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Trade Liberalization and Food Security

Examining the Linkages

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Food and Sustainability

Agricultural Trade and Investment

In 2012, the Quaker UN Office (QUNO) began a four year project working with others in stepping back from the World Trade Organization (WTO) agriculture negotiations to explore some questions at the heart of defining the purpose, structure and direction of governance of trade and investment in agriculture.

QUNO believes that by placing livelihoods and dignity alongside sustainability, resilience and food security as the central objectives of trade and investment for agriculture, and taking account of new global challenges, it is possible to envision a New Framework for Trade and Investment in Agriculture (NFTIA) that would better enable the world to meet peoples' long-term food security needs.

Learn more about our Food & Sustainability work at quno.org/areas-of-work/food-sustainability. For questions on the programme and publication, contact Susan H. Bragdon, Representative for Food & Sustainability at shbragdon@quno.ch.

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Acronyms

AoA	Agreement on Agriculture
CO2	Carbon Dioxide
EROI	Energy Return on Energy Input
FAO	Food and Agricultural Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
IAASTD	The International Assessment of Agricultural Knowledge, Science and Technology for Development
IATP	Institute for Agricultural and Trade Policy
IFAD	International Fund for Agricultural Development
IISD	International Institute for Sustainable Development
LDC	Least Developed Country
NAFTA	North American Free Trade Agreement
NFTIA	New Framework for Trade and Investment in Agriculture
OECD	Organization for Economic Cooperation and Development
QUNO	Quaker United Nations Office
TEEB	The Economics of Ecosystems and Biodiversity
TNC	Transnational Corporation
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
US	United States of America
WTO	World Trade Organization

Introduction

Since the 1980s, there has been growing pressure to liberalize agricultural trade in line with the rise of liberal economic policies on a global scale. But how exactly trade liberalization affects food security is a hotly contested question. The issue is a vital one. Over 30% of the world's active workforce is engaged in agricultural work (World Bank 2014a). For the 70% of the world's poor people who live in rural areas, who are also among the most food insecure people in the world, agriculture is their main economic activity (World Bank 2014a). Some 2.5 billion people are engaged in small-scale agriculture on either a full or part-time basis (IFAD 2013).

At the same time, only around 10% of world cereal production crosses borders through international trade (World Bank 2012, p. 118), and agriculture accounts for just 9.2% of all merchandise trade (WTO 2013). Developing countries account for only a small proportion of global agricultural trade, with the Least Developed Countries (LDCs) making up only 1% of that trade (World Bank 2012, p. 119). Although agricultural trade policies technically govern only a small proportion of the world's trade overall, they can have

far-reaching consequences for several billion farmers and farm communities in the world's poorest countries. Whether small-scale farmers produce primarily for international or domestic markets or even for their own consumption, their livelihoods and food security are affected by global trade patterns and the global rules-framework for international agricultural trade.

The dominant narrative put forward by advocates of trade liberalization is that food security is enhanced under an open trade model. Specifically, pro-liberalization trade advocates make the case that a more open trade regime promotes more efficient agricultural production, which results in an increase in food supply and in turn lower food prices. In other words, they argue that more open trade policies should make food both more available, and more affordable.

Do these claims hold up? Critics are skeptical.

Some are highly skeptical of global economic integration and largely reject the agricultural trade liberalization agenda. For these critics, trade and agricultural market

liberalization that has taken place since the 1980s has only exposed developing world farmers to unfair international economic conditions that privilege wealthy countries and global agribusiness. Other critics accept some role for trade in agricultural products, including food, but only on terms that offer protections for farmers, food security and the environment (on this debate, see Burnett and Murphy 2014).

Debates over trade and food security in this context have tended to either be fought over broad ideological divides, with free trade advocates and critics frequently talking past each other, or quickly get lost in minute details on specific provisions within trade agreements, such as the ongoing WTO negotiations on a new Agreement on Agriculture (AoA). The result is often a stalemate – ideological or political – from which it is difficult to reach consensus. This paper attempts to avoid both overly-determined ideological argumentation and the fine details of trade agreements and negotiations. Instead, it seeks to analyze the conceptual linkages between trade and food security in the hopes that such an exercise might help to move the conversation forward.

The aim of the analysis is to tease out a set of issues for consideration for policymakers that can contribute to making trade policy more sensitive to food security concerns and vice versa.

The analysis presented in this paper highlights three points: first, it shows that the dominant neoclassical economic arguments for agricultural trade have many caveats that need to be put out in the open and examined in light of food security concerns. Second, it shows that current trade theory tends to utilize an outdated notion of food security, and could benefit from a more nuanced understanding of the concept. Third, it shows that trade theory and policy tends to prioritize efficiency (in a narrow sense) over other social goals, including ensuring the right to food, the need to preserve livelihoods and to protect the environment. Given the political importance of these social goals, the paper suggests that we are only likely to see advancement of the dialogue on trade policy and food security once these broader goals are put on equal footing with trade and efficiency concerns.

Pro-Liberalization Arguments for More Open Agricultural Trade

Neoclassical trade theory makes the case that more open trade policies bring net benefits for those countries that adopt them. These benefits, in turn, are seen as positive contributors to food security. There are three common components to this line of argumentation: 1) the theory of comparative advantage demonstrates that more food will be produced more efficiently, resulting in more available and affordable food supplies, both globally and nationally; 2) there is a moral imperative to distribute food from surplus regions of the world to deficit regions via international trade in foodstuffs; and 3) there are dangerous risks to food security associated with restricting trade in food. Each of these arguments is spelled out in more detail below.

Comparative Advantage and Food Security

There is almost unanimous agreement among mainstream economists today that free trade is superior to protection. This near universal belief is based on the theory of comparative advantage, first spelled out by David Ricardo

in 1817. The theory of comparative advantage posits that efficiency gains from specialization and trade will result in an increase in welfare for all trading partners.

The basic idea behind the theory of comparative advantage is that if countries specialize in the products that they are relatively better at producing (i.e. those goods for which they have the lowest opportunity costs) compared to other products, and then engage in trade with one another, they will be better off (i.e. have more goods) than they would have had without trade. The gains from trade hold even when a country does not have an absolute advantage (lowest cost of production) in any goods. In other words, efficiency gains result, and will benefit all countries, when countries specialize in the goods at which they are relatively better at producing and then trade with each other. Because each country faces different opportunity costs in the production of different goods, due to differing endowments such as land, climate, capital, technology, and labour, each country has a comparative advantage in at least some goods (see WTO 2012).

The gains that should result from specialization and trade can be shown mathematically, which is a large part of the appeal of this theory. The theory has been periodically updated by economic theorists over the years to take modern conditions into account (with more detail, for example, on the role of exchange rates as adjustment mechanisms), but the basic principle of comparative advantage – i.e. specialization and trade as a means by which to capture efficiency gains – is still at the centre of international trade theory today.

There are a number of mechanisms by which specialization and trade should lead to material gains for trading partners. According to the theory, these gains accrue across a variety of trading sectors, including agriculture, and help to bolster a range of policy goals, including food security. The WTO, the Food and Agricultural Organization of the United Nations (FAO), and the World Bank all refer to what they see as the benefits of more open trade policies and their contributions to food security. The conceptual linkages in these contexts are made more or less along the following

lines, and together have formed the underlying basis for pursuit of liberalized agricultural trade policies as a key ingredient for a more food secure world (see Lamy 2013; FAO 2003a; World Bank 2007; World Bank 2012).

