African Technology Development Forum

ATDF JOURNAL VOLUME 8, ISSUE 1/2 2011

SCIENCE; INNOVATION; TECHNOLOGY; TRADE; DEVELOPMENT

Food Sovereignty and New Trade Protectionism

The road to hell is paved with good intentions

`Saint Bernard of Clairvaux`

HIGHLIGHTS:

ISSN: 1817-2011
Abbreviation: Afr. Technol. Dev. Forum j

Inside this Issue

EDITORIAL

The end of economic ideology in African agriculture

Calestous Juma

Africa can feed itself in a generation. It can do so by harnessing abundant technologies that are available worldwide, expanding internal regional markets and expanding rural infrastructure. But to achieve this, African leaders at the highest level possible will need to take charge of the agenda for agriculture. The continent cannot afford anymore to listen to well-meaning consultants in affluent countries that still rely on conventional and traditional approaches in dealing with the ongoing crisis. It has sufficient lessons to learn from within Africa and from other countries to draw on.

Many African countries have managed in recent years to design innovative policies and enable institutional changes that help promote agricultural innovation. The courageous leaders of these countries have realized that they should rely on tested pragmatism rather than economic ideology. For example, the recovery of Rwanda after the genocide focused on reviving agriculture. Malawi has shown that strategic support for farmers can stimulate agriculture within a short period. In both cases decisive high-level leadership on the part of heads of state and the use of existing technologies have played a major role.

These countries have learned that agricultural development can greatly benefit from the global knowledge economy if research conducted in academia, government, civil society, and private industry is effectively applied in the local private sector in accordance with a well-designed regional integration policy.

Yet, the untapped potential of African agriculture becomes striking when comparing it to Asia, which has seen huge increases in agricultural yields in the last 40 years. Sub-Saharan Africa (SSA)'s food production by contrast is actually 10% lower today than it was 1960, while the aggregate world food production has increased by 145% over the same period of time. As a result the continent has become most dependent on food imports and is most vulnerable to fluctuations in world food prices. The reason for this poor track record is decades of imposed underinvestment in agriculture. The imposition was guided by ideologies that opposed funding to infrastructure and technical training, two critical foundations for agricultural innovation. For example, fertilizer use is strikingly low—only 13kg per hectare in sub-Saharan Africa compared with 71kg in northern Africa. Only 24% of cereal production uses improved seeds compared with 85% in eastern Asia. The lack of nutrient input has led to a dramatic depletion of soil quality; 75% of farmland in sub-Saharan Africa has been degraded by overuse. Only about 4% of Africa's crops are irrigated, compared to about 40% in South Asia. It is therefore important for African leaders to give these problems in agriculture political priority and address them in accordance with the principle of best-practice. This involves efforts to reduce the risks of failure by working together through regional integration bodies to learn from their own successes in other technological fields such as the rapid diffusion of mobile phones.

The combination of new knowledge and technologies with flexible local techniques, resources and experience enables the development of new local products and services, harnesses technological innovation, encourages entrepreneurship, increases agricultural output, creates markets, and improves infrastructure. Improved measures in food processing and storage can help stabilizing agricultural markets and stimulating rural innovation. For example, pastoral communities routinely lose their cattle when there is drought. This tragedy is unfolding right now in Kenya. Renewable energy sources such as solar or wind power could be used to run communal meat refrigeration facilities. Such innovations will come from increased involvement of engineers in economic matters with the help of other social and natural sciences. *Reproduced from ATDF blog by Calestous Juma.*

Food Sovereignty: Old Protectionism in Somewhat Recycled Bottles

William A. Kerr
Senior Associate Estey Centre for Law and Economics in International Trade, and
Professor at the University of Saskatchewan, Canada
Email:wak532@mail.usak.ca

Abstract:

One pillar of the food sovereignty movement is local self-sufficiency achieved through protectionist measures. This protection-based self-sufficiency is examined with regard to the objectives of food sovereignty and its ability to achieve food security. The results suggest that it does little in assisting the achievement of the broader goals of food sovereignty – other policies will be required. Further, it cannot provide meaningful food security in the face of the riskiness of agricultural production. Those interested in achieving food sovereignty need to reassess this pillar of their proposed policies.

Keywords: famine, local, protectionism, security, trade

1. Introduction

> *The laws concerning corn may everywhere be compared to the laws concerning religion. The people feel themselves so much interested in what relates either to their subsistence in this life, or to their happiness in a life to come, that government must yield to their prejudices, and, in order to preserve the public tranquillity, establish that system which they approve of. It is upon this account, perhaps, that we so seldom find a reasonable system established with regard to either of those two capital objects [emphasis added]. Adam Smith, 1776 [1]*

The debates between free traders and protectionists have been going on since the dawn of economic discourse – and likely before they were recorded. One of the major motivations behind Adam Smith's writing of the *Wealth of Nations* was to debunk the protectionist policy of mercantilism. Food policy has often been at the centre of these debates with Britain's protectionist *corn laws* – in Smith's time corn (grain) was synonymous with food as it was virtually the only storable and transportable food product – being a fiercely contested issue in public policy. The repeal of the *corn laws* by Prime Minister Robert Peel in 1846 during the Irish Famine was heralded as a major victory for free traders [2].

Any victory by free traders, however, has always been short lived. Protectionists tend to be resourceful, resilient, able and persistent – after all there is usually a lot at stake. There have been a host of protectionist arguments that have emerged over the last 250 years – infant industry, unequal levels of development, declining terms of trade for commodities, national security, import substitution-based industrialization, etc. Over time, each of these theories has been intellectually debunked, primarily by the rigorous economic analysis undertaken by well-known economists [3]. The result has been to effectively strip away any association of protectionism with the *general good* and to expose the fact that the beneficiaries of protectionism are those with personal vested interests. Without the *cloak of intellectual legitimacy* it makes much more difficult to persuade politicians to extend protection. Thus, one of the things that protectionists crave is to be able to have their particular vested interest couched in terms of the good of society – *the general good*. Time and again new protectionist ideas emerge which claim to have the welfare of society at their heart.

Over the last twenty years there has been an important change in the composition of those asking for protection. In Adam Smith's [4] time it was clear who was asking for protection:

In every country it always is and must be the interest of the great body of the people to buy whatever they want of those who sell it the cheapest. The proposition is so very manifest, that it seems ridiculous to take any pains to prove it; nor could it ever have been called in question, had not the interested sophistry of merchants and manufacturers confounded the common sense of mankind. Their interest is, in this respect, directly opposite to that of the great body of the people. As it is the interest of the freemen of a corporation to hinder the rest of the inhabitants from employing any workmen but themselves, so it is the interest of the merchants and manufacturers of every country to secure to themselves the monopoly of the home market. Hence ... the extraordinary duties upon almost all goods imported by alien merchants. Hence the high duties and prohibitions upon all those foreign manufacturers which can come into competition with our own [4].

Those asking for protection were producers (of goods and services). This focus on producers as the source of protectionism continued right through to the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947 and subsequently the World Trade Organization (WTO) in 1995. In the economic model that underlies the WTO, producers have a direct interest in asking for protection because it yields them a higher price. Consumers, on the other hand, are never expected to ask for protection because it means they pay higher prices [5]. Even up to the time of the formation of the WTO this was a relatively safe assumption. As a result, the framers of the GATT/WTO made no provisions for other groups in society asking for protection. It came as a great surprise to most trade policy professionals when groups of protestors with a wide range of interests took

to the streets in Seattle in 1999 to protest the WTO meeting that was underway. Groups other than producers, particularly consumers and environmentalists (but also those concerned about ethical issues pertaining to foreign production practices and the influence of multinational corporations) have become active advocates for protection and opponents of trade liberalization [6]. In agriculture, these *new protectionists* have been particularly active in the area of trade in the products of biotechnology [7]. Trade liberalization is generally predicted to be welfare enhancing but it is easy to show that the welfare enhancing result need not arise when groups other than producers have concerns about imports [8].

The WTO has been the focus of heavy and persistent criticism by *new protectionists* for failing to take their views into account in the making of trade policy. The Member States of the WTO have not been willing to deal with the issue of how to incorporate the concerns of *new protectionists* into the rules of trade leaving the WTO bureaucracy with nothing to offer beyond providing increased transparency and opportunities for consultation. Little academic work has been done on how trade institutions might be reformed to incorporate such new interests [9]. The failure of the Members of the WTO to deal with their concerns has been a constant source of frustration among groups in civil society and has, in part, been responsible for their rejection of multilateral institutions and international trade as positive solutions to the problems they perceive [10].

2. Food Sovereignty

Definitions of food sovereignty tend to include a *kitchen sink* of objectives. The movement that proposes food sovereignty as a policy prescription appears to be comprised of elements of traditional producer-based protectionists (farmers) and *new protectionists* including consumers, environmentalists and anti-globalization elements. While the movement rejects the legitimacy of international trade institutions, it is also not nation-based. Nations, of course, are the normal units upon which sovereignty is usually seen to reside. The unit upon which food sovereignty is defined is usually articulated as *local* – although how this is defined is relatively nebulous. Just as it rejects international institutions, it also rejects non-local governments as potential infringers on food sovereignty.

Essentially, the movement is about control of the food system. One does not have food sovereignty if someone else has control of ones access to food. From this perspective there are many demons that threaten sovereignty. These include, among others; market prices that are sometimes so low as to drive farmers off the land threatening local food supplies; multinational corporations that pursue non-local objectives; non-local farmers that grow food that may not be healthy or produced in an environmentally sustainable fashion; foreign governments that lower prices and flood local markets through subsidization; domestic governments that support non-local ownership of farmland, allow questionable and inappropriate technologies to be used or tax agriculture in the name of economic development; globalization that allows diets to diversify away from local agricultural products; industrial growth that alters the climatic parameters under which local production must take place; the attraction of urban life that removes the young from local agricultural production; multilateral trade institutions whose rules inhibit protection of local markets. Of course, the actual efficacy of each of these demons, and in fact whether some are demons at all, forms the heart of the debate over globalization, but they are generally accepted as important concerns among those that support the food sovereignty movement.

One reaction to these perceived threats has been a belief that the key to their removal relies primarily in local food self-sufficiency. If local areas, however, are not self-sufficient under normal market conditions, the way to foster self-sufficiency is to exclude non-local food from the market. It means putting barriers to market access in place. This is protectionism. The result is higher prices for farmers and increased production. Is it anything new? It is certainly wrapped in a new *general good* argument, but whether that legitimacy is deserved or not, requires further scrutiny.

Protectionism that leads to local self-sufficiency is not a cure-all for all of the concerns that those advocating food sovereignty wish to deal with. It does not deal with, for example, the problem of land not being owned locally. There have been longstanding issues with absentee landlords in agriculture. More recently, there has been considerable acquisition of large tracts of agricultural land, particularly in Africa, by both multinational corporations and foreign parastatal companies. The latter may be particularly threatening to food sovereignty as they may be acquiring secure sources of resources that may be used to produce for their home markets in times of high prices or domestic shortages. Local self-sufficiency bolstered by protectionist measures will not deal with this threat. Land used to provide local self-sufficiency need not be locally owned. Further, barriers to market access cannot prevent land owners from shipping food out of the local area to supply their home markets. Irrespective of protectionist measures, these issues must be dealt with through direct policies relating to land ownership.

Local self-sufficiency does not prevent the use of controversial technologies such as genetic modification. Self-sufficiency can be provided by crops produced using biotechnology. Again, policies to deal directly with the use of technologies are required. This is also true for production methods such as organic that may be desired because of being perceived to be more sustainable. Just because food is grown locally does not ensure that it is produced organically – direct regulation is required, not trade policies.

Local production cannot ensure that food is safe. Much is made of *being able to look the local farmer in the eye* when purchasing food. While it is true that local farmers may fear a loss of trust by local consumers, many of the attributes of safe food are credence in nature whereby the consumer cannot tell if the attribute is contained in the food even after consumption (e.g. whether the food is a host for *e coli* or was produced using pesticides)

[11]. Some food safety attributes can be discerned by consumers at time of purchase – inspection attributes (e.g. mould on vegetables) – or upon consumption – experience attributes (e.g. meat that has spoiled) – but many cannot. Local farmers may simply not have the skills to produce and handle food in a safe way – so *looking him or her in the eye* – cannot ensure safety. Of course, some local farmers may simply be untrustworthy. Hence, active food safety systems are required to ensure the safety of food even if it is produced locally. Thus, separate measures from trade policy are required to produce the *safe food* element of food sovereignty.

Control of the food system by multinational corporations is another concern of food sovereignty advocates. Local self-sufficiency does not necessarily free the food system from corporate control. Corporate control of supply chains has little to do with whether food is produced and consumed locally. This is where the vague definitions of *local* can lead to imprecise analysis. If *local* means that supply chains are shortened so that all food transactions take place only between farmers and final consumers, then there is no role for middlemen. This is, however, a rather extreme interpretation of *local*. While this may be feasible for fresh produce, milk and eggs which can be consumed in an unprocessed state in season, most food must be processed either so that it can be stored for non-seasonal consumption or so that it is presented to consumers in a desirable form. Even largely self-sufficient communities in medieval Europe had millers, bakers and butchers because the benefits of scale and specialization freed farmers and households from the drudgery of, for example, grinding their own grain and the duplicate investment of household milling equipment. Of course, these specialists are middlemen and were often mistrusted even if they were local. There are many recorded frictions between, for example, millers and their customers (e.g. shorting the weight during milling). In longer local supply chains the middlemen may be multinational corporations which would require separate regulation just as medieval millers did. The point is that self-sufficiency gained through protection does not alone remove the risk of exploitation by middlemen, whatever their origin.

Being self-sufficient does not prevent domestic governments from, for example, taxing local agriculture to pay for economic development projects, which has often been the case in developing countries. To gain this facet of food sovereignty requires local communities to obtain the right to autonomy from their national (or subnational) governments.

Clearly, the attainment of food sovereignty requires a bundle of policies. Local self-sufficiency arising from barriers to market access can provide some of the attributes of food sovereignty; it isolates local markets from international price fluctuations that local farmers can have difficulty coping with and means that local farmers no longer have to compete against food that enters international markets at artificially low prices due to the agricultural subsidies provided by developed countries [12]. One extremely important point is that protection is not a long term solution to the low incomes of farmers. While barriers to market access lead to short term price increases for farmers, over time the benefit of those higher prices will be eroded by rising land prices. The inevitability of the *capitalization* of policy generated benefits into fixed assets such as farmland is a generally accepted outcome of policy intervention [13]. On the other hand, in countries which depend on imports of food, import restricting policies often push up food prices imposing considerable hardship on the urban poor.

3. A Closer Look and Self-sufficiency

Is self-sufficiency a reasonable food sovereignty objective? While on a simplistic level self-sufficiency would seem to remove control of a local food system from the influence of others, a closer examination suggests a number of *non-sequiturs* in the relationship between food sovereignty and self-sufficiency.

Protection to achieve self-sufficiency will lead to higher prices for food. If self-sufficiency was already achieved it would mean that local producers are competitive with non-local prices. While higher food prices are good for farmers, at least in the short run, they will have a negative impact on consumers – they must pay higher prices for food. It may be that consumers are willing to accept these higher prices as the cost of being locally sovereign. There is a presumption, however, that all local consumers are willing to pay this food sovereignty premium. This is a large assumption, particularly for poor people in developing countries – a great many of whom survive on less than US$2.00 per day. For them, any price increase can move them from being adequately nourished to being malnourished or undernourished. If not all local consumers are willing accept paying the food price premium associated with local sovereignty then their food system is controlled by the group that imposed the trade barriers. Do non-consenting consumers have food sovereignty?

In Africa, and developing countries generally, there are large urban conurbations. Many of these are currently supplied with food from international markets. Their populations consist of many thousands, if not millions, of people. Beyond one generation they have little contact with the rural hinterland. Does local food sovereignty mean they should be supplied exclusively from their local hinterlands? In many cases *local* hinterlands would struggle to supply these large non-rural populations no matter what prices could be charged. At the very least, prices for locally produced food would have to rise substantially. Would the urban poor voluntarily accept these price increases to achieve food sovereignty with people with whom, in reality, they have little affinity. If it was imposed on them by those in the hinterland it is unlikely that they would feel individually sovereign.

If local food self-sufficiency is to be the norm, the question has to be asked as to the role of current food surplus producing localities. There are many areas of the world that produce quantities of food far beyond their local requirements – roughly equal in magnitude to those who are not self-sufficient. If food sovereignty means that areas of the world that are not currently self-sufficient are to become so, there will be no markets for

those areas that can produce surpluses. In many parts of the world that are not self-sufficient the agricultural land is already stressed due to the heavy demands of production. Increasing production to achieve self-sufficiency can only lead to further stress on the land, threatening the environment, sustainability and biodiversity. At the same time, productive land in areas easily capable of producing surpluses would lie fallow.

All of this aside, the major problem with local self-sufficiency is that it cannot guarantee food security. Famines are local phenomenon. Famines arise from local food systems failures. While it is possible through protection to achieve self-sufficiency (including some surplus to create carryover stocks) in *normal* times, agricultural production does not always take place under *normal* conditions. Local production cannot be completely isolated from drought, frost, pests, diseases (both crops and livestock), floods, input shortages, war and the myriad of other ills that affect agricultural production. Crops fail, livestock die. Local sovereignty cannot deal with food systems failures. This is why there are local famines reported somewhere in the world almost every year. Africa has been particularly blighted with local food systems failures in recent years, largely as a result of drought or war. The problem has been particularly acute in Africa because its transportation infrastructure is so poor, so that areas of famine are effectively isolated and dependant on local resources. The heartbreaking long lines of emaciated people streaming to refugee camps where food aid is being distributed – effectively abandoning their local place of residence – is harsh evidence of the dangers of being excessively reliant on local resources to provide food. Climate is changing. One consistent prediction is that events such as droughts will become more frequent and more severe [14]. This means local food systems failures will become more common.

Famines, of course, are extreme examples of local food systems failures. A famine is when large numbers of people cannot afford food at local prices – they have no access to food. The rich always have access to food. Local food systems failures, however, can impose hardship on a large proportion of a local population through significant price rises even if a famine does not arise. Significant price increases can, as suggested previously, move those with low incomes from having adequate nutrition into being malnourished or undernourished – a considerable deterioration in their quality of life. Neither famine victims nor those who suffer declines in their nutritional status enjoy food security. Clearly, one can achieve local food sovereignty whereby food policy is determined locally, but fail to enjoy food security.

Trade is the cure for the lack of food security. If there are no protectionist barriers to trade in place, the increase in prices that arise from local food systems failures provide a signal for food to move into the locality where food is in short supply. These increased food supplies arriving from outside the local area have the effect of moderating prices thus making food accessible to those who might otherwise have experienced famine. Lower prices can also remove the threat of nutritional declines. In many cases, unfortunately, a trade response cannot take place due to government restrictions or poor transportation infrastructure and there is no food security.

Of course, there is a dynamic element to markets. In times of famine, the poor may in the short run exhaust all of their resources in the scramble to acquire food and, thus, not be able to purchase food once it arrives from elsewhere. This, for example, was the case in the Irish famine of the 1840s – the *an Gorta Mór* – which required the distribution of free food though soup kitchens [15]. In today's terms this means governments providing income supplements to the poor, or if this is not proffered or feasible, food aid [16]. Of course, food aid is subsidized trade.

In the absence of price arbitrage between local markets and non-local markets, the price spikes associated with local food systems failures tend to be exacerbated by hoarding and speculation. Hoarding removes additional food from the market as individuals attempt to ensure that they have food at a later time. Speculators remove food from the market betting that the food can be sold later at a higher price. The short run effect is to drive up current prices. Of course, hoarders and speculators are often pariahs to local residents and politicians. The most effective means to discourage hoarding and speculation is the threat of the arrival of non-local food supplies – why hoard if supplies of food will be plentiful in the future and who would speculate when future prices are expected to fall.

A policy of protection-based local self-sufficiency means that there is no need for trade in normal times. As a result, the infrastructure and institutions to facilitate trade may not develop [17]. As a result, if there is a local food systems failure, it may be much more difficult to obtain food supplies from outside the local area – leading to deteriorating nutritional status or famine. Having good infrastructure for moving goods between localities is one of the reasons consumers in developed countries never experience famines or sustained local food price increases. Local food systems failures happen all the time in developed countries – local producers suffer droughts, floods, grasshopper infestations, frost and hail just as in developing countries. The difference is that, for consumers, alternative food supplies become available seamlessly [18].

Local food sovereignty may also mean that a nearby local community may not wish to share its food supplies with a neighbouring local community that has suffered a food systems failure. Trade would mean that prices would rise in the supplying community – something sovereign local consumers may well resist. Allowing trade would allow the pain of a local food systems failure to be shared. Of course, the larger the trading area, the smaller the effect on price, thus dispersing the pain of a local food systems failure more widely. In the recent global food price increases that have arisen from a series of similarly timed food systems failures in different parts of the world combined with the significant diversion of food to biofuels in the US and EU and rising incomes in China and India, some countries have cur-

tailed exports in the name of keeping prices low for their consumers. These export embargoes increased international prices further, imposing greater hardship on the world's poor. Export restrictions are the bane of the WTO but its disciplines on these practices are weak and likely impossible to enforce. It is one of the major weaknesses of the international trading system. There is no reason to believe that local communities that have food sovereignty would behave any differently.

Food sovereignty is often portrayed as food security-plus. If food sovereignty has as a central element protection-based local food self-sufficiency, then it is unlikely to be able to deliver food security. In other words, food sovereignty will be food security-minus. Thus, this pillar of food sovereignty needs re-examination.

4. Conclusion

Local food sovereignty is sometimes billed as the *New Protectionism* with an implied undertone that protectionism justified in this way is legitimate. The discussion in this paper suggests two things: (1) protection-based self-sufficiency does not contribute to many of the aims of food sovereignty (e.g. removal of the influence of multinational corporations) and; (2) it cannot deliver food security. Stripped of these trappings of legitimacy, it looks suspiciously like old protectionism – it does not contribute to the *general good* and instead benefits particular vested interests. It benefits farmers through higher prices. Consumers pay higher prices but receive little in return, and in particular do not receive food security. To be sovereign but not secure is a false sovereignty. It is an attempt to again repackage old protectionism in largely recycled bottles.

Premising local food sovereignty on a pillar of protection-based self-sufficiency is naïve – it does not take account the inherent variability of agricultural production. Local food systems failures are a fact of life and, if not mitigated by inflows of non-local food, can impose considerable hardship on local populations and, in the worst cases, famine. Food security requires access to food. Highly diversified trade is the best way to ensure that access.

Food sovereignty is a laudable goal – no one's access to food should be controlled by others. Achieving food sovereignty will not be easy. In particular, proposed solutions should be carefully examined to ensure that they are not too simplistic. Beyond a failure to achieve their stated goals, simplistic solutions may lead to dangerous consequences. Protection-based local self-sufficiency is a case in point.

It is also important that those with legitimate interests in achieving food sovereignty not be co-opted by those with a vested interest in protectionism. It has long been understood that protectionists seek to cloak themselves in legitimacy Returning one more time to Adam Smith, in his discussion of *balance of trade* arguments for a restrictive trade policy he observed:

> That it was the spirit of monopoly which originally both invented and propagated this doctrine, cannot be doubted; and they who first taught it were by no means such fools as they who believed it. (p. 527) [19].

References

1. Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, New York: The Modern Library (1994 edition).

2. The potato was introduced to Europe from the Americas and thrived in Ireland. This led to a considerable improvement in agricultural productivity and an increase in the population of Ireland. The peasantry became heavily dependent on the potato for their sustenance. In 1845 and subsequent years a disease – potato blight – catastrophically reduced yields leading to widespread famine. At that time England ruled all of Ireland and there had been a long-standing debate over the removal of a set of protectionist laws that limited the import of grain known as the *corn laws*. The British government was able to use the Irish famine as justification for finally abolishing the *corn laws*. Bloy, M. (2002) The Irish Famine, 1845-9, *The Victorian Web*, http://www.victorianweb.org/history/famine.html.

3. Kerr, W.A. and N. Perdikis (1995) *The Economics of International Business*, London: Chapman and Hall.

4. Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, New York: The Modern Library (1994 edition).

5. Kerr, W.A. (2010) What is New in Protectionism?: Consumers, Cranks and Captives, *Canadian Journal of Agricultural Economics*, 58 (1): 5-22.

6. Kerr, W.A. (2001) The World Trade Organization and the Environment, in H.J. Michelman, J. Rude, J. Stabler and G. Storey (eds.) *Globalization and Agricultural Trade Policy*, Boulder: Lynne Rienner, pp. 53-65.

7. Isaac, G.E. and W.A. Kerr (2007) Whose Vision of the Future? The Entrenched International Conflict Over Genetic Modification, *The Geneva Post Quarterly*, 2 (1): 87-107.

8. Gaisford, J.D., J.E. Hobbs. W.A. Kerr, N. Perdikis, M.D. Plunkett (2001) *The Economics of Biotechnology*, Cheltenham: Edward Elgar.

9. Perdikis, N. and W.A. Kerr (1999) Can Consumer-Based Demands for Protection be Incorporated in the WTO? – The Case of Genetically Modified Foods, *Canadian Journal of Agricultural Economics*, 47 (4): 457-465.

10. Kerr, W.A. (2010) What is New in Protectionism?: Consumers, Cranks and Captives, *Canadian Journal of Agricultural Economics*, 58 (1): 5-22.

11. Hobbs, J.E. (1996) A Transaction Cost Approach to Supply Chain Management. *Supply Chain Management*, 1 (2): 15-27.

12. Gaisford, J.D. and W.A. Kerr (2001) *Economic Analysis for International Trade Negotiations*, Cheltenham: Edward Elgar Press; Johnson, D.G. (1973) *World Agriculture in Disarray*, London: Macmillan; Josling, T., D. Roberts and D. Orden (2004) *Food Regulation and Trade: Toward a Safe and*

Open Global System, Washington: Institute for International Economics.

13. Kerr, W.A. (2007) Capitalization of Trade Policy Benefits, in W.A. Kerr and J.D. Gaisford (eds.) *Handbook on International Trade Policy*, Cheltenham: Edward Elgar, pp. 276-281; Just, R.E., D.L. Hueth and A. Schmitz (2004) *The WelfareEconomics of Public Policy*, Cheltenham, Edward Elgar;Tyers, R. and K. Anderson (1992) *Disarray in World Food Markets*, Cambridge, Cambridge University Press.

14. Sauchyn, D., H. Diaz and S. Kulshreshtha (eds.) (2010) *The New Normal*, Regina: Canadian Plains Research Center Press.

15. Bloy, M. (2002) The Irish Famine, 1845-9, *The Victorian Web*, http://www.victorianweb.org/history/famine.html; Liu, T.H. (n.d) *Chinese Famines 1850-1953: Natural Disasters or Man Made Disasters*, Department of Economics, University of Chicago.

16. Cardwell, R. and W.A. Kerr (2009) How Much Food Aid is Enough? – Insights for WTO Rulemaking, *Quarterly Journal of International Agriculture*, 48 (2): 193-218; Pardy, P.G. and J.M. Alston (2010) *U.S Agricultural Research in a Global Food Security Setting*, Washington: Centre for Strategic and International Studies..

17. Kerr, W.A., J.E. Hobbs and J.D. Gaisford (1994) Privatization of the Russian Agri-Food Chain: Management Constraints, Underinvestment and Declining Food Security, in G. Hagelaar (ed.), *Management Studies and The Agri-Business: Management of Agri-Chains*, 118-128. Wageningen: Department of Management Studies, Wageningen Agricultural University, pp. 118-128.

18. Kerr, W.A. (2011) The Role of International Trade in Achieving Food Security, *Journal of International Law and Trade Policy*, 12 (2): 56-67.

19. Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, New York: The Modern Library (1994 edition).

FOOD SOVEREIGNTY, HUNGER AND GLOBAL TRADE RULES

Ramesh Sharma
Senior Economist
Trade and Markets Division
Food and Agriculture Organization, Rome
Email: Ramesh.Sharma@fao.org

Abstract

Food sovereignty has become a popular approach or model to address hunger as well as the problems that presumably caused the global food crisis. It is defined by certain principles. At its core is the sovereignty of small farmers to produce their own food with resources and institutions that are under their control. This paper compares the concept of food sovereignty with other concepts that aim to eliminate global hunger and malnutrition such as the 'food security' and 'the right to food'. Moreover it discusses the claim by advocates of food sovereignty that their approach is being constrained and undermined by certain trade rules as provisioned in the WTO. Despite some reservations about their effectiveness, the positions articulated by the food sovereignty side are increasingly guiding national policy responses to the price spikes in the global food sector. This is revealed by the renewed national focus on food production, higher targets for food self-sufficiency, increased attention to small farmers and to inequities in their access to productive and natural resources as well as markets. However, such policies are hardly ever constrained by the WTO Agreement on Agriculture which offers most member states sufficient policy space to address their particular national concerns about food and agriculture.

1. Introduction

Food sovereignty is considered to be a specific approach or model for eliminating hunger. It is crafted around certain principles which define that specific approach. The goal of the currently more widely applied concept of food security is also to eliminate hunger but it is applied in a more flexible or pragmatic way. Thus, although both concepts aim at the same goal, the approaches taken can be very different. The concept of food sovereignty emerged from intense discourses by civil society organizations (CSOs) around 1995-1996, led by the international peasant movement, La Via Campesina, an organization created in 1992. The discourses were taking place around three important developments: the inclusion in 1995 of agriculture within the WTO rules; the World Food Summit of 1996; and the Leipzig Conference on Plant Genetic Resources of 1996. Since then, the campaign has organized several conferences and issued declarations and papers to further elaborate the concept of food sovereignty.

Trade issues defined broadly are closely linked to food sovereignty. There is a large literature on the relationship between the food sovereignty and trade rules as provisioned in various WTO Agreements that have a bearing on food and agricultural policies, notably the Agreement on Agriculture (AoA). The food sovereignty movement has been very critical of the fact that WTO rules apply to food and has campaigned actively against it in all the WTO Ministerial Conferences. Its battle cry around the time of the Seattle WTO Conference is most telling of this: "WTO - Shrink or Sink!" (shrink the agenda, or else sink!).

The recent food crisis and price spikes have induced analysts and policy makers to move closer to the positions advocated by the food sovereignty campaign. These positions include priority to the food sub-sector within agriculture, higher targets for national food self-sufficiency, increased attention to small farmers, and addressing inequities in their access to productive and natural resources as well as to markets. These issues have also been prominent in recent global discourses on agriculture, food security and price volatility [1, 2, 3]. Many calls have been made for improving the global governance of food, agriculture and trade. In this sense, it seems that policies related to national food security are increasingly in line with the model promoted by the food sovereignty side for many years now.

The purpose of this paper is to discuss issues around the relationship between food sovereignty principles and global rules governing trade in food products. With this background, the next section introduces the concept of food sovereignty and its principles, including a brief on how this differs from the concept of food security. Section 3 provides a commentary on selected issues, first on the three core principles of food sovereignty and then on its interface with the WTO AoA. Section 4 concludes.

2. Food sovereignty

2.1 The concept and its evolution

The focus of this paper is on food sovereignty. Food security and Right to Food are other two concepts closely related to food sovereignty. These three terms are being used even more frequently since the food crisis. The differences among the three terms are noted towards the end of this sub-section.

The 1996 declaration released by Via Campesina at the time of the World Food Summit presents the core ideas of the movement [4]. Box 1 summarizes most of the main points from that declaration. In this abridged summary, there are a total of 21 points under the seven Prin-

ciples. Many of them are related to trade/pricing issues, including the WTO Agreements, while others have more to do with the national political process. There are several papers that present analytical commentaries on the concept which will be discussed in the following sections [see 5, 6, 7, and 8].

