

The Importance of Trade for Food Security

Abstract The important contribution international trade has in meeting the food security challenges that will arise in the first half of the twenty-first century is explained. The dual effect of rising population and increasing incomes among the world's poorest consumers on food demand is outlined. Slowing rates of increase in global agricultural productivity will add to the difficulties in increasing food production. The areas where food demand will increase the most are not where increases in food production can take place, meaning that international movement of foodstuffs must fill the gap.

Keywords Food demand · Food security · Population growth · Food production · Agricultural research · Productivity

Food security is set to become a major global challenge as the world's population increases to 9 billion by 2050. This one-third increase in the number of people that need to be fed, combined with rising incomes among a considerable proportion of the world's poorest inhabitants, will stretch the capacity to produce food to its breaking point. A failure in the ability to increase food production at a sufficient pace to keep up with rising demand can only mean a decline in the food security status of the world's poorest citizens. The fragility of the world's food system came into sharp focus during the recent food crisis when there was a major

spike in the prices of staples in 2007–2008. The crisis stemmed from a combination of multiple harvest reducing events around the world and trade-restricting practices of some major exporting countries (Giordani et al. 2012). The resulting spike in food prices pushed over 75 million additional people into extreme hunger and malnutrition (FAO 2008; World Bank 2009). This was with current population levels and points to the need for food’s international trade system to work with a minimum of trade restrictions (Kerr 2011a). Food security has three fundamental components: (1) food production¹ must increase at least at the pace of increasing demand for food; (2) food must be consistently available; and (3) individuals must have sufficient resources to acquire food. One is not food secure if markets or supermarkets are fully stocked with food, but one does not have sufficient funds to purchase it. This is the case, for example, for poor individuals in developed countries where food stores are well stocked, but incomes are not sufficient to purchase it in quantities that will provide adequate nutrition over time. Such individuals are not food secure. It is why there is a need for *food banks* and other food sources for the poor such as *soup kitchens*.

Famines can also arise from lack of resources among the poor (Kerr 2011a). A famine usually starts with some shock to agricultural production which reduces available food. This causes prices to rise. If the trade infrastructure or political situation does not allow for an inflow of food from other areas in response to the rise in food prices, then the poor quickly exhaust their resources attempting to acquire what food is still on offer. Once they have exhausted their resources, starvation follows—even if adequate food supplies subsequently become available.

This was the case, for example, in the Irish potato famine—the *anGortaMór*—of the late 1840s. According to Bloy (2002, p. 1):

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.

It was not until the British government made resources available to establish soup kitchens that some of the poor were able to escape

starvation. The efforts of the *World Food Program* provide a contemporary example (Kerr 2015).

If most individuals have adequate resources, such that under normal circumstances, they can acquire sufficient food, they are still not food secure if food is not available—almost on a daily basis.² One only has to observe the reaction of individuals in developed countries when a hurricane, flood, or other forecast natural disaster can be expected to disrupt deliveries of food—even for a few days. The result is a rush on food retailers with shelves being emptied and, sometimes being looted, in panic. It is clear that those engaging in these types of activities do not feel themselves to be food secure.

Much of the world's lack of food security arises when, for a variety of reasons, potential food supplies are not able to respond, through internal or international trade, to the incentives provided by price increases in the wake of a disruption to agricultural production. The reasons for a failure to capitalize on potential arbitrage opportunities include lack of transportation infrastructure (roads, ports, and trucks), lack of communication networks, such that information on relative prices is not available or government restrictions on movements of food—including asynchronous regulations—as well as wars and insurrections.

In modern market economies, there are local disruptions to food production all the time—drought, flooding, frost, diseases, pests, etc., still decimate local production on a regular but unpredictable basis. Food retailers (and/or other players in food supply chains) are, however, easily able to identify alternate sources of supply for the product, or its close substitutes. Communication and transportation infrastructure function well, and there is a minimum interference in the movement of food. The result, from the perspective of consumers, is a seamless shift in supply with minimal effect on prices, such that they may not even know about the disruption to production. Seldom does one go to the supermarket and what one wants³ is not there. This ability to arbitrage is a hallmark of food security in modern market economies.

In some developing countries, markets may not work as seamlessly to mitigate the effects of local food supply disruptions. As a result, food security suffers. While the rich are always likely to have the ability to acquire food,⁴ the poor's food security will decline. In some cases, if food cannot be moved to where it is needed through trade, it may be necessary for the population to relocate. The long and heart-breaking

lines of African refugees seen in recent years are one obvious example of this problem. Their destination is often a refugee camp which is secure enough for *World Food Program* or government food disbursements to take place (Kerr 2015).