Openness to trade fosters competition that leads to specialization that enhances efficiency. The idea is that certain crops will be produced in those countries where their production is most efficient – i.e. those that have the natural endowments to enable certain crops to be grown with the fewest resources and in ways that capitalize on economies of scale. These gains will result in greater production of food on a global scale.

The increased global food supply will result in more food being made available in all countries, including those that now import it rather than produce it themselves. This should occur because all countries benefit from trade and thus more food should mean all countries receive a greater share than previously.

A greater supply of food both globally and nationally should result in lower food

prices, as dictated by the forces of supply and demand. Lower food prices should ensure that food becomes more accessible to the poor, hence improving food security.

Efficiency gains, including within the agricultural sector, should contribute to economic growth (through technological innovation and economies of scale), thus creating more job opportunities. These changes within an economy should result in greater incomes, making food more accessible even to those who are not working in the food and agriculture sector.

In sum, neoclassical economic trade theory sees specialization and trade based on the principle of comparative advantage as advantageous for food security because it enables the harnessing of efficiency and its gains on a global scale, resulting in more food, lower prices and better access.

Trade as a Global “Transmission Belt” for Food

A second key argument often put forward for agricultural trade liberalization, which builds on the comparative advantage argument, makes an ethical case for

capturing efficiency gains brought about from specialization and trade. Some countries lack the natural endowments (available land, fertile soil, climate, etc.) to produce all of their own food, while other countries are naturally able to produce more food than they need. Trade enables those countries that are less well endowed to rely on others to provide food for import when their own production falls short (World Bank 2012). Because world agricultural output is more stable than agricultural production at the national and regional level, due to weather variability and other conditions, reliance on international trade to move food from surplus to deficit regions helps to stabilize food prices (World Bank 2012). For trade advocates such as Pascal Lamy, international food trade is thus a “moral obligation” (Lamy 2012).

With climate change threatening to negatively impact agricultural production in a number of countries (Porter et al. 2014), particularly those in the Southern Hemisphere, trade advocates argue that it is imperative not just on moral grounds, but also on environmental sustainability grounds, to produce food in locations

where it is most efficient to do so. They argue that scarce water and energy resources need to be utilized as efficiently as possible in order to make food security more sustainable (Lamy 2013).

The Perils of Protectionism

A third common argument put forward by advocates of agricultural trade liberalization is that there are heavy economic costs associated with continued trade protection in the sector. In making the case for opening agricultural markets in developing countries, the World Bank in particular points out the costs of protection and compares them to projected gains from liberalization (World Bank 2007; World Bank 2012; see also Anderson et al. 2005).

Agricultural protection measures – including export taxes, export restrictions, tariffs, state-managed marketing boards, and public stockholding – are seen by agencies such as the World Bank and WTO as being highly inefficient policies. These organizations argue that these inefficiencies result in distorted price signals that can result in weaker production

levels and higher food prices, both of which harm the poor and exacerbate food insecurity (World Bank 2012; Martin and Anderson 2011). They further point out that protection measures can also make agricultural producers in developing countries more vulnerable by denying them market opportunities (World Bank 2007; Lamy 2013, p.77).

Trade advocates also make the case that the lack of open trading systems for agriculture can also result in thin markets – i.e. those where only a few suppliers dominate the trade in certain crops. In such cases, supply disruptions emanating from just one supplier could result in more volatility and vulnerability to crises for those that rely on imports of that crop. The use of export bans and other export restrictions in this context are seen by trade advocates to be especially problematic, as the erection of sudden barriers to trade can cause price spikes that have direct food security implications for the poor, many of whom spend 50-80% of their income on food. Thin markets and export restrictions were widely referred to as key contributing factors to the food price spikes of 2007-2008 (Headey and Fan 2008).

Shortcomings of the Pro-Liberalization Arguments

The above arguments in favour of liberalized agricultural trade as a support to food security have wide appeal among neoclassical economists because they follow an internal logic and can be quantified. These arguments, however, are contingent on certain assumptions that must hold if the theory is to have predictive value. Whether these assumptions hold in practice is an open question. If the assumptions that underlie the theory are not accurate, then further questions must be asked about the implications of trade liberalization for food security.

Disagreements indeed exist in international policy circles regarding the value of trade for food security. While the WTO and World Bank rarely discuss the underlying assumptions to trade theory in relation to food security, the FAO has more openly raised questions about those assumptions, although it still largely supports a more liberal trade agenda (e.g. FAO 2003a). Taking a more critical stance, in 2011 the United Nations (UN) Special Rapporteur on the right to food called on countries to limit their reliance on trade as a means to meet food security objectives, a call which provoked an open debate with the WTO

Director General at the time, Pascal Lamy (see De Schutter 2011; Lamy 2011).

These disagreements are largely spurred by different interpretations of the assumptions and ideas underlying the linkage between trade and food security. It is worthwhile to examine these assumptions in more detail and assess them in light of food security concerns. In particular, it is important to evaluate the set of economic assumptions that underpin the theory of comparative advantage, assumptions about what constitutes food security within the dominant trade narrative, and assumptions that underlie the prioritization of economic efficiency over other social goals more broadly. Many of these assumptions overlap and reinforce one another. Looking at each in more detail and assessing their validity, helps to better understand the implications for food security.

Weaknesses with the Theory of Comparative Advantage: Implications for Food Security

Ricardo's initial articulation of the theory of comparative advantage (as well as later updates to the theory), is based on

simplified notions of economic activity that rest on a number of both explicit and implicit assumptions. All economic models simplify actual conditions to some extent. The question is whether the assumptions are reasonably representative enough that the predictions of the theory hold, or whether they simplify to such an extent that the model loses its predictive value. The assumptions behind the theory of comparative advantage are wide ranging, and include, for example: capital and labour are immobile between countries; there is perfect mobility of capital and labour within a country; there is perfect competition in markets for goods; there are no externalities; goods are homogenous; there are no costs to transportation; there is full employment; trade between countries always balances (there are no long term trade surpluses or deficits); technology, resources and labour productivity are fixed; and all partners benefit from trade.

A number of economists have critiqued the theory of comparative advantage on the grounds that many of its assumptions are unrealistic (Daly 1993; Prasch 1996, Fuller 2010; Schumacher 2013). Some

have pointed out that they are especially inappropriate when applied to trade with developing countries (Chang and Grabel 2004, p. 60). Within this body of literature that critiques the theory of comparative advantage, there are relatively few studies that examine these assumptions with specific reference to the implications for food security (for several exceptions, see De Schutter 2009; Gonzales 2011; McGeorge 1992). Below is an analysis of those assumptions that have the most relevance for the question of food security and discussion of their implications.

Capital and labour are immobile between countries.