Box 1: Seven principles of food sovereignty: the essential foundations for achieving food security

1. Food - A Basic Human Right
- 1.1 Everyone must have access to adequate and safe food
- 1.2 Each nation must declare this as a constitutional right Guarantee primary sector development for realizing the above

2. Agrarian Reform
- 2.1 Agrarian reform for land ownership/control by landless/actual tillers
- 2.2 Return territories to indigenous peoples

3. Protecting Natural Resources
- 3.1 Food sovereignty requires sustainable care and use of land and natural resources
- 3.2 Those who farm must have the right to do so
- 3.3 Shift away from cash-crop monocultures and industrialized production models
- 3.4 Prohibit patenting and commercialization of genetic resources (reject WTO TRIPS Agreement)

4. Reorganizing Food Trade
- 4.1 Food is first a food and then only a trade item
- 4.2 Policies must prioritize production for home consumption and self-sufficiency
- 4.3 Food imports must not displace local production nor depress prices

5. Ending the Globalization of Hunger
- 5.1 Food sovereignty is undermined by multilateral institutions
- 5.2 Economic policies of multilateral organizations such as the WTO, World Bank and IMFhave facilitated growing control of multinational corporations over agricultural policies
- 5.3 So, regulate and tax speculative capital, and strictly enforce Code of Conduct for trans-national companies (TNCs)

6. Social Peace
- 6.1 Everyone has a right to be free from violence
- 6.2 Food must not be used as a weapon
- 6.3 No marginalization of countryside, nor oppression of ethnic minorities and indigenouspopulations

7. Democratic control
- 7.1 Small farmers must have inputs into formulating agricultural policies at all levels (national, international)
- 7.2 Democratize UN and related organizations for this process
- 7.3 Honest, open, democratic, participatory decision-making at all levels

Source: Abridged, including numbering, by the author, based on the 1996 declaration of Via Campesina – *Food Sovereignty: A Future without Hunger* [4].

Windfuhr and Jonsén [8] review many food sovereignty documents and find that there is no universally agreed definition for the term, while many documents offer interpretations. They consider the following definition from the 2002 People's Food Sovereignty Network to be among the most commonly used:

"Food Sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable

development objectives; to determine the extent to which they want to be self-reliant; to restrict the dumping of products in their markets; and to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather it promotes the formulation of trade policies and practices that serve the rights of peoples to food and to safe, healthy and ecologically sustainable production."

According to them [8], food sovereignty is an umbrella term for particular approaches to tackling the problems of hunger and malnutrition, as well as promoting rural development, environmental integrity and sustainable livelihoods. This approach is being developed as a counter-proposal to the mainstream development paradigm built on liberalized international agricultural trade, trade-based food security, and industrial agriculture and food production by well-resourced producers. It places small farmers and food production at the centre of the framework, and, more importantly, considers it essential that small farmers themselves have full control over the process of production by exercising their right to natural and productive resources (hence the word sovereignty).

2.2 How does *food sovereignty* differ from *food security* and the *Right to Food*?

The approach to food security is not defined as precisely. Most papers use the following sentence from the 1996 World Food Summit (WFS) as the definition of food security: "*Food security exists when all people, at all times, have physical and economic access to safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life"*. But it is not often realized that this statement is only a vision or goal, rather than an approach or strategy, unlike the case with food sovereignty. This is also indicated in the very first sentence of the WFS Plan of Action: "The Rome Declaration on World Food Security and the World Food Summit Plan of Action lay the foundations for *diverse paths to a common objective* - food security, at the individual, household, national, regional and global levels"(emphasis added). From this, it is clear that no specific strategy or path or policy is prescribed for attaining food security - rather, just as said in the *Upanishads* for human salvation, there are many paths to the common goal. The WFS's Plan of Action comes with eight commitments that cover a wide range of topics on agriculture, rural development and governance, reflecting the multi-faceted character of food security. Most are presented as

guidelines or principles to pursue, rather than prescriptive measures. These are broad and flexible enough for individual countries to consider, interpret and adapt. Indeed, many countries have national food security strategies, policies and programmes, and these reflect the above characterization, "diverse paths to a common goal".

Lee [7] cites a work by J. Dryzek which offers an interesting definition. Food security is characterized in terms of "economic rationalism" with building blocks like rational, self-interested private entities - regulated by rules, such as those of the WTO in the case of trade - and competitive markets. On the other hand, food sovereignty is seen as "green rationalism" grounded on the notions of the complexity of food production, the interrelationship of farmers and nature and the use of organic metaphors such as agro-ecological food production.

The *Right to Food* is a concept that does not rest on a particular set of policies, but focuses on the obligations of states and on allowing people who are negatively affected or deprived to use legal remedies to get their rights implemented. States have a wide margin of discretion on how to implement the concept. Food sovereignty also demands Right to Food. In Windfuhr and Jonsen's views, while food security is more of a technical concept, and the Right to Food a legal one, food sovereignty is essentially a political concept.

The food sovereignty principles are being increasingly echoed by other people and agencies also, especially since the 2007-08 food crisis. For example, Olivier de Schutter, the UN special rapporteur on the right to food, recently wrote that hunger is not a natural disaster but primarily the result of political factors that condemn small farmers, the main victims of hunger, to poverty [9]. These factors include insufficient access to land, water and credit; poor organization of local markets; lack of infrastructure; and lack of bargaining power against an increasingly concentrated agro-industrial sector. He also said that it is crucial to help small producers organise themselves into co-operatives and unions to strengthen their positions in food chains, and to collaborate with governments in designing programmes that benefit them.

3. Commentary on food sovereignty and trade-related issues

This section presents a commentary on selected principles and arguments of the food sovereignty paradigm. The focus is on trade-related issues but some other elements of the arguments are crucial and therefore also covered. The purpose is to better understand issues around food sovereignty by analyzing how and where its positions and advocated policies are divisive on trade policies. The first part discusses three topics, considered to be three core principles of food sovereignty, namely 'the centrality of small family farming', 'the centrality of food production and control over the process', and 'Control over productive/natural resources'. It will then address the question whether these principles run counter to the goals and principles of the WTO AoA.

3.1 The three core principles of food sovereignty

The centrality of small family farming

This is one key building block of the food sovereignty paradigm on hunger. The core argument made is that an agricultural development model based on small-scale farming holds the key to simultaneously solving *three* problems: food, poverty and environment. What is crucial is the ability of the small farmers to produce their own food and have full control (or sovereignty) over the resources to produce food. A second strand of the arguments made is that several of the ongoing trends and processes, and global and national policies, tend to marginalize small farmers and impoverish them further. These processes include large-scale cash cropping for exports, industrialization of farming, inroads of large agribusiness, and liberal policies and trade agreements that encourage these processes. These trends are further impoverishing small farmers by shrinking their political power.

These arguments are not without merit or support – many studies are cited that show how small farmers have been squeezed out in a process that rewards economies of scale, e.g. from successful product chains. Likewise, studies are cited that show negative effects of trade liberalization on small farmers. Household survey data have revealed high income inequalities and, as a result, stubborn poverty trends despite respectable economic growth rates of 5-6% [10]. These problems have been acknowledged and there is a growing consensus that the past model needs serious rethinking, in a way supporting the food sovereignty view of the world. Where people differ is on the policy response to these problems.

A considerable amount of debate takes place on the small versus large farming in the context of food security and poverty reduction. Again there is a virtual consensus in support of the viability of small-scale farming and its crucial role in fighting hunger. Three years back Professor Paul Collier of Oxford University published an article titled *The Politics of Hunger: How Illusion and Greed Fan the Food Crisis* in the journal *Foreign Affairs* (November/ December 2008) where he said that taking the small farm route is romantic but unhelpful, and argued for encouraging large-scale commercial farming as the way ahead, especially in Africa, for resolving the food crisis. In response to a call by *Future Agricultures Consortium*'s to respond to Paul Collier's views, not one of the 20 leading development economists who responded subscribed to Collier's view, instead supporting the opposite view that the way forward to address both the food crisis and poverty is to assist small farmers, focusing on their productivity gains [11]. In that debate, there was also a consensus that the best growth potential in Africa lies with food staples (cereals, roots and tubers, traditional livestock products etc) – which is yet another building block of the food sovereignty approach. Since the food crisis in particular, most high-level political statements have also pointed to the need for paying special attention to assisting small farming.

While there is a widespread consensus for an agriculture strategy that promotes and supports small-scale farming without necessarily being against large-scale farming as

long as this does not marginalize the former, there is one other argument in the food sovereignty writings that this camp needs to clarify. This is the argument about politically and economically empowering the small farmers in a way that bestows to them full control over the productive resources, including institutions that provide services to farming.

This particular position requires further articulation from them as the ground reality is different. The national policy papers of virtually all developing countries now encourage private sector provision of farm inputs and services as well as public-private partnerships in many areas, including the establishment of value chains. It is typically the private sector that is endowed with valuable technology, funding and management. It is not clear in the writings of the food sovereignty side, but if its position is against any role for the private sector – i.e. those outside the local farming community – then the food sovereignty side needs to say so clearly and also explain how farming will progress without this outside involvement. If, on the other hand, that is not the position and private sector is welcomed, they need to demonstrate a model under which private sector can be involved without the farming community loosing full control over decision-making and resources. In order to fill the gap between rhetoric and reality, advocates of food sovereignty need to come up with empirical evidence and studies on best practices to convince policy makers and other stakeholders in the respective countries that they have a coherent and detailed approach that can be clearly written in national policy documents such as the Poverty Reduction Strategy Papers (PRSPs) as well as trade and agricultural policies. The PRSPs are becoming important policy documents in most countries but there is a lot to be improved in their design so that trade and agriculture are properly mainstreamed [12].

The centrality of food production and control over the process

The following eight sentences collated from various documents on food sovereignty illustrate the main arguments made on this subject [4, 13]:

Food sovereignty is the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity. Farmers and countries have the right to produce our own food in our own territory. Food is not primarily about trade. National agricultural policies must prioritize production for domestic consumption and food self-sufficiency. Food imports must not displace local production nor depress prices. Peasant farmers have the right to produce essential food staples for their countries and to control the marketing of their products. Food prices in domestic and international markets must be regulated and reflect the true costs of producing that food. Reject cash-crop monocultures and industrialized production models towards small farm-based food production.

Very briefly, it is all about farmers' right to produce and market food and have full local and national sovereignty on policies required for this. The latter includes domestic policies that provide ownership and control to farmers (and their groups) throughout the food value chain. Governments would have to ensure that this happens by providing subsidies to food production and food processing, marketing and protection through border/trade policies. Thus, imports of dumped and subsidized foods are obviously rejected outright. Also rejected is the control over food production and processing by non-farm entities (agri-business, national or transnational). This obviously includes large-scale land acquisitions and investments (also called "land grabs") by foreign companies. The argument above that food prices must reflect the true cost of production also implies that trade-based prices (import and export parity prices) are rejected.

Some of these arguments have more to do with the domestic political and policy process over the setting of priorities, allocation of budgetary resources and legislation that favours the control by farmers and local groups of resources, pricing and marketing. But others have more to do with the external trading environment, distortions in global food markets, and trade rules, notably the AoA. The latter is the topic of the next sub-section.

The food sovereignty paradigm not only calls for the primacy to food production but also rejects other processes that may hurt food production indirectly. One example of this is the argument against an export-led strategy that favours cash to food crops. Somewhat milder statements on this point reveal that food sovereignty is not necessarily against cash crops as millions of small farmers benefit from this, but against the process that undermines food production and marginalizes small farmers [6, 14]. This could come, for example, from investment agreements that encourage large scale cash cropping for exports in areas where staples producing small farmers are politically weak to counter the process and/or benefit from that. Cash-crop monocultures are also rejected from the natural resources view point.

What is mostly missing in the food sovereignty writing is credible evidence that demonstrate their points, and convince the other side. For example, the negative impacts of these processes on food sovereignty of the small farmers are often country and context specific, and thus it should not be very difficult to understand how the target groups are being affected, and what corrective measures are required. There is too much rhetoric and too little evidence, which undermines the arguments. For example, careful studies should be able to point to the often-blamed strategy that the export-led model favours transport systems that link cash crop areas to ports while a food-focussed strategy would see more resources devoted to connecting inland villages that produce and trade food crops. A majority of the extant PRSPs and similar national documents have adopted export-led strategies, and it is these documents that the food sovereignty analysts need first to focus their attention on.

Control over productive/natural resources

The importance of exercising control over the production process by food producing small farmers was noted above. Together with this, the third core principle of the food sovereignty approach to food security is farmers'

full access and control over natural resources essential for food production such as land, water, forests, seeds and biodiversity. The logic is simple and the food sovereignty model attaches high weight to this component as it considers marginalization (from access, control) as a significant cause of hunger. Although who in a society has access and control over natural resources primarily depends on the domestic political processes, the food sovereignty side has argued that this is being increasingly influenced by two sets of the WTO Agreements.

One of them is the WTO Services Agreement. Although the reach and influence of this Agreement in developing countries is relatively small currently, there is a considerable fear regarding the future. At stake is the possible control over resources like water, production inputs, banking, insurance and marketing. In the scenario presented by the food sovereignty side, domestic and multinational companies could use the provisions of this Agreement to control inputs and output services to the detriment of small farmers, including through unfavourable terms of exchange.

The other Agreement that the food sovereignty side rejects outright is the part of the WTO TRIPS Agreement that requires countries to provide some form of Intellectual Property Rights (IPRs) to plants and other life forms. The movement obviously attaches high importance to the rights of farmers, indigenous peoples and local communities over plant genetic resources and associated knowledge, including farmers' right to exchange and reproduce seeds. It feels that without that freedom, farmers will not be sovereign to produce food and lift themselves out of hunger and poverty. The agriculture part of the TRIPS Agreement has been contentious from the beginning. Efforts have been made through negotiations to reconcile this Agreement with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) which provides for farmers' rights and benefits sharing. On discussions at the WTO on the TRIPS-CBD, it is reported that Members have voiced support for the CBD objectives, i.e. the general principles of prior informed consent and equitable sharing of benefits that are enshrined in the CBD, but remained divided as to the best means to fulfil them within the TRIPS framework [15].

The food sovereignty's criticism over the recent trends in large-scale land acquisitions ("land grabs") also falls under this cluster. Land grabs are criticized not only on the ground of access to land, but also on access to water as any rationing of water in that region will certainly work against small holders. Such investments are also criticized as they promote the practice of mechanised monocultures.

3.2 Food sovereignty and the WTO Agreement on Agriculture

The food sovereignty movement has been critical of several WTO Agreements that have a bearing on food and agricultural policies, and particularly the AoA. One prominent argument mentioned earlier is that food is first a food and then only an item for trade, and that food should be fully kept out of all the WTO Agreements, including the AoA. Other arguments made from time to time are to completely prohibit any form of dumping and provide full sovereignty (freedom) to implement trade and domestic support polices, which means even import controls and unlimited amounts of farm subsidies, i.e. the pre-Uruguay Round (pre-1995) status.

This sub-section focuses on the AoA. There are various ways of organizing this discussion in the context of the above questions. In what follows, this is done by asking the following two questions (a similar approach was taken in an earlier paper on trade rules and Right to Food – see Sharma 2004 [16]):

a. Is the AoA as a whole conducive to food security, i.e. does it contain elements that contribute to food security in food-insecure countries?

b. Do the AoA rules limit the ability of food-insecure states to pursue effective approaches to food security?

Question *a* addresses the issue of the impact of the AoA on the global food markets which in turn are important for national food security while the second question is about "policy space" for food-insecure countries. The commentary first looks into the current or Uruguay Round AoA and then the prospective or Doha Round AoA.

The question on the conduciveness of the AoA to food security

The answer to this question, reached in accordance with the conclusions of the author's 2004 paper on Right to Food [16], is essentially "yes", i.e. the AoA is a positive development for global and national food security. This conclusion follows from an analytical framework that compares a counterfactual scenario (the continuation, in the absence of the AoA, of various "disarrays" or distortions in the world food markets that existed prior to the Uruguay Round) with the post-AoA scenario. Briefly, pre-1995, when agriculture was kept out of the GATT rules, the global food markets were characterized by serious disarrays, caused by rampant and *ad hoc* protectionism and massive subsidies, both domestic and export. The source of most of these distortions were rich countries as only they could afford the sufficiently large subsidies to distort global markets, while non-subsidizers, mostly developing countries, were the ones who suffered from the consequences. These costs have been computed as being sizable in many global simulation studies. The distortions not only undermined food production incentives in the developing countries but also created for them unfair competition in their export markets. Hence, closing this loophole was absolutely essential [17].

In the mean time, there are many critics of the AoA who hold that it did not do much in *effectively* disciplining the sources of the disarrays as enough policy spaces were left for subsidies and protection. This is not entirely incorrect but one needs to acknowledge the significant

achievement made in subjecting agriculture to a rule-based system. Keeping food out of the WTO, as many food sovereignty papers have argued, runs the risk of lapsing to the pre-1995 disarrays.

Reducing further disarrays was left for the Doha Round. As usual, there are various views on the current AoA package, the draft Modalities of December 2008 [18], with some seeing this as half-full and others as half-empty. The half-full view is that the draft Modalities in the three core areas of the AoA are ambitious enough, both in an absolute sense and relative to the reduction rates of the Uruguay Round AoA. For example, on domestic support, the overall trade-distorting domestic support (OTDS) (sum of the Amber Box, *de minimis* and Blue Box) would be cut by 80% for Members with the highest levels of support in the base period, and by 70% and 55% for other two groups of countries with lower levels of support currently. The Amber Box support will be cut similarly, with 70% for those with the highest support levels, and by 60% and 45% for the other two groups with lower supports. On market access, the minimum average cut on final bound tariffs for developed countries would be 54%, with 75% cut for high tariffs. On export competition, the agreement is for the developed countries to eliminate remaining scheduled export subsidies by 2013, with detailed rules drawn in other areas to close indirect and hidden subsidies. Implementing all these cuts and closing loopholes sincerely would be a significant progress. The half-empty view, on the other hand, holds that the current provisions – riddled with various exceptions and flexibilities, such as for sensitive and special products,– that will still provide space for continuing distorting policies.

The question of policy space

Do trade rules limit the ability of the food-insecure countries to pursue agricultural development and food security, such as those articulated by the food sovereignty camp or other approaches? The conclusion reached in that previous analysis by Sharma [16], as in many other studies, was that on the whole the AoA provided considerable space for implementing food policies, barring some cases of products and countries.

For example, an analysis of the data on domestic subsidies shows that, barring some cases, actual trade-distorting subsidies granted by most developing countries are fairly low (about 3-5% of the value of agricultural production) relative to what is permitted by the AoA (10% for product-specific and another 10% for non product-specific subsidies). On top of this, AoA's Article 6.2 exempts some useful subsidies from the above discipline (subsidies to low-income and resource-poor farmers), but this too has not been used much. In the case of bound tariff, i.e. the maximum tariff allowed under the WTO rule, the situation is somewhat different in that while the AoA bound tariffs are fairly high (relative to applied rates) for many developing countries and products, there are significant exceptions (countries and products) where policy space is an issue. Not having access to the Special Safeguard (SSG) of the AoA to many of these countries was an issue but was meant to be rectified in the Doha Round with the Special Safeguard Mechanism (SSM). When import prices are high, such as during the past 4-5 years, these issues are not that relevant because the typical response in vulnerable food-importing countries would be to eliminate or sharply reduce import tariffs to lower domestic prices.

In the Doha Round, based on the draft Modalities, the developing countries will also reduce their tariffs and subsidies by two-thirds less than the developed countries, with several exceptions here and there. On domestic subsidies, a majority of the developing countries did not have trade-distorting subsidies in the Uruguay Round and, for this reason, will not have them in the Doha Round either, but the 10% + 10% *de minimis* limits, and Article 6.2 exemption, should provide enough room in most cases. On bound tariffs, the policy space will definitely shrink and might be an issue for a sizable number of countries and products. This makes the provisions on Special Products and SSM, both accessible to the developing countries only, particularly valuable for them, and they have rightly negotiated hard for these. Note that these instruments will reduce market access to exporters, which also include developing countries, but the issue being discussed here is policy space for an importer.

Doubts are often raised about some of the Green Box measures being truly "green" as assumed. The decoupled income payments are blamed for perpetually reducing the average cost of production (even if marginal impact may be zero), thus giving a competitive edge to those with financial resources. Likewise, an argument is often made that even if all distortions are eliminated, the fact that there are large productivity gaps between the developed and developing countries means that the rules of the game are still skewed in favour of the former. Thus, even if the AoA were balanced in design, outcomes would be asymmetric, with some countries utilizing the policy space more fully and using the full range of the instruments provisioned (e.g. Blue Box, trade remedy measures). Investment and capacity building are seen as the solution to some of these systemic imbalances. The Aid for Trade initiative was launched in 2005 primarily in response to these concerns and several WTO Agreements call upon richer countries to provide capacity building support to the developing countries.

The food sovereignty argument for keeping food out of the WTO seems to be more influenced by a "defensive" stand (the shrinking of the policy space) rather than an "offensive" one (eliminating distortions in the global food markets). Developing countries need to take the distortions seriously if they want to avoid food dumping and therefore cannot just be concerned with the defensive side. A more constructive approach for the food sovereignty proponents would be to try to preserve what has been achieved so far (both the Uruguay Round AoA and the Doha Round draft package) and identify specific areas where further improvements are needed for effectively implementing the food sovereignty approach to food security, e.g. improvements in the Special Products, SSM, cotton etc. In addition, recent projections of the global food markets show that periods of high and vola-

tile food prices are likely to be more frequent in the coming years. The AoA was designed primarily for an environment of structural surpluses and depressed prices. This means that trade rules must also adjust accordingly and there are several areas where such adjustments may be needed to the current package of the draft Modalities – see Sharma and Konandreas [19]. It is desirable that the food sovereignty proponents also raise these issues of food security.

4. Conclusions

The recent food crisis and price spikes have induced widespread interest on food and agricultural issues. At the global level, new initiatives have been taken and pledges made for increased support for agriculture. At the national level, new strategies and policies have been announced and investment programmes drawn. These developments are in the direction that the food sovereignty side has been campaigning for all these years.

Thus, one notable policy response to the food crisis has been that many countries are setting new, higher targets for self-sufficiency of key staples, including 100%, in several cases. Among the staples, rice has been prominent in such policies, largely reflecting uncertainties experienced with the global rice market. Even in developed countries, the Russian Federation (not a WTO member) announced a new food security doctrine in 2010 with high self-sufficiency rates for several foods. Note that while this has been the popular response to the food crisis, and along the line advocated by the food sovereignty proponents, higher levels of self-sufficiency beyond what economic logic would dictate based on competitive advantages in trade has economic resource costs, and so are not necessarily welfare-enhancing.

Likewise, increasing attention is being given to small farms, both in global food security discourses and national agricultural strategies, although progress in this area will depend on how concretely small farmers are defined, their constraints and needs articulated and these translated to policies and support. In countries, debates on inequities about adequate access to productive and natural resources as well as to markets have become prominent. Similarly, many calls have been made for improving the global governance of food, agriculture and trade. The reform of the Committee on World Food Security is an example of this. To complete this list, there have also been moves towards incorporating food sovereignty and Right to Food languages in national constitutions and agricultural policies. In some cases this is limited to a symbolic step while in others this is being done more prominently (see [5] for some case studies and [20] for recent initiatives in West Africa).

Patric Mulvany aptly summarizes these trends in support of food sovereignty in the preface to the Windfuhr and Jonsén study [8]: "Now, when there is intense debate about how the world will halve poverty and eradicate hunger, the policies that govern the way food is produced, consumed and distributed, how it is processed and traded, and who controls the food chain, need to be looked at comprehensively. This timely paper points a way forward and invites a more focused consideration of the principles behind what is fast becoming recognized as the most important food and agriculture policy consensus for the 21st century". With the availability of more and more statistics on income distribution from household surveys, an increasing number of studies have shown that income inequality must be reduced substantially in many food insecure countries before hunger and poverty can be tackled [10]. What better way to reduce inequities other than by focussing development efforts on small farmers, staples and inequities in access to natural and productive resources – the three core food sovereignty principles. As for some other elements of these principles, such as the risk of marginalization of small farmers due to the expansion of large and powerful agribusiness, and the WTO Agreements that facilitate that process, some disagreements will remain between the food sovereignty side and others, including national policy makers. But even on this, some consensus can be reached by clarifying the term food sovereignty with regard to the role of the private sector and developing effective mechanisms to reduce possible risks for small-scale farmers by properly monitoring the impact of global change in food and agriculture.

References

1. FAO and others (2011), Price Volatility in Food and Agricultural Markets: Policy Responses. Report by FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF to the G20 on price volatility. June 2011, Rome. http://www.foodsecurityportal.org/sites/default/files/g20_interagency_report_food_price_volatility.pdf

2. FAO (2011), Policy Roundtable - How to Increase Food Security and Smallholder-Sensitive Investment in Agriculture, Document CFS:2011/4, Committee on World Food Security, 37th Session, Rome, 17-22 October 2011. http://www.fao.org/docrep/meeting/023/mc066E.pdf

3. HLPE-CFS (2011), Price Volatility and Food Security. High Level Panel of Experts on Food Security and Nutrition on Food Security and Nutrition, Committee on World Food Security, July 2011, Rome. http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE-price-volatility-and-food-security-report-July-2011.pdf

4. Via Campesina (1996), Food Sovereignty: A Future without Hunger. Declaration at the 1996 World Food Summit, Rome, Italy. http://www.viacampesina.org/

5. Beauregard, S. and Gottlieb, R. (2009), Food policy for people: Incorporating food sovereignty principles into State governance - Case studies of Venezuela, Mali, Ecuador, and Bolivia, April 2009. Occidental College, Los Angeles, U.S. http://www.oxy.edu/x8697.xml

6. FIAN - Friends of the Earth International (2003) *Trade and People's Food Sovereignty*. www.foei.org/publications/trade/newfinallowres.pdf

7. Lee, R. (2007), Food Security and Food Sovereignty. Discussion Paper Series No. 11, Centre for Rural Economy, University of Newcastle Upon Tyne.

8. Windfuhr, M. and Jonsén, J. (2005), Food Sovereignty:

Towards democracy in localized food systems. Study by FIAN-International for ITDG Publishing. http://www.ukabc.org/foodsovereignty_itdg_fian_print.pdf

9. de Schutter, O. (2011), Food crises: five priorities for the G20. An article posted at the *PovertyMattersBlog* of the Guardian, 16 June 2011. guardian.co.uk

10. Fosu, A. K. (2010), Growth, Inequality and Poverty Reduction in Developing Countries: Recent Global Evidence. CSAE Working Paper WPS/2011-07, Centre for the Study of African Economies, Oxford, U.K.

11. Future Agricultures (n.d.), Big farms or small farms: how to respond to the food crisis - a Debate. http://www.future-agricultures.org/EN/e-debates/Big_Farms/farm_debate.html

12. Sharma, R. and Morrison, J. (editors) (2011), *Articulating and Mainstreaming Agricultural Trade Policy and Support Measures.* FAO, Rome. http://www.fao.org/economic/est/international-trade/trade-policy-analysis/articulatingtradepolicyandsupport/publications/en/

13. Via Campesina (2008), Food Sovereignty for Africa: A Challenge at Fingertips. http://www.viacampesina.org/

14. Koning, N. and Jongeneel, R. (2006) Food sovereignty and export crops: Could ECOWAS create an OPEC for sustainable cocoa? Paper written for ROPPA for Forum on Food Sovereignty, Niamey, 7-10 November 2006.

15. WTO (2011), *Issues Related to the Extension of the Protection of Geographical Indications Provided for in Article 23 of the TRIPS Agreement to Products Other Than Wines and Spirits and Those Related to the Relationship between the TRIPS Agreement and the Convention on Biological Diversity*, Document TN/C/W/61, 21 April 2011, Trade Negotiations Committee, General Council, WTO, Geneva.

16. Sharma, R. (2004), Right to Food Principles vis-à-vis Rules Governing International Trade. Background paper for the FAO Right to Food programme, FAO, Rome.

17. Josling, T, Tangerman, S. and Warley, T.K (1996). *Agriculture in the GATT*. London, Macmillan Press Ltd.

18. WTO (2008), *Revised Draft Modalities for Agriculture*, TN/AG/W/4/Rev.4, 6 December 2008, WTO, Geneva.

19. Sharma, R. and Konandreas, P. (2008), "WTO Provisions in the Context of Responding to Soaring Food Prices", *FAO Commodity and Trade Policy Research Working Paper No.25*. FAO, Rome.

20. SWAC (2007), Food sovereignty in West Africa: From Principles to Reality, Study by the Sahel and West Africa Club (SWAC), Paris, March 2007.

Food Sovereignty: The Idea's Origins and Dubious Merits *

Douglas Southgate **
Department of Agricultural, Environmental, and Development Economics
Ohio State University
2120 Fyffe Road, Columbus, Ohio 43210
Email:southgate1@osu.edu

Abstract

Contrasting with the current definition of food security – which focuses on economic access to food, generally through markets – food sovereignty stresses basic human rights to adequate nourishment. Many of its exponents also support food self-sufficiency. Experience in Sub-Saharan Africa demonstrates that agricultural protectionism, which often goes hand in hand with this self-sufficiency, actually causes more people to go hungry. By the same token, Chinese experience demonstrates that giving market forces freer rein raises incomes and reduces food insecurity. In light of the hunger alleviated by freer markets, food sovereignty, which sympathetic interpreters of the concept admit suffers from serious internal inconsistencies, holds little appeal as a recipe to eradicate poverty, malnutrition and hunger.

Introduction

Safe to say, economists' familiarity with the idea of food sovereignty is cursory at best. This is partly because precise economic argumentation is not a strong suit of the relevant literature, which to date has been written by social scientists from other disciplines as well as non-academic advocates [1,2]. Moreover, this literature deals little with indicators such as food prices and numbers of people who cannot afford an adequate diet.

Contrary to the worst suspicions harbored by staunch defenders of free markets and trade, which most economists are, food sovereignty has not be designed to serve as a Trojan Horse for agricultural protectionism. A more serious problem, which at least a few sympathetic interpreters of the concept recognize in print, is its incoherence – incoherence that has the potential for creating economic malefaction. As one of the most well-regarded of these interpreters complains, food sovereignty is "over defined," adding that there are "so many versions of the concept (that) it is hard to know exactly what it means." Beyond observing that "food sovereignty is a call for people's rights to shape and craft food policy," Raj Patel notes the concept's "contradictions," which he happens to find "worth exploring" [3].

No definitions are offered in the pages that follow. Instead, two recurring themes of the literature on food sovereignty – and its U.S. variant, community food security (CFS) – are noted at the beginning of the article, one being a basic human right not to suffer hunger and the other being agricultural self-sufficiency. Much of the article is about the progress that has been made by improving economic access to food – in large part thanks to greater reliance on market forces, rather than concentrating on rights and self-sufficiency. This discussion is followed by the challenges of actually achieving food sovereignty. To their credit, some of the idea's exponents have written honestly about these challenges.

1. Food Sovereignty versus Food Security

In a fundamental sense, the food sovereignty movement seeks to revive a formulation of food security that was widely accepted during the 1970s. This formulation has been superseded by an alternative conception that food sovereignty advocates find unsatisfactory, yet is accepted by the U.N. Food and Agriculture Organization (FAO) and other multilateral agencies.

To understand the earlier definition of food security, an appreciation of prevailing currents of thought 40 years ago is useful. In the wake of spiking prices for petroleum, grain, and other commodities in the early 1970s, there was a crescendo in demands for a New International Economic Order. In addition, a "technocratic faith" in the capacity of national governments to allot resources, stabilize prices, and accomplish related tasks was widely shared [3]. Ideas about food security that date from the same period reflect these circumstances and intellectual tendencies. Also receiving much attention at the time was a basic human right to

* The author gratefully acknowledges advice and recommended readings provided by his departmental colleague, Jill Clark, as well as Philipp Aerni, the editor of this special issue. Comments provided by an anonymous reviewer are appreciated as well. Of course, all errors and omissions in this article, as well as the views expressed in it, are solely his responsibility.

** An agricultural and environmental economist with a Ph.D. from the University of Wisconsin, Douglas Southgate has been a professor at Ohio State University since 1980. He has studied tropical deforestation, watershed deterioration, and other environmental problems in sixteen Latin American, Caribbean, and African nations. In addition, Dr. Southgate is the lead author of *The World Food Economy*, the second edition of which was published by John Wiley in 2011.

adequate nourishment, of the sort recognized in the International Declaration of Human Rights of 1948 as well as the International Covenant on Economic, Social, and Cultural Rights agreed to by 145 governments in 1966.

The New International Economic Order and the technocratic faith that inspired it subsequently lost appeal – particularly after the early 1980s, when international attempts to stabilize world food prices by maintaining buffer stocks collapsed. For at least ten years now, the formulation of food security accepted by the FAO and other multilateral bodies has been that "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" [4]. This formulation is largely silent about human rights to food. Instead, the focus is on access – especially access of the economic variety, which depends both on the earnings of food-insecure people and on the prices they pay for edible goods.