The third element of food security is more long term in scope and pertains to the ability of global food production to keep pace with growing food demand arising due to a combination of expanding population and increasing incomes. If production does not increase at a pace that keeps up with rising demand, the result is a growing population chasing ever-scarcer food, which represents deterioration in food security. The potential for demand for food to outstrip the ability to increase food production—known as the Malthusian trap—has been known, since Thomas Malthus publishes his famous book *An Essay on the Principle of Population* in 1798. Thus far, Malthus' dire predictions relating to declining food security—although he did not use that term—have proved to be false. The reason for this is that he failed to take an account of the impressive increases in agricultural productivity that have occurred as a result of innovation and investments in agricultural research and development over the last two centuries. The rate at which agricultural productivity is currently increasing appears to be falling, while population continues to increase as exemplified in the projections to 2050 (Beddington 2010).

The Deputy Director of the United Nations Food and Agriculture Organization (FAO) suggests, “agricultural production needs to increase by 70% worldwide, and by almost 100% in developing countries, in order to meet growing food demand” (Tutwiler 2011). There is, however, considerable evidence of and concern regarding a serious underinvestment in agricultural research and development over the last 20–30 years (James et al. 2008; Alston et al. 2009). Even if the rate of investment could be increased, there are considerable lags between when investment expenditures are made and the resulting increases in productivity are fully manifest (Alston 2010). The lags are often in the range of 25 years or more.

The underinvestment in agricultural research has a number of causes, including long and costly regulatory processes for new technologies (Smyth et al. 2004); high costs in identifying and acquiring existing intellectual property (Smyth and Gray 2011); poor intellectual property protection (Cardwell and Kerr 2008); resistance to technological change

(Haggui et al. 2006); misaligned incentives (Malla and Gray 2005); investor's inability to capture full benefits (Alston 2002); and governments' fiscal difficulties (Gaisford et al. 2001). Research on reducing food waste exhibits an even greater degree of underinvestment. The lack of investment in agricultural research and development poses a significant food security challenge with population slated to rise considerably in the next decades.

While the degree of underinvestment in agricultural research and development is concerning, the geographic misalignment of those investments greatly increases the global food security challenge. Almost all of the increase in population and increases in income that will most affect food demand will take place in developing countries. It is these areas of the world, however, that receive the least research investment. The research capacity in developing countries is low and resource-strapped governments find it difficult to make the long-term investments required to build that capacity. As a result, if there is to be an investment in productivity-enhancing agricultural research, it will likely have to come from agribusiness firms headquartered in developed countries. These profit-driven firms, however, must see competitive returns from their investments. Thus far, they have not seen those returns and, for the most part, they eschew investments in technologies specifically designed for crops and the agronomic conditions in developing countries.⁵ One of the major stumbling blocks is poor protection of intellectual property in many developing countries (Cardwell and Kerr 2008; Gaisford et al. 2007; Loppacher and Kerr 2005; Perdakis et al. 2004; Isaac and Kerr 2003). In addition, some promising technologies such as biotechnology have run into resistance in developing countries (Holtby et al. 2007) or from their trading partners, causing them to not allow the use of the technology (Smyth et al. 2013). In the face of rapidly expanding populations and incomes, if productivity improvements are inhibited in developing countries, then to maintain or enhance food security alternative sources of supply must be found.

International trade flows can provide, to a considerable degree, an alternative source of supply (Kerr 2011a). Any major gains in agricultural productivity over the next few decades are likely to arise in developed countries. Given the slower growth in population in most developed countries, much of the additional food coming from increases in productivity will be available for export. Furthermore, the major food surplus

countries are concentrated in North America, around the Black Sea and in some South American countries. Basically, if there is any chance of food security being maintained or enhanced in developing countries, it will have to come from imports. Attempts at providing food security through increases in domestic production to foster self-sufficiency, as advocated by some, are bound to fail (Kerr 2011b). This does not mean that increasing local food production will not be important in meeting the challenges of food security, but it should not have as its objective food self-sufficiency. Such an objective can lead to inefficient use of resources, environmental degradation, and increased risks to food security. As suggested above, without the ability, or willingness, to trade, local crop failures can lead to a decline in food security. Given that agricultural systems in developing countries are often already stressed, pushing them harder to achieve self-sufficiency can only lead to more frequent local crop failures. The impacts of climate change are likely to exacerbate the problems associated with attempting to achieve self-sufficiency.

Barriers to international trade will inhibit the role that trade can play in enhancing food security. Protectionist-motivated trade barriers in agriculture considerably reduce the potential benefits of international trade (Gaisford and Kerr 2001). Having the potential contribution that international trade can make to food security further reduced by unintended barriers to trade is a folly and a failure in public policy. The trade problems created by asynchronous MRLs are such an unintended barrier to trade. Given the upcoming global food security challenges, such systemic unintended barriers to food trade warrant closer scrutiny to determine their source and examination of any options for removing their trade restricting elements.

NOTES

1. Here we use a broad definition of production related to food availability so that production can also increase through reduction in waste as well as increases in agricultural productivity.
2. Storage of food such as saved harvest stocks can provide the means for having food available on a daily basis.
3. Or a close substitute.
4. Sometimes through their ability to hoard or, if necessary, to escape to more food secure areas.
5. Some technological advances designed for developed country crops and conditions can be transferred relatively easily to developing countries.

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