The immobility of labour and capital between countries is a foundational assumption underpinning the theory of comparative advantage. If capital and labour were mobile, capital would gravitate toward opportunities where absolute advantage prevails, and labour would seek out opportunities where wages are highest. Comparative advantage rests on the idea that it is only goods that are mobile across borders, and economies then adjust through various mechanisms

such as prices and exchange rates such that all partners gain from trade even if they lack absolute advantage. This assumption is thus indispensable to the theory (Schumacher 2013).

The immobility of capital and labour is the most questioned assumption of the theory of comparative advantage. Critics point out that capital and labour are in fact quite mobile, especially in today's globalized world where money and people move across borders on a regular basis (Daly 1993; Schumacher 2013). Capital is able to seek out investments anywhere in the world via transnational corporations (TNCs) and international financial instruments, and although less mobile than capital, labour is able to migrate to some extent. Critics argue that if the assumption of immobile capital and labour does not hold, then the theory itself is questionable, as it becomes less clear that there are gains from trade.

The empirical weakness of these assumptions also has important implications for the food security claims made within the dominant trade liberalization narrative. Freely mobile

capital means that TNCs can invest in developing countries to capitalize on absolute advantage that may exist in those locations, for example because of their climate and low labour costs. Global agrifood value chains that dominate the structure of agricultural production and trade today are often characterized by transnational corporate and financial ownership of farm operations in developing countries. In such cases, any gains from trade are likely to accrue to the owners of the capital, which may in fact reside in other countries, rather than to the local farmers that supply those firms or work as paid labour on large-scale foreign-owned farms (see McMichael 2013).

Although limited, international mobility of labour also has implications for the application of trade theory in the agricultural sector because the sector in many countries relies on migrant labour. The ability of farmworkers to migrate seasonally, for example Mexican workers who regularly relocate for a portion of the year to both the United States of America (US) and Canada, enables the receiving countries to enhance their own comparative advantage in farm

production, which then competes with agricultural production in those countries from which the workers migrated (Preibisch 2007). This pattern of labour mobility can push down agricultural prices in both countries, and raises questions about the gains from trade for farmers. Moreover, migrant farmworkers often lack rights to healthcare, decent living conditions, and other benefits (Hennebry and Preibisch 2010).

The factors of production are perfectly mobile within a country.

The theory of comparative advantage assumes that there is complete mobility of the factors of production (labour and capital) between different activities within an economy that will enable specialization in some goods over others. The assumption that labour and capital can easily switch from producing one good to another is essential to the theory as it is what enables countries to specialize, which is required for the efficiency gains to be realized from trade.

Trade advocates admit that there may be some adjustment costs associated

with specialization, but typically assume these costs are minimal and temporary. Moreover, it is generally assumed that the gains from trade that accrue to the country enable governments to cover the adjustment costs and compensate losers. Critics argue that the adjustment costs are far more problematic than trade advocates admit. As Chang and Grabel point out, the adjustment involves not just economic costs, but also human costs (reskilling and searching for new employment) as well as time. Moreover, there is no guarantee that new employment opportunities that emerge from specialization will be better or more fulfilling for workers than previous ones (Chang and Grabel 2004). Further, there is no guaranteed mechanism in place to ensure winners compensate losers. It may well be that those who previously worked in one sector will simply be unemployed when capital moves to other activities (Fletcher 2010).

There are important implications of the weaknesses of this assumption with respect to the food and agriculture sector. Because of the unique link between agriculture and the natural environment, the extended period of time required

for growing seasons, as well its role in providing rural employment and safety nets for peasant families, the structure of production and trade in the agricultural sector is highly inflexible. As such, major shifts between activities within the agricultural sector, or between the agricultural sector and other sectors, are very difficult and costly, especially in the short run (FAO 2003a; see also Chang 2009). Incomes may not rise as expected from what are considered by economists as more economically efficient production activities. Farmers who are transitioned out of farming, for example, are likely to find it difficult to secure employment in non-farm activities or as agricultural labourers (Fuchs and Hoffmann 2013, p.269; Sachs et al. 2007, 30).

Compensation of the “losers” from this adjustment process, for example in the form of social safety nets such as food and nutrition assistance programs or in the form of payments to small-scale producers whose livelihoods are compromised, is also not guaranteed (FAO 2003a; De Schutter 2009). Governments, particularly if they lose out on revenues associated with tariffs in the process of trade liberalization, are

typically short of the resources available to compensate those who are made worse off from agricultural trade liberalization (FAO 2003a). A recent World Bank report indicates that some 870 million of the world’s poorest people (most of whom live in rural areas) are not covered by any social safety nets (World Bank 2014b).

Markets are perfectly competitive.

Competitive markets and a level playing field are further assumptions of comparative advantage. Without perfect competition and a level playing field, efficiency gains from specialization are not guaranteed. The assumption of competitive markets is common in many economic models, but it is also widely critiqued more for not holding in practice, as there are few truly competitive markets in the real world.

The lack of competitive markets and a level playing field is very relevant for food security considerations. Market power is concentrated in the hands of a few actors in the agricultural sector within countries, as well as internationally (Clapp and Fuchs 2009). In some agricultural and

food markets, just a handful corporations dominate the market. Economists consider situations where the top four firms control 40% or less of the market as generally constituting a competitive market. Ratios higher than that imply some degree of market control, which in economic terms is considered inefficient. Concentration ratios in the food and agriculture sector, however, often exceed that percentage, indicating very high levels of concentration that lead to uncompetitive and distorted markets (Murphy 2006). Just four firms dominate the global grain market, for example, accounting for anywhere from 75-90% of the world's grain trade (Murphy et al. 2012). Market power of this sort enables firms to manipulate prices in ways that result in inefficient outcomes (Gonzalez 2011, p.771).

Within countries, certain agricultural producers also dominate markets. In the US, for example, where twenty feedlots feed half of the cattle, just four firms account for over 85% of the market for beef processing (IATP 2010). And only four firms account for 50% of the US market for broiler chickens, and 46% of the pork market (Lang and

Heasman 2004, p.144). Similar levels of concentration exist for the trade in tropical commodities grown in developing countries where just a handful of firms control well over the majority of the market (Fairtrade Foundation 2013, p.26). In those cases where just a few firms dominate certain agricultural markets, it is difficult to argue that any kind of "natural" comparative advantages would emerge and result in efficient resource allocation.

The lack of a level playing field in the agricultural sector is also evident when one compares levels of government support for the agricultural sector between countries. The industrialized countries of the Organization for Economic Cooperation and Development (OECD) have historically paid enormous levels of subsidies to their own farmers at levels that developing countries are unable to match for their own farmers (often because of obligations to liberalize their economies under programs of structural adjustment).

Although some larger developing countries, such as India and China have been able to support their farmers in

recent years, the poorest countries are typically unable to provide any farmer subsidy support at. As Kevin Watkins notes, agricultural production and trade are not determined by comparative advantage at that point, but rather “comparative access to subsidies” (Watkins 1996, p.245). Indeed, the grossly imbalanced levels of agricultural subsidies were one of the main rationales for liberalizing agricultural trade under the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) (Clapp 2006). Combined with continued market restrictions, including the practice of tariff escalation and tariff peaks by the industrialized countries, many of the world’s poorest developing countries are being squeezed from both sides (De Schutter 2009, pp.16-17). The imbalance in subsidy levels remains today, and is currently one of the key sticking points in the Doha Round attempts to renegotiate the AoA (Clapp 2012).