Advocates of food sovereignty are uncomfortable with this reorientation. The current definition of food security, Patel contends, reflects the "absence of an alternative to US-style neoliberal capitalism," at least as far as governmental representatives in international negotiations and summits are concerned [3]. According to the same commentator, the signs that neoliberalism now dominate include a "break away from a commitment to the full meeting of human rights, leading to the *watered down* Millennium Development Goals" (emphasis added) [3].

Rights are likewise a primary concern of the U.S. exponents of Community Food Security (CFS), such as Patricia Allen [4]. Beyond decrying neoliberalism – or simply the "right," as pro-market conservatism is commonly known in the United States and other affluent nations – Allen criticizes the state for having shed "its responsibilities for social welfare," thereby weakening the rights and responsibilities that make up the country's social contract.

There is another sense that CFS's exponents, not to mention many around the world who subscribe to the idea of food sovereignty, are in tune with the FAO's original formulation of food security, dating from the 1970s. To be specific, they call for agricultural self-sufficiency, which is entirely distinct from the self-reliance that a country enjoys by growing some of its own food efficiently and importing the rest using money earned by exporting non-agricultural goods in which it holds a comparative advantage. But whereas the FAO and other multilateral agencies these days generally avoid recommending self-sufficiency as a way for a country to achieve food security, advocates of CFS are now in favor of self-sufficiency at the sub-national level. Allen, for one, asserts that resolving the paradox of inadequate nourishment in the face of agricultural abundance in the United States requires better integration of local production and consumption, including greater food self-sufficiency within communities [5].

2. Free Markets and Food Security

For anyone familiar with the relevant economic literature, which draws on empirical investigation in a large number of settings, food self-sufficiency ought to hold little appeal. Reviewing available research more than two decades ago, the Director General of the International Food Policy Research Institute (IFPRI) concluded not only that freer trade in farm products is rewarding for developing nations, but also that such a policy benefits impoverished and food-insecure people in rural areas. As he argued forcefully: "Agricultural commercialization raises the income of the rural poor, thus improving their food security" [6].

The soundness of this argument is readily apparent where a comparative advantage in agriculture exists. However, it also applies for the poorest of the rural poor in countries that find themselves importing more food in the wake of trade liberalization. Impoverished farmers, who tend to have tiny holdings, typically are net buyers of food, so they benefit as prices are driven down due to the availability of cheaper imports. Even worse off are rural households with no land at all and that lack the skills required for remunerative employment. This group may suffer a reduction in earnings as lower commodity prices reduce the demand for unskilled labor in the agricultural sector. But for most landless households, this reduction is outweighed by the gains coming their way because of cheaper food.

2.1 China's Progress

The most convincing evidence in support of the claim that freer markets alleviate hunger is provided by the world's most populous nation. At the time when the term, food insecurity, was becoming part of FAO's lexicon, China not only had more poorly-fed people than any other country, but one of the highest incidences of food insecurity in the world as well. Within a few years after the death of Mao Tse-tung, whose policies cost the lives of tens of millions of his countrymen [7], Chinese peasants began experimenting with alternatives to collective agriculture, which had been imposed during Mao's disastrous Great Leap Forward of the late 1950s and early 1960s.

The peasants did not opt for community self-sufficiency. Instead, they undertook family farming, independent marketing of livestock and produce, and other individualistic "deviations" from rigid socialism. Even though these practices were illegal, communist authorities did not succeed at suppressing locally-instigated reforms entirely, as the old despot undoubtedly would have attempted. To the contrary, elements of the Household Responsibility System (HRS), as these reforms came to be known, started to be tolerated by the state in the early 1980s. The HRS soon spread from the countryside to urban areas and is largely responsible for China's economic trajectory during the past 30 years [8].

When Chinese peasants began to challenge the system that Mao had imposed on them, global surveying of the

extent of undernourishment had barely begun. According to the earliest estimates, which date from the late 1960s and early 1970s, the highest incidence of food insecurity in the world was registered in China and neighboring lands. At 41 percent, and with 475 million people categorized as food-insecure, this regional incidence for East and Southeast Asia exceeded the corresponding shares for South Asia (238 million people; 33 percent of the population) and Sub-Saharan Africa (103 million people; 38 percent of the population) [9].

In no sense is the Chinese countryside today a paragon of unfettered capitalism; indeed, governmental meddling with market forces is still commonplace. But liberalization, partial though it is, has resulted in substantial progress. The improved economic access to food created by a combination of higher earnings, which have resulted largely because the move away from Mao's brand of doctrinaire communism has accelerated economic growth in China, and cheaper food, deriving from technological advances that have raised crop yields, has reduced the number of food-insecure people in East and Southeast Asia by more than half – to 219 million in 2003-2005. The incidence of food insecurity in the region is now little more than 10 percent [10].

The progress made in East and Southeast Asia explains why there are fewer undernourished people throughout the world today than there were 40 years ago. India and its neighbors in South Asia now have the largest food-insecure cohort, with 314 million, although the incidence (22 percent) is lower in the region than what it used to be [10]. These days, Sub-Saharan Africa has the highest incidence of food insecurity, at 29 percent, and 212 million people there go hungry regularly or often [10].

2.2 Continuing Food Insecurity South of the Sahara

Not coincidentally, governmental meddling with market forces in the food economy is worse in Sub-Saharan Africa than elsewhere in the developing world. True, nominal rates of assistance (NRAs) for agriculture, which summarize the aggregate impact on farm income of price controls, over-valued currencies, and other policies, have improved in recent decades, which is in line with global trends. In the early 1980s, for example, the NRA for Ghanaian agriculture, was -21.2 percent, which means that public policies caused farmers' earnings to be 21.2 percent lower than what they otherwise would have been. But two decades later, the same indicator was close to zero, which means that agriculture was neither penalized nor subsidized. On the other hand, penalization of the sector continues in a number of Sub-Saharan nations. Among these are Zambia, where the NRA worsened (from -2.7 percent in the early 1980s to -28.5 percent during the years immediately following the turn of the Twenty-First Century), and Zimbabwe (where the NRA deteriorated from -24.0 percent to -38.7 percent during the same two decades) [11]. Since government policy does much economic harm to farmers in these two nations, the comparative advantage that each has in agriculture is overwhelmed and far too many people go hungry.

Aside from policies that drive down farmers' earnings, and hence diminish incentives to produce crops and livestock, food insecurity south of the Sahara results from inadequate investment in the public goods needed to raise output and productivity in the countryside. Roads and related infrastructure are notoriously inadequate in rural areas. This diminishes the farmgate value of agricultural commodities and also makes inputs more expensive for growers. This impact underlies the choice made by the vast majority of African farmers not to use any commercial fertilizer at all [12]. Thirty years ago, the average fertilizer application rate south of the Sahara was the lowest in the world, at 16 kilograms per hectare per annum. Since then, this annual rate has fallen, to a mere 12 kilograms per hectare [13].

There has been severe under-investment in dams, canals, pumping stations, etc. As a result, 4 percent of all farmland in Sub-Saharan Africa is irrigated, compared to 12 percent in Latin America and the Caribbean, 34 percent in the Middle East and North Africa, 37 percent in East and Southeast Asia, and 39 percent in South Asia. There are just three Sub-Saharan countries where more than one in ten hectares irrigated: Madagascar (31 percent), Swaziland (26 percent), and Sudan (11 percent) [13].

Support for agricultural research and development is also deficient, and not simply in financial terms. Aside from the Republic of South Africa, where a number of universities and other institutions are using biotechnology to improve crop and livestock varieties, genetic modification is seldom employed south of the Sahara. One reason why the region is not harnessing this approach – as Brazil, China, and India are doing – is opposition by anti-biotechnology campaigners, who are affiliated with the Food Sovereignty movement in affluent nations [1]. To be specific, these campaigners have made clear their intention to block agricultural imports from African nations that do not adopt regulations of genetically-modified organisms (GMOs) based on an uncompromising interpretation of the precautionary principle. This stance has helped convince many sub-Saharan nations not to use agricultural biotechnology [14, 15].

Sub-Saharan Africa is sometimes portrayed as hopeless, including by many who embrace the misguided policies responsible for much of the region's poor economic performance or are reluctant to criticize these policies. However, unrelenting pessimism is not warranted by any means. Consider the case of Kenya, where the NRA was -18.6 percent in the early 1980s but stood at 9.3 percent a decade ago [11]. Cereal yields have risen in the country, thanks to a doubling of the annual fertilizer application rate during the same period as well as a modest increase in irrigation [13]. Moreover, a sizable industry now exists to export fresh vegetables, cut flowers, and other goods worth up to $500 million every year to Europe, which among other things has provided jobs to 250,000 rural dwellers. Local-food campaigners in Great Britain and other importing nations have complained about the energy

needed to fly Kenyan produce to market. However, their arguments have been refuted by economic studies that demonstrate that the energy-savings of growing fruit, vegetables, and flowers under the sunny skies of East Africa exceed the energy required for intercontinental air transport [16].

Between increased production of farm products for domestic markets and the expansion of foreign commerce, which has raised rural incomes, food security has improved in Kenya. Extremely poor people, whose daily earnings are under $1.25 and who comprise practically all of the food-insecure cohort, make up at least 10 percent of the population in all but a handful of Sub-Saharan nations. Kenya, where the incidence of extreme poverty is little more than 6 percent, is one of the exceptions. Also, one in six five-year-olds is categorized as abnormally underweight in the country, which is low by regional standards. In contrast, one in every three citizens is extremely poor and nearly 25 percent of all five-year-olds are severely underweight in Zambia, which to repeat has been out of step with the global trend toward diminished penalization of the agricultural sector in recent years [11].

In much of Africa, rights to adequate nourishment are honored in the breach. However, the problem does not relate to humankind's inability to come up with a satisfactory definition of such rights. Neither will striving for greater food self-sufficiency reduce hunger south of the Sahara. Instead, food insecurity in the region is best understood in terms of the FAO's current definition, which focuses on economic access. Food security is best achieved by improving that access, both by diminishing governmental interference with market forces and by increasing investment in the agricultural sector's public goods – including investment in agricultural biotechnology, not to mention rural roads and other infrastructure.

3. Other Insights from Writings on Food Sovereignty?

The argument can be made, and many economists would make it, that the task of providing everyone with "access to sufficient, safe, and nutritious food that meets their dietary needs and preferences" [4] can be accomplished through a combination of market reforms and investment in public goods. Does the literature on food sovereignty convince the reader that anything else is needed?

Perhaps. Patel notes that the definition of food security that the FAO enunciated in 2001 largely dodged the issue of social control of the food system and that "a discussion of internal political arrangements was a necessary part of the substance of food security" [3]. While generally applauding this sentiment, he observes that the food sovereignty movement has yet to propose a core program, one made up of "an internally consistent set of ideas" [3].

General statements issued by the movement, Patel forthrightly continues, are not helpful. He quotes from the Nyéléni Declaration on Food Sovereignty, from 27 February 2007, which calls for respecting the rights of "those who produce, distribute, and consume food." As he points out, this includes anyone and everyone, "including transnational corporations," whose interests are not supposed to be taken into account according to another part of the same Declaration. The conclusion is reached that the "canvas on which inequalities of power need to be tackled is vast . . (and) . . the project of food sovereignty so wide that it becomes everything and nothing" [3].

In terms of a practical program, the scholarly literature about CFS is no more illuminating. After decrying the power of corporations, U.S. welfare reform during the 1990s, and so forth, Allen considers the practicalities of a "whole-systems approach to food security" at the local level. Like Patel, she is honest about the difficulties, conceding among other things that "geographical proximity does not overcome social and economic distance and *may increase* it" (emphasis added) [5]. In other words, differences in income, wealth, ethnicity, and so forth, which greatly trouble CFS advocates, are not necessarily less problematical in a confined community than in the broader marketplace, and might actually be worse. Besides, as Allen reminds us, relying more on local farm products, as community self-sufficiency requires, may be irreconcilable with the goal of providing food at affordable prices to the poor [5].

As noted in the introduction to this paper, food sovereignty is replete with contradictions. Commentators such as Patel who recognize these contradictions nevertheless consider them worth exploring. The same cannot be said of the more ardent supporters of food sovereignty poor [1,2, 17] who exhibit little inclination to admit the concept's flaws and rarely if ever ponder its internal inconsistencies.

These activists, it must be conceded, do modest harm in places that lack a comparative advantage in agriculture and also are affluent enough for food expenditures to be small relative to consumers' incomes and budgets. In such settings, which have served as an incubator for the food sovereignty movement and others like it, opposition does not have to be overcome from an agribusiness sector that is an important source of exports and foreign exchange. To the contrary, activists often are able to forge alliances with farmers who find foreign competition difficult to withstand. Moreover, the higher prices for food that are a direct result of greater agricultural self-sufficiency do not arouse much opposition since most consumers barely notice the change.

Switzerland is a good example of the fertile ground that exists for the food sovereignty movement, local-foods militancy, and the like due to a combination of internationally uncompetitive agriculture and affluence among a population with little economic stake in farming [18]. Such a country is in a position to implement the activists' program if the bounded tariffs on farm products it has agreed to in World Trade Organization (WTO) negotiations exceed its actual tariffs. Of course, if a larger nation or the European Union as a whole has the same

opportunity and follows the same course, global agricultural trade ends up being distorted.

But the worst consequences occur if the activists' prescriptions are adopted in poorer parts of the world – where their knowledge of food and agricultural policy, not to mention awareness of the outcomes of previous attempts at self-sufficiency, is limited at best. In places like Sub-Saharan Africa, the cost of pursuing food sovereignty is measured in terms of the number of people needlessly going hungry.

4. Conclusions

Since it was coined nearly 40 years ago, the term 'food security' has not had a fixed definition. In keeping with prevailing currents of thought during the 1970s, the original formulation reflected aspirations for a New International Economic Order as well as confidence in the abilities of governments to intervene in the food economy to the benefit of their citizens. In early discussions of food security, substantial attention was given to the basic human right to adequate nourishment. Also, belief in food self-sufficiency was widespread.

The definition of food security that has been in use for at least a decade now is quite different. This definition makes no mention of basic rights. In addition, the pitfalls of self-sufficiency are appreciated. Instead, economic access to food is the main concern. Moreover, free markets are widely regarded as widening this access. So is investment in agricultural research and development, including genetic modification of crops and livestock.

Along with U.S. adherents of CFS, the food sovereignty movement seeks to reintroduce the subject of social control over the food system in the debate over food security, for the sake of protecting rights they argue are abridged in the market economy. The movement's aim is not agricultural protectionism per se. However, the affinity of many food sovereignty advocates for self-sufficiency can have the practical effect of facilitating protectionism – even though the hobbling of agricultural markets contributes directly to food insecurity, as is easy to observe in many parts of Africa.

Food sovereignty is clearly not a viable alternative to food security, as we understand the term today.

References

[1] Wittmann, H., Desmarais, A. A. & Wiebe, N. (2011) Food Sovereignty: Reconnecting Food, Nature & Community. Food First Books, Oakland, California.

[2] Schanbacher, W. D. (2010) The Politics of Food: Global Conflict between Food Security and Food Sovereignty. Prager, Santa Barbara, California.

[3] Patel, R. (2009) "What does food sovereignty look like?" The Journal of Peasant Studies, 36, 663-673.

[4] Food and Agriculture Organization (FAO) (2002) State of Food Security in the World 2001. FAO, Rome.

[5] Allen, P. (1999) "Reweaving the food security safety net", Agriculture and Human Values, 16, 117-129.

[6]. von Braun, J. (1989) "Commercialization of smallholder agriculture: Policy requirements for capturing gains for the malnourished poor", IFPRI Report, 11, 4.

[7] Short, P. (1999) Mao: A Life. Henry Holt, New York.

[8] Gregory, P. and Zhou, K. (2010) "How China won and Russia lost", Policy Review, 158, 35-50.

[9] FAO (1997) Food Security: Some Macroeconomic Dimensions. FAO, Rome.

[10] FAO (2009) Food Security Statistics. FAO, Rome. http://fao.org/economic/ess/food-security-statistics/en/

[11] Anderson, K. and Masters, W. (2009) Distortions to Agricultural Incentives in Africa. World Bank, Washington.

[12] Henao, J. and Baanante, C. (2006) Agricultural Production and Soil Nutrient Mining in Africa. International Fertilizer Development Center, Muscle Shoals.

[13] Southgate, D., Graham, D., and Tweeten, L. (2011) The World Food Economy, second edition. John Wiley, Hoboken.

[14] Aerni, P. (2008) "A new approach to deal with the global food crisis", African Technology Development Forum Journal, 5, 16-31.

[15] Paarlberg, R. (2008) Starved for Science: How Biotechnology Is Being Kept out of Africa. Harvard University Press, Cambridge.

[16] Desrocher, P. and Shimizu, H. (2008) "Yes we have no bananas: A critique of the 'food miles' perspective" (policy primer number 8), Mercatus Center, George Mason University, Arlington.

[17] Altieri, M.A. and Toledo, V.M. (2011) The agroecological revolution in Latin America: rescuing nature, ensuring food sovereignty and empowering peasants. Journal of Peasant Studies 38(3): 587–612

[18] Aerni, P., Rae, A., and Lehmann, B. (2009) "Nostalgia versus pragmatism? How attitudes and interests shape the term sustainable agriculture in Switzerland and New Zealand", Food Policy, 34, 227-235.

Food Sovereignty and its Discontents

Philipp Aerni*
University of Bern and ETH Zurich.
World Trade Institute, Hallerstrasse 6, 3012 Bern.
Email:philipp.aern@wti.org

Abstract

The global food crisis is a clear signal that old belief systems no longer apply. Innovative ideas are necessary to make agriculture simultaneously more inclusive, sustainable and productive. Hybrid models of problem-oriented collaboration involving competent and committed actors in civil society, farmer organizations, government, academia and business are increasingly crucial in tackling the global challenges of agriculture. They create demand-driven agricultural innovation systems that respond to the needs of small-scale farmers to produce more with less through homegrown innovation. The Food Sovereignty movement could play a crucial role in this endeavour because the agro-ecological practices it advocates must be part of a comprehensive approach to sustainable intensification. Unfortunately, the movement still prefers political confrontation to cooperation on the ground, and its baseline assumptions of agriculture are defensive, not progressive. This article shows why these baseline assumptions are misleading even if they sound intuitively right. Sub-Saharan Africa has become a net importer of food because ideology has always mattered more in agricultural policy than the knowledge gained from farmers' experience in the field and from agricultural research. The Food Sovereignty movement is right about the mistakes of neoliberal economic ideology, but it is silent about the fact that most famines actually occurred under socialist and communist regimes that pursued the goal of food self-sufficiency. The concept of Food Sovereignty still contains too much old left-wing ideology and too little creative thinking on how to make better use of today's global new knowledge economy to promote sustainable development. The movement could either become an obstacle to future food security, if it sticks to its ideology-based and confrontational rhetoric, or part of the solution, if it decides to extend collaboration beyond like-minded groups and engage in joint pragmatic action.

1. Introduction

'Food Sovereignty' is the new battle cry of those who dream of an alternative to the global food system, which they believe is ruled by multinationals that neither address the needs of producers nor care about the preferences of consumers [1]. Food Sovereignty advocates want agriculture to be exempted from trade liberalization and consider new agricultural technologies to be incompatible with traditional practices [2, 3]. They claim that their alternative is based on a system-oriented agroecological approach that makes use of 'ecological interactions and synergisms between biological components to maintain the soil fertility, productivity and crop protection of the agricultural system' [3]. This is probably meant to sound a bit vague because there is wide disagreement about what such a 'holistic' system looks like. Agroecology is primarily a scientific discipline that studies the effect, impact or change that is created by introducing an agricultural innovation in the field. No matter whether this innovation is a new crop rotation system or a genetically modified crop [4]. It studies the impact on a plot level or an agro-ecosystem level, but it usually refrains from broadly prejudging the consequences of such potential changes on a global food systems level. After all, agroecology wants to be a science and not a social movement. Yet, well-known scholars in agroecology seem to have become bored with field research and have acquired a taste for political activism [2, 3]. The number of publications that put agroecology into a global political context has increased almost exponentially in recent years [4].

Based on the findings of this mostly non-empirical research, Food Sovereignty activists promote a wide range of local initiatives in developed and developing countries that aim to bring like-minded producers and consumers closer together in efforts to regain power over the control of food [4]. Most of these projects, however, rely either on state subsidies or have a generous private sponsor. Moreover, if farmers aim to sell their products for a premium price outside their community, they depend heavily on the good will of those who certify, package and market their products. For example, retailers are willing to offer favourable terms as long as the projects can be used as showcases in their marketing efforts, enabling them to portray themselves as supporters of fair and sustainable agriculture [5]. Once favourable terms cease to be granted or subsidies are reduced, enthusiasm for this kind of consumerism-based food sovereignty would probably subside too.

The Food Sovereignty movement still has a chance to avoid being remembered as just another 'let them eat cake' movement if it is able to separate science from politics. Sustainable agro-ecosystem management practices are important, but so are investments in user-friendly new agricultural technologies, product innovation, rural infrastructure and post-harvest technologies. Since the private sector has developed many new prod-

* Philipp Aerni Works at World Trade Institute, University of Bern and teaches at Institute for Environmental Decisions, ETH Zurich he also is co-founder of ATDF

ucts and services which are useful and could be tailored to the needs of small-scale farmers, food sovereignty activists should collaborate with innovative companies rather than simply denouncing them as representatives of 'the corporate regime'. The common goal should be to support small-scale farmers in their efforts to adopt innovative practices and techniques that allow them to produce more with less in a sustainable way. Incentives to adopt innovation in a farming community increase if local farmers themselves are involved in the testing of the effectiveness of the innovative product or practice and its application and adaptation to the local agroecological context. This would allow small scale-farmers with poor access to outside resources to become more productive and more open to experimenting with new approaches [6]. The next step is to enable them to jointly invest in post-harvest facilities and marketing in the region. The additional revenues generated through market integration would then be likely to be reinvested in on- and off-farm activities. Off-farm employment in remote and poor rural areas often contributes significantly to improving local food security even if the employed people do not produce food themselves [7]. It would jump-start a process of rural empowerment and endogenous development which would result in an increase in domestic food production that would eventually help food-importing and rapidly urbanizing countries in sub-Saharan Africa to feed themselves to a large extent. The Food Sovereignty movement should welcome this objective and therefore engage in cooperation rather than confrontation with the existing food system.

Unfortunately, the concept of Food Sovereignty is still too ideologically rigid to give real support to innovative endeavours that primarily aim at improving the economic situation of the poor and therefore their access to food. For them access to food is an economic concept that is linked to the official definition of 'Food Security'. While 'Food Security' tries to operate within the existing world food system, 'Food Sovereignty' tries to change the system [1]. To be more precise, the Food and Agriculture Organization (FAO)'s definition of Food Security aims at ensuring access to sufficient, nutritious and safe food, whereas food sovereignty relates to the ownership and rights of food growers and local communities [8]. It is not clear, however, why the term Food Security should not include these aspects too so long as they are ensuring access to food. Yet, for the Food Sovereignty movement Food Security smacks of 'neoliberalism' because it implies that access is primarily ensured through trade and exchange. They call it 'economic rationalism' as opposed to 'green rationalism', which stands for radically different understandings of the environment, human–environment interactions, and human society [9]. But Food Sovereignty activists have a hard time explaining this greenish alternative apart from using fuzzy terms such as 'system-oriented' and arguing that we should produce food with nature and not against nature. While even large agribusiness companies adopted a system-oriented approach a long time ago, they consider agriculture to be a struggle against nature rather than being in harmony with nature. Even small-scale farmers would probably agree with them because if you grow crops in a field, you want only the crops to grow and bear fruit, while all insects and plants that prevent them from doing so have to be removed. As cruel as this may sound for a romantic urbanite, agriculture is impossible without this type of warfare against the unwanted organisms in the field.

There are also some inconsistencies with regard to the sovereignty of a farming community. Such a community may completely decouple itself from trade and exchange with the outside world and thus be perfectly autonomous in its right to control, produce, and consume local food. But this implies that all the techniques and means to produce, process and preserve food are already in the hands of this community (which would probably have happened through trade at an earlier stage). Yet, if the community lacks the means and technologies to attain a level of agricultural productivity that lifts food production above the subsistence level, it may still be called 'food sovereign'. At the same time the community may still be profoundly food insecure because as soon as there is crop failure through natural biotic and abiotic stress factors, or war with another community that competes for scarce natural resources, it would quickly run out of stock and suffer from hunger and malnutrition. This vulnerability of people who are disconnected from markets explains why roughly 80% of the people who suffer from hunger and malnutrition are found in remote villages in poor developing countries not in cities [10]. They are disconnected from trade not because they think this will lead to more sustainable agriculture or because they believe that this is a better lifestyle, but because their demands for better access to outside resources are ignored by their government since policy makers are mainly concerned with the needs of the politically relevant urban constituency. In the absence of a dependable infrastructure and sufficient purchasing power, the private sector also fails to invest in these remote regions, because they lack incentives to do so. Many outsiders visiting these remote villages are impressed by the solidarity they find in the village community. But again, this solidarity is not a question of values but a question of survival. Since they cannot expect anything from the outside world everyone must contribute his or her share to the maintenance of public goods and services [11].

One might object to this pessimistic view of life in the countryside in developing countries and argue that many historical cases of autonomous community farming proved to be sustainable and that we can learn from them. Elinor Ostrom for example was fascinated by remote villages in the Swiss Alps that were governing the local commons sustainably without much trade and exchange with the outside world and without relying exclusively on private property rights [12]. Yet, this lack of contact with the outside world also prevented these villages from adopting new techniques and innovative practices that would have enhanced their agricultural productivity. Moreover, local investment in innovation was also neglected because of the absence of ownership rights. As a consequence agricultural productivity largely stagnated.

The sustainable equilibrium in the villages was therefore only possible if the surplus population (the population that could not be fed with the available resources and

traditional techniques) could be exported as mercenaries to foreign armies or as non-farm labourers to lowland industrial centres. As such they contributed later on to the viability of the village institutions thanks to remittances. These remittances then allowed the villagers to buy food from elsewhere during periods of scarcity. But does this mean that they have lost their food sovereignty? Today, more than 215 million people have decided to leave their home countries and settle as migrants elsewhere [13]. Many did so because they lacked economic opportunities back home or even because they wanted to escape food insecurity. Climate change is likely to increase the number of dislocated people in future. How shall we cope with these huge challenges? Even food sovereignty activists would admit that it is no longer a good idea to encourage the male offspring who can no longer be fed by their own community to join a foreign army as mercenaries. Nor are there any new territories that could accommodate these huge numbers of migrants. The only possibility is to create urban centres of economic growth in the home countries themselves [14]. But these centres must also rely on a robust and productive countryside that is able to partly support the urban economy with food, feed, fibre, and fuel. This would require investment in agriculture.

Food Sovereignty advocates in the west could contribute to this development if they overcome their dualist mindset of 'community versus the market' or 'people versus profit' [15] or at least refrain from exporting these ideas to developing countries. Small-scale subsistence farming in developing countries is not an end in itself, as they believe, but a precarious situation that often makes it difficult for families to feed their children properly throughout the year; not to mention enabling them to get a good education and have a better life in future. They did not choose to become small-scale farmers because they like the lifestyle that comes with it. In fact, they may encourage their offspring to abandon farming, get a proper education, and then build up a successful business through trade, entrepreneurship, and innovation. This could contribute much more to the well-being of the farming village (by reinvesting or through remittances) than if the children simply continued the work of their parents. They could serve as engines for local endogenous development and thus make the region more self-confident and less dependent on development assistance and emergency food aid. The state of food sovereignty would thus also be improved as a positive side effect.

This paper shows why the baseline assumptions of the Food Sovereignty Movement about trade, business, technology, and our world food system are fundamentally wrong. At the same time, it argues that the movement could still play a crucial role in facilitating sustainable change by shifting from confrontation to cooperation. But for that to happen, public leadership is required. During the past decade politicians in affluent countries were largely concerned with confirming popular stereotypes and passing useless or even harmful regulation that made innovation in agriculture unnecessarily expensive and enhanced public distrust in modern agricultural biotechnology. The paper describes the harm done to society and the environment by clinging to old belief systems that see technological and economic change in agriculture as the problem rather than part of the solution. But it also offers a new perspective on how to reconcile the different views and embark on joint action.

2. Wrong Baseline Assumptions

The line of argumentation of the Food Sovereignty advocates contains implicit baseline assumptions about the world food system which are hardly ever questioned because they are taken for granted. These assumptions refer to the alleged effects of the Agreement on Agriculture (AoA) of the World Trade Organization (WTO) on agricultural trade (2.1), to the view that hunger is a distribution rather than a production problem (2.2), and the hope that proper respect of the human right to food could effectively address the problem of access to food (2.3).

2.1 The WTO Agreement on Agriculture (AoA) massively increased trade in agricultural goods

La Via Campesina, the organization that coined the term Food Sovereignty, was founded in 1993 in Mons, Belgium and currently counts 148 organizations from 69 countries as its members. It is probably safe to argue that the reason for its creation are to a great extent linked to the fears of highly subsidized and well-protected farmers in affluent Europe to become victims of agricultural trade liberalization. This assumption is confirmed by the recent Nyéléni Europe Forum 2011. It is meant to follow the 2007 Nyéléni Declaration on Food Sovereignty in Mali but is mostly focused on the European agricultural policy [16]. Yet, the Spanish name of the organization also refers to its partial roots in Latin American [17]. At any rate, the concern about the future of farming was raised in developed and developing countries when the US and the EU finally settled their differences regarding agricultural trade reform in the so-called Blair House Accord in November 1992. This broke the impasse in the agricultural negotiating group and the Uruguay Round was finally concluded in December 1993; and eventually led to the establishment of the WTO in 1995. This successful conclusion of the Uruguay Round was also a result of the end of the Cold War and the reduced need for a national strategy to ensure food self-sufficiency.

Agricultural trade protectionism through tariff trade barriers and farm subsidies could no longer be justified with arguments of national security because the communist threat was gone. Moreover the resulting food surpluses became increasingly expensive to get rid of by export subsidization, which amounted to food dumping in developing countries. These problems finally led to a shift in agricultural policy away from production-tied subsidies towards support for multifunctional agriculture through direct payment [18]. The intended purpose of multifunctional agriculture was to promote not only the economic but also the social and environmental dimensions of agricultural sustainability. Direct payments were also recognized as legitimate

subsidies in the so-called Green Box (describing non-actionable subsidies) under the AoA. The AoA also left many doors open for developing countries to preserve their policy space (Article 6.2 of the AoA) [19]. In addition to benefiting from Special and Differential Treatment (Development Box), developing countries were allowed the flexibility of ceiling bindings, longer implementation periods, and lower reduction commitments in tariffs; least developed countries were subject to tariffication and binding but exempt from reduction commitments [20]. As for developed countries, the AoA allowed for some tricks (e.g. dirty tariffication, tariff escalation, tariff dispersion) to ensure that the tariffication of non-tariff trade barriers into equivalent bound tariff rates did not force developed countries to reduce support and protection for domestic agriculture in any significant way. All in all, many scholars in law and economics concluded that the AoA was legitimizing agricultural protectionism rather than further opening agriculture to international trade [20, 21].

This is also reflected in the fact that growth rates in agricultural trade have not increased significantly for food crops since the AoA was passed. While farm products accounted for more than 30% of all merchandise trade globally in the 1960s, its share has decreased to just 9% since the beginning of the new millennium [22]. Growth in total agricultural trade over the past four decades nevertheless increased, not because of trade liberalization but because of technological change: improvements in transportation and handling, such as containerization and refrigeration, facilitated shipments of out-of-season produce from distant origins, and communication and logistical improvements enabled shippers of bulk agricultural commodities, like grains, to respond more easily to market demands for specific types, grades, and qualities [23].

