing a food-secure future for all.

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