The absence of competitive markets at both national and global scales casts doubt on the ability of the theory of comparative advantage to guide countries to specialize in certain crops. Some countries and firms

that influence their own relative costs for producing agricultural goods can affect markets in ways that force other countries, especially those with a large number of small-scale farmers, out of producing those goods. In this way, politically driven market power of key players, rather than efficient and competitive markets, determines how resources are allocated. As such, comparative advantages in the sector are largely constructed, rather than natural outcomes of competitive market processes (De Schutter 2009).

A number of studies by trade advocates make the case that market liberalization in developing countries will be more beneficial to them than forcing rich countries to reduce their subsidies (Laborde and Martin 2012). In other words, trade advocates argue that subsidies are less problematic than market restrictions, and as such opening the latter is advised even if the former is not possible (see also World Bank 2007). Some subsidies may be less harmful than others, but it is important to acknowledge the sheer size of the industrial country subsidies compared to developing countries.

This differential, in the context of market opening in the poorest countries, results in a situation where small-scale agricultural producers in poor countries are put into direct competition with the largest and most subsidized farmers in the world. The exposure to this highly slanted playing field is often devastating for small-scale producers (De Schutter 2009). Indeed, developing countries have experienced a significant number of “import surges” where their imports of basic staples increased dramatically after they opened their markets to agricultural imports (FAO 2003b; South Centre 2009). These imports often arrive at a much lower price than domestic producers can compete with, due to the factors above, and can therefore be detrimental to domestic food producers.

There are no externalities.

The theory of comparative advantage assumes that all costs of production are paid for by producers of goods, and as such are incorporated into market prices. This assumption is important, because all costs must be internalized in order to determine efficient allocation

of resources, which is essential to the concept of comparative advantage. This assumption has been widely critiqued for being unrealistic, and in particular for ignoring externalized environmental costs of production (Daly 1993; Fletcher 2010; Prasch 1996).

Some economists have recently calculated that if external environmental costs of agricultural production were incorporated into prices of food, that these costs would outweigh any possible gains from trade (Schmitz et al 2012). Some have argued that it is especially hard to internalize costs in agricultural systems due to the nature of specialization and dynamics of external input prices, both of which also affect food prices (Fuchs and Hoffmann 2013, p.269).

The failure to account for externalities has important implications for food security. Countries that specialize their agricultural production according to their comparative advantage tend to produce in large-scale, export-oriented, monocultural farming operations that rely on external inputs that impose enormous environmental costs. Mono-cropped fields geared to agricultural exports

have a negative impact on agricultural biodiversity, the very basis of agriculture and vital for sustainability and resilience of food systems. The use of agricultural chemicals for fertilizer and pest control contributes to chemical overload in soils and waterways, as well as to depletion of fossil fuels on which those chemicals are typically based. The use of machinery further utilizes fossil fuels and contributes to carbon emissions, as does forest-clearing for large-scale crop operations (Weis 2010).

All of these environmental effects of crop specialization for export threaten the long-term sustainability of food systems, and ultimately have negative impacts on food security. Indeed, a recent study has shown crops grown in a world with higher carbon dioxide (CO₂) levels are less nutritious (Leahy 2014). In addition, the environmental costs of transportation are not incorporated into models (indeed another assumption of the model is that there are no transportation costs, let alone environmental costs associated with it). Carbon emissions from fossil fuel based transportation can be significant (Daly 1993; Schmitz et al. 2012).

In the process of specializing, countries typically lose their small-scale biodiverse and low external input farms as well as the ecological benefits that they bring. Small-scale agro-biodiverse farming systems provide ecological services such as water and air filtration as well as carbon absorption (TEEB 2014). These positive externalities are also not incorporated into the theory of comparative advantage, and are not recognized by the market, which typically rewards farming systems that externalize costs rather than benefits (Fuchs and Hoffmann, p.269).

The effects of the failure to incorporate externalities – both positive and negative, are seen in the case of agricultural liberalization under the North American Free Trade Agreement (NAFTA). Maize prices in the US did not reflect the ecological costs of large-scale industrial production, while Mexican maize prices similarly did not incorporate the benefits of small-scale agro-biodiverse production systems typically used by Mexican small-scale farmers. Yet under trade liberalization in the context of NAFTA, “cheaper” US maize that has significant ecological costs flooded

Mexican markets, driving Mexican small-scale producers out of business, and with it causing a loss of the ecological benefits of biodiverse farming systems that themselves were not considered by trade policies (Gonzalez 2011, p.770). The ecological resilience of both the Mexican and US farming systems has been damaged in the process, while Mexico has become dependent on imports, as situation that makes it especially vulnerable to price shocks that originate outside of the country (Wise 2012).

All countries benefit from trade.

One of the key messages of the theory of comparative advantage is that all countries benefit from trade when they specialize and exchange goods. The theory shows that world welfare increases as a result of efficiency gains, although it is recognized by trade theorists that all countries may not benefit equally (FAO 2003). It is assumed, however, that if countries engage in trade at all, they must receive some gains from it or they would cease to exchange goods with other countries. These gains are further assumed to result in higher incomes and

economic growth more broadly within economies that trade (Lamy 2010). For these reasons, trade is often seen as an “engine of growth” by neoclassical economists, which has given it a central place in intergovernmental platforms such as the aforementioned WTO and World Bank and in development policies in most countries.

Critics have raised important questions about the assumptions around the overall benefits from trade. At the broadest level, if the fundamental assumptions noted above do not hold, including immobility of capital and labour, mobility of factors of production within economies, competitive markets and the role of externalities, then there is uncertainty about any gains from trade. Even if there are some efficiency gains at a global scale, there is no guarantee that they would be evenly distributed. Critics have argued that while some countries may gain, others may actually lose, and this can be further differentiated into those who gain and lose within a country, as below. As Daly points out, once countries specialize their production of goods, they have little choice but to trade

because the adjustment back to a more diverse economy is difficult and time-consuming. In such cases, it is not clear whether a country's engagement in trade necessarily means it gains in material terms (Daly 1993, p.51).

The evidence is also weak with respect to the implications of trade for economic growth. Comparative advantage has been critiqued for its focus on static, short-term efficiency gains, and overlooking longer-term dynamic conditions that could affect future growth. As Chang and Grabel argue, specialization based on short-term conditions can stunt long-term growth and development by locking some countries – developing countries in particular – into producing low value added goods, including raw commodities, making it difficult to capture added value from processing and manufacturing (Chang and Grabel 2004, pp.61-63). Nearly all industrialized countries developed in conditions that were protected in order to foster longer-term growth prospects in certain industries, and adopted liberalized trade policies after they had industrialized. This trend holds not just generally, but also in the agricultural sector (Chang 2009).

These qualifications with respect to the gains from trade and their growth potential are very important in light of food security concerns.