2.2 Hunger and Malnutrition are a Distribution not a Production Problem

One significant change since the Cold War has been the severe cuts in public sector research and development (R&D) on the national and international level even though they would have been perfectly legitimate subsidies under the AoA and the WTO Agreement on Subsidies and Countervailing Measures (SCM) [24]. This lack of priority for public sector R&D was justified by the assumption that the Green Revolution had already accomplished its goal. It made most food abundant and caused global food prices to decline to a level that many thought would ruin farm livelihoods and be harmful to the environment. Yet, this view largely ignored the fact that the Green Revolution was far from having achieved the goal of global food security. Even though the percentage of the population that was undernourished decreased from 24% in 1970 to just 14% in 1990, the total number remained stubbornly around 800 million people [25]. The decline in public sector R&D spending and the support for extensive agriculture in Europe since the 1990s helps explain why annual agricultural productivity growth in Europe declined from an average of 4% between 1960–1990 to an average of just 0.6% between 2000–2010. As a result, the EU has become the largest importer of food and feed in the world. It imported the equivalent of 35 million hectares of arable land in 2007–2008 which is roughly the size of Germany. That is an increase of almost 40% (amounting 10 million hectares) since 1990. The European media would never call this land-grabbing – but it is difficult to find another name for it [26].

In response to a decline in the percentage of the global population that was undernourished, politicians lost interest in investing in agriculture in the 1990s. Their widespread belief that improvements in science and technology led to global overproduction of food at the expense of the poor and the environment in developing countries turned out to be misguided. No one anticipated in the 1990s, that the economic rise of India and China, the two most populous countries in the world, would lead to such a global boost in demand for food, fibre and fuels. Therefore the popular argument that the food security problem is not a production problem but a distribution problem may have once made sense, but today it has become nonsense. Why? First of all, the distribution problem argument ignores the fact that most of the hungry and malnourished people live in remote areas that are difficult to reach because of a lack of reliable infrastructure. So it would be very difficult to feed people in such regions over a long period of time. Moreover, a system for distribution of free food would probably not be welcomed by the farmers in the affected regions because they need to sell their food. They cannot compete with free food. The argument that we should just use the overproduction in food-surplus countries and distribute it in food-scarce developing countries is therefore dangerous and might make these regions even more dependent on food imports in the long term. Many European countries have demonstrated and still demonstrate the negative effects of artificially cheap food imports when they apply export subsidies to get rid of agricultural overproduction on the world market. This food dumping has the same effect on local food prices in developing countries as food aid shipments over a long period; it leads many farmers to abandon their business entirely [27]. Their own governments further worsened the situation by designing food policies that tended to tax productive farmers, subsidize consumer prices and crowd out private sector investment in agriculture. This partially explains why most countries in sub-Saharan Africa have turned from net food exporting into food importing countries [27]. In other words, it undermined their food sovereignty. Yet, the movement explicitly reject food dumping, the argument that food security has nothing to do with agricultural productivity and incentives still implies that it can be addressed through proper local distribution systems that are not linked to markets but to the respect of the human right to food. That is how the following statement of the organization 'La Via Campesina' when it first defined the term 'Food Sovereignty' in 1996 must be interpreted:

> *"Food is a basic human right. This right can only be realized in a system where food sovereignty is guaranteed. Food sovereignty is the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity. We have the right to produce our own food in our own territory. Food sovereignty is a precondition to genuine food security." [28]*

The definition implicitly assumes that local food production and consumption can ensure food security and therefore the human right to food. It completely ignores that developing countries, in particular, go through a process of rapid urbanization. So the share of non-farm activities is constantly increasing, which means that a smaller share of the population needs to produce more food with less input. How is the 'food sovereign' community which is focused on self-sufficiency supposed to feed this rapidly growing urban population? Do they think that the human right to food applies only to those who produce their own food within the self-sufficient community?

2.3 If we simply respect the human right to food we would be able to solve food crises

The Food Sovereignty Movement insists on the right to produce 'our own food in our territory' [28]. It implies that every country is capable of producing and distributing sufficient food for its inhabitants (and thus of meeting the human right to food) without any need to resort to agricultural trade. This has actually been tried many times in the history of humankind, by many governments, and mostly led to widespread hunger and starvation because the virtual absence of cross-border trade in agriculture prevented not just the inflow of food products but also the entry of new knowledge and technology that could make agriculture more productive. It did not permit private actors to sell surplus agricultural products abroad in return for obtaining goods and services that were scarce in the domestic agricultural economy. Since farming was no longer a business, the incentives for farmers to produce more and respond to consumer preferences disappeared. There are plenty of examples in history that illustrate how famines occur due to a lack of understanding of the economic forces of demand and supply. A well-documented great famine occurred after the communists took over Russia at the end of World War I. After mass starvation became obvious Lenin had to introduce the so-called 'New Economic Policy' that legalized profit-oriented agricultural production again. Most famines actually happened in socialist authoritarian systems such as China, India, Ethiopia and most recently Zimbabwe and North Korea. These governments designed highly centralized public food production and distribution systems to ensure food self-sufficiency. These highly protectionist agricultural policies combined with a lack of protection for private ownership of land brought private investment in agriculture to a halt and consequently led to a decline in agricultural productivity and food production. The goal was to reinstate social justice and enforce the human right to food, the result was hunger and starvation. It is a great irony that the Special UN Rapporteur for the Human Right to Food from 2000–2008 was Jean Ziegler, a self-styled intellectual with no competence in the field of food policy whatsoever but many friendship ties to the dictators of socialist authoritarian regimes in Africa and Latin America. His rigid socialist ideology has not budged an inch since the 1970s. The enemy is capitalism and the salvation lies in communism. It was therefore quite clear that he would focus on the mistakes of neoliberal ideology as practiced by the International Monetary Fund (IMF) and the World Bank. The scapegoats are the usual suspects such as speculators and the corporate world, especially agribusiness. Socialist and communist regimes and the famines they have caused do not appear on his radar screen.

This blindness to the failures of left-wing policies in coping with food security also applies to the advocates of Food Sovereignty. Not a single document in the Food Sovereignty literature actually refers to these tragedies caused by communist and socialist regimes, because their enemy is the 'neoliberal' food regime. The storyline that is repeated over and over again is that the United States imposed a food regime on the rest of the world after World War II through the establishment of the neoliberal Bretton Woods Institutions. If the world 'neoliberal' means that the free market should be in charge of the production and distribution of food, then this has definitely nothing to do with Cold War agricultural policies, where the state was primarily in charge of agriculture. Even the Green Revolution had nothing to do with the private sector but was in every sense a public sector initiative [5, 20]. One might call the economists of the Bretton Wood institutions 'neoliberal' because of the conditionalities they imposed on indebted Third World governments during the implementation of structural adjustment programmes. They regarded the state as the problem and not as part of the solution and the standard recipe to development and growth was to slim down the state budget even if the cuts impaired the state of domestic agriculture, public health and education. IMF experts who were trained in comparative static neoclassical economics also ill-advised developing country governments in focusing almost exclusively on exports of labour-intensive commodities with predictable decreasing marginal revenues instead supporting the private sector in the development of new goods and services with increasing returns. They were also unable to recognize the role of universities as engines of social and economic change [29]. Finally, in the field of export-oriented agriculture, they ignored the fact that small-scale farmers in remote areas face much higher risks in export-oriented agriculture than farmers in more favourable areas [30]. But this kind of neoliberalism was typical of the 1980s and reflected flawed textbook economics. Today it is rather passé because many countries are starting to adopt new industrial policies that can hardly be compared with laissez-faire Thatcherite capitalism [31]. But even today's pragmatic policy makers in emerging economies recognize that the public good of food security can only be secured by a state that generates sufficient tax revenues to invest in agricultural development and improved access to nutritious food. For them the human right to food may be fulfilled by an affluent state that has the means and infrastructure to protect its most vulnerable citizens through a social security and public health system to ensure sufficient access to nutritious food. But this is impossible for other states that do not have the necessary means; they can nevertheless improve access to food by investing in domestic agriculture. Calling for the global right to food is easy if it is voiced from the safe haven of an affluent country. But it will not change the situation in poor countries.

3. Is Food Sovereignty a Lifestyle phenomenon?

Considering its rather nostalgic views and its attachment to old left-wing ideas, it would be easy to discard the Food Sovereignty Movement as a sort of relic from the past millennium that has not yet woken up to the new reality of the global knowledge economy. Yet, the term 'Food Sovereignty' is very popular and widely considered to be 'progressive' because it is linked to a lifestyle that would express personal values about the way food should be produced in a sustainable way. It coincides with a general public fatigue with agricultural modernization in affluent countries and the subsequent rise of many different identity-based social movements over the past decade (anti-biotech, slow food, organic, gender, community food security (CFS), etc) that can easily be mobilized under the umbrella term Food Sovereignty. All these anti-globalization movements claim to offer an alternative to the existing world food system that is considered to be controlled by large multinationals which take advantage of open markets at the expense of endangered community-based life styles and the environment [32, 33]. The alternative system is conceived to embody a local-, family-, and community-based ethic that stresses the values of sustainability, independence, environmental protection and local food production for local consumption. The vision is that everyone feels happy and fulfilled in their own community with plenty of fresh and nutritious food at its disposal. As a pleasant side effect, Food Sovereignty on the community level would also eliminate global hunger and save the environment [1, 2].

In this wonderful utopia there is not much room for pragmatic practitioners in agriculture who raise difficult questions about the practical feasibility of extending community-based agriculture to a global scale, or point to historical and empirical insights about the origins of food insecurity and famines. Slow progress based on trial and error and critical assessment is boring, especially for young people who dream of revolution. Like the Marxists in the 19th century they believe that they know what has to be done and think that people must first become aware of their false consciousness and then be weaned off the current unsustainable food system. This has to be achieved by means of symbolic public protest, position papers and dramatic documentaries. The dream is to reconcile nature with agriculture, regain control over food, protect farmers from international trade, defeat large agribusiness companies, stop the use of genetically modified crops, increase public health as well as the quality of food and of the environment through organic farming and, finally, to ensure that no one on this planet ever again has to suffer from hunger and malnutrition [1,2,3]. At first glance, this too sounds intuitively right, but it ignores the fact that agriculture has always been a fight against nature. After all, the farmer wants certain plants to grow in his or her cultivated field and not others. There is no way you could start a dialogue with the unwanted plants as to whether they would be willing to leave under certain circumstances. You have to remove them against their will. Since the beginning of the Neolithic Age societies have been moving from a nomadic or a hunter–gatherer mode of living based on equality and reciprocity towards an agriculture-based sedentary life that produces social inequalities and hierarchies [34, 35]. The brutal large landowners in feudalist and colonial times can hardly be compared with today's multinationals. They may be profit-seeking, but they are also anxious about their public reputation and have to comply with the law. Multinationals are not just rent-seekers but invest in R&D and innovative goods and services that might eventually benefit the public at large. Moreover they produce a lot of positive spillovers for smaller companies and are engaged in public–private partnerships that aim at empowering farmers in the developing world [36]. Yet, that does not help them much in the face of global resentment against those who produce unwanted change. As the prescient Joseph Schumpeter had already noticed in the 1940s, one of the problems of technological and economic change is that benefits are taken for granted while risks are increasingly considered to be unacceptable in highly developed societies [37]. Affluent societies do not remember anymore how they developed and the extent to which previous generations suffered to solve the big problems of economic and technological development. It was this change that resulted eventually in more social mobility and the empowerment of the masses. Many of the poorest countries have not even started this process, but are nevertheless expected to adopt a very costly agricultural compliance system that corresponds with western views of value-based sustainable agriculture.

3.1 Food Sovereignty as Anti-Biotech

Because the goals of the Food Sovereignty movement are so numerous and ambitious, it is not surprising that the movement is very heterogeneous. It is largely united by what it opposes rather than what it stands for and what changes it envisions for the future. In view of their defensive argumentation one wonders whether the countless self-appointed food sovereignty advocates ranging from Prince Charles to Vandana Shiva to José Bové are just anxious to defend their privileged lifestyles, which they consider sustainable, against the forces of change, which they consider unsustainable. The current World Food System has grown over centuries and is not the product of a deliberately enforced global ideology that aims at enriching the powerful and exploiting the poor. Numerous columnists in the big national dailies all over the world, however, have embraced this reductionist view of 'people versus profits' because it is so convenient – after all it is not really about addressing today's agricultural problems, but about saying something that sounds meaningful within one's own peer group. You don't need to bother about facts and history; it is enough to learn who stands for the corporate (evil) system and who stands for the 'alternative' (good) system. An Internet search will provide you with everything else you need to know. It helps communities of like-minded people to create an echo chamber in which they can feel reassured about their views even though they lack any concrete experience with any of the systems [38].

The heroes of the movement have become so popular because they learned a lot from the strategy of former president George W. Bush. He knew that a lie can be-

come a truth in public if it is repeated over and over again [39]. Vandana Shiva has honed this PR strategy to perfection when it comes to the false claim that farmers that adopt Bt cotton in India are more likely to get into debt and eventually commit suicide. By repeating the message again and again she created a persistent narrative that became a public truth that no one needed to verify any longer, and it was then also taught in school as an example of the socioeconomic risks of genetically modified (GM) crops [40]. Yet, she must be well aware that large-scale surveys have shown that *fewer* and not more farmers commit suicide after they have adopted Bt cotton [41].

These empirical studies showed that Bt cotton in India was widely adopted by small-scale farmers not because they were fooled by seed companies but because they had better yields, needed less chemical input and thus generated more revenues and suffered less from health and environmental problems [42]. The success of Bt cotton explains why more than 90% of the farmers who have adopted GM crops worldwide are small-scale farmers [43]. This also applies to Burkina Faso, the only country in francophone Africa that decided to ignore France's advice and approved GM Bt cotton for commercial cultivation [44]. As in India, Bt cotton was a boon in Burkina Faso, especially to small-scale farmers. But these are obviously not the small-scale farmers the Food Sovereignty advocates want to hear about. They might argue that Bt cotton is not about food anyway. It is true that so far the only transgenic crops that have been approved were not meant for direct human consumption, with the exception of virus resistant papaya in Hawaii, which has already been consumed in the United States for more than a decade. So why do we still have to wait for GM food crops that have a real value for poor food consumers? The case of vitamin A rich 'Golden Rice' shows clearly that it is not patents, but costly and time-consuming regulation that prevents poor consumers and producers from gaining access to beneficial GM crops [45].

The Golden Rice consortium has already spent 12 years since the first proof-of-concept trying to comply with national and international regulatory requirements. The costs so far amount to about US$ 25 million. The project would have been dead a long time ago without the strong will of the researchers involved to make it happen and the generous support of public and private institutions. In the private sector, only very big companies can afford to spend that amount of money and time on such burdensome regulatory procedures whereas the small innovative companies either disappear or become part of the large ones because they cannot afford to go it alone. So the result is increasing concentration in industry created by the opponents' call for ever more redundant regulation. Risk studies on GM crops have been carried out over and over again in the European Union and its Member States, and nothing suspicious has yet been found. Yet the Precautionary Principle as defined in the Cartagena Protocol on Biosafety of the UN Convention on Biological Diversity ensures that decisions continue to be postponed. This protocol was celebrated as one of the major achievements of food activists opposing the 'corporate' regime in agriculture. As a consequence of preventive regulation, plant biotechnologists at universities have become rather disinterested in going beyond proof-of-concept and developing useful products for the poor in cooperation with public and private institutions. This stands in strong contrast to the original purpose of the Biosafety Protocol, which has its foundation in Article 19 of the UN Convention on Biological Diversity (CBD). In Article 19, the purpose of the Protocol was described as enabling the safe transfer of biotechnology. But the way it has ultimately been interpreted serves the opposite purpose. It prevents technology transfer. Does this mean that there are no environmental and socioeconomic risks involved in GM agriculture? Of course not, and that is why millions of dollars have been spent on public risk assessment of GM crops over the past decade. The European Commission recently published a report called A Decade of EU-funded GMO research (2001-2010) [46]. The report does not just cover a decade but actually looks at the past 25 years of EU risk research on GMOs (funded with an amount of EUR 300 billion) involving more than 500 independent research groups. The overall conclusion of this large-scale assessment is that biotechnology in general, and GMOs in particular, are not per se more risky than conventional plant breeding technologies. Another very important conclusion is that modern biotechnology will help address to the main sustainability challenges of the future, especially when it comes to adaptation to and mitigation of climate change in agriculture. Yet, this report was hardly discussed in the media and consequently had no impact on public policy in Europe.

The US government may have been in a position to do some capacity building in Europe on the risks and benefits GM crops in view of its considerable experience with commercial cultivation over the past decade. Instead, it is starting to question its own more permissive regulation of GM crops, which has led to a protest letter addressed to the US Environment Protection Agency (EPA) by the leading researchers in the field [47]. The researchers are concerned that the anti-science attitude of the Bush administration is continuing in the Obama administration, but this time not against climate change but agricultural biotechnology. The Food Sovereignty advocates, however, are celebrating this as a victory against the corporate food regime in the United States.

3.2. How pandering to Western stereotypes can be rewarding for activists in developing countries

Many Third World activists like Vandana Shiva seem to have a more significant influence on European regulation of GM crops than any sort of empirical studies. She has a charisma that even besotted the conservative Bavarian president Horst Seehofer when he attended one of her speeches in front of thousands of Bavarian believers. After the event, he decided to change his mind about agricultural biotechnology and become a strong opponent of GM crops. This also had consequences for Germany as a whole, because the hapless German minister of agriculture, Ilse Aigner, a former political trainee of Seehofer, was then asked by him to ban the only approved GM crop in Germany

(MON810) [48]. Shiva illustrated with her magic charisma that it is not facts, but a good narrative that moves people and thus politics and regulation. She knew that catering to Western anxieties and stereotypes about the 'corporate' regime and its victims in developing countries can be more rewarding in terms of media attention than fighting for the real local concerns as expressed by the hard-working poor Indian population, whose main wish is to have better access basic resources to do business and make a decent living. Their bottom-up social movements usually demand land rights, protection from abuse, and access to knowledge, finance and technology – banning GMOs is not one of their priorities unless they get paid for it by the Europeans.

The Chipko movement in India provides an example of how Shiva managed to change the original meaning of a successful local movement so that it appeals to Western stereotypes and the sense of collective guilt over the past. The Chipko movement was led by women in Uttar Pradesh at the foot of the Himalayas who defended their right to use their forest resources. They protested against the takeover by a foreign logging company that was granted a logging licence by the Uttar Pradesh government, and thus endangered their right to use their forest as they pleased. They protested by hugging trees so that they could not be cut down. Shiva presented this movement to the west as an example of how eco-feminism can help create a more sustainable and fair world. As a result, a 'tree-hugging' movement emerged in the United States, which wanted to imitate this form of protest to protect mother earth. The irony of this rewriting of history is that the women who protested back then for their rights to use the forest resources are still prevented from using them because their area has been converted into a protected nature reserve (to honour their pioneering action for eco-feminism?) [49]. Shiva is however not an exception, but represents a new type of political entrepreneur in developing countries who first struggles as a local activist for a genuine local concern (e.g. land rights), but once in the limelight of the mass media, becomes infatuated with the sudden celebrity status in the west (or simply needs funding from Western NGOs) and eventually abandons the local struggle in favour of fervent speeches before western audiences, embracing a narrative that addresses western concerns and lifestyles [50, 51].

Looking at the history of the meaning of 'Food Sovereignty' a similar trend can be observed. The original principles of Food Sovereignty as defined by La Via Campesina at the World Food Summit in Rome in 1996 show this clearly. Even though the organization was already dominated by western organizations (in terms of funding) at that time, there were still principles that referred to the particular grievances of marginal farmers in developing countries (agrarian reform, social peace, political participation) [18]. Yet, today, the meaning of food sovereignty is primarily associated with multi-functional agriculture, sustainable food systems and community food security (CFS) in highly subsidized western countries [52]. All kinds of intellectual acrobatics and conspiracy theories are then applied to explain why such a costly approach would also be worth adopting in developing countries. The authors themselves have never done empirical research on the problems farmers face in developing countries, but are mostly quoting the Food Sovereignty literature to underpin the validity of their arguments [1, 2]. As with the Chipko movement, it is remarkable how popular food writers in the United States are rewriting the history of countless farmer movements in Latin America to make them poster children of the Food Sovereignty movement [53].

The belief that poor small-scale farmers in developing countries would share the lifestyle view of farmers in affluent countries ignores the fact that many of these poor countries must first start to address the productivity leap in agriculture. It was the big increase in productivity, thanks to technology change, that enabled the United States and Europe in the 19th century to feed their growing population and facilitate the emergence of an empowered middle class that would create and inclusive and prosperous economy, and a vibrant democracy. This still needs to happen in Africa.

4. The history of food and agriculture in the context of Food Sovereignty

4.1 Did the problems with food start with the rise of the United States and global capitalism?

The food sovereignty literature reveals a conspicuous absence of the history of food and agriculture before World War II, except from the point of view of class struggle [54]. History in the official narrative of the Food Sovereignty movement starts instead with the Cold War and the US government's decision to sponsor the Green Revolution. The Green Revolution was originally conceived as part of a containment strategy implemented by the US government to prevent non-aligned developing countries from becoming communist. The goal was to support their efforts to become more food secure [55]. This also included the development of high yield varieties (HYV) of food crops that are essential to the developing world. At a later stage, the Consultative Group of Agricultural Research (CGIAR) was put in charge of implementing the Green Revolution through its numerous international agricultural research centres in the developing world. Researchers at these centres focused on the breeding of varieties that were primarily suitable for agriculture in favourable areas. The new varieties were responsive to fertilizers and grew especially well in irrigated areas. The improved seeds were first tested by national agricultural research institutes and then distributed to farmers. Since there was little interaction with domestic producers and consumers, the varieties bred were often not well-accepted in marginal agricultural lands and consumers complained about the lack of taste [56].

Even though the large productivity gains in agriculture and the resulting low food prices are acknowledged by food sovereignty advocates, they criticize the Green Revolution for having led to monoculture practices, the loss of biodiversity and the abandonment of local varieties. In addition, they correctly noted that the widespread use of fertilizer and pesticides has caused environmental and public health problems. Yet, they cannot blame the

private sector for that, because the Green Revolution was a public sector initiative. The environmental problems of industrial agriculture were recognized early by Rachel Carson. She became an icon of the counter-movement against intensive agriculture with her book 'Silent Spring' written in the 1950s [57]. This book created an awareness of the negative consequences of the use of chemicals in agriculture and sparked the first environmental movement in the United States. If Food Sovereignty activists today could be bothered to read her book, they would notice, however, that she was opposed neither to business nor technology. She praised the public and the private sector researchers who jointly developed insect sterilization techniques, as well as the first microbial Insecticides based on the effect of *Bacillus thuriginensis* (Bt). She was strongly in favour of bacterial warfare in agriculture because in contrast to chemicals, insect pathogens are harmless to non-target insects. She was also a scientist who wanted to reach out to all parties to find a joint solution. For her, the popular argument in the food sovereignty movement that 'we have to do farming with nature not against it' would simply have revealed the ignorance of the Food Sovereignty movement about the reality of farming.

The end of government efforts to promote a Green Revolution coincided roughly with the end of the Cold War. Non-aligned developing countries were no longer considered to be strategic allies and there was a general agreement that the purpose of the Green Revolution had already been achieved. As a consequence the United States and Europe significantly cut funding for international and national agricultural research [58]. Taxpayer preferences (protecting local farmers and the environment) and consumer preferences (food safety standards, demand for organic food) gained priority in agricultural and development policy. The subsequent introduction of direct payments with the purpose of making agriculture more extensive also led to a large shift of agricultural research activities from the public sector to the private sector. Unlike the public sector, however, the private sector is concerned with the development of proprietary technology in order to reimburse the fixed costs spent on R&D. This forced CGIAR centres increasingly to seek collaboration with the private sector when it came to further improving the crops that are important to poor consumers and producers in developing countries. This was not necessarily a bad thing because the private sector was able to bring in a lot of valuable knowledge and experience to biotechnology research and product development [36, 59]. However, these public–private partnerships did not gain widespread acceptance in development cooperation and are highly distrusted by the Food Sovereignty movement, which believes that there is no need for private sector technology in agriculture. The reason why the Food Sovereignty movement resents public–private partnerships has a lot to do with its highly selective and short historical memory. Agriculture in the 19th century is described either as a form of class struggle or a centre-periphery-system in which European colonial powers exploited the labour and natural resources of their colonies [59]. But there was also a process of rural empowerment during this period, which is easily ignored by the Food Sovereignty experts who are still strongly attached to the social theories of the 1970s, such as the dependence theory that basically assumes that certain regions are rich because others are poor. The empowerment of farmers in remote regions in the United States and Europe happened through the establishment of agricultural research institutes that collaborated closely with the farmers and local entrepreneurs in the regions concerned to make agriculture more productive, to develop innovative products and technologies and help the region organize itself economically and socially [60]. This resulted in social mobility and enhanced self-confidence of the country-dwellers. It also helped to create an entrepreneurial middle class that contributed to the political stabilization of the young democracies by making use of the system of checks and balances.

4.2 Learning from the 19th century

Efforts to modernize agriculture started in Europe in the 19th century when it became obvious that population growth and increasing affluence would cause demand for food to exceed supply and thus result in peaking prices of food that would hurt the working poor most, and cause food riots and political instability. While large-scale plantations based on cheap labour or slavery in European colonies had previously been able to deal with increasing demand for food in Europe, the abolition of slavery and the political empowerment of the exploited local populations made it increasingly difficult to rely on food imports from colonies to produce sufficient food for the population of Europe. It should be noted that the concern for food security at that time certainly did not include food for the local populations in colonies. They largely had to rely on subsistence agriculture that made them very vulnerable to hunger and starvation. But since life-expectancy was low and child mortality high the population at least grew slowly, so that pressure to increase local food production in these regions was less acute. It is however a fact that throughout history, rulers cared only for the food security of those who ensured their political legitimacy within the traditional patron-client system of feudalism, and of the army which would protect their lives and properties. People living outside the centres of power could not count on the protection of the state and were largely left to their own devices [61]. Humanitarian assistance was provided by privately organized local religious institutions and charities that were not part of a formal government system [62]. But these private institutions were often unable to cope with natural catastrophes or wars that destroyed harvests, spread diseases and consumed all the people's savings and stocks. Religion was then often the only way to make sense of cruel fate. It could be attributed to a revengeful and all powerful God rather than to particular human decisions [63].

Despite the many reforms resulting from the new ideas of enlightenment, cross-regional food trade in the early 19th century was still marginal and food preservation and storage was time-consuming. The regular acquisition and consumption of food was still one of the major

challenges for households. Especially during the winter, there was no way to save people in the countryside from hunger and malnutrition once they ran out of food stocks. Food insecurity was therefore always one of the major reasons why people in marginal farming communities migrated to cities where they could not expect respect for their rights as human beings and where they were likely to be exploited as cheap manual labour [64]. But at least there was a better likelihood that they would have access to food throughout the year and possibly obtain a tiny additional income of which they could send a share home to their families. As for the freshness and variety of food, this was primarily a pleasure enjoyed by the ruling elite that was supplied with fresh products from their dependent farmers and a variety of exotic food products from overseas. In fact the term fresh was probably alien to people at that time because the refrigerator had not yet been invented, which made freshness a permanent anxiety of the emerging middle class [65]. As for the variety of food, poor people had to put up primarily with simple staple grain meals unless there was some surplus from a seasonal harvest. The threat of starvation was real, especially during winter time [66]. The consumption of wine, beer and spirits was also mostly the privilege of the ruling elite and they were able to appease and control their subjects through the sponsoring of festivals with free beer [67].

This feudalist system was cruel and unfair and there was no way for the poor to change their situation and ensure that their children would have a better future; they were born into their situation and destined to stay there. The emergence of modern science, the development of new technologies in agriculture, energy, transport and communication and more open markets in Europe in the 19th century changed all this. Society members became more socially mobile and political participation of the emerging middle class made governments more responsive to the needs of the common people. At the same time, policy makers had to deal with increasing economic inequality especially between rural and urban areas. In the United States this problem was first addressed by enacting the Land Grant College Act in 1862 (followed by many subsequent acts to strengthen and refine the idea). It provided the land and the funds to set up higher institutes of learning in each state including the impoverished rural states in the Midwest. The primary purpose of the land-grant colleges was to teach economically relevant knowledge in the fields of agriculture and the mechanical arts and to do applied research in the service of the local farming community. These early public universities were strongly embedded in their local environment. Their purpose was not to lecture farmers but to learn from the way they dealt with agricultural problems and developed agricultural innovation. County agents were the mediators who introduced farmers to new techniques and practices by demonstrating them in the field next to the traditional practices. At the same time, they brought useful knowledge gained from farming and agricultural business activities back to the universities [68]. This fruitful exchange led to endogenous economic development and helped to reduce economic inequality between rural and urban regions significantly. The concept was then also adopted by many European countries.

A second challenge governments had to face at that time was rapid population growth due to advances in the sciences that improved standards of hygiene and increased life expectancy as well as average incomes. The resulting increase in demand for fuel, fibre and food (largely agricultural products back then) came first at the expense of forests. Eventually it became clear that expansion of agricultural land and consumption of wood for fuel would accelerate deforestation to an extent that would make it difficult to cope with future challenges. Science was therefore increasingly put to use to develop new technologies that allowed farmers to produce more with less and to overcome the many constraints of food production and preservation. It was then that Gregor Mendel discovered the laws of plant genetics, which improved breeding and eventually led to the first hybrid variety in the 1920s. This was the beginning of the modern seed industry that invested in improved seed. It benefited from the natural protection of intellectual property provided by hydrid varieties because the crop yield decreased significantly when the next generation seed was used due to hetereosis effect, so new seed always had to be bought from the seed company [69]. Seed sovereignty advocates such as Vandana Shiva curse this development because it resulted in dependence of the farmers on the seed industry. Moreover, according to her these cultivars would have eliminated many valuable landraces that had been traded and exchanged by farmers for thousands of years [70]. She ignores completely, however, the fact that most farmers were not happy with the seed of landraces because they grew unevenly in the field and did not result in good yields. Hybrid seeds gave farmers more certainty about the size of the harvest, generated more revenue and saved a lot of labour. Switzerland consists largely of small-scale farmers but none of them would want to go back to landraces. Shiva should ask herself why even farmers in India ignore her.

The practice of science in the 19th century moved from merely being a hobby of wealthy European aristocrats towards an organized system of scientific training and (mostly) experimental research at universities. Governments set up new universities with the explicit purpose of supporting the local private sector in its endeavour to produce new goods and services that would meet the needs of society, create employment and generate profits that could then be reinvested in the further improvement of these goods and services [62].

None of these policies had anything to do with pressure from neoliberals to give markets a free rein. Instead they adopted a pragmatic approach to agricultural development based on a system of trial and error that primarily aimed at finding solutions to problems in business and government. There were already ideological battles at universities, taking place between those biologists who primarily wanted to collect, categorize and preserve natural species according to binomial nomenclature of Linnaeus (botanists and naturalists) and those who wanted to change them to serve human needs (plant and cattle breeders). But there was also fruitful cooperation and governments were still mustering sufficient leadership to continue to support agricultural research and development despite some public opposition, especially from the

aristocrats who never had to bother about the scarcity of food [64]. This was true then and is true today. Prince Charles illustrates this attitude today perfectly. He wants everyone to live like he does enjoying fresh organic food from his large estate in Cornwall (for which he also receives roughly £200,000 in government subsidies according to the Global Subsidies Institute). Unfortunately, not everyone can afford to stop working and live as he does. The planet would be ruined within a very short time if that were the case. Nevertheless he continues to argue that there is no need to increase agricultural productivity by investing more in agricultural R&D and that poor farmers in developing countries are good representatives of food sovereignty because they grow the food they eat. Consequently , they must share our distaste for technological change and we should therefore primarily protect their lifestyle (even though they are unlikely to have the privilege to choose between different life-styles). The well-meaning but ill-informed attitude of the Prince of Wales stands in strong contrast to those prevalent in the 19th century, when even aristocrats recognized that technological and economic change was the only way to create more with less, which was necessary in the face of a growing population and widespread social inequity.

5. The state of agriculture in 2011

Today we face similar challenges to food security to those we faced in the 19th century due to the large emerging economies such as China, India, Indonesia and Brazil which are now becoming industrialized countries. But this time we need to cope with the challenge on a global scale, not just on a European scale and the ongoing world food crisis provides evidence that so far policy makers in national and international institutions have failed to address this global problem effectively. The short and long-term responses to the first food crisis in 2008 were conventional and ineffective. In the short term, food exporting countries imposed export restrictions to keep domestic food prices stable at the expense of food importing countries that faced food riots due to the resulting price peaks. In the long term, most countries have so far failed to increase public sector R&D to boost productivity again. Instead they have invested in the expansion of land under cultivation. Between 2008 and 2010, arable land expansion increased by 12.5% compared to the historical average of 3.5% [71]. This is unsustainable from a social and environmental point of view because it increases land grabbing in poor developing countries and encourages deforestation.