A key part of the food security and trade narrative is that incomes should rise, resulting in greater access to food. If those gains are only uncertain at the country level, and if any potential gains are not distributed equally within society, some may find themselves worse off in terms of their access to food (FAO 2003a). This is especially a concern for those who have become unemployed as a result of specialization within the economy. If the economy as a whole has not experienced gains, especially in very poor countries, the government's ability to provide safety nets for losers of this system, as noted above, is compromised. For this reason, Chang argues that for countries with low levels of industrialization, a policy of food self-sufficiency is perfectly sensible, as specialization can be too risky and could result in serious negative consequences arising from hunger and malnutrition (Chang 2009, pp.6-7). Morrison and Sarris also caution that liberalization of agricultural trade policies too early in

a country's development trajectory can leave agricultural sectors weak which can impede rather than improve their prospects for economic growth, poverty alleviation and food security (Morrison and Sarris 2007, p.14).

The gains are also likely to be uneven between countries, with most scenario models of the Doha Round completion showing that high-income countries will gain the lion's share of the gains (which are themselves quite modest on a global scale), with developing countries benefiting far less, and even potentially being net losers from any WTO deal (Wise 2009; IAASTD 2009, p.452). The World Bank, for example, projected that the gains from agricultural liberalization would be around US\$75 billion, but only US\$9 billion of that gain was expected to accrue to developing countries (Anderson et al. 2005). And even among developing countries, any gains are likely to be concentrated in just a handful of agricultural exporting countries, and within these countries those gains will likely flow to a small number of large export-oriented agribusinesses. Low-income countries are not likely to see

much of a gain at all, yet there are likely to be negative consequences especially for their staple-producing small-scale farmers due to increased competition from imports as a result of market opening (Wise 2009).

An Outdated Understanding of Food Security

The dominant narrative that promotes trade as a positive force for food security relies heavily on what many would consider to be an outdated understanding of food security (De Schutter 2011). The key argument presented by advocates of agricultural trade liberalization is that efficiency gains result in more food being produced, which is assumed to be an automatic benefit to global food security. Because all countries should gain from trade, more food should be more available not just globally, but in all countries that engage in trade. More food availability should eventually result in lower food prices, which in turn should make food more affordable for the poorest segments of society (World Bank 2012; Lamy 2013). Acknowledging that hunger persists, advocates of this

narrative argue that if there is hunger, it is because domestic policies have fallen short – governments have either denied appropriate production incentives to farmers through trade protectionism, or have failed to provide adequate safety nets (World Bank 2012; Lamy 2013).

This view of food security that places primary emphasis on increasing global food production has been critiqued for downplaying other important dimensions of food security (Lang and Barling 2012; Jarosz 2011). Although in the 1970s food security was widely defined as food availability at the global scale, revisions to the concept over the course of the 1980s and 1990s have given it more nuance to take into account greater understandings of the causes of hunger (see Maxwell 1996; Barrett 2010). The work of Nobel Prize-winning economist Amartya Sen (1981), and later Sen’s writings with Jean Drèze (Drèze and Sen 1989) contributed to a broader understanding of hunger and food security that have since become widely accepted within the food policy community. Their work showed that hunger is deeply dependent on people’s ability to access food, which

is determined by their ability to obtain resources to produce it, buy it or trade personal items for it.

For many, as this more nuanced understanding of food security highlights, access to food becomes precarious if their livelihoods and savings are threatened by changes in the economy. It has become increasingly accepted in food policy circles that having enough food to feed a population within a country’s borders, or even globally, is no guarantee that everyone will be well fed. Indeed, the world today produces enough food to provide at least 2800 calories per person per day (even after livestock are fed and food waste is accounted for), yet over 840 million people remain chronically undernourished (FAO data, cited in Clapp 2014).

Further refinements to our understanding of the conditions in which hunger occurs have incorporated nutritional dimensions as well as other factors. The 1996 World Food Summit expanded the definition of food security, and minor updates in 2001, remains the most widely used and authoritative definition of the concept

today: “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO 2001). The FAO now also frequently refers to four pillars of food security: availability, access, utilization and stability, when explaining the concept (FAO 2008).

The dominant supply-focused narrative does link food security to access through the mechanism of supply and demand, by arguing that more availability of food – globally and especially regionally and within countries – should lower food prices. The World Bank acknowledges that this relationship between productivity and prices is complicated, however, and that liberalization of trade in agriculture could push up food prices globally while also lowering them domestically (World Bank 2007; World Bank 2012, p.121).

If the above problems are taken into account, and if the material gains from trade are uncertain, some segments of society are likely to be disadvantaged by trade and lose their livelihoods

or employment, or face higher food prices. Without growth in the overall economy, states face constraints in providing financing for safety nets and the agricultural sector more broadly in terms of subsidies and infrastructural investments. It is clear that food security is a deeply complex issue that cannot be addressed easily with simply more food production or trade liberalization.

Some have argued that trade liberalization, if not implemented carefully, can heighten vulnerability to changes in global food prices in the world’s poorest countries, which highlights the importance of the FAO’s stability pillar of food security.

Those countries that have become reliant on food imports over the past thirty years, which include most of the world’s LDCs, are now deeply vulnerable to global price swings (De Schutter 2009). Ensuring stability of access in this context is difficult for many of the world’s poorest countries, yet policies to insulate themselves from the instability of world markets are increasingly necessary in a global economy where food prices are high and volatile (Daivron et al. 2011). At the same time, the mainstream trade narrative is highly

critical of government efforts to provide stability through policies such as grain reserves and subsidized food prices (Murphy 2009).

The dominant trade narrative also says little about nutrition as a key component of food security. Its assumptions regarding production assume that sufficient calories equates to proper nutrition. Yet as research shows, nutritional elements of food security are hugely important, and should not be overlooked. Indeed, proper nutrition has been identified as a key element in individuals' earning potential and in countries' growth dynamics (Ruel 2010). Stunting remains, however, a serious problem, with more than a quarter of the world's children not receiving an adequate diet in their key growth years (FAO 2013).

Economic Efficiency is Prioritized Over Other Social Goals

The emphasis of the dominant narrative on the productivity gains that will result from specialization effectively places economic efficiency over other social goals. The

focus on efficiency is not surprising for economic theory; it is a mainstay of neoclassical economics to work toward greater economic efficiencies. The link to food security within the narrative is tightly linked to the efficiency gains from trade and their subsequent effects. Efficiency may bring some of the material gains that the theory predicts, but an excessive focus on efficiency by policy-makers risks transforming trade to an end, rather than a means to an end. Even Ricardo, in his original conception of comparative advantage, was focused on the implications for society, rather than simply generating efficiency gains for the sake of it.

The rise of economic efficiency as a major concern is only relatively recent development. Efficiency was first expressed as a quantitative ratio in the early 1800s, around the time that Ricardo developed his theory. But it was not until the late 19th and early 20th centuries that efficiency became widely synonymous with productivity, usefulness and "good" (Princen 2005, p.50). The marginal revolution in economics developed the field as a largely mathematical and model-based

discipline, which helps to explain the appeal of comparative advantage, and its adoption by neoclassical economists, even when many earlier economic ideas from classical thinkers were abandoned. The conversion of efficiency to numerical expression, however, has distanced the concept from its relationship to human wellbeing (Princen 2005). It has become an end in and of itself, and we have lost track of how the constant push for efficiency in this narrow sense can result in outcomes that damage other goals that are more difficult to quantify and measure. Princen makes the case that “efficiency needs to be taken down a notch or two” and that “other principles need propping up” (Princen 2005, p.86). If efficiency gains are questionable in the first place because other assumptions are not realistic, it is not at all clear that we should continue to prioritize trade as a primary policy for food security on the grounds of efficiency gains.