The EU where most advocates and sponsors of the Food Sovereignty movements are located has caused the greatest damage with its Common Agricultural Policy promoting unsustainable extensification instead of sustainable intensification. Together, its 27 Member States have become the world's largest net importer of agricultural produce, and therefore the largest user of agricultural land that is not its own. Since 1990, food imports to the EU have increased by more than 40% largely because its annual productivity growth rate declined from an average of 4% between 1960–1980 to an average below 0.6%, in the case of wheat, from 2000–2010 [72]. Imports increased not just because of the focus on the promotion of organic farming and other extensive forms of agriculture, but also of the goal of increasing the share of biofuels in car tanks for which domestic crop production is far from sufficient. Yet European policy makers show no inclination towards a change of mind.

The EU is sticking to its objective of increasing the share of biofuels (biodiesel and bioethanol) consumed in road transportation, even if the fuel will have to be imported from developing countries. France defends the Common Agricultural Policy which mainly benefits its large-scale farmers through subsidies that help to crowd out private sector activities in the countryside and Germany continues to try to increase the share of organic farming to 20% of total agriculture [73]. They do so by invoking the term Food Sovereignty. On the other hand hardly any politicians dare to address the economic and ethical need to increase agricultural productivity in Europe. More spending for agricultural R&D aimed at product innovation is not high on the political agenda. In fact, product innovation in the private sector is hampered because of preventive regulation that tends to increase concentration in industry, because the small companies cannot afford long delays in the approval of a new crop or to spend millions of dollars on often redundant biosafety risks assessments. Sadly, this dysfunctional regulation (especially when it comes to GM crops) is also increasingly being exported to developing countries (especially in Africa) in the name of capacity building. And once the regulatory frameworks are adopted in the countries of destination, they ensure the approval process is so burdensome and costly that new technologies will never reach the stage of commercial release and thus cannot contribute to an increase in agricultural productivity [74]. In other words, European NGOs and government agencies, supported by 'resistance' celebrities such as José Bové, Prince Charles and Vandana Shiva, have become attached to a vision of Food Sovereignty that shows a preference for extensive but highly subsidized agricultural systems and a general hostility towards innovation, technology and entrepreneurship in agriculture. This has decreased productivity in Europe and led to an increase in imports of food and feed from developing countries and thus contributed to the increase in world food prices. The export of this false vision of Food Sovereignty to Africa via trade policies and foreign aid is harming entrepreneurial farmers who want to grow and escape poverty through agricultural innovation. They do not care so much about seed sovereignty as about improvement of seed quality because productivity still matters to African agricultural systems which did not benefit from the earlier Green Revolution.

The false vision also undermines the process of empowerment of African women because of the emphasis on cultural rights and traditional practices, and the negative view of economic and technological change. This focus on preservation ultimately strengthens traditional male-dominated power structures and prevents women from escaping their predestined submissive role in society. Women in rural communities prefer innovation to tradition. They want to be taken seriously

as entrepreneurs and not treated as aid recipients who gratefully accept the wisdom of eco-feminism and other theories that concern the affluent west [75].

Such misguided belief systems have also spread to the United States, where the Food Sovereignty movement has become hugely popular mainly thanks to successful food writers who are more familiar with cooking than agriculture. All these trends may simply reflect the anxieties of affluent urban societies about food safety and the environment, but the negative consequences of this sort of lifestyle politics largely have to be endured by poor food-importing developing countries.

5.1. The Reality of Global Food Demand and Supply

Global population is expected to increase from 7 billion in 2011 to 9 billion by 2041 and by 2050 grain demand is projected to increase by 50% (25% for feed, 25% for food). Meat consumption is predicted to increase by 75% [71]. At the same time, land and water resources will become increasingly limited and climate change will lead to increasing crop failure in the affected countries, due to an increase in biotic and abiotic stress factors. Finally, waste in the food supply chain, starting with post-harvest losses at the farm gate (5–30%) and ending with consumer waste (10–30%) has hardly been addressed either in organic or in conventional agriculture [76, 77]. When it comes to efforts to make agriculture more productive, waste saving and, at the same time, more environmentally sustainable, the much criticized industrial soybean production has actually achieved some of the greatest improvements. From 1987–2007 the industry cut greenhouse gas emissions massively and reduced energy consumption and loss of topsoil by half by using no-tilling practices. Moreover it contributed to a significant reduction in water and land use thanks also to productivity increases [78]. In livestock farming the biggest success for environmental sustainability was a genetically modified enzyme called Phytase added to the diet of the animals. The enzyme enabled them to absorb phosphorus more effectively. As a consequence, phosphor effluent was greatly reduced in pig farming (by 40–60%) and chicken farming (20–30%) [79]. The major reasons for these achievements were not specific agro-ecological measures but technological change that also made sense from an agro-ecological point of view. Technological change will also be crucial when it comes to the reduction of post-harvest losses (storage and preservation technologies) and consumer waste (sensors and microchips in food packages) [80]. All these technologies are being developed in the agribusiness and there is a need to explore how cheap and user-friendly versions can be developed and tailored to the needs of small-scale farmers in Africa.

5.2. Demand-Driven Innovation Systems for Small-Scale Farmers in Africa

Industrial agriculture may appropriate in some areas of the world and, in future, it will play an increasingly important role in feed the growing cities. However, small-scale farming is of much greater importance in efforts to fight poverty, improve nutrition, promote sustainable agriculture and facilitate rural empowerment in developing countries. This is especially true for Africa where small-scale farms account for more than 90 per cent of Africa's agricultural production [81]. However, there are great misunderstandings in the west about small-scale agriculture as practised in developing countries. The Wikipedia definition says “Small-scale agriculture is an alternative to factory farming or more broadly, intensive agriculture or unsustainable farming methods that are prevalent in primarily first world countries”. Such a definition clearly reveals the view in affluent societies that farming is an alternative lifestyle that resists the economic pressure to produce more food with less means. The reality of small-scale agriculture in Africa has nothing to do with such views. First of all, the problem with small-scale farms in Africa is not that they are getting bigger but that they are getting smaller. In view of the lack of off-farm employment opportunities and the impossibility of selling the land and moving to the city, farming families divide their land among their offspring from generation to generation. The result is ever smaller plots with ever lower productivity, less access to resources and less food available to feed even the nuclear family [82]. African farming families have no choice. They need structural change because they need to grow in order to produce more food to overcome their food insecure situation and generate additional revenues through cash crops. This would allow them to invest in a better future for their children. It is very unfortunate that the current Special UN Rapporteur on the Human Right to Food, Olivier de Schutter continues to apply the Wikipedia definition of small-scale agriculture to the African context. Like his predecessor Jean Ziegler, he had no prior field experience in the area of food and agriculture. It is therefore not surprising that his analysis about the roots of the food crisis is unconvincing. In his recent paper *The New Green Revolution: how twenty-first-century science can feed the world* [83] he argues that “small-scale farms use land and water more efficiently, and economists have long demonstrated the inverse relation between farm size and land productivity”. This may apply to some farmers with adequate access to resources, but it does not make sense in the context of small-scale African agriculture where agricultural productivity and the diversity of food have decreased in many regions because of a lack of ability to cope with the many biotic and abiotic stress factors.

De Schutter is right when he argues that improved agro-ecological approaches can contribute to more sustainable management systems in African small-scale agriculture. But he is dangerously wrong in portraying the problem of African agriculture as a fight between the presumed ‘good’ forces (agro-ecology, small-scale agriculture, public sector research, IAASTD report, etc) against the presumed ‘evil’ forces (biotechnology, agribusiness, private sector research, large farms). In every successfully managed and sustainable agro-ecosystem there are small and big players, modern techniques combined with traditional methods, agro-ecology combined with improved seed varieties, public and private sector activities as well as a wide range of off-farm employment opportunities. Depending on the economic, social and environmental circumstances, a different combination of the practices, services and products might emerge. At any

rate, farmers must have the opportunity to learn about new possibilities to enhance the quality and quantity of the food they produce and have a chance to experiment with different combinations at local farm field schools. They would thus become active participants in demand-driven innovation systems where they essentially contribute with their own local knowledge towards finding innovative and locally adapted solutions to agricultural problems [84].

Small-scale farmers would thus gain much more by learning from best practices than from reading the reports of western NGOs and government bureaucracies that confuse the situation of highly subsidized western farmers with the precarious situation of small-scale farmers in Africa. China could serve as an example showing how investment in small-scale agriculture can reduce poverty and increase productivity through innovation in management and technology. Its rural development policies since the 1980s put great emphasis on the importance of entrepreneurship and innovation. The creation of thousands of township and village enterprises (TVEs) played a key role in the rural empowerment process. Most TVEs have become private enterprises that are active in the supply of agricultural inputs as well as in the creation local food processing capabilities. Moreover they offer business support services for local farmers [85]. The Chinese government supports these entrepreneurial activities through fiscal policy incentives as well as infrastructure projects. Thanks in part to TVEs, Chinese agriculture accounts for 25% of Chinese GDP and 66% of all rural economic output [86]. Overall, agricultural GDP growth per capita in China over the past 30 years was 4.6% and annual income increase per farmer household was 7%. As a result, China's 200 million small-scale farmers (average farm size 0.6 hectares) are able to feed a population of 1.3 billion and China's poverty incidence decreased from 31% in 1978 to just 2.5% in 2008 [87]. The Chinese, however, were not following a particular neoliberal or 'food sovereignty' approach but simply focused on how to solve the problems of small-scale farmers effectively. Its pragmatic approach could serve as a template for African policy makers. Sub-Saharan Africa, however, will not be able to follow the Chinese model in a literal way because its agro-ecological and socioeconomic conditions are very different. Its decisions will not be about irrigated rice and wheat farming systems, but diverse and often rain-fed farming systems that are adjusted to the local circumstances and involve a mix of food and cash crops, livestock and fisheries, as well as many off-farm employment opportunities that support agricultural market development [84].

The guiding philosophy should however also be based on inclusive agricultural development and growth like in China. The hybrid approach that involves public and private stakeholders could work in Africa very well if African governments (a) force aid agencies and foreign NGOs to work more with local business and universities and respond to their special requests, (b) provide adequate support for domestic agricultural research and education with strong local private sector involvement, (c) invest in rural infrastructure and business development, and (b) create commercially viable clusters of rural innovation. There are already plenty of examples where this approach has worked successfully in Africa. The Uganda Rural Development and Training Program (URDT) has created the African Rural University for Women with the aim of developing a new generation of visionary women leaders in Rural Development (http://www.urdt.net/). Women play a central role in African agriculture and their valuable traditional knowledge largely shapes local agricultural practices as well as food processing and marketing activities. But they are also more open to change and innovation because their role in traditional communities is still highly constrained to household activities. The URDT involves them in every step of agricultural innovation. It introduces new agricultural techniques, vocational skills, and the possibility to interact with international experts and scientists through an 'Appropriate and Applied Technology Program'. All types of innovations can be tested in the experimental farm fields of the school, and by means of 'Back home' projects the students subsequently make their families and the communities familiar with what they have learnt in school. Such Farm Field schools can be based at a local university or simply constitute a local learning centre or market point that farmers can visit to purchase agricultural inputs, sell their harvest on the market, try useful new inputs products (e.g. microinsurance products, improved seed varieties, new crop rotation techniques etc) and exchange experience and innovative practices with other farmers.

One highly successful example is the One Acre Fund in Kenya and Rwanda (http://www.oneacrefund.org/). It is a non-profit organization that again started not with theory but with talking to farmers to find out what they need in order to make their farms more productive and innovative. It then created a service model tailored to farmerst needs. Its primary focus is to search for life-changing agricultural technologies that are already out there in the world and then break them down to a 'farmer-usable' form. Groups of farmers receive in-kind loans of seed and fertilizer from the organization at locations that are within walking distance of their fields. The field officers are recruited from the farmers themselves and their task is to provide in-field training and to support to other farmers in their efforts to test out innovation at low risk. The model seems to work well. Farmers who joined the One Acre Fund were able to increase their yields 2–3 fold, achieved a doubling in farm profit per planted acre and were almost always able to repay their loans after harvest (98% repayment rate) [84].

Another trend to make agricultural R&D more demand-oriented and more focused on product development is the crop or agricultural research networks that were largely spin-offs from the international agricultural research centres known as CGIARs in the 1980s and 1990s. The ongoing ICT revolution enhances the role of these networks of collaboration. Such networks make it much easier to organize experts and practitioners on particular crop-related problems around the world to exchange knowledge and experience and focus on problems articulated by local farmers and policy

makers. They comprise researchers from all the different fields including agroecology, molecular biology and social sciences, as well as local and international practitioners who deal with the successful application and commercialization of the different crop-related innovations. The annual meetings of the crop research networks are held in particular developing countries where the crop is prominent and the farmers are accustomed to working with research institutes and therefore engaged in the development and testing of local innovation. Together they identify the most urgent problems, review the current state of knowledge and technology, set research priorities accordingly and then contact the relevant actors in civil society, business and government to help them translate crude proof-of-concepts for innovative prototypes that result from research into useful new products and services for small-scale farmers. These crop research networks have become very pragmatic, innovative and problem-oriented over the past two decades, because Northern stakeholders have largely withdrawn funding for agricultural research and were gradually being replaced by private foundations and more Southern stakeholders which were less reluctant to embrace agricultural innovation and more interested in private sector collaboration. The resulting public–private partnerships turned out to be much better at creating new useful products and services than the previously purely public agricultural research institutes.

The Cassava Biotechnology Network (CBN) was one of the networks that initiated organizational change in international agricultural research. It was established in 1988 and its main purpose was to make use of modern biotechnology to genetically improve cassava planting material and thus the harvests of African small-scale farmers who are highly dependent on this food crop. Originally the main sponsors were European donor agencies. But because of the controversial word 'biotechnology' and the decreasing European public interest in international agricultural research in the 1990s, they decided to gradually withdraw funding from the network. Research on GM cassava within CBN made up only 5% of its budget. It was applied only if no other approach worked to the satisfaction of the farmers. But in a highly politicized and polarized public debate on sustainable agriculture in Europe, even 1% would have been a political and reputational risk. The withdrawal of European donors had the great advantage that CBN became more focused on the needs of local farmers and involved them in all stages of product development. These interesting changes in agricultural research have scarcely been touched upon by social science researchers. Entering the words 'crop research networks' or 'agricultural research networks' yields only publications from the 1980s and 1990s. This illustrates how western funding priorities also determine international social science research priorities. Even though such networks have also contributed significantly to women's entrepreneurship and empowerment in developing countries, these developments have largely been ignored by the field of gender studies. For example, CBN developed tissue culture laboratories that were sufficiently adjusted to local needs and skills, affordable and user-friendly to be run by local women farmers' groups. These women were initially reluctant to embrace this innovation because they thought it would only be appropriate for western scientists in white coats. But then they realized that this new tool helps them to address concrete local problems and to add value to their traditional knowledge about local cassava planting material. They made use of the preferred local planting material, but also adopted improved cassava varieties from the agricultural research centre nearby and subsequently cloned it in the tissue culture laboratory. Thanks to this type of reproduction, good cassava planting material became widely available in the region concerned. These women were and are not just improving the local economy by selling new useful products, but have also gained self-confidence as innovators and successful businesswomen [60].

All these examples show that it is nonsense to separate community development from market development. Women who are active in small-scale farming could not care less about eco-feminism and other concerns of the civil society and environmental studies communities in affluent countries. They want access to resources to find practical solutions for local problems and they want to grow and ensure that their children will have more options in life and a better future [88].

6. Conclusions

Raj Patel wrote in his book 'Stuffed and Starved' that something must be wrong in the current world food system when people are starving in some parts of the world while being overfed and therefore suffering from obesity in other parts. Both starvation and obesity mostly affect the poor. He is therefore right that the world food economy should not just serve the privileged but also benefit the poor and marginalized [89]. This challenge must be addressed by investing in the entrepreneurial skills and the innovative capacity of the poor themselves. They must be supported in their efforts to create new local markets in collaboration with the existing players in the public and the private sector and become better integrated into the existing supply chains. This form of inclusive agricultural development has already proved successful in many parts of the world. Unfortunately, it is not high on the agenda of the Food Sovereignty movement, which is increasingly dominated by the privileged in affluent countries who would like everyone to practice their rather expensive alternative lifestyles. This food sovereignty advocates often own a well-tended and well-subsidized organic farm that makes them feel more connected to the rural people and more morally satisfied when enjoying the fresh, balanced and healthy food of their country estate. Food Sovereignty today tends to be more about the lifestyle of Prince Charles than the lives of small-scale farmers in Africa who lack access to basic input and output markets and where children are most vulnerable to hunger and starvation. Smalls-scale farmers in the marginal regions of Africa would not consider their situation as a freely chosen lifestyle. Unlike small-scale farmers in affluent countries who primarily aim at maintaining the status quo of a highly subsidized agricultural system, small-scale farmers in Africa need change to make their agricultural systems more productive and

sustainable. Otherwise they will abandon farming and move to the overcrowded cities that are often ill-prepared to accommodate them [90]. For them, the right to food means primarily the right to not be ignored. They have gained a lot of knowledge and experience in how to make the best of extremely scarce resources, and necessity has made them skilled in finding innovative local solutions. But in order to enhance the value of their knowledge, they need to become better connected to markets and knowledge outside their own region. They must be allowed to test and experiment with new agricultural practices and technologies and be supported in their efforts to tailor them to local needs. Few farmers, however, can afford to take the risk of trying new things because crop failure due to inappropriate use of the new product, or unpredictable stress factors, would result in increased household food insecurity and debt. But local farmers who take this risk gain valuable knowledge and expertise with innovative practices from outside. They can then combine the new insights with their local knowledge to address local agricultural problems more effectively. They become trusted agents of change in the region demonstrating to other local farmers how the new practice or product could benefit them too. Women farmers, particularly, tend to be more open to innovation and exchange because they are eager to change their low status in traditional male-dominated farming communities and gain more economic freedom [88]. They associate the adoption of new technologies and the creation of new markets with rural empowerment and a better life for their children as the case studies discussed in this paper demonstrate [60, 84].

Patel is aware of the fact that the notion 'Food Sovereignty' should not be defined by the privileged and it that it should be sufficiently flexible to adapt to specific local needs that may or may not be connected to technological and economic change. Despite being celebrated as one of the advocates of 'Food Sovereignty' he seems to be a rather cautious cheerleader. He notes that the definition of 'Food Security' has broadened from being merely about producing and distributing more food, as in the 1970s, to more differentiated concerns regarding nutrition, social control and public health. He attributes this change largely to the successful campaigns for Food Sovereignty by La Via Campesina in the 1990s. At that time, it largely reflected the dissatisfaction with the IMF/World Bank structural adjustment programs that tended to disenfranchise poor small-scale farmers and made many African countries more and not less food insecure. Today, the movement has become more cacophonic and inconsistent according to Patel [91]. In particular, the Nyéléni Declaration of 2007 suggests that la Via Campesina is increasingly dominated by stakeholders that represent anxious farmers in affluent countries who worry about their future access to subsidies, and affluent urban consumers who want fresh local and organic food and are willing to pay a higher price for it. He correctly recognizes that Food Sovereignty should not be about the right to maintain privileges but to facilitate the respect of the rights of those who are currently ignored by national and international food policy makers [91]. These rights can best be ensured in Africa through social and economic change and rural empowerment. The process of empowerment, however, should not start with teaching a theory but with practice. This pragmatic approach was successfully applied in rural China and has proved very promising in various African initiatives to empower small-scale farmers. It is based on bringing knowledge to farmers through local farm field schools, experiment stations, market points and many other services discussed in this paper. This also eventually helps to create urban centres in rural areas that facilitate more off-farm employment and decrease the pressure to move to the overcrowded capital cities. Sustainable change in Africa is therefore possible but the stakeholders involved in the global debate on the future of food and agriculture need to finally move from fruitless confrontation to imaginative cooperation. A hybrid model is required that includes different stakeholders with different types of expertise from civil society, business, academia and government to make small-scale farming in Africa more productive and more sustainable. Policy makers need to provide the necessary incentives to facilitate this type of cooperation beyond like-minded groups. A good start would be the shared acceptance of the fact that farmers should no longer be treated as passive aid recipients but as active entrepreneurs. This insight guided agricultural policy in the United States in the 19th century when the land grant college system was introduced to support farmers in the neglected Midwest with new institutions and technologies that would help them to improve their precarious economic situation and lift their rural regions out of poverty through entrepreneurship and innovation. Europe learned from this successful experiment and achieved the same results when similar programmes were implemented in one form or another. As a result, national food sovereignty greatly improved and the risk of hunger and starvation was largely eliminated from the countryside. It is therefore learning from experience and not a particular ideology that will help us overcome the current global food crisis.

7. References

[1] Schanbacher, W. D. (2010) The Politics of Food: Global Conflict between Food Security and Food Sovereignty. Prager, Santa Barbara, California.

[2] Wittmann, H., Desmarais, A. A. & Wiebe, N. (2011) The Origins & Potential of Food Sovereignty. In H. Wittman, A. Desmarais & N. Wiebe (eds) Food Sovereignty: Reconnecting Food, Nature & Community. Food First Books, Oakland, California.

[3] Altieri, M. (2010) Agroecology, Small Farms, and Food Sovereignty. Monthly Review 63(3) (available online: http://monthlyreview.org/2009/07/01/agroecology-small-farms-and-food-sovereignty

[4] Wezel, A. & V. Soldat, V. (2009) A quantitative and qualitative historical analysis of the scientific discipline of agroecology. International Journal of Agricultural Sustainability 7(1): 3-18.

[5] Aerni, P. (2007) A New Approach to Deal with the Global Food Crisis". ATDF Journal 5(1/2): 16-32.

[6] Aerni, P. Mobilizing science and technology for development: The case of the Cassava Biotechnology Network (CBN)". AgBioForum 9(1): 1-14 (2006)

[7] Owusu, V., Abdulai, A., & Abdul-Rahman, S. (2011) Non-

farm work and food security among farm households in Northern Ghana. Food Policy 36 (2): 108-118.

[8] Dryzek, J. S. (1997) The Politics of the Earth: Environmental Discoursesthe Oxford University Press, New York.

[9] Food and Agriculture Organization (FAO) (2002) State of Food Security in the World 2001. FAO, Rome

[10] Human Rights Council (2010) Study on discrimination in the context of the right to food. Prepared by the drafting group of the Advisory Committee on the right to food. A/HRC/AC/6/CRP.1 (available online: http://www2.ohchr.org/english/bodies/hrcouncil/advisorycommittee/docs/session6/A.HRC.AC.6.CRP.1_en.pdf

[11] Ferguson, A. (1767) An Essay on the History of Civil Society. 1996 edition, Cambridge University Press, Cambridge.

[12] Ostrom, E. (1990) Governing the Commons: The Evolution of Collective Institutions. Cambridge University Press, Cambridge.

[13] Human Development Report (2009) Overcoming barriers: Human mobility and development. UNDP, New York (available online: http://hdr.undp.org/en/reports/global/hdr2009/)

[14] Romer, P. and Fuller, B. (2010) Reform Zones that Drive Development. ATDF Blog (available online: http://www.atdforum.org/spip.php?article392)

[15] Bove, J., Dufour, F., Luneau, G., de Casparis, A. (2001) The World Is Not for Sale: Farmers Against Junk Food. Verso Books, London.

[16] La Vía Campesina (2011) Food Sovereignty, a European answer to the crisis. European Forum for Food Sovereignty at the Nyéléni Europe 2011, (available online: http://www.viacampesina.org/en/index.php?option=com_content&view=article&id=1106:food-sovereignty-a-european-answer-to-the-crisis&catid=21:food-sovereignty-and-trade&Itemid=38)

[17] Desmarais, A. A. (1999) La Vía Campesina. Globalization and the Power of Peasants. Fernwood Publishing, Peterborough, CA.

[18] Aerni, P. (2008) A New Approach to Deal with the Global Food Crisis". ATDF Journal 5(1/2): 16-32 (available online: http://www.atdforum.org/IMG/pdf_A_new_Approach_to_Food_PA.pdf)

[19] Ramesh, S. & Konandreas, P. (2008) WTO provisions in the context of responding to soaring food prices. FAO Commodity and Trade Policy Research Working Pape. FAO, Rome (available online: http://www.fao.org/es/esc/common/ecg/555/en/ESC-WP25.pdf)

[20] Aerni, P., Häberli, C. & Karapinar, B. (2011) Reframing Sustainable Agriculture. In: T. Cottier & P. Delimatsis (eds) Prospects of International Trade Regulation. Cambridge University Press, Cambridge, UK: 169-210

[21] Desta, M. G. (2002) The Law of International Trade in Agricultural Products: From GATT 1947 to the WTO Agreement on Agriculture. Kluwer, London.

[22] Sandri D., Valenzuela E. & Anderson K (2007) Economic and trade indicators, 1960 to 2004. Agricultural Distortions Working Paper 02, World Bank, Washington, DC. (Available online www.worldbank.org/agdistortions.www.worldbank.org/agdistortions)

[23] Effland, A., Normile, M. A.; Roberts, D. (2008) World Trade Organization and Globalization Help Facilitate Growth in Agricultural Trade*Amber Waves* June 2008, USDA Economic Research Service, Washington, DC. (Available online www.worldbank.org/agdistortions.www.worldbank.org/agdistortions)

[24] The World Bank (2007) World Development Report 2008: Agriculture for Development. The World Bank, Washington, DC (available online: http://siteresources.worldbank.org/INTWDR2008/Resources/2795087-1192111580172/WDROver2008-ENG.pdf

[25] FAO Hunger Statistics (available online: http://www.fao.org/hunger/en/)

[26] Von Witzke, H. & Noleppa S. (2010) EU Agricultural Production and Trade: Can more efficiency prevent increasing 'land-grabbing' outside of Europe? Research Report. Humboldt University, Berlin (available online http://farmlandgrab.org/13063)

[27] Masters, W. (2008) Beyond the Food Crisis: Trade, Aid and Innovation in African Agriculture. ATDF Journal 5(1/2): 3-13.

[28] La Via Campesina (1996) Food Sovereignty: A Future without Hunger. Tlaxcala Declaration, Mexico. Available online: http://www.voiceoftheturtle.org/library/1996%20Declaration%20of%20Food%20Sovereignty.pdf

[29] Aerni, P. 'Exploring the linkages of commerce, higher education and human development: A historical review'. ATDF Journal 4(2): 35-48 (2007)

[30] Aerni, P. (1996) Das Verschuldungsproblem von Kleinbauern bei der nichttraditionellen Agrarexportproduktion: Das Fallbeispiel Guatemala. Diplomarbeit, Geographisches Institut, Universität Zürich.

[31] Liu, Feng-chao, Simon, Denis Fred, Sun, Yu-tao, Cao, Cong. 2011. China's innovation policies: evolution, institutional structure, and trajectory. Research Policy 40: 917-931.

[32] Mittelman, J. H. (2000) The globalization syndrome: Transformation and Resistence. Princeton University Press, Princeton.

[33] Castells, M. (2009) The Power of Identity. John Wiley & Sons, New York.

[34] Diamond, J. (1999) Guns, Germs and Steel. WW Norton, New York.

[35] The Economist, 2008. Hunters and Gatherers: Noble or Savage, Dec. 19th. (available online: http://www.economist.com/displaystory.cfm?story_id=10278703)

[36] Ferroni, M. & Castle, P. (2011) Public-Private Partnerships and Sustainable Agricultural Development. Sustainability 2011, 3(7), 1064-1073.

[37] Schumpeter, J. (1942) Capitalism, Social and Democracy. Harper Perennial (3rd edition, 1962), New York.

[38] Sunstein, C. (2007) Republic.com 2.0. Princeton University Press, Princeton.

[39] Westen, D. (2008 The Political Brain. The Role of Emotion in Deciding the Fate of the Nation. Public Affairs, New York.

[40] Herring, R. (2009) Persistent Narratives: Why is the "Failure of Bt Cotton in India" Story Still with Us? *AgBioForum,* 12(1): 14-22

[41] Gruère, G. P., Mehta-Bhatt P. & Sengupta, D. (2008) Bt Cotton and Farmer Suicides in India. Reviewing the Evidence. IFPRI Discussion Paper 00808, Washington DC (available online: http://www.ifpri.org/sites/default/files/publications/ifpridp00808.pdf)

[42] Kouser, S. & Qaim M. (2011) Impact of Bt cotton on pesticide poisoning in smallholder agriculture: A panel data analysis. *Ecological Economics*, http://dx.doi.org/10.1016/j.ecolecon.2011.06.008

[43] Sadashivappa, P., Qaim, M. (2009) Bt Cotton in India: Development of Benefits and the Role of Government Seed Price Interventions. AgBioForum, 12(2): 172-183.

[44] Vitale, Jeffrey; Ouattarra, Marc; Vognan, Gaspard. 2011. "Enhancing Sustainability of Cotton Production Systems in West Africa: A Summary of Empirical Evidence from Burkina Faso." Sustainability 3, no. 8: 1136-1169.

[45] Potrykus, I. (2010) Regulation must be revolutionized. Nature 466: 561.

[46] European Commission (EC) (2010) A Decade of EU-funded GMO Research. EUR 24473 EN, Brussels.

[48] Tribe, D. (2011) Fedoroff Letter to EPA raises serious concerns over EPA blundering (available online: http://www.biofortified.org/2011/09/fedoroff-letter-to-epa-raises-serious-concerns-over-epa-blundering/

[49] Schäffer, A. (2009) Gentechnik und CSU: Ein Wunder der politischen Logopädie. Frankfurter Allgemeine (FAZ), 3. Mai, 2009. (available online: http://www.faz.net/artikel/C30923/gentechnik-und-die-csu-ein-wunder-der-politischen-logopaedie-30123883.html)

[50] Meera, Nanda (2005) The Wrongs of the Religious Right: Reflections on Science, Secularism and Hindutva. Three Essays Collective, Gurgaon, Haryana, India.

[51] Bob, C. (2005) The Marketing of Rebellion: Insurgents, Media, and International Activism. Cambridge University Press, Cambridge

[52] Maxwell, K. (2003) Naked Tropics: Essays on Empire and Other Rogues. Routledge, New York: 219-242.

[53] Allen, P. (1999) Reviving the food security safety net, Agriculture and Human Values, 16, 117-129.

[54] Moore Lappé, F. (2011) The Food Movement: Its Power and Possibilities. The Nation, October 3, 2011 (available online: http://www.thenation.com/article/163403/food-movement-its-power-and-possibilities)

[55] McMichael, P. (2009) Food sovereignty, social reproduction, and the agrarian question. In A. H. Akram-Lodhi and C. Kay (eds) Peasants and Globalization, Political Economy, Rural Transformation and the Agrarian Question. Routledge, New York.

[56] Anderson, R.S., Levy, E., Morisson & B.M. (1991) Rice Science and Development Politics. Reserach Strategies and IRRI's Technologies Confront Asian Diversity (1950-1980). Clarendon Press, Oxford.

[57] Carson, R. (1962) Silent Spring. Houghton Miflin, New York

[58] The World Bank (2008) the World Development Report: Agriculture for Development (available online: http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf)

[59] Friedmann, H. & McMichael, P. (1989) Agriculture and the State System: The Rise and Decline of National Agricultures, 1870 to the present. Sociologia Ruralis 29 (2): 93-117.

[60] Aerni, P. (2006) Mobilizing science and technology for development: The case of the Cassava Biotechnology Network (CBN). AgBioForum 9(1): 1-14 (2006)

[61] Erdkamp, P. (2005) The Grain Market in the Roman Empire: A Social, Political, and Economic Study. Cambridge University Press, Cambridge, UK.

[62] Aerni, P. (2007) Exploring the linkages of commerce, higher education and human development: A historical review. ATDF Journal 4(2): 35-48.

[63] Luhmann, N. (1993) Risk: A Sociological Theory. De Gruyter, New York.

[64] Freidberg, S. (2008) Fresh: A Perishable History. Harvard University Press, Cambridge, MA.

[65] The Economist, 2008. Hunters and Gatherers: Noble or Savage, Dec. 19th. http://www.economist.com/displaystory.cfm?story_id=10278703)

[66] Pount, J. (1986) Poverty and Vagrancy in Tudor England. Longman, London.

[67] Swinnen, J.F.M (2011) The Economics of Beer. Oxford University Press, New York.

[68] Widder, J (2004) Michigan Agricultural College: The Evolution of a Land-Grant Philosophy, 1855-1925. Michigan State University Press, East Lansing.

[69] Kingsbury, N. (2011) History and Science of Plant Breeding. Chicago University Press, Chicago, IL.

[70] Shiva, V. (1997) Biopiracy: The Plunder of Nature and Knowledge. South End Press, Boston, MA.

[71] Gonzalez-Valero, J. (2011) Agriculture's Global Challenge. EAAE Pre-Conference. ETH Zürich, 30 August 2011.

[72] Von Witzke, H. & Noleppa, S. (2010) EU agricultural production and trade: can more efficiency prevent 'land-grabbing' outside Europe. Research Report. Humboldt University, Berlin (available online: http://www.opera-indicators.eu/assets/files/News/Final_Report_Humboldt_Opera.pdf)

[73] Bundesregierung (2008) Nationale Nachhaltigkeitsstrategie "Perspektiven für Deutschland". Berlin Bundesregierung.

[74] Paarlberg, R. (2008) Starved for Science. How Biotechnology Is Being Kept Out of Africa. Harvard University Press, Cambridge, MA.

[75] ATDF/UNCTAD (2008) Development through Women Entrepreneurship. Workshop Report (available online: http://www.atdforum.org/IMG/pdf_womenentrepreneurship.pdf)

[76] OECD/FAO (2011) Agricultural Outlook 2011-2020 (available online: http://www.agri-out-look.org/pages/0,2987,en_36774715_36775671_1_1_1_1_1,00.html)

[77] Crop Life International (2009) Key Sustainability Achievements in Agriculture. Field to Market Report. (Available online: www.croplife.org/view_document.aspx?docId=1764)

[78] Brookes G. & Barfoot, P. (2006) Global Impact of Biotech Crops: Socio-Economic and Environmental Effects in the First Ten Years of Commercial UseAgBioForum, 13(1): 25-52.

[79] Knowlton, K.F., J. S. Radcliffe, J. S., Novak, C.L. and Emmerson, D. A. (2004) Animal management to reduce phosphorus losses to the environment. Journal of Animal Science 82 (13), 173-195.

[80] Rentzing, S. (2011) Kampf gegen Hunger: Bessere Verpackungen für eine bessere Welt. Der Spiegel 9. August, 2011 (Available online: http://www.spiegel.de/wissenschaft/mensch/0,1518,778981,00.html)

[81] Resnick, D. (2004) Smallholder African Agriculture: Progress and Problems in Confronting Hunger and Poverty," IFPRI Development Strategy and Governance Division. Discussion Paper 9, Washington DC (available online: http://www.ifpri.org/sites/default/files/pubs/divs/dsgd/dp/papers/dsgdp09.pdf)

[82] Benson, T. (2009) An assessment of the causes of malnutrition in Ethiopia. A contribution to the formulation of a National Nutrition Strategy for Ethiopia. IFPRI, Washington DC. (available online: http://www.ifpri.org/sites/default/files/publications/ethionutrition.pdf)

[83] De Schutter, O. & Vanloqueren. G. (2011) The New Green Revolution: How Twenty-First-Century Science Can Feed the World. Solutions Journal, August 2011 (available on: http://www.energybulletin.net/stories/2011-08-21/new-green-revolution-how-twenty-first-century-science-can-geed-world)

[84] Juma, C. (2011) New Harvest: Agricultural Innovation in Africa. Oxford University Press, New York.

[85] Huang, Y. (2008) Capitalism with Chinese Characteristics: Entrepreneurship and the State. Cambridge University Press, New York.

[86] Zhang, Z. (1999) Rural Industrialization in China: From Backyard Furnaces to Township and Village Enterprises. East Asia 17(3): 61-87.

[87] OECD (2010) Agriculture, Food Security and Rural Development for Growth and Poverty Reduction: China's Agricultural Transformation – Lessons for Africa and its Development Partners. Summary of Discussions by the China-DAC Study Group, Bamako, Mali.

[88] UNCTAD/ATDF (2008) Development through Women Entrepreneurship. Workshop Summary, ETH Zurich (available online: http://www.atdforum.org/IMG/pdf_womenentrepreneurship.pdf)

[89] Patel, R. (2008) Stuffed and Starved: The Hidden Battle for the World Food System. Melville House, Brooklyn, NY.

[90] Aerni, P. (2010) Sustainable urbanization: The missing bottom-up dimension. ATDF Journal 7 (1/2): 44-53 (available online: http://www.atdforum.org/IMG/pdf_AerniATDF2010.pdf)

[91] Patel, R. (2011) What does Food Sovereignty Look Like? In: H. Wittman, A. Desmarais & N. Wiebe (eds) Food Sovereignty: Reconnecting Food, Nature & Community. Food First Books, Oakland, California.

Food Policy Coherence for Sustainable Development: The case of the Rice Sector in Costa Rica

Víctor Umaña
World Trade Institute/ University of Bern and INCAE Business School
victor.umana@incae.edu
Email: victor.umana@ir.gess.ethz.ch

Abstract

The term 'Food Sovereignty' has often been invoked in developing countries to justify protectionist trade policies aimed at promoting sustainable development, improve the livelihood of farmers, protect natural resources and enhance local food supply for local consumers. Costa Rica did so too when designing its rice support program to promote sustainable agriculture. Our Sustainability Impact Assessment illustrates how this rice policy largely failed to achieve its objectives due to the incoherence of the underlying policy principles that very much reflect the philosophy of the Food Sovereignty movement. The paper concludes by suggesting that Costa Rica may have to open its rice market to create the desired welfare gains for its most vulnerable citizens and contribute to sustainable agriculture.

1. Introduction

Policy coherence is defined as "the systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives". [1] From a sustainable development perspective, policy coherence implies that a country's public policy, should avoid negative consequences and spillovers which adversely affect the environment and the development prospects of its poorer citizens. More positively, policy coherence for sustainable development implies that a country, in designing its policies, should actively look for ways to exploit the potential for positive spillovers and consequences for the environment, social cohesion and economic growth.

Policy coherence research in the trade area has focused on the impact of developed country polices on developing countries. Empirical studies on policy coherence and the link between trade policy and sustainable development in developing countries themselves are rare. [2]

After the 1980s debt crisis, Costa Rica has followed a two-pronged liberalization strategy leading to both multilateral and regional commitments to open its domestic market. It was based on an export-led growth strategy that included tariff reductions (at the multilateral and regional level), market reform in protected sectors and some fiscal concessions. This led to a shift towards manufacturing and sharp export expansion, which in turn has contributed to rapid economic growth. The country finally joined GATT in 1990s. Even though agriculture remains an important economic sector for its contribution to employment and export earnings, some sub sectors in agriculture have been excluded from the reform process, and remain shielded from foreign competition.

The rice sector stands out as a clear example. A combination of tariff barriers, including the Special Agricultural Safeguard of Article 5 of the Agricultural Agreement, tariff rate quotas, price controls and phytosanitary measures are used to protect it from competition. Calculations of producer support estimates (PSE) for rice, suggest that rice farmers in Costa Rica receive more support than their peers in the United States and the European Union. [3]

Although there is some research done on the environmental impacts of rice production in Costa Rica, an integral assessment of economic, social and environmental impacts at the policy level has not been done for the rice policy in this country. [4,5]

The objective of this paper is to systematically explore the effects of rice policy in Costa Rica on sustainable development. Elements of the sustainability impact assessment methodology developed by the University of Manchester for the Doha Development Round will be borrowed to perform this analysis [6,7,8]

Issues addressed include: (i) the economic and social effects of rice market price support policies in Costa Rica; (ii) the environmental implications of productive development policies for the rice sector; and (iii) alternatives for improving policy coherence in Costa Rica. The paper argues that trade liberalization and deregulation of the rice sector in Costa Rica will contribute to sustainable development. Apart from the typical gains of trade, trade liberalization should increase the income of the poorest households and contribute to the effective protection of wetlands of international importance in the country.

The paper is organized as follows. Section 2 details the relationship between policy coherence, trade and sustainable development and describes the sustainability impact assessment methodology. Sections 3 and 4 explain the characteristics of both global and domestic rice markets, in which market price support and concentration are common characteristics. Section 5 analyzes the market price support system for rice in Costa Rica. In section 6, the economic, social and environmental impacts of Costa Rica's rice policy are analyzed from a sustainable development perspective.

2. Policy coherence, trade and sustainable development

Policy coherence has been defined as "the systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives". [9] From a sustainable development perspective, policy coherence implies that a country, in pursuing policy objectives in specific areas (e.g. trade or agriculture) should, at a minimum, avoid negative consequences and spillovers, which would adversely affect the environment and the development prospects of its most vulnerable citizens. More positively, policy coherence for sustainable development implies that a country, in designing its policies, should actively look for ways to exploit the potential for positive externalities for the environment, social cohesion and economic growth.

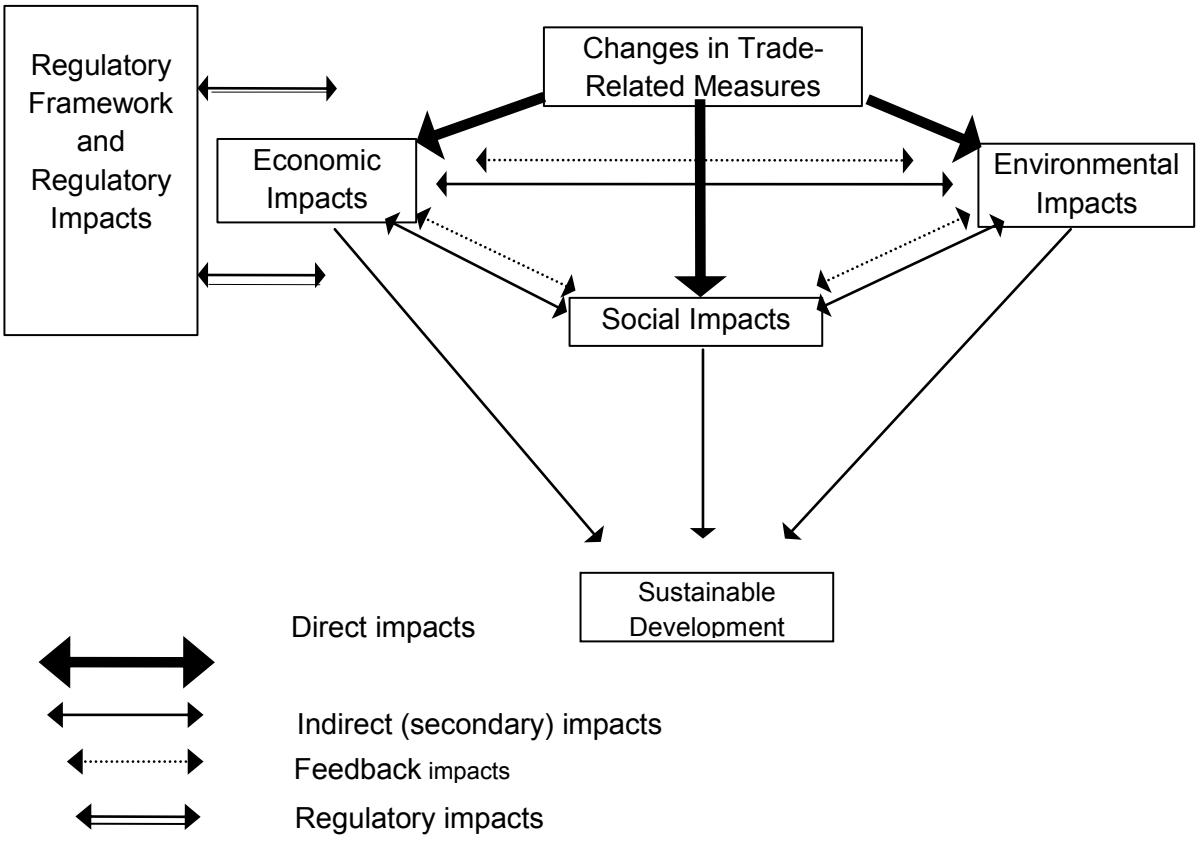
The OECD has been promoting policy coherence in developed countries in order to avoid negative consequences for developing countries. One of the best examples of incoherence with a profound effect in developing countries, stem from trade and agricultural policies in some OECD members. Three quarters of the World's poor depend, directly or indirectly, on agriculture for their livelihoods. In the OECD, less than 10% of the population is dependent on agriculture as a source of income, but received financial support equivalent of USD 268 billion. These protectionist policies result in a loss of market access for developing countries' and depress global food prices, often leading to export subsidies that are akin to food dumping. [10] Official development assistance, which amounts less than half of total amount of agricultural subsidies cannot outweigh this loss, apart from creating problems of its own kind.

Agricultural policies to promote for sustainable development in developed countries may result in lots of undesirable side effects when applied in developing countries. For developing countries achieving sustainable development is one of many competing objectives. Certainly, for a vast array of nations, objectives such as improving national security, pursuing faster economic growth or conserving biodiversity-may take priority. The challenge for policy makers is to strike a balance between the interests and objectives of diverse interest groups. Yet, incoherent policies are inefficient and ineffective no matter which objective takes priority. [11]

The OECD argues for a monitoring, impact assessment and reporting systems which involve collecting and analyzing evidence about the impacts of different polices. [12] The findings are then fed back into policy process to ensure that results that are not in line with the sustainability objectives are addressed properly. These instruments are rarely employed in developing countries because they are very costly to create, operate and maintain.

A sustainability impact assessment is a tool that can be used for determining coherence of trade and agricultural policies. It is a relatively new concept that

Figure 1. Sustainability Impact Assessment Framework



Source: Kirkpatrick, Lee and Morrisey, 1999

does not require prior established monitoring mechanisms. They are based on concrete practical impacts of certain policy decisions, particularly relating to trade policy. The measurement improved in impact assessment when the European Commission asked for the development of a tool to determine the impact of the multilateral trade negotiations on sustainable development. [13]

Figure 1 shows the simplified form of a Sustainability Impact Assessment Framework developed by the Institute for Development Policy and Management of the University of Manchester as part of the European Commission's preparation for what it would be the Millennium Round of multilateral trade negotiations. [14]

A trade measure may have direct (positive or negative) economic, social and environmental impacts, as well as indirect economic, social and environmental consequences. Measures such as changes in tariff levels, subsidies or quotas impact trade flows, which then have a number of direct economic consequences (e.g. on production, consumption and income). In turn, these may have further social and environmental repercussions. Other measures such as competition policy may have an impact on the regulatory provisions for environmental protection, which then, have environmental, social and economic consequences. All these impacts have cumulative impacts, which also need to be considered. The process can be very complex, as other reforms take place alongside trade reform measures. [15]

Most of the social and environmental effects occur as a result of the economic ones. Also, these impacts vary between countries and between short term and long term effects, with some of the impacts positive and some negative. The overall effect on sustainable development depends on how these impacts are weighed against each other, summing up the different values of the different groups of people that are affected in different way and the consequences for future generations. [16]

Apart from the economic gains from trade, e.g. specialization, economies of scale, product variety, increased competition and productivity; trade can improve social conditions via the link between trade and economic growth, consumer gains, the increase in real wages, the adoption of higher standards and the elimination of rents from protectionism, among others. Despite the much-publicized negative effects of trade on the environment, trade allows for powerful alternatives to protect it. The fact is that trade, following the logic of comparative advantage, may promote the transfer of activities to where the resource is less scarce and fragile, avoiding exacerbating patterns of exploitation.

3. The Global Rice Market

Rice is one of the most important commodities in the world. It is the main source of energy in the diet of the world population. According to FAOSTAT, on average it accounts for 13% of the total dietary energy consumption. In some countries this share rises to levels above 50%, Bangladesh (71%), Cambodia (66%), Lao People's Democratic Republic (64%), Vietnam (62%), Myanmar (57%), Indonesia (51%). Rice is therefore viewed as a strategic commodity for food security in many countries.

Concentration, thinness, high market segmentation, governmental intervention and price variability are the most important characteristics of the international rice market. Rice is mostly consumed in the country where it is produced, so trade in rice is small, both in absolute terms and as a proportion of global production. Rice is the second largest produced cereal in the world. Production is geographically concentrated in Asia with more than 90 percent of world output. China and India, which account for more than one-third of global population, supply over half of the world's rice. Brazil is the most important non-Asian producer, followed by the United States. Italy ranks first in Europe. World production has shown a significant and very steady growth, almost exclusively due to increasing production in Western and Eastern Asia.

International rice trade is estimated between 25 and 27 million tons per year, which corresponds to only 5-6 percent of world production. It makes the international rice market one of the thinnest in the world compared to other grain markets such as wheat and corn. Thailand, Vietnam and the United States are the leading rice exporters in the world.

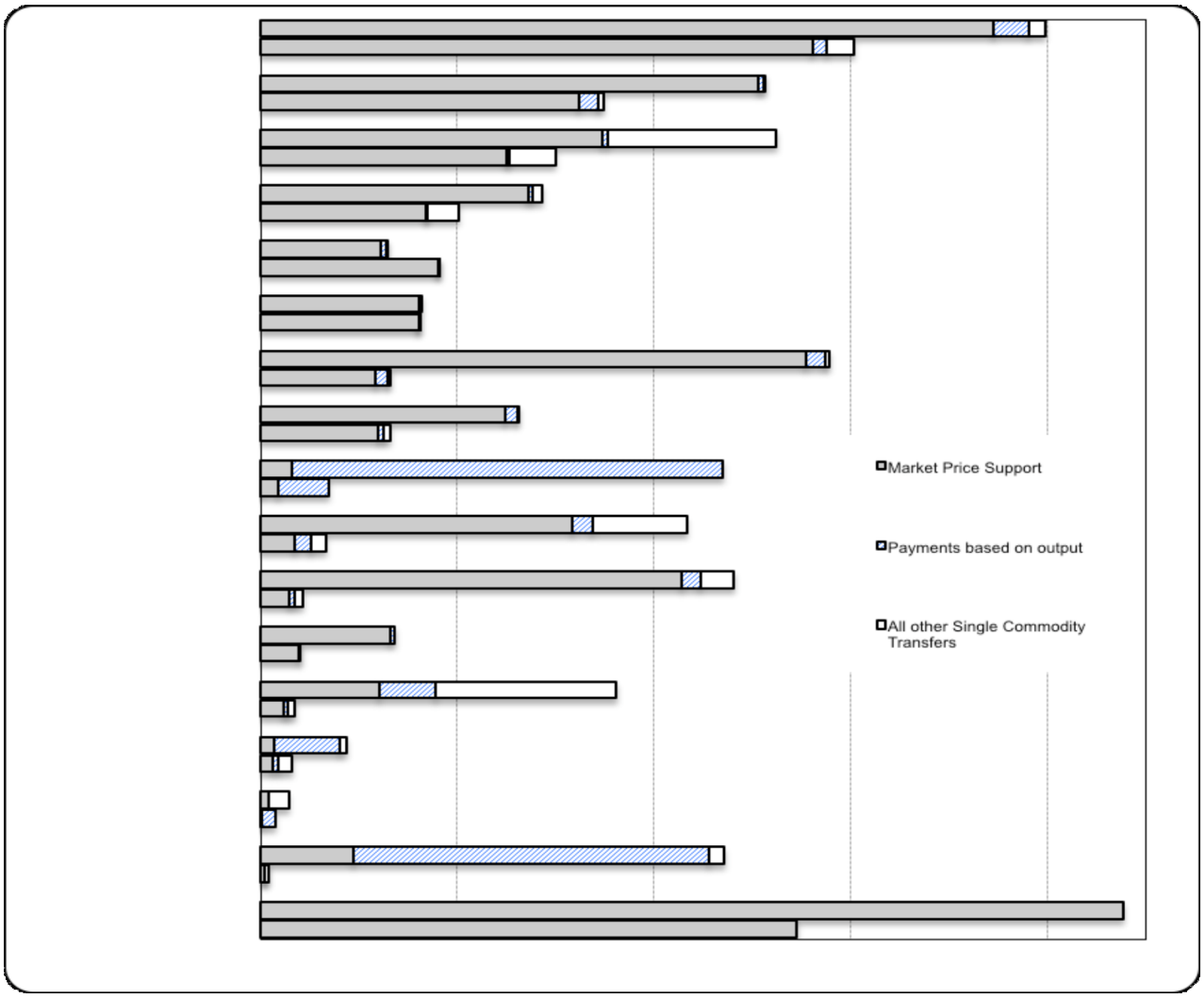
Rice is the most distorted commodity in the world market. Although, overall support to farmers in OECD countries has been declining, rice is as an outlier. State support amounted to 60% of total producer rice receipts in 2006-08, which equates to US$17.6 billion (figure 2)

The small volume of rice traded, relative to the quantity produced, concentration on a few major exporting, importing and producing countries, and domestic support policies, provide a potential for highly fluctuating world prices resulting primarily from sudden changes in exportable supplies in the major exporting countries and/or domestic production shortfalls in large consuming countries. [17]

The global rice market landscape is changing. Two distinct developments may affect the rice economy in the future. First, as developing countries are industrialising, land, water, and labor may move away from rice to other activities. Second, the potential for productivity through the adoption of high-yielding varieties, fertilizer and irrigation systems has almost been exploited since the beginning of the Green Revolution in the 1960s. Rainfed agroecosystems, which account for about 45% of global rice area, may have to bear the major burden of a future increase in rice production. In this scenario, the potential for increasing yields in rainfed agroecosystems is significant, as average yields amounts to only 1.5–2.5 tons per hectare. [18]

Certainly, the conclusion of the Doha Round, but most of all the conclusion of regional trade agreements, may contribute to more investment in rain-fed rice production by partially liberalizing the domestic rice market.

Figure 2. OECD: single commodity transfers (1986-88 and 2006-08)



Source: OECD, PSE/CSE database, 2009.

4. The Rice sector in Costa Rica

Rice is the most important staple crop of Costa Rica. Costa Rica is ranked second in the Americas in rice consumption per capita and this level is similar to Japan's (57 kg per capita). Rice represents 8% of the total value of the food basket and is a key source of total calories and proteins intake. [19] Rice cultivation accounts for 2.3% of total value added of agricultural production in Costa Rica. [20] In 2008, area planted with rice accounted for 62,411 hectares, equivalent to 13% of total agricultural area in the country. There are 1082 farmers in the rice business. [21]

5. Primary production

Costa Rica is a very small player (ranked 55) in the global rice market, amounting to 0.027% of paddy production in the world. Output is highly concentrated as 3% of farmers account for 50% of total production, while 83% of them represent just 20% of production. [22] The average farm size is of 65 hectares. However, 34.4 % of rice producers cultivate less than 10 hectares and their share of total rice cultivation area is 3.4% In contrast 6% of producers have 55% of the land.

This makes it hard for most small farmers to achieve economies of scale. The role of economies of scale may be relevant in producing rice efficiently. The production cost varies depending on farm size and is higher on small farms than on larger farms in Turkey. The production cost was on average 18% higher in the group of smaller farms than of the biggest farms. But they also find differences of up to 56% in the production cost between the lowest (largest farm group) and the highest cost (smallest farm group). [23]

Moreover, in the case of Costa Rica there is an important difference in costs between the two common production methods: irrigated and rainfed production. Irrigated rice is the most productive method of production in Costa Rica producing on average 24% more than rainfed rice production. [24] Nevertheless, most

of rice farmers in Costa Rica (70%) use the rainfed method. [25]

Irrigated fields are concentrated in the Tempisque River Basin where 45% of total national production originates. It is important to note that rice has nevertheless the lowest productivity per hectare compared to alternative crops in the Tempisque River Basin. [26]

Table 1 shows the production costs for the season 2007/2008. The average cost per hectare was US$1,555. Taking the United States as country of comparison (excluding opportunity costs), average production costs are similar to farming costs in Costa Rica. Although, it is important to consider that yield is significantly higher in the United States. Between 2002 and 2008 average yield was 7,66 t/Ha. vs. 3,52t/ha in Costa Rica. The cost / yield ratio (season 2007/2008) was 128% higher in Costa Rica than in the U.S.A. Therefore, if we consider both issues -costs and productivity- the unit cost of rice production in Costa Rica is more than twice the one of the United States.

6. Milling

The Costa Rican rice milling industry is highly concentrated. Four out of the fifteen mills currently operating comprise 70% of the production. The Herfindahl Hirschmann Index for the 10 largest mills went from 954 in 2001 to 1454 in 2005. [27] Vertical downstream integration is standard for the four largest mills, as they source paddy rice from their own fields. Because primary production of rice does not satisfy total consumption demand, paddy rice (rice in the husk) is imported from the United States to keep the mills operating. The import mechanism (explained in section 4) prevents economic agents to import ready to consume milled rice.

7. Trade

Costa Rica imported in average 155 thousand tons of paddy rice during the 2003-2008 period, to satisfy the demand of the milling industry. In the rice year 2007/08, imports totaled 117,032 tons of milled rice equivalent. This figure represents 50% of total rice demand in Costa Rica. Table 2, shows the evolution of the share of imports in total rice demand in the country between the years 2003 and 2008. All rice is imported from the United States. There is a phytosanitary ban imposed on rice originating from South East Asia due to *Trogoderma granarium*. Although the risks associated with this pest have been estimated as being very low, the ban is still enforced.

8. Support policies for the rice sector

The most important form of support to the rice industry in Costa Rica is market price support. Market price support is defined by the OECD as an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures creating a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level. [28] In the case of rice production, market price support is granted through a combination of tariff protection and price controls. The rice industry is highly protected as tariffs of 35% apply to the importation of paddy and milled rice. A combination of the Special Agricultural Safeguard of Article 5 of the Agreement of Agriculture and GATT Article XIX Safeguard had raised the tariff level up to 71%. Other levies and fees related to phytosanitary measures are applied as well.

The rice market in Costa Rica is thoroughly regulated. At almost every step along the production chain, as rice passes from the farmer to the miller, to the wholesaler, to the distributor, to the retailer, and finally to the consumer, the price of rice is controlled by the government through a system of established price floors and ceilings. Indeed, the only price in this chain not subject to regulation is that paid by the wholesaler to the miller.

The National Rice Corporation (CONARROZ), created in 2002, is the coordination institution of the rice sector. It is a non-governmental public enterprise managed by a board of producers, millers and Government representatives. CONARROZ has the authority, given by the Ministry of Economy, of defining productive policies and has mechanisms for controlling imports and exports of rice. Likewise, CONARROZ sets the price levels of rice in every step of the value chain. The Ministry of Economy implements all recommendations by CONARROZ. In the case of imports, CONARROZ has the authority to import rice when needed, benefiting from a tariff free treatment.

The objective of CONARROZ is to protect and promote the rice sector through the establishment of a corporate regime whereby farmers and millers obtain a 'fair' and equitable share of the economic benefits of their activity. In its mission statement, CONARROZ mixes food security with food sovereignty concepts. It proclaims that Costa Rica's food security should be accomplished through domestic production, given the distortions in the international market. It aims at improving the livelihood of farmers and millers, assuring affordable consumption to the poorest households. Raising yields and production are part of its official mission statement.

The CONARROZ model has been criticized because it assigns several market competitors to the same institution and is governed by policies that can potentially encourage a monopolistic behavior. One of the most disputed actions is CONARROZ participation in the importation of paddy rice. When imports are needed, the Government lowers the tariff to zero, but the right to import at this level is exclusively given to CONARROZ. In such cases, authorization is given to import the quantity required to satisfy local consumption at a reduced tariff or tariff-free. Any other economic agent who imports rice has to pay a 35% tariff, which is the bound tariff inscribed in Costa Rica's schedule of market access concessions to the WTO. Once it has imported the volume determined to meet the shortage, CONARROZ distributes the paddy rice to the millers in quotas proportionally to their participation in buying domestic production. The rents involved in the transaction are captured by CONARROZ, through a hedge fund, and

then are transferred to the growers, proportionally to their level of production. Nevertheless, being a vertically integrated industry, part of the rent is captured by the millers too.

The National Service for Irrigation and Drainage (SENARA), as manager of the Arenal-Tempisque River Irrigation District (PRAT), is also a key player in the rice sector. It sets the irrigation tariffs. according to area subject to irrigation. This means that the famers pay on the total land they irrigate irrespective of the water consumed. Current tariff is equivalent to $40 per hectare per year. According to the Price Regulation Agency (ARESEP), this tariff is highly subsidized as total costs of operation and maintenance are not covered. Total transfers of the Government to the water users in PRAT were US$1.37 million in 2005. The estimates from ARESEP are that the irrigation tariff should be at least US$400 per hectare per year to cover all the costs. [29]

The producer support equivalent (PSE) for rice production was calculated in 2003 as part of an Interamerican Development Bank (IDB) project to quantify agricultural support in Central America. [30] The estimates were a PSE% of 45, which translates into the equivalent of US$19 million per year. This means that without the different forms of support, rice farmers in Costa Rica would receive only 55% of their total revenues from rice production. Costa Rica's support to rice tops the one of the United States and the European Union, and after taking out Japan and Korea, is higher than OECD average (table 3). Although, PSE methodology and domestic support calculations differ, as the latter does not include the transfer effect of the tariff, Costa Rica has never notified to the Committee of Agriculture its rice domestic support programs.

9. Impacts of rice policy on sustainable development

9.1 Economic and social impacts

Economic distortions in the rice sector are found resulting primarily from a combination of tariff, tariff-rate quotas and regulation of domestic prices. In general, economic theory suggests that market price support raises domestic producer and consumer prices and thus increases production and decreases consumption, implying a transfer from consumers to producers. Therefore, the market price support system distorts both production and consumption decisions. Through the application of these instruments, rice policy in Costa Rica has not been effective in increasing the planted area, production or yields (see table 4); nor has it improved the livelihood of the small and independent farmers. Last but not least, it also failed to expand the consumption opportunities for the poorest households.

Rice market price support teamed up with the special import regulation mechanism has failed to stimulate domestic production but has encouraged paddy rice imports. Because most mills are vertically integrated, they prefer to import instead of embarking on the risky process of rice cultivation even if they have to pay an import duty fee. However, gains from trade have benefited the millers and not the consumers, as the lower international prices are captured in the form of rents by these firms.

These regressive policy effects have fallen back on the most vulnerable sectors made up of small independent farmers and consumers. The price received by rice farmers in the period 2002-2005 fell notoriously behind the Consumer Price Index (CPI), indicating deteriorating income among independent farmers. [31]

A study to estimate profitability and fertilizer demand for rice production around the Palo Verde National Park, determined that profit levels of small farmers with adjacent fields to the park area are highly influenced by the application of the import tariff. Considering a tariff-free scenario, only close to 9% of the farmers in this area would earn a profit above the line of poverty for a household in Costa Rica. [32] These farmers are characterized by using high capital intensity production systems, as expressed by the sum of agrochemicals, machinery and transportation costs. As it is difficult to achieve economies of scale in small plots, their fixed costs are very high.

The rice millers have been able to maintain its margins throughout the decade, especially since the foundation of CONARROZ, to the detriment of farmers and end consumers. [33] Figure 4 shows the prices received by rice millers are higher compared to their competitors in major exporting countries. It is clear that Costa Rican millers, through the protectionist policies implemented, have benefited from prices that are consistently above world market levels.