It is important to question the prioritization of efficiency goals when discussing food security. Agriculture is widely recognized to be multifunctional,

and food and food security are broadly accepted as being special. As Sachs et al. stress, agriculture is “not a normal business and at the same time, it is much more than a business” (Sachs et al. 2007, p. 31). Indeed, even the Doha Declaration recognizes the unique role agriculture plays in society by stressing that “non-trade concerns”, including food security, the environmental functions of agriculture, and agriculture’s role in rural development, must be taken into account (IISD 2003). But at the same time, these non-trade aspects of the food and agricultural sector are often overshadowed by efficiency arguments in agricultural trade negotiations.

Critics have pointed out that excessive emphasis on efficiency in formulating agricultural trade policy may in some cases lead to worse outcomes. Specialization based on short-term, static efficiency goals can jeopardize long-term food security in a number of ways. It encourages imports of cheap foodstuffs today that often lead to greater market dependence and vulnerability to price shocks in the future. It encourages monocultural farming that

damages biodiversity and other ecosystem services provided by the agricultural sector, ultimately affecting the long-term sustainability of the food system on which food security relies. And it can result in huge social costs that result from loss of livelihood for rural people that affect their ability to access sufficient food.

In market-oriented agricultural systems that rely on efficiency criteria, purchasing power is a primary determinant of food distribution, rather than need. Some market inefficiencies are important for ensuring food security. Certain short-term inefficiencies introduced through government policies in the agricultural sector can lead to increases in long-term productivity (Chang 2009, p.7). The ecological resilience of agriculture relies on a measure of redundancy that can be seen as “inefficient” in economic terms, yet it is vital for the protection of ecosystem services over the long run (Fuchs and Hoffmann 2013). Investments in small-scale, diverse farming systems that may not be profitable in strict economic terms can provide meaningful livelihoods, with enormous social benefit, for a significant portion of

humanity (Sachs et al 2007). And government organized food distribution and social protection programs based on need, rather than market efficiency, are also important to ensure all members of society have access to an adequate diet (Devereux et al. 2012).

If societies are to take food security seriously, efficiency must not be allowed to trump other less quantifiable objectives to the point that food security is threatened. Careful consideration of multiple social goals is required in the formulation of agricultural and food security policies, including policies guiding agricultural trade.

The Right to Food. The work of the UN Special Rapporteur on the right to food has been instrumental in raising awareness of the importance of ensuring food security for all and in particular to provide legislation that protects the right to food. While liberalized markets may increase short-term efficiencies by enabling less expensive foodstuffs to enter markets in countries where food insecurity is high, it can also dampen those countries’ long-term productivity

potential and create costly vulnerability by increasing dependence on world markets that are increasingly volatile (De Schutter 2009). Efficiency and food security concerns need to work in a mutually beneficial way, which may require relaxing efficiency criteria in the short term in order to ensure that the poorest segments of society are able to access sufficient amounts of nutritious food in the long term. Such policies require adequate policy space for governments to make choices about how best to ensure food security and the right to food over the long run without fear of sanctions over policies that may restrict trade in the short run.

Livelihoods and Decent Work.

The current push for agricultural trade liberalization prioritizes agricultural production efficiency yet says very little about agricultural livelihoods and decent work. Agricultural specialization and increased reliance on trade for foodstuffs has a tendency to reduce the decision-making powers of small farmers and in many cases makes them redundant within an economy, forcing them to seek other employment. This kind of “adjustment”

may be seen as economically efficient in neoclassical economic terms, but it fails to recognize the cultural and social significance of livelihoods and meaningful work that are necessary for ensuring human dignity and well-being in addition to social harmony within societies. Loss of autonomy among a population can have devastating implications for social and economic progress within a country over the long term. Moreover, recent research has shown that small biodiverse farms are in fact more efficient in terms of agricultural production than specialized large-scale farms while at the same time providing more employment (Sachs et al. 2007, p.34; Pretty et al. 2006).

Ecological Diversity. Protection and nurturing of a biodiverse natural environment is vital for long-term sustainability of food systems and the provision of food security and livelihoods. An excessive focus on efficiency in narrow economic terms downplays the ecological dimensions of agriculture and food security. Although there is growing economic work that seeks to address environmental “externalities” in the agricultural

sector (TEEB 2014), these external costs and benefits are not currently considered seriously in international trade policy. It is important to expand our understanding of “efficiency” in agricultural production to better recognize the benefits of ecosystem services from small-scale agro-ecological farming methods that are not be captured in crop yield figures. In contrast to industrial agriculture, which is one of the largest contributors to greenhouse gases, agro-ecological practices have climate-cooling effects and are more resilient to climate change (Martinez-Alier 2011).

Numerical quantification of ecological services is not necessarily the most appropriate way to take this factor under consideration. This means of measurement could only make this type of service subservient to the current efficiency focused economic framework (Gomez-Baggethun and Ruiz-Perez 2011). Simply prioritizing ecological goals alongside economic ones in food security policy frameworks opens more avenues for creative policy solutions that address the environmental damages

to the world’s food systems without necessarily having to tie them to numerically calculated efficiency gains.

These alternative goals are fundamentally important for food security, yet have been downplayed in recent decades as economic efficiency has gained prominence with a liberal trade agenda. Trade policies that prioritize these other social goals can be seen as correcting market failures, rather than as market “distortions” (Nadal and Wise 2004). Opening policy options to include these and other measures that balance efficiency concerns equally with other goals is important if trade policy is to provide the appropriate ends of improved human and environmental well-being.

A more balanced approach to considering social goals and dynamic processes can in fact lead to more efficient outcomes, when defined in a wider sense, over the longer-term.

Conclusion:

Getting to Meaningful Dialogue on Food Security and Trade

The relationship between international trade and food security is highly complex, and deeply important to understand in order to formulate appropriate policies. The global agricultural rules framework affects us all, and in particular the world's 2.5 billion small-scale agricultural producers, whether or not they are producing goods that cross borders. The analysis in this paper raises questions about the efficiency gains argument that is central to liberal trade theory and its perceived role in promoting food security. There are many qualifications to the theory of comparative advantage, and many if not most of its key assumptions do not hold, calling into question the predictive value of the theory. Moreover, the ways in which those assumptions fail to reflect actual circumstances have important implications for food security, the livelihoods of small-scale agricultural producers and the environment. Advocates of trade liberalization may see the problems outlined in this paper as reason to continue to push for further market opening while correcting for genuine market failures in order to

reduce the distortions that render trade theory weak in practice. Critics may point out that certain problems associated with specialization and trade, such as damage to ecological diversity and loss of livelihoods for over one billion small farmers, are inherent to trade policies, and reject international trade altogether.