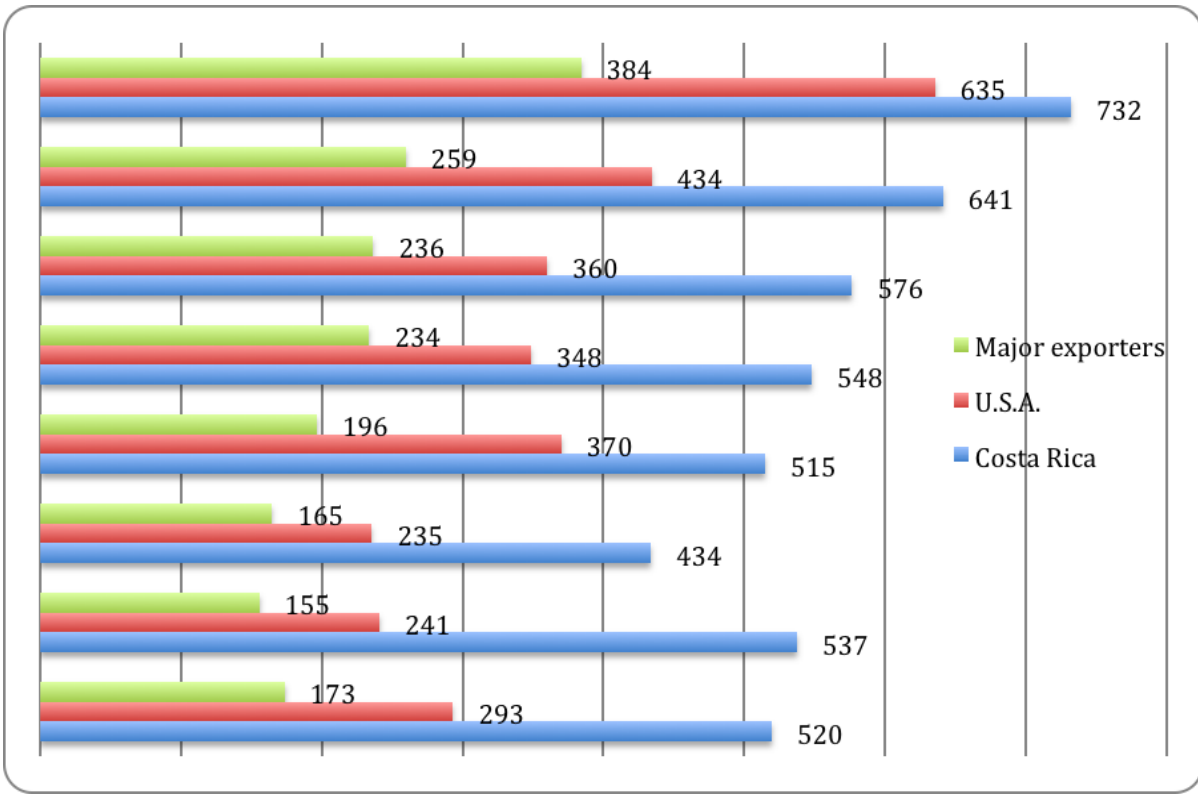
Furthermore, the quota rents resulting from the monopolistic import mechanism are assigned by CONARROZ through a fund, in proportion to the quantity produced. According to the estimates made by the Government Accountability Office, three percent of the farmers received 50% of the import rent, while 71% of the farmers received only 13% of the fund administered by CONARROZ. The main conclusion of the report by the CGR (2004) was that the original objectives of CONARROZ were not being addressed at all. [34]

According to welfare economics models the transfers from consumers to the rice industry (growers and millers) - reached an accumulated 10-year amount of US $396.4 million, from 1996 to 2005, of which 80% was absorbed by the millers and only 20% by farmers.[35] Similarly, the net present value of income transfers from consumers to rice producers was calculated at US$428 million.[36]

The impact of these transfers is socially regressive, since per capita spending on rice is conspicuously more significant in lower income households. Price to consumers, measured by the Consumer Price Index, indicates deteriorating purchasing power among consumers – and especially among the poorest households. [37] A study report an 8% increase in the total basic food basket because of higher local prices compared to international CIF prices calculated for a small basket of agricultural foods that include rice, poultry, dairy and beef. [38]

Table 5 shows the incidence of expenditure on rice per

Figure 4. Wholesale rice prices in Costa Rica, U.S. and major exporters (US$/ton)



Source: BCCR (2009), CONARROZ (2009) and USDA (2009).

Notes: Costa Rica: refers to price of 20% broken / 80% whole grain (regulated price); USA: refers to average price, F.O.B. mills, at selected milling centers (Louisiana, Texas, and Arkansas); Major exporters: refers to average prices F.O.B. vessel, corresponding home port for milled rice export price quotes (Vietnam, India and Pakistan). Average price of 15% and 25% broken

income quintile. In the poorest households, rice expenditures represent 6% to 7% of per capita income and only 0.4% to 0.5% of per capita income in the more affluent households. Another study estimated that in absence of market price support, consumers in the I quintile will expand their consumption possibilities by 6%. [39]

Summing up, rice policy in Costa Rica is the result of a successful rent- seeking group of well organized millers, and the misguided government concerns over the potential negative effects of trade liberalization on small farmers and consumers. Instead of pursuing a coherent productive development policy for the sector, the main policy has been import protection and price controls that have been unsuccessful to improve productivity, have created significant rents for rice millers, transferred significant income from consumers to producers, and maintained local prices above international prices for years. [40]

Regulatory capture in the rice sector has prevented domestic actions to remedy policy incoherence. It required the negotiation for a Free Trade Agreement with United States – DR-CAFTA, to liberalize rice trade. Although only after a 20-year phase-out period, rice trade between Costa Rica and the United States will be completely duty free. According to a partial equilibrium analysis of the impact of DR-CAFTA on the U.S and Central America rice sector, the FTA will have a profound effect in the rice economy of Central America and Costa Rica in particular. [41] Important welfare effects to consumers are expected, while production decreases and prices to producers lower significantly (tables 6). Nevertheless, longer phase out periods in DR-CAFTA for tariff elimination would cause welfare losses and inefficiencies in resource allocation, which represent a present value of US$895 million. [42]

9.2 Environmental impacts

Although indicators like the producer support equivalent (PSE) have been developed for measuring economic distortions arising from agricultural policies, these indicators do not reveal the direct effects of agricultural policies on the environment. Nevertheless, one would expect that the same agricultural policies that could distort production decisions and trade could also have an environmental impact. As market price support policies distort the production factor markets, changes in input consumption are to be expected. Fertilizers and water for irrigation are

classical examples. Subsidies for agrochemicals and water of agricultural use distort the real price of these inputs and encourage overconsumption due to lower effective prices. Irrigation subsidies encourage intensive farming, which in turn leads to higher levels of chemicals use than would occur otherwise. Moreover, irrigation subsidies can lead to the underpricing of irrigated water, which promotes the inefficient use of water. In these cases, the economically optimal rate of input use would exceed the environmental optimal rate. [43]

The Tempisque river basin is located in northwestern Costa Rica and is one of the most economically productive regions of the country. The irrigation district associated with this watershed – known as PRAT - is also the largest in the country and the premier producer of rice, melon and sugarcane. Its landmass represents 10% of the country. This basin has been the site of important biological, physical, productive and social transformations since colonial times, which have shaped it into a complex matrix of agricultural lands, wetlands, protected areas and human settlements. [44]

The basin has the most extensive hydrological system of Costa Rica and combines the greatest concentration of wetlands on the Pacific plain of Central America with more than 100 hectares of swamps, marshes, and mangroves. It contains 73,000 hectares of protected areas, including a Ramsar site – a wetland of international importance. The Palo Verde National Park with a total area of 20,000 hectares has seasonally dry forest on limestone outcrops and extensive wetland vegetation. This park is the major bird sanctuary in Central America and the host to thousands of migratory birds flying between the north and the south. [45]

Thousands of waterbirds pass through Costa Rica during their migrations, using diverse wetlands (e.g. river mouths, beaches, swamps, ponds and lakes) as stopover sites. The Palo Verde National Park is very important for waterbirds due to their wetland characteristics (providing opportunities for feeding, breeding and wintering) and because it is located near or along the migratory ways. Several wetlands in Costa Rica including Palo Verde National Park are threatened by agricultural runoffs, sedimentation, drainage and habitat destruction. [46]

The irrigation project (PRAT) was conceived between 1975 and 1978 and is administered by the National Service for Irrigation and Drainage (SENARA). In total, close to 30,000 hectares are currently under irrigation benefiting close to 800 producers. Small farmers with 7 to 10 hectares manage more than 50% of this area. A total of 234 kilometers of channels have been built, as well as 89 kilometers of drainage canals and 230 kilometers of roads and paths. [47]

Rice is grown twice a year thanks to the irrigation facilities of the PRAT. Mechanized land preparation and harvesting represent the common techniques used among farmers to cultivate the rice. The use of agrochemicals (fertilizers, pesticides and herbicides) is highly intensive. Technological package for rice cultivation demands four fertilizations of approximately 184 kilograms per hectare. Nitrogen, phosphorus, potassium and zinc constitute the principal chemicals applied during the fertilizations. To control pests and common diseases, the use of chemicals is also intensive mainly due to the high pest susceptibility of the seeds varieties used in this area. Application of agrochemicals airplanes and tractors is almost 100% mechanized. [48]

Rice cultivation consumes large quantities of water. Water demand for rice fields is up to thirty thousand cubic meters per hectare. The conversion rate of water to rice is seven thousand liters per kg of milled rice, according to average yield in Costa Rica. [49] Researchers agree that the introduction of irrigation water could have a major impact on the original ecosystems. [50] Information collected on the cultivation methods used, suggests that rice farming in the Tempisque River Basin could be associated with a high level of soil erosion, lixiviation and agricultural runoffs. [51] Likewise, waterfowl and local fauna nest or forage in rice fields with high levels of agrochemicals. [52]

As a matter of fact, in 2008, agencies from the Government of Costa Rica went to a legal dispute over the pollution and flooding of more than 3,000 hectares of protected areas in Palo Verde National Park. The polluted water contained traces of pesticides, herbicides and fertilizers allegedly originated in the rice fields adjacent to the park. The Ministry of Environment presented a compelling case to the Environmental Tribunal regarding the ecological damage caused by the polluted waters. The conflict was resolved when SENARA the responsible agency for administering the PRAT and the Institute for Rural Development (IDA) in charge of land reform, agreed in an *ad-hoc* conciliation process to pay the equivalent of US$6 million dollars as compensation for ecological damage to the park.

10. Conclusions

This paper reviewed Costa Rica's Rice Support Policy Program, which was conceived as a way to preserve national food sovereignty in the face of fluctuating World market prices. For that purpose we did a Sustainability Impact Assessment that considered the economic, social and environmental dimension of sustainable development.

Although, supporting rice at levels beyond United States of the European Union, current support for rice in Costa Rica proved to be ineffective in promoting economic development for the rice sector. Planted area, productivity and production are decreasing, and imports are growing. Moreover, tariffs, water subsidies and price controls did not benefit small farmers as millers have largely captured the rents associated with protectionism. Similarly, consumers, especially the poorest, are spending a considerable amount of their income for purchasing rice whose price is above world market levels. These results contrast with the original goals of CONARROZ, to create support mechanisms for local production growth, productivity improvement and food security. Furthermore, there is empirical evidence of environmental damage associated with these programs, especially to protected and valuable ecosystems in the Tempisque River basin, whose impor-

tance transcends Costa Rica.

Policy coherence for sustainable development can be achieved. Trade liberalization and the elimination of water subsidies and price controls accompanied by competition policy enforcement would contribute to food security as price levels decrease; and send market signals that would lead to a better allocation of resources towards more productive and environmentally friendly activities in the Tempisque River basin. Small farmers may be better off, as their fate will not be tied to the current regressive mechanisms.

Liberalization in the rice market can be expected to reduce environmental pressure over the wetlands in Palo Verde National Park. The elimination of market price support and irrigation water subsidies will reflect the true costs of inputs and production factors, which in turn diminish the economically optimal rate for agrochemicals and water use.

The policy reform process should include a thorough review of CONARROZ, as the main political and executing agency in the rice sector, in order to align its objectives and programs to the national goals of sustainable development.

Regarding productive development policies for small farmers, conditional cash transfers, are better alternatives to market price support policies when promoting rural livelihood and agricultural productivity. These transfers should be decoupled from production or area planted, as decisions for farming should be based on market incentives. They could provide the same economic transfers but will not tax the consumer and have the political benefit of transparency. They will act as safety nets while promoting human capital. Costa Rica has the right institutional environment for supplying good quality health and education services required for the success of these programs. Similarly, the implementation of agro-environmental programs can reduce adverse environmental impacts of agriculture and may also enhance the provision of environmental benefits. Some successful projects are being implemented in this subject matter by leading research institutions and advanced farms in the region.

One important lesson drawn from the analysis of rice policy in Costa Rica, is that regional trade agreements, i.e. DR-CAFTA, have shown to be powerful instruments to deal with the political economy problems arising from vested interests of rent-seeking groups. In this particular situation, not even Costa Rica's commitments to the WTO or the Ramsar Convention had been enough to prevent the implementation of the ineffective and inefficient policies.

Foot notes

1. By Law No. 8285 on May 30, 2002

2. CONARROZ Mission, values and objectives statements. Found at www

3. This statement clearly resembles the actual definition of food sovereignty posed by Via Campesina (http://viacampesina.org/en/index.php?option=com_content&view=article&id=47:food-sovereignty&catid=21:food-sovereignty-and-trade&Itemid=38)

4. **Producer Support Estimate (PSE):** An indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives, or impacts on farm production or income. The PSE indicator can be reflected as a total monetary value (US$) or as a percentage of the overall price paid to producers (PSE%)

5. IDA distributed almost 10,000 hectares to small farmers, adjacent to the Palo Verde National Park.

Table 1. Costa Rica: Average costs of rice production (irrigated ecosystem) (US$/Ha.)

	Sep-07	%	Nov-07	%	May-08
A. Labor	38.1	2.94%	57.9	4.02%	60.8
B. Mechanization	475.2	36.63%	510.1	35.44%	565.8
C. Inputs	469.0	36.15%	524.7	36.45%	717.3
D. Other expenses	98.1	7.56%	105.7	7.34%	119.4
E. Administrative and selling costs	172.5	13.30%	191.6	13.31%	221.7
F. Financial costs	44.3	3.42%	49.5	3.44%	57.4
TOTAL COST $ / Ha.	**1,297.3**	**100.00%**	**1,439.6**	**100.00%**	**1,742.4**

Source: CONARROZ, 2009

Table 2. Costa Rica: Rice total demand, imports and share of imports in total demand.
Tons of Milled rice equivalent

Year	03/04	04/05	05/06	06/07	07/08
Total demand	214,102	236,526	235,167	233,532	236,218
Imports	77,847	157,402	76,885	79,496	117,032
Share	0.36	0.67	0.33	0.34	0.50

Source: Calculations based on CONARROZ, 2009

Table 3. Producer support estimates (PSE) for the Rice Industry in Costa Rica and selected comparators. 2000 - 2003

	2000	*2001*	*2002*	*2003*
Costa Rica	36	32	52	45
United States	45	53	50	31
OECD	82	81	78	76
European Union	17	40	34	32

Source: Arias, 2007

Table 4 . Costa Rica: rice area planted, production and yield. 1997 – 2008

Year	**Area** (hectares)	**Production** tones of paddy rice	**Yield** t/ha
1997/98	59,333.00	242,359.00	4.08
1998/99	56,185.00	263,491.00	4.69
1999/00	66,096.00	319,565.00	4.83
2000/01	66,083.00	274,595.00	4.16
2001/02	56,165.00	221,414.00	3.94
2002/03	48,906.00	208,506.00	4.26
2003/04	52,835.00	207,585.00	3.93
2004/05	60,414.00	233,660.00	3.87
2005/06	54,093.00	201,114.00	3.72
2006/07	47,252.00	190,131.00	4.02
2007/08	54,053.00	208,555.00	3.86

Source: CONARROZ, 2009

Table 5. Costa Rica: Incidence of expenditure on rice in each income quintile

Year	Country level	Per capita income quintiles				
		I Quintile	II Quintile	III Quintile	IV Quintile	V Quintile
2008	1.35%	5.76%	2.99%	1.95%	1.20%	0.45%
2007	1.36%	5.99%	3.05%	1.99%	1.22%	0.44%
2006	1.47%	6.77%	3.27%	2.09%	1.27%	0.47%
2005	1.54%	6.84%	3.23%	2.09%	1.28%	0.52%
2004	1.39%	6.55%	3.09%	1.93%	1.18%	0.47%

Source: Calculations based on: INEC, (2009); CONARROZ (2009)

Table 6. Change in important variables for the rice sector as consequence of DR-CAFTA. Partial equilibrium model results

	U.S.	CAFTA countries
Rice Production	0.5%	-6.5%
Producer Price	1.7%	-22.4%
Producer Surplus	1.6%	-25.1%
Rice Consumption	-0.2%	6.5%
Wholesale Price	0.9%	-20.5%
Consumer Surplus	-0.4%	12.7%
Milling Activity	8.1%	-38.1%

Source: Durand-Morat and Wailes (2005)

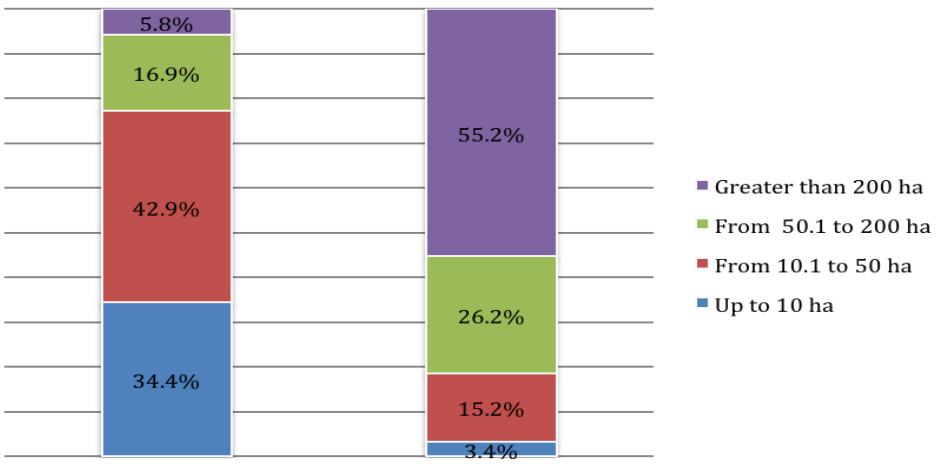


Figure 3. Costa Rica: Relative distribution of rice farms by size and number of famers

Source: Calculations based on CONARROZ, 2009

References

1. Organisation for Economic Co-operation and, Development. (2003). Policy Coherence: Vital for Global Development. Policy Brief.

2. George, Clive, and Colin , Kirkpatrick. Eds. (2007). Impact Assessment and Sustainable Development: European Practice and Experience Evaluating Sustainable Development series. 2007.

3. Arias, Diego. 2007. Agricultural support policies and programs in Central America and the Dominican Republic In Light of Trade Liberalization. Economic and Sector Studies Series. Inter American Development Bank.

4. Jimenez et al. 2003. Perspectives for the Integrated Management of the Tempisque River Basin in Costa Rica. Organization for Tropical Studies. Costa Rica

5. Arriagada-Cisternas, Rodrigo. (2004). Estimating profitability and fertilizer demand for rice production around the Palo Verde National Park, Costa Rica. University of North Carolina. Raleigh, North Carolina.

6. Kirkpatrick, Colin; Norman Lee and Oliver Morrissey. (1999) WTO NEW ROUND Sustainability Impact Assessment Study. Institute for Development Policy and Management, and Environmental Impact Assessment Centre, University of Manchester.

7. Lee, N. and C. Kirkpatrick (2006) "Evidence-based policy-making in Europe: an evaluation of European Commission integrated impact assessments", Impact Assessment and Project Appraisal, Vol. 24 (1): 23-33.

8. George, Clive, and Colin Kirkpatrick. (2008). Sustainability Impact Asssesment of Trade Agreements: From Public Dialogue to International Governance. Journal of Environmental Assessment Policy & Management 10, no. 1: 67-89

9. See reference [1]

10. Organisation for Economic Co-operation and, Development. (2005). Agriculture and Development: The Case for Policy Coherence. Development Dimension series., 2005.

11. See referece [1]

12. Organisation for Economic Co-operation and, Development. (2009). Building blocks For Policy Coherence for Development. 2009

13. See reference [6]

14. Ibid

15. Ibid

16. See reference [8]

17. Paggi, Michael and Fumiko Yamazaki. (2001). The WTO and International Trade Prospects: Rice. University of California. Executive Seminar on Agricultural Issues. December, 2001.

Hossain, Mahabub. (2007) Where now for the global rice market? International Rice Research Institute. http://beta.irri.org/news/index.php/rice-today/where-now-for-the-global-rice-market.html

19. Polo-Cheva, Demetrio., Luis Rivera and Víctor Umaña (2006). Perverse Subsidies and Development: The Case of Rice in Costa Rica. Lecture presented at the Sustainability Management Program, June 2006. INCAE Business School, Costa Rica. Power Point Presentation.

20. SEPSA (2009). Boletín estadístico agropecuario No.19. Ministerio de Agricultura y Ganadería. Costa Rica.

21. CONARROZ (2009) Informe Estadístico del Sector Arrocero. Available at www.conarroz.com

22. Ibid

23. Gaytancioglu, O. and Süre H. (2000). "Input use and production cost in rice cultivation in Turkey". International Rice Comission Newsletter, 49.

24. Figueroa, Luis and Víctor Umaña (2002): Los Retos de la Política Comercial y de la Agricultura en Centroamérica: Elementos para la Discusión. Working Paper CEN 560, CLACDS-INCAE Business School.

25. See reference [21]

26. See reference [24]

27. Petrecolla, Diego (2006). Estudio de la agrocadena del arroz. COPROCOM. Gobierno de Costa Rica y Banco Mundial. Manuscript.

28. Organisation for Economic Co-operation and, Development. (2009). Agricultural policies in OECD countries: Monitoring and Evaluation. 2009

29. Morales, Sergio (2002). Escasea inversión en proyectos de riego. El Financiero. Domingo 5 de mayo, 2002

30. See reference [3]

31. See reference [27]

32. See reference [5]

33. See reference [27]

34. Contraloría General de la República (2004). Informe sobre los Resultados Obtenidos en el Estudio Especial Acerca de la Gestión de la Corporación Arrocera Nacional.

35. See reference [27]

36. Stewart, Rigoberto (2007). Una Estimación de los Costos de la Estrategia Comercial Mercantilista aplicada por el Gobierno de Costa Rica en el Tratado de Libre Comercio entre Estados Unidos, Centroamérica y República Dominicana. Stewart Associates. Alajuela: Costa Rica.

37. See reference [27]

38. Trejos, Alberto, Rivera, Luis and Víctor Umaña (2007).

Potential Frequency and Intensity of the Special Safeguard Mechanism

Amanda M. Leister*
U.S. Department of Agriculture
Economic Research Service**
355 E Street SW, Washington DC 20024-3221
Email: aleister@ers.usda.gov

Abstract

Increased concerns regarding global food security have brought about various agricultural policies aimed at insulating domestic markets from variability in world commodity markets. Negotiations in the World Trade Organization under the Doha Development Agenda include provisions for a Special Safeguard Mechanism (SSM) that would allow developing countries to invoke additional duties if imports increase or import prices fall. The SSM in question is expected to further threaten global food security by increasing the levels and volatility of commodity prices. This work assesses the frequency, measured relative to shipments, trade volume and trade value, for both the price and quantity based SSM (P-SSM and Q-SSM, respectively). Measurements for the intensity of the P-SSM are also provided by evaluating the magnitude of the duty that would be applied to each shipment relative to the global average price of each commodity. Frequency and intensity results vary by import region and commodity market. Findings suggest that SSM duties are more likely to be triggered against exports from developing countries and that higher P-SSM duties may be levied against developing country exporters as well as smaller commodity shipments.

Keywords: Special Safeguard Mechanism, World Trade Organization, Doha Development Agenda, Agricultural Trade Policy, Trade Restriction

1. Introduction

The levels and variability of food prices have been of great concern following the global commodity price increases in 2008, 2010 and beyond. Dethier and Effenberger (2011) provide a review of agricultural policies focused on food security as a result of the 2008 food price crisis and conclude that measures aimed to stabilize domestic prices and increase national food security have been ineffective and counterproductive [1]. While a myriad of factors contributed to the recent commodity price spikes, restrictions on commodity exports have been identified as the leading culprits of these price surges [2]. Many national governments responded to the threat of food insecurity by implementing isolationist policies aimed at insulating domestic markets from the vagaries of world markets. Meanwhile the international community encouraged support programs for immediate relief as well as increased investments in agriculture to mitigate the long term threat of continued commodity price volatility [3].

Agricultural development focused on increasing productivity is expected to help mitigate the risk of commodity shortages, yet increased integration of the global agricultural trading system including elimination of export taxes and export bans is necessary to help in this effort as well. Substantial increases in welfare are expected from further trade liberalization through the passage of the Doha Development Agenda, yet the inclusion of protectionist policies that insulate domestic markets, including the Special Safeguard Mechanism for use by developing countries, is expected to offset these potential gains and exacerbate the potential for commodity prices to remain relatively high and volatile. Hertel, Martin and Leister (2011) investigate the potential implications of the SSM for the global wheat market, and find that, in general, implementation of both the P-SSM and Q-SSM are expected to increase tariff-laden import prices, increase domestic prices, land rents and output as well as increase import price variability [4]. They also find that the Q-SSM is more damaging to world trade flows when compared to the P-SSM when the measure is assed in a global modeling framework. The justification for allowing the SSM is to protect developing country markets from import surges and price declines, yet implementation of the policy would stand in contrast with the goals of achieving global food security by restricting imports if production is low and potentially supporting artificially high commodity prices. The arguments in favor of allowing an SSM are similar to the rationale for export restrictions, which ultimately focus on attempts to protect the domestic market at the expense of creating additional pressures on the levels and variability of international prices.

The price-based safeguard (P-SSM) would be available for use when the price of an individual shipment falls below 85 percent of the three year moving average most favored nation (MFN)-sourced import price within a given import market. The P-SSM duty may not exceed 85 percent of the difference between the observed shipment

*The author would like to thank Thomas Hertel from Purdue University as well as reviewers from ATDF for their helpful comments on this work.

**The views expressed here are those of the author alone and are not representative of the Economic Research Service or the United States Department of Agriculture.*

price and the three year moving average import price (WTO 2008). The volume-based safeguard (Q-SSM) can be levied when imports in a year exceed a three year moving average of imports (base imports) in a given developing country. The Q-SSM includes three tiers, which increase in duty rate if imports continue to increase. The first tier of the Q-SSM allows for a 25% duty if imports exceed 110% of the base, a 40% duty if imports exceed 115% of base imports and the third tier of the duty equals 50% if imports exceed 135% of the base [5].

The SSM was created to loosely resemble the Agricultural Special Safeguard (SSG) provided under the Uruguay Round [6]. Studies suggest that the SSG was applied far less than was allowable under the policy, yet increased over time as the measure became more widely understood [7],[8]. The South Center (2009) suggests that the majority of import surges are caused from domestic shocks, namely domestic market shortages, which makes the use of a volume based safeguard, either SSG or SSM, seem unreasonable [9]. This provides further concern for the potential use of the Q-SSM in times of commodity shortages. Valdés and Foster (2005) dismiss the Q-SSM in their work since harvest shortfalls would be the likely cause of a domestic shock leading to increases in imports [10]. However, Ivanic and Martin (2011) focus on the Q-SSM, illustrating that mechanical usage of the Q-SSM is expected to raise global poverty overall by increasing domestic prices even further when imports to fill the gap in domestic production become more expensive [11]. The fact that implementation of a policy of this nature may be politically and economically unattractive, makes no guarantee that the measure will not be utilized by policy makers. Furthermore, there is no requirement to show damage to the domestic industry to invoke an SSM, while alternative measures to protect fragile domestic production including provisions for special products and anti-dumping would be available in addition to the SSM.

The growing literature on the proposed Special Safeguard Mechanism describes how the SSM has the potential to increase the levels and the volatility of commodity prices in many developing countries and therefore poses a threat to poverty households who are net purchasers of food. The quantity based mechanism is particularly troublesome as the measure may come into effect at times when there are domestic shortfalls in commodity production and additional imports are needed to meet domestic demand. Implementing the measure at such a time would intensify commodity price increases that would further threaten food security. Furthermore, the P-SSM is discriminatory in nature as it penalizes exports from low priced sources, which are oftentimes developing countries. Although the P-SSM would generally not apply during times when world prices are uniformly high, the measure could come into effect as prices fall after the presence of a price spike. This would exacerbate the potential for prices to remain at artificially higher levels in the presence of the SSM than would be the case otherwise.

The SSM provides an option, but not an obligation, to enact a safeguard duty. Therefore, it is difficult to be sure how frequently it might be utilized and whether a country is more likely to impose a P-SSM or Q-SSM in the event of shock to the global supply of a given commodity [12]. One approach to assessing the extent of its likely utilization is to use historical data to examine how often the SSM could have been implemented, and what the magnitude of allowable duties would have been, had the policy been in place historically. Therefore, this work assesses the frequency, measured relative to shipments, trade volume and trade value, for both the P-SSM and Q-SSM. The intensity of the P-SSM is also calculated by looking at the magnitude of the duty that would be applied to each shipment relative to the global average price of each commodity.

Estimating the potential frequency of SSM invocation is challenging because it is difficult to say whether or not a country would actually levy the safeguard tariff when the import market allows for such a measure. Additionally, many developing countries that would be eligible for the policy have difficulty maintaining trade data needed to implement the measure, which is especially true for many African nations [13]. Furthermore, import surges are often caused by shortages in domestic production, as previously discussed, in which case the Q-SSM may not be an attractive option. Nevertheless, policymakers may opt to implement the measure when imports increase, even if it is economically unattractive. There certainly can be adjustments made to the SSM to reduce its potential frequency and intensity; however this does not negate the fact that the nature of the policy itself is to penalize imports and keep import prices high. Using historical data allows for the quantification of the frequency and intensity of allowable SSM invocations in the global market for agricultural commodities, for trading relationships where data is available, and this work focuses specifically on the implications for cereal grains markets.