A third option that seeks to navigate between these two extremes is to claim trade policy space that strikes a balance between multiple social goals. Given the uncertainty regarding potential gains from liberalized trade in agriculture, there is a need to strike a balance between efficiency objectives and other social goals such as realization of the right to food, securing farmer livelihoods, and ensuring environmental sustainability. Although these other goals are complex in nature and in many ways cannot be easily quantified with concrete numbers, they are no less important than efficiency goals. These other goals should be given adequate consideration in the development of agricultural trade policy, both at the national level, and internationally in

multilateral, regional and bilateral trade arrangements. It is vitally important that they are incorporated at the negotiation stage of developing trade policies and agreements, rather than as an afterthought at the time of implementation (De Schutter 2009, p. 39).

Trade policies that take a range of considerations into account from the start are likely to enable trade to be more supportive of food security goals than simply focusing on liberalization for the sake of efficiency gains.

Historically, these considerations were very important in devising trade policies for what are today's rich industrialized countries when they first developed their agricultural sectors in the 19th and early 20th centuries (Chang 2009). Under the right conditions, trade may provide some benefits for the world's poorest countries and may play a role in contributing to food security, livelihoods and environmental protection. For this to happen, however, it must be guided by careful policy development under a rules framework that is flexible enough to allow each country the appropriate policy space to determine how best to

balance a variety of social goals within their own unique context.

References

- Anderson, Kym and Will Martin. 2005. "Agricultural Trade Reform and the Doha Development Agenda." *The World Economy* 28(9): 1301 – 27.
- Barrett, Christopher B. 2010. "Measuring Food Insecurity." *Science* 327(5967): 825 – 28.
- Burnett, Kim and Sophia Murphy. 2014. "What Place for International Trade in Food Sovereignty?" *Journal of Peasant Studies*: 1 – 20.
- Chang, Ha Joon. 2009. "Rethinking Public Policy in Agriculture: Lessons from Distant and Recent History." Rome: FAO.
- Chang, Ha Joon, and Irene Gabel. 2004. "Reclaiming Development: An Economic Policy Handbook for Activists and Policymakers." Zed Books.
- Clapp, Jennifer. 2006. "WTO Agriculture Negotiations: Implications for the Global South." *Third World Quarterly* 27(4): 563 – 77.
- Clapp, Jennifer. 2012. "Food." Cambridge: Polity.
- Clapp, Jennifer. 2014. "World Hunger and the Global Economy: Strong Linkages, Weak Action." *Journal of International Affairs* 67(2): 1-17.
- Daivron, Benoit; Niama Nango Dembele, Sophia Murphy and Shahidur Rashid. 2011. "Price Volatility and Food Security." A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Online at: http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE-price-volatility-and-food-security-report-July-2011.pdf
- Daly, Herman E. 1993. "The Perils of Free Trade." *Scientific American* 269(5): 50-50.
- De Schutter, Olivier. 2009. "International Trade in Agriculture and the Right to Food." *Dialogue on Globalization*. Occasional Paper No.46. Friedrich Ebert Stiftung.
- De Schutter, Olivier. 2011. "The World Trade Organization and the Post-Global Food

Crisis Agenda: Putting Food Security First in the International Trade System.” Activity Report of the UN Special Rapporteur on the Right to Food. Online at: http://www.wto.org/english/news_e/news11_e/deschutter_2011_e.pdf

Devereux, S.; W. B. Eide; J. Hoddinott; N. Lustig and K. Subbarao. 2012. “Social Protection for Food Security.” A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Online at: http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-4-Social_protection_for_food_security-June_2012.pdf

Drèze, Jean and Amartya Sen. 1989. “Hunger And Public Action.” Oxford University Press.

Fairtrade Foundation. 2013. “Powering Up Smallholders to Make Food Fair: A Five Point Agenda.” Online at: http://www.fairtrade.org.uk/includes/documents/cm_docs/2013/F/FT_smallholder%20report_2013_lo-res.pdf

FAO. 2001. “State of Food Insecurity in the World 2001.” Rome: FAO. Online at: <http://www.fao.org/docrep/003/y1500e/y1500e00.htm>

FAO. 2003a. “Trade Reforms and Food Security.” Rome: FAO. Online at: <http://www.fao.org/docrep/005/y4671e/y4671e08.htm>

FAO. 2003b. “WTO Agreement on Agriculture: The Implementation Experience: Developing Country Case Studies.” Rome: FAO. Online at: <http://www.fao.org/3/contents/d9cdea2f-bfb1-5c18-80e6-9b2e6f0fddad/y4632e00.htm>

FAO. 2008. “An Introduction to the Basic Concepts of Food Security.” Online at: <http://www.fao.org/docrep/013/al936e/al936e00.pdf>

FAO. 2013. “The State of Food Insecurity in the World 2013.” Rome: FAO. Online at: <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>.

Fletcher, Ian. 2010. “Dubious Assumptions of the Theory of Comparative Advantage.” *Real World Economics Review* (54): 94 – 105.

Fuchs, Nikolai and Ulrich Hoffmann. 2013. “Ensuring Food Security and Environmental Resilience – the Need for Supportive Agricultural Trade Rules.” UNCTAD Trade and Environment Review: 266-275. Geneva: UNCTAD.

Gonzalez, Carmen G. 2011. “An Environmental Justice Critique of Comparative Advantage: Indigenous Peoples, Trade Policy, and the Mexican Neoliberal Economic Reforms.” University of Pennsylvania Journal of International Law 32(2): 723 – 803.

Headey, Derek, and Shenggen Fan. 2008. “Anatomy of a Crisis: The Causes and Consequences of Surging Food Prices.” Agricultural Economics 39: 375 – 91.

Hennebry, Jenna, and Kerry Preibisch. 2012. “A Model for Managed Migration? Re-Examining Best Practices in Canada’s Seasonal Agricultural Worker Program.” International Migration 50.s1: e19-e40.

IAASTD. 2009. “International Assessment of Agricultural Knowledge, Science and Technology for Development: Global Report.” Island Press. Online at: <http://www.unep.org/dewa/assessments/ecosystems/iaastd/tabid/105853/default.aspx>

IATP. 2010. “NAFTA: Fueling Market Concentration in Agriculture.” Online at: <http://www.stwr.org/food-security-agriculture/nafta-fueling-market-concentration-in-agriculture.html>

IFAD. 2013. “Smallholder Farmers Key to Lifting Over One Billion People Out of Poverty.” Press Release, June 4. Online at: <http://www.ifad.org/media/press/2013/27.htm>

IISD. 2003. “Non-Trade Concerns in the Agricultural Negotiations of the World Trade Organization.” International Institute for Sustainable Development Trade and Development Brief No.1. Online at: http://www.iisd.org/pdf/2003/investment_sdc_may_2003_1.pdf

Jarosz, Lucy. 2011. “Defining World Hunger: Scale and Neoliberal Ideology in International Food Security Policy Discourse.” Food, Culture and Society: An International Journal of Multidisciplinary Research 14(1): 117 – 39.

Laborde, David and Will Martin. 2012. "Agricultural Trade: What Matters in the Doha Round?" *Annual Review of Resource Economics* 4(1): 265 – 83.

Lamy, Pascal. 2010. "Comparative Advantage is Dead? Not at All, Lamy Tells Paris Economists", Speech 12 April. Online at: http://www.wto.org/english/news_e/sppl_e/sppl152_e.htm

Lamy, Pascal. 2011. "Lamy Rebuts UN Food Rapporteur's Claim that WTO Talks Hold Food Rights 'Hostage.'" Online at: http://www.wto.org/english/news_e/news11_e/agcom_14dec11_e.htm

Lamy, Pascal. 2012. "Pascal Lamy Speaks on the Challenge of Feeding 9 Billion People." Speech, February 2012. Geneva. Online at: http://www.wto.org/english/news_e/sppl_e/sppl216_e.htm

Lamy, Pascal. 2013. "The Geneva Consensus: Making Trade Work for Us All." Cambridge: Cambridge University Press.

Lang, Tim and Michael Heasman. 2004. "Food Wars: The Global Battle for Mouths, Minds and Markets." London: Earthscan.

Lang, Tim and David Barling. 2012. "Food Security and Food Sustainability: Reformulating the Debate." *The Geographical Journal* 178(4): 313 – 26.

Leahy, Stephen. 2014. "CO2 Producing Hollow Food." Inter Press Service, 7 May 2014. Online at: <http://www.ipsnews.net/2014/05/co2-producing-hollow-food/>

Maxwell, Simon. 1996. "Food Security: a Post-modern Perspective." *Food Policy* 21(2): 155 – 70.

McGeorge, Robert L. 1992. "Accommodating Food Security Concerns in a World of Comparative Advantage: A Challenge for GATT's International Trade System." *Neb. L. Rev.* 71: 368.

Martinez-Alier, Joan. 2011. "The EROI of Agriculture and Its Use by the Via Campesina." *Journal of Peasant Studies* 38(1): 145 – 60.

McMichael, Philip. 2013. "Value-chain Agriculture and Debt Relations: Contradictory Outcomes." *Third World Quarterly* 34(4): 671 – 90.

Morrison, Jamie and Alexander Sarris. 2007. "Determining the Appropriate Level of Import Protection Consistent with Agriculture Led Development in the Advancement of Poverty Reduction and Improved Food Security." In J. Morrison and A. Sarris (eds). *WTO Rules for Agriculture Compatible with Development*. Rome: FAO.

Murphy, Sophia. 2006. "Concentrated Market Power and Agricultural Trade." *Ecofair Trade Dialogue Discussion Papers No 1*: 14. Online at: <http://www.iatp.org/iatp/publications.cfm?accountID=451&refID=89014>.

Murphy, Sophia. 2008. "Globalization and Corporate Concentration in the Food and Agriculture Sector." *Development* 51(4): 527 – 33.

Murphy, Sophia. 2009. "Strategic Grain Reserves in an Era of Volatility." Minneapolis: IATP. Online at: <http://www.iatp.org/documents/strategic-grain-reserves-in-an-era-of-volatility-0>

Murphy, Sophia, David Burch, and Jennifer Clapp. 2012. "Cereal Secrets: The World's Largest Grain Traders and Global Agriculture." Oxfam Great Britain.

Nadal, Alejandro and Timothy Wise. 2004. "The Environmental Costs of Agricultural Trade Liberalization: Mexico – U.S. Maize Trade under NAFTA." Online at: <http://ase.tufts.edu/gdae/Pubs/rp/DP04NadalWiseJuly04.pdf>

Porter, J.R., L. Xie, A.J. Challinor, K. Cochrane, S.M. Howden, M.M. Iqbal, D.B. Lobell, and M.I. Travasso, "2014: Food security and food production systems." In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova,

B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.). New York; Cambridge: Cambridge University Press.

Prasch, Robert. 1996. "Reassessing the Theory of Comparative Advantage." *Review of Political Economy* 8(1): 37-56.

Preibisch, Kerry. 2007. "Local Produce, Foreign Labor: Labor Mobility Programs and Global Trade Competitiveness in Canada." *Rural Sociology* 72(3): 418-449.

Pretty, Jules et al. 2006. "Resource-conserving Agriculture Increases Yields in Developing Countries." *Environmental Science & Technology* 40(4): 1114-1119.

Princen, Thomas. 2005. "The Logic of Sufficiency." Cambridge, MA: MIT Press.

Ruel, Marie. 2010. "The Oriente Study: Program and Policy Impacts," *Journal of Nutrition* 140(2): 415 – 418.

Sachs, Wolfgang et al. 2007. "Slow Trade-Sound Farming: A Multilateral Framework for Sustainable Markets in Agriculture". *Ecofair Trade Dialogue*. Online at: http://www.misereor.org/fileadmin/redaktion/slow_trade_sound_farming.pdf

Schmitz, Christoph et al. 2012. "Trading More Food: Implications for Land Use, Greenhouse Gas Emissions, and the Food System." *Global Environmental Change* 22: 189 – 209.

Schumacher, Reinhard. 2013. "Deconstructing the Theory of Comparative Advantage." *World Economic Review* 2: 83 – 105.

Sen. Amartya. 1981. "Poverty and Famines: An Essay on Entitlement and Deprivation." Oxford: Oxford University Press.

South Centre. 2009. "The Extent of Agriculture Import Surges in Developing Countries: What are the Trends?" Analytical Note SC/TDP/AN/AG/8. Geneva, Switzerland.

TEEB. 2014. "The Economics of Ecosystems and Biodiversity (TEEB) for Agriculture

and Food.” Concept Note, February 27. http://www.teebweb.org/wp-content/uploads/2014/03/TEEB-for-Agriculture-and-Food_Concept-note1.pdf

Watkins, Kevin. 1996. “Free Trade and Farm Fallacies: From the Uruguay Round to the World Food Summit”, *The Ecologist* 26(6): 244-255.

Weis, Tony. 2010. “The Accelerating Biophysical Contradictions of Industrial Capitalist Agriculture.” *Journal of Agrarian Change* 10(3): 315-341.

Wise, Timothy. 2009. “Promise or Pitfall? The Limited Gains from Agricultural Trade Liberalisation for Developing Countries.” *The Journal of Peasant Studies* 36(4): 855 – 70.

Wise, Timothy. 2012. “The Cost to Developing Countries of U.S. Corn Ethanol Expansion, 2012.” *Global Development and Environment Institute Working Paper 12-2*. Online at: <http://www.ase.tufts.edu/gdae/Pubs/wp/12-02WiseGlobalBiofuels.pdf>

World Bank. 2007. “World Development Report 2008: Agriculture for Development.” Washington, D.C.: World Bank. Online at: http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf

World Bank. 2012. “Global Monitoring Report: Food, Nutrition and the Millennium Development Goals.” Washington, D.C.: World Bank. Online at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/0,,contentMDK:23148901~pagePK:64165401~piPK:64165026~theSitePK:476883,00.html>

World Bank 2014a. “World Development Indicators.” Online at: <http://data.worldbank.org/data-catalog/world-development-indicators>

World Bank. 2014b. “The State of Social Safety Nets 2014.” Washington, D.C.: World Bank. Online at: <http://www.worldbank.org/en/topic/safetynets/publication/the-state-of-social-safety-nets-2014> WTO. 2012. Online at: http://etraining.wto.org/admin/files/Course_389/CourseContents/TEC-E-Print.pdf

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