2. Data and Methods

Monthly, bilateral trade data accounting for imports of 14 different cereal grains commodities into 7 developing country markets spanning the years 1995-2009 are employed to investigate the frequency and intensity of potential SSM duties, had the SSM been implemented previously. The use of monthly trade data is of particular importance given the shipment by shipment nature of the price based mechanism. The data employed are monthly trade flows, where each observation is used as a proxy for one shipment in the frequency analysis. Unit values are used as a proxy for prices and are calculated by dividing the volume of each observation by its corresponding quantity. The data are described in Figures 2.1, 2.2 and 2.3. There are 19,848 total observations, and the share of observations, share of observed value and share of observed volume are shown for importers, exporters (divided by developing and developed countries), as well as by commodity. As illustrated, observed imports are primarily distributed between all countries in the sample except for the case of India, which accounts for less than 5 percent of the observed imports in the sample. Mexico and South Korea reported the highest percentage of import value and vol-

ume, while India shows the lowest share of imports for all three measurements, which have important implications for the frequency analysis results described herein. Developed country exporters account for 59 percent of observations, yet comprise 76 percent of the value and 74 percent of the volume traded. Developing country exporters account for the remaining 41 percent of observations, 24 percent of trade value and 26 percent of trade volume. This illustrates that developing country export shipments tend to be smaller in terms of value and volume relative to developed country competitors in the export market for cereal grains. Figure 2.3 illustrates the dominance of maize and other wheat trade activity within the dataset. Durum wheat, grain sorghum, barley and rice, both husked and unhusked, also prove important from a value, volume and observational perspective, while the remaining cereals show relatively small shares of trade value and volume.This analysis uses the aforementioned data to identify how often the price and quantity based SSMs could have

Figure 2.1 Data Description by Importer

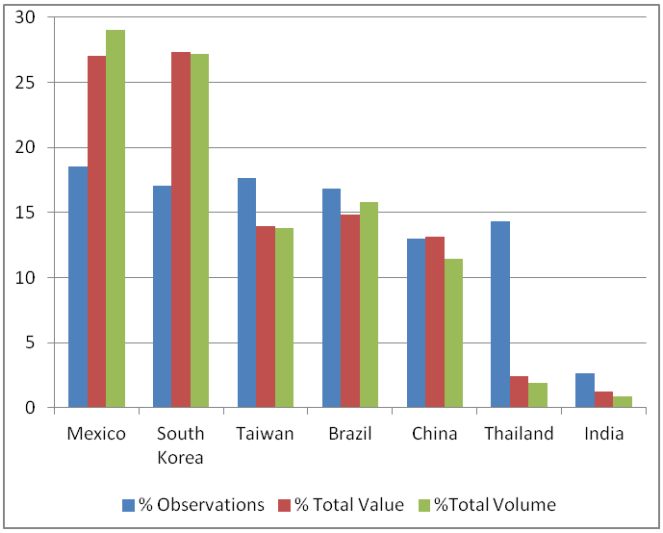


Figure 2.2 Data Description by Exporter Status

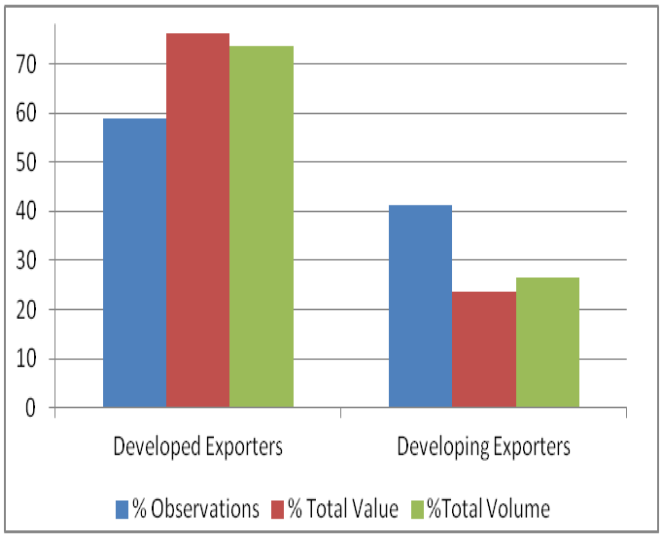
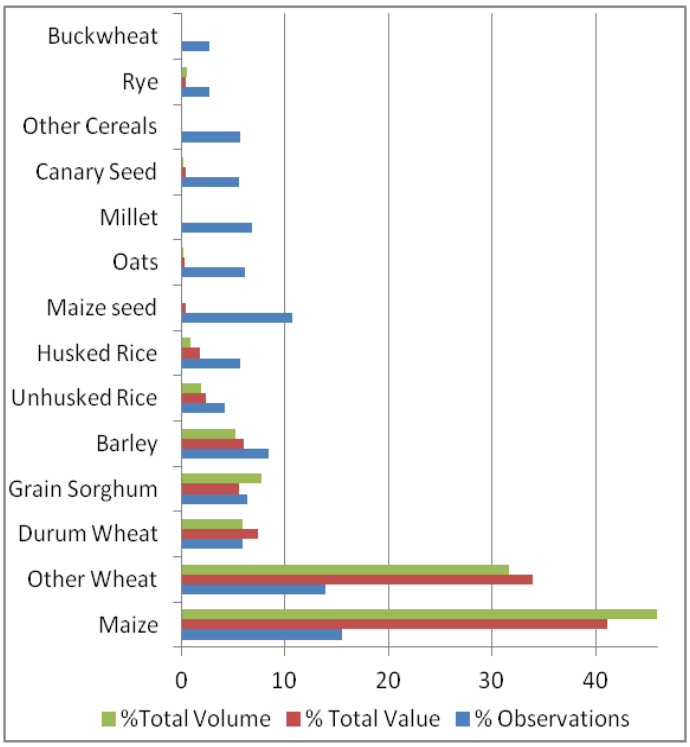


Figure 2.3 Data Description by Cereal Grain Commodity



been triggered, relative to the total number of shipments in a given market (Frequency), the value of duty-laden shipments relative to total trade value (Percent Value), the volume of duty-laden imports relative to total import volume (Percent Volume), as well as the mean and trade-weighted ratios of the value of the allowable duty relative to the mean world import price of the duty-laden commodity (Mean Intensity and Weighted Intensity, respectively).

Frequency is calculated as:

$$\frac{\sum_{n=1}^{N} \text{Triggered Observations}}{\sum_{n=1}^{N} \text{Observations}}$$

Percent Value is calculated as:

$$\frac{\sum_{n=1}^{N} \text{Value of Triggered Observations}}{\sum_{n=1}^{N} \text{Value of Observations}}$$

Percent Value is calculated as:

$$\frac{\sum_{n=1}^{N} \text{Volume of Triggered Observations}}{\sum_{n=1}^{N} \text{Volume of Observations}}$$

Duty Value is calculated as:

$$\text{Price} + (0.85 * (\text{Ptrigger} - \text{Price}))$$

where Price is proxied by monthly commodity-specific bilateral unit values and Ptrigger is equal to the P-SSM trigger value for each observation.

Mean Duty Ratio is calculated as:

$$\text{Mean}\left(\frac{\text{Duty Value}}{\text{Mean hts6 Price}}\right)$$

where Mean hts6 Price is the mean commodity-specific unit value Weighted Mean Duty

Ratio is calculated as:

$$\frac{\sum_{n=1}^{N}(\text{Quantity}_n * \text{MeanIntensity}_n)}{\sum_{n=1}^{N}\text{Quantity}_n}$$

where in each above equation, N is determined by various aggregations of importer, exporter commodity groupings as described in each section below.

Each monthly observation of commodity-specific trade activity between bilateral traders is used as a proxy for one shipment. This distinction is critical due to the fact that the P-SSM applies on a shipment-by shipment basis while the Q-SSM applies on an annual basis to all imports once the three year moving average import quantity trigger is breached. The difference in timeframe and application of the P-SSM versus Q-SSM duties indeed gives rise to different implications for all parties involved in cereal grains trade. Frequency and intensity results, using different aggregation schemes, for both the price and quantity based SSM measures are included below to understand how often the P-SSM and Q-SSM trigger values would have been breached, had they been in place historically.

3. Potential Frequency and Intensity of the SSM

Frequency measurements for the P-SSM and Q-SSM duties as well as the intensity of the P-SSM duties for all cereal grains trade are shown in Figure 3.1. The first (blue) bar indicates that 44.1 percent of all cereal shipments into the eight developing countries considered would have triggered the P-SSM. Triggered shipments account for nearly 44 percent of the value of cereal trade in these markets (second bar) and 53 percent of the trade volume (third bar).

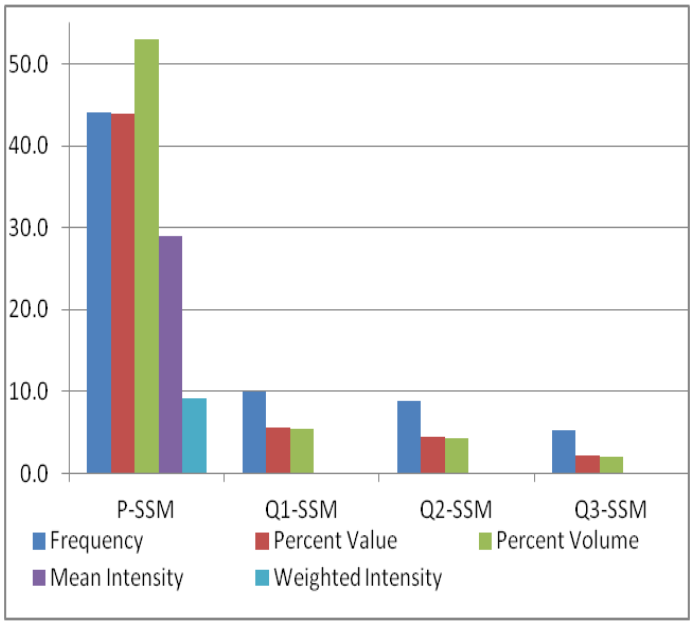
The intensity of the P-SSM duties that could have been levied refers to the size of the tariff which could potentially be applied. In Figure 3.1, it is characterized by the weighted and mean intensity measures (fourth and fifth bars). The ratio of the dollar value of the P-SSM duty that could have been levied, divided by the mean import price for each commodity, was calculated for each triggered shipment. The mean intensity ratio in Figure 3.1 suggests that duties, which could have potentially been levied on shipments were, on average, equal in value to 29 percent of the average import price for cereals (final bar in P-SSM chart). The intensity measurement drops to 9.2 percent when the P-SSM duty ratio is weighted by trade volume, suggesting that higher duties would generally fall on smaller shipments which are generally sourced from developing country exporters as seen from the data description in Figure 2.2.

Turning to the Q-SSM case, just 10 percent of trade activity, accounting for slightly more than five percent of trade volume and value would have triggered the first tier of the quantity based SSM. Interestingly, the volume of cereal imports was high enough to reach the second tier trigger for nearly nine percent of trades, while just over five percent would have reached the third tier trigger. Of course, the breaching of the second tier would be limited by tier one tariffs that might be applied. Again, it is critical to take into account the fact that trade volumes were not altered and results are a comparison of actual trade flows relative to the three year moving average of import volume. Now, it is insightful to turn to a disaggregate investigation of frequency and intensity of potential SSM invocations for given importers, exporters and different cereal grains traded, beginning with the cereal grains market as a whole, then focusing on individual importers.

3.1 Potential frequency and intensity of the SSM by importer

Figures 3.2 and 3.3 describe the potential frequency and intensity of SSM duties for the seven developing country import markets in the sample. The percentage of shipments (proxied by observed monthly trades) triggering the P-SSM ranges from 41 to 47 percent for all countries except India where just less than 25 percent of total monthly trade transactions would have met the P-SSM trigger. Looking at country-specific measures for frequency and intensity shows that for all importers, the shipments that would have been triggered make up a slightly larger percentage of the total volume of imports than the total value of imports, suggesting, not surprisingly, that the P-SSM weighs more heavily against lower value sources of imports as suggested by [14].

Figure 3.1 SSM Frequency and Intensity for All Cereal Grains Trade



Over 40 percent of import volume would have met the trigger in China, Mexico, South Korea and Thailand, with similar shares of import values triggered. Brazil shows slightly lower results with just over 25 and 30 percent of import value and volume, respectively, meeting the P-SSM trigger. The shipments that are being triggered in India are relatively small in volume and value. In the case of Indian wheat imports, only 2 percent of import value and 3.5 percent of import volume are triggered by the P-SSM, which therefore comprise a minimal amount of the already limited Indian import market.

Worth consideration is that fact that in response to the food price spikes in 2008, many countries, including from this sample India, Thailand and South Korea, reduced import tariffs on agricultural commodities in an effort to combat the increases in the cost of food [15]. While tariffs were decreased in light of high commodity prices, there could have been potential for tariff increases against relatively lower cost shipments once prices began to fall, under the SSM regime. Whether this would be economically attractive is doubtful, yet the possibility remains under the presence of such a measure.

When looking at the mean intensity of the P-SSM duties, the value of the duty that could have been levied relative to the world average import price of each commodity ranges from 20 to 39 percent in all countries except Taiwan, where the mean intensity of the P-SSM duty is just 12.5 percent. China and Brazil would have had the highest intensity of the P-SSM tariff, equaling 39 and 36 percent, respectively, and are substantially above the global average intensity of 29 percent. Taiwan could have levied relatively low tariffs compared to the average import price of each commodity. This illustrates that the difference between observed shipment prices and the three year moving average import price of cereal grains is relatively large in China and Brazil while relatively small in Taiwan. As seen at the aggregate level, the intensity measure decreases by an average of 20 percent for five of the seven import countries when the intensity ratios are weighted by trade volume of the P-SSM triggered shipments, again suggesting that higher duties are levied against smaller trade flows. The two exceptions are Taiwan, where the mean and weighted intensity of the P-SSM for cereals are within one percent, and in India, where the weighted intensity of the duty is less than one percent. This result for India occurs because the shipments triggered comprise a small share of the value and volume of Indian imports, thus causing the insignificance of the weighted intensity of the tariff similar to the results discussed for the percentage of value and volume triggered.

The implications of the Q-SSM are quite different for importers, as a smaller percentage of import volume and value meet the Q-SSM trigger when compared to the P-SSM results discussed above. More wheat imports in India exceed the Q-SSM trigger level when compared to other importers, which is opposite of the P-SSM case. The results for India stem from the fact that there are relatively few trade flows, meaning that seemingly small increases in import activity within India during a given year could potentially invoke the first tier of the Q-SSM rather easily. Nearly 30 percent of Indian wheat imports, comprising over 20 percent of both import volume and value would have met specifications for the first tier of the Q-SSM duty, as illustrated by Figure 3.4. Brazil, Mexico and China's markets are similar and meet the Q1-SSM specifications 7.9, 9.5 and 13.5 percent, respectively, with the percentage of value and volume slightly below these values. South Korea, Taiwan and Thailand are different in that the percentage of value and volume of imports meeting the trigger is significantly lower than the number of shipments that could have been levied a tier one duty. This shows that the value and volume of the shipments that could be triggered are relatively small in these markets.

As indicated by Figure 3.5, the second tier of the quantity based safeguard (Q2-SSM) is reached nearly as often as the first tier of the duty, and the third tier of the safeguard (Q3-SSM) is also breached for a large percentage of the volume and value of imports in each country. It is important to note that a 25 percent safeguard duty could be applied to subsequent imports once the first tier is reached, so it is difficult to speculate as to the degree to which imports would decrease after the invocation of the first tier of the duty. The results presented for Q2-SSM and Q3-SSM are meant as an illustration to show that historical trade flows frequently surpass the second and third tier level of imports that would enact higher duties of the Q-SSM, but such a comparison is only strictly valid when no safeguard duties are levied on the first, or second, stages of Q-SSM trigger levels. This shows that the potential for invocation of second and third tier duties is a valid concern, especially during times of harvest shortfalls and low commodity stocks that naturally lead to increases in imports.

Figure 3.2 P-SSM Frequency for all Cereal Grains Trade by Importer

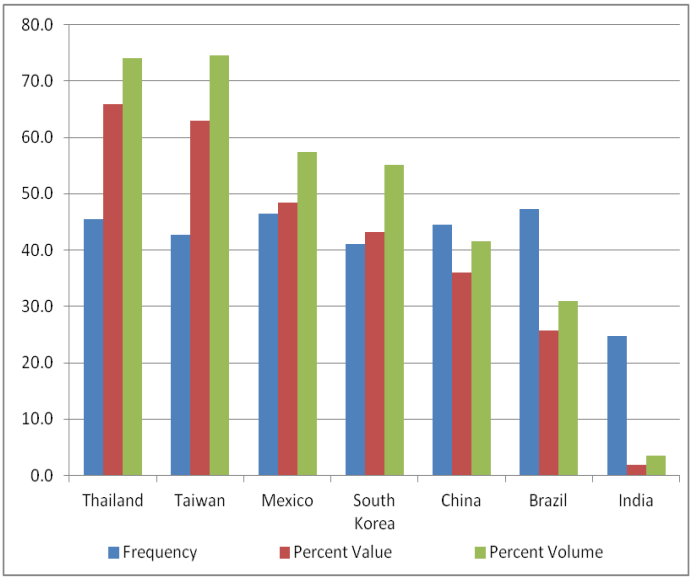


Figure 3.3 P-SSM Intensity for all Cereal Grains Trade by Importer

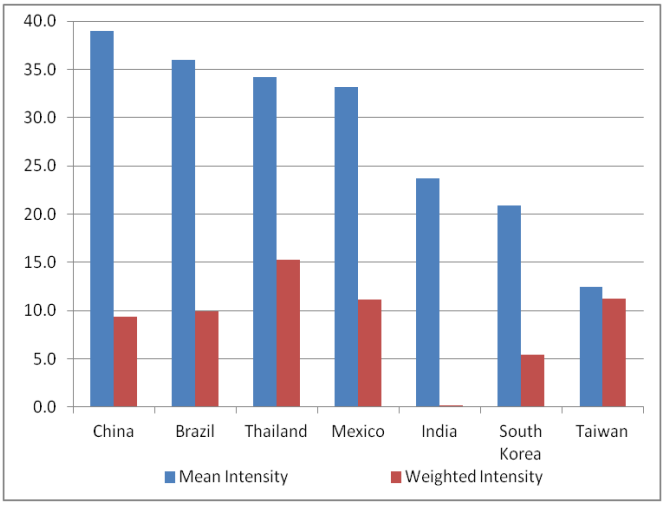


Figure 3.4 Q1-SSM Frequency for all Cereal Grains Trade by Importer

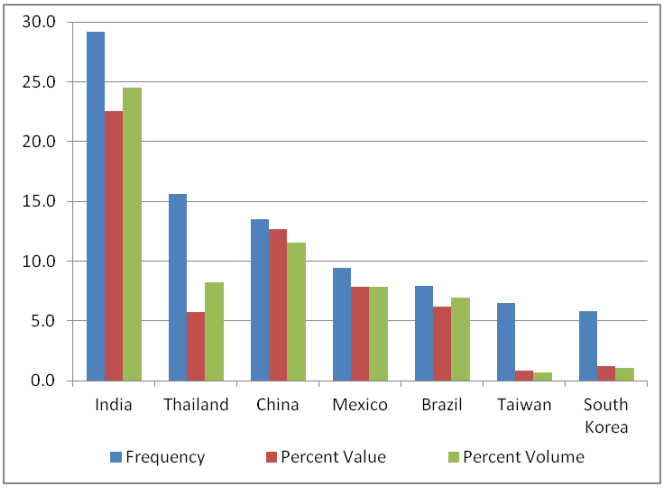
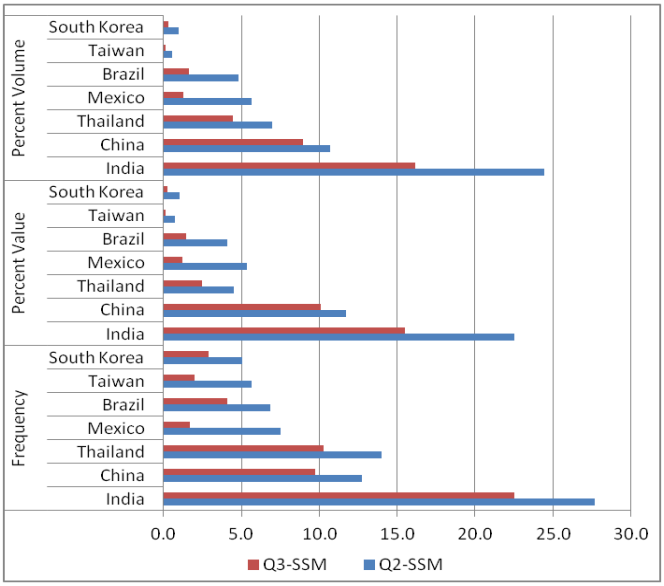


Figure 3.5 Q2- and Q3-SSM Frequency for all Cereal Grains Trade by Importer



3.2 Potential frequency and intensity of the SSM by commodity

Figure 3.6 illustrates the frequency and Figure 3.7 shows the intensity of allowable P-SSM duties for imports into the 7 countries by commodity. Results for 14 commodities, defined at the HS6 level, are included. The P-SSM trigger levels are met for a higher percentage of trade value and volume than is the case for the Q-SSM for all cereal grains. When looking at key cereal grains, maize shipments trigger the P-SSM more frequently than durum and other wheat, while rice (both husked and unhusked) could have been most frequently triggered of all. Wheat P-SSM occurrences also account for the lowest percentage of trade value and volume as compared to rice or maize. Interestingly, maize surpasses rice in the husk for percentage of trade value and volume triggering the P-SSM, yet husked rice shipments meeting the P-SSM trigger account for the highest percentage of trade value and volume when compared to wheat, maize and rice in the husk. Durum wheat has the highest mean intensity of the P-SSM tariff of the aforementioned commodities (47.2%), yet the lowest trade weighted intensity of the safeguard (4.4%). Mean intensities of the P-SSM safeguard range from 13 percent for canary seed to 47.2 percent for durum wheat and 52.8 percent for grain sorghum, while the weighted mean of the safeguard ranges from 2.8 percent for canary seed to 33 percent for maize seed. The high value for the latter is indicative of the likely great variation in genetic value of seeds, which is far greater than the variation in its value for food consumption.

Figure 3.6 P-SSM Frequency by Commodity

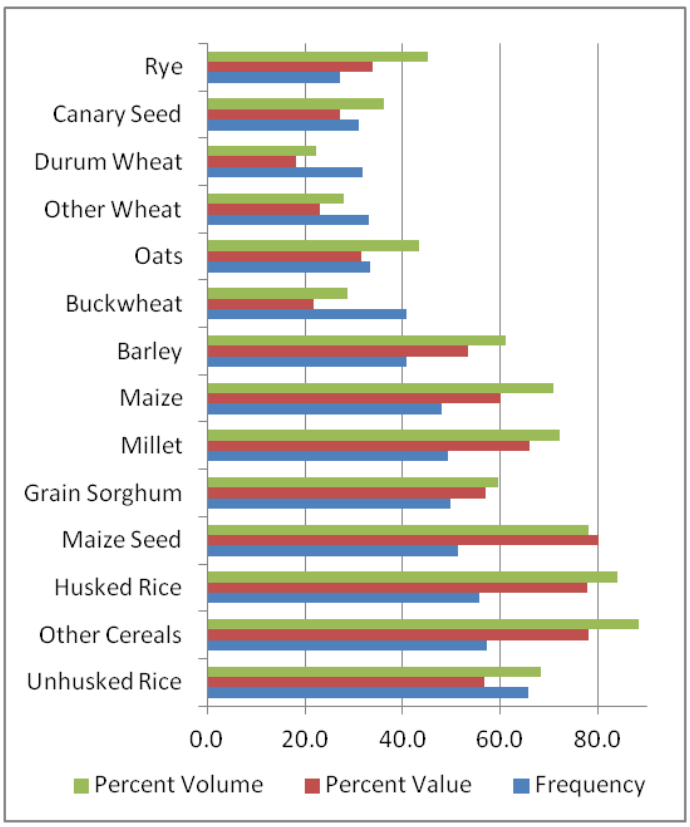


Figure 3.7 P-SSM Intensity by Commodity

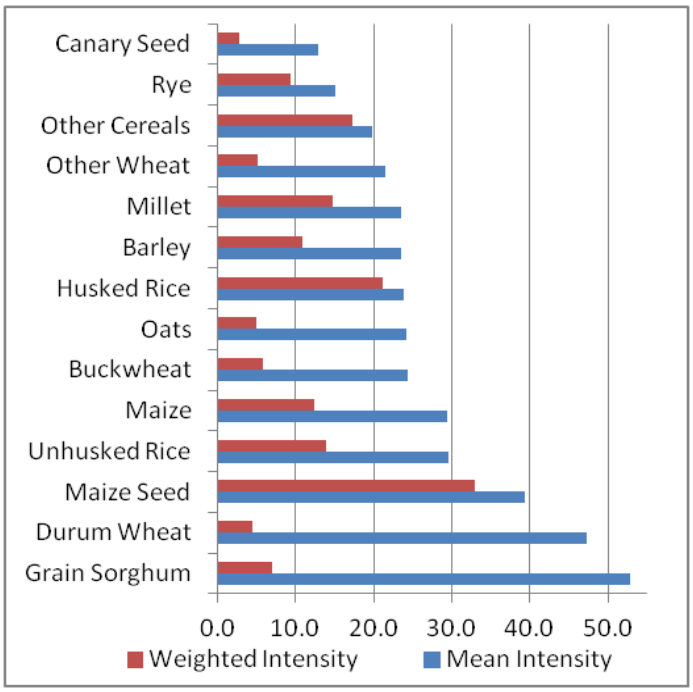
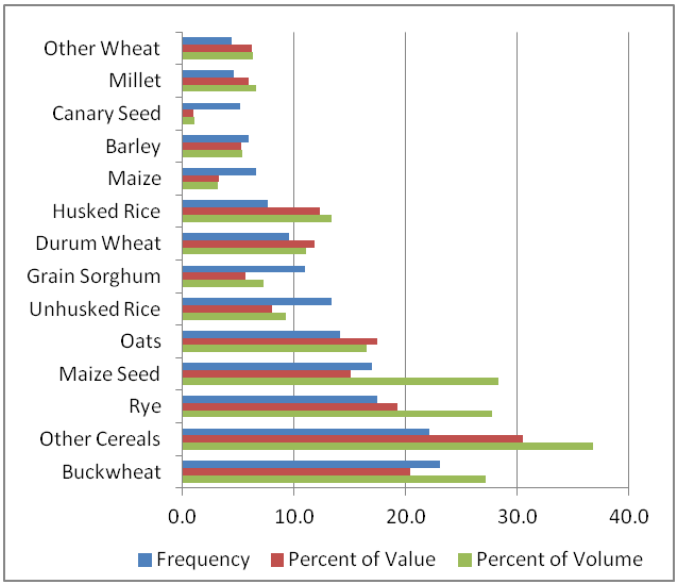


Figure 3.8 illustrates the frequency of the first tier of the quantity based safeguard by commodity. The number of shipments that could have faced the Q1-SSM duty range from 5.1 percent of canary seed shipments (although this accounts for just 1 percent of trade value and volume) to 23.1 percent of Buckwheat imports (accounting for 20 percent of import value and 27 percent of import volume). The first tier of the quantity based safeguard could have been applied to 6.6 percent of maize shipments, 9.5 percent of durum wheat shipments, as well as 7.6 and 13.4 percent of husked rice and rice in the husk, respectively, which comprises from 3.2 percent of value and volume for durum wheat, to 12.3 and 13.4 percent of husked rice import value and volume, respectively.

Figure 3.8 Q1-SSM Frequency by Commodity



3.3 Potential Frequency and Intensity of the SSM for all Imports by Export Country

As illustrated in Figures 3.9, 3.10 and 3.11, the variation in allowable SSM frequency and intensity among exporters is rather large. Figures 3.9-3.11 list the top half of exporters included in the sample, measured by percentage of total exports. Developed country exporters are listed in the top portion of each figure, while developing country exporters are on the lower portion of each. From the figures, it can be generally seen that developing country exporters have a higher frequency and intensity when compared to developed country exporters for both the P-SSM and Q-SSM. As illustrated by the Developing Mean and Developed Mean results in Figure 3.9, the largest developing country exporters would have triggered P-SSM duties on their shipments 20 percent more often than the largest developed country exporters, and the percentage of value, volume and intensity of the duties are between 8 and 12 percent higher for developing country exporters.

The frequency, in terms of trade flow, value and volume, of the Q1-SSM is an average of ten percent higher for the largest developing countries relative to the largest developed country exporters. The developing country exporters that have relatively high observed percentage of value and volume of Q1-SSM triggers are Cambodia, South Korea, Laos, Nepal, South Africa and Taiwan. The implications for the leading developed exporters are rather uniform, and below 20 percent for all countries except Denmark, Germany and Russia, where the percentage of trade volume triggered is relatively large.

3.4 Potential Frequency of the SSM for Cereal Grains Trade by Import Country and Commodity

Figures 3.12 and 3.13 show each import market's SSM frequency measures for wheat, corn and rice while Figure 3.14 illustrates the share of each commodity in each country's import bill. This is useful to further decompose the results illustrated in Figures 3.2 and 3.4 above, which depict the frequency of cereals at the aggregate level into each import market, while taking into account the relative importance of each commodity within import markets. Recall that the highest P-SSM frequencies for cereals are in Thailand and Taiwan. Within Thailand, wheat, rice and maize imports significantly contribute to this factor, as frequency ratios for shipments, volume and value all exceed 30 percent. Maize and rice in the husk have particularly high values for the share of volume and value of imports into Thailand which might be triggered under the P-SSM. Indeed, for these two commodities, over 80 percent of the trade volume would be eligible for triggering under the P-SSM, with durum and other wheat both measuring an average of 60 percent of value and volume. Other wheat is the most substantial import into Thailand, which magnifies the relative importance of the high frequency of possible SSM invocation for other wheat. In Taiwan, maize is also important as it accounts for over 70 percent of the value and volume of cereal grains imports, with over 70 percent of maize import volume and value triggering the P-SSM. Husked rice mimics the frequency ratios of maize, but is much less significant in Taiwan's imports of cereal grains.

Figure 3.9 P-SSM Frequency for Top Cereals Exporters by Development Status

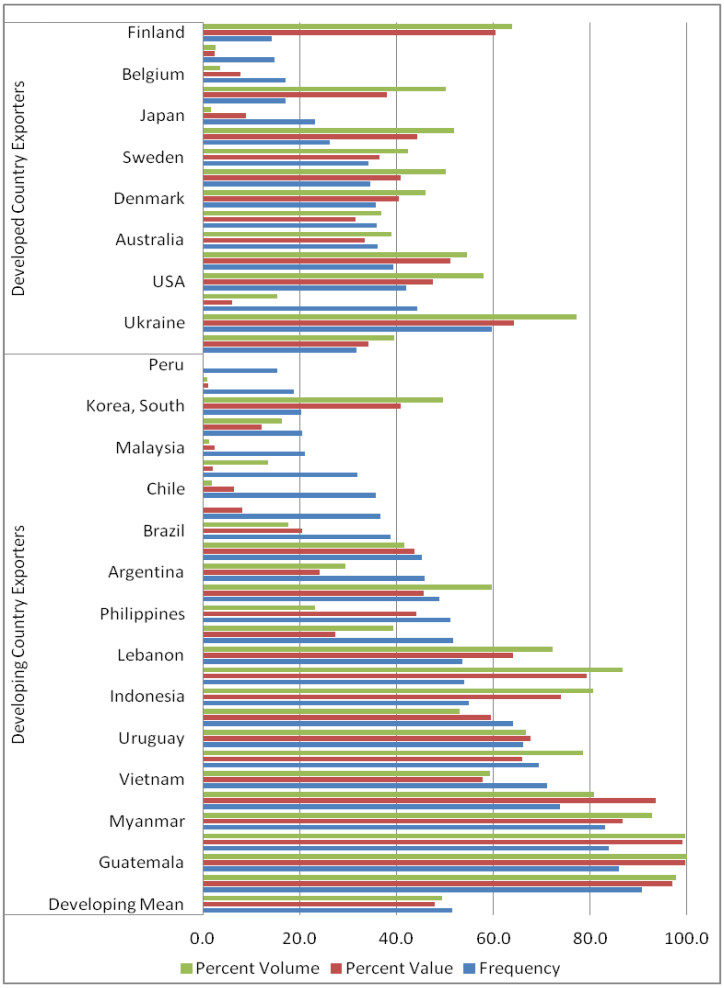
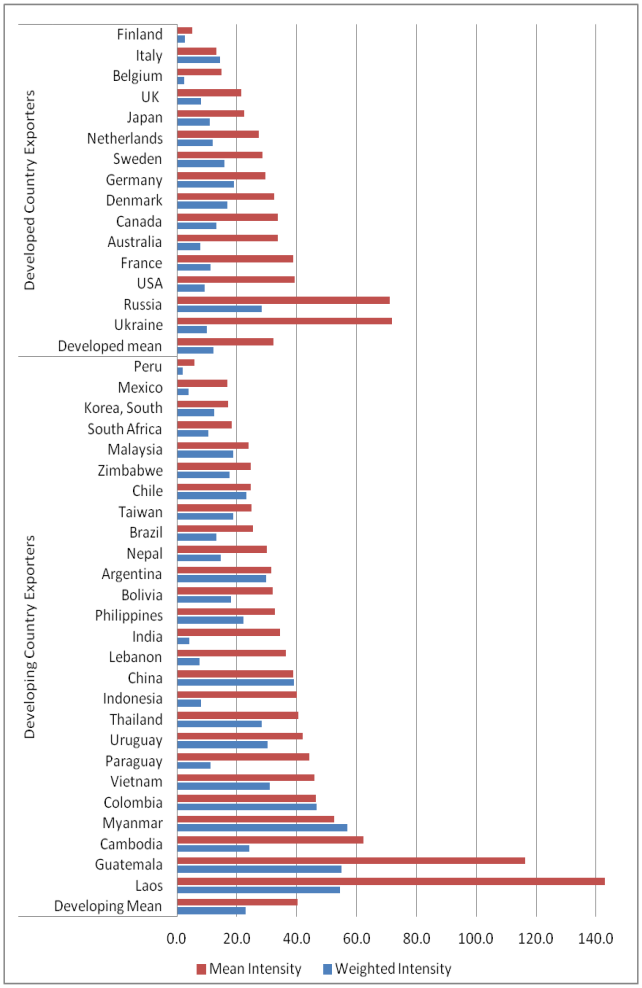


Figure 3.10 P-SSM Intensity for Top Cereals Exporters by Development Status



The percent of volume and value triggering the P-SSM for durum and other wheat is relatively small in all import markets, excepting Thailand and Mexico where wheat values are high and where other wheat is the primary import in Thailand and the second most important cereal grain imported into Mexico. In Brazil, maize and rice imports could have been triggered the most frequently, although these commodities are secondary in importance as other wheat is the dominant cereal grain import into Brazil. Nearly all imports of durum wheat into Mexico could have potentially triggered the P-SSM in the timeframe studied, though the share of durum wheat in total cereal imports is relatively small.

The Q1-SSM could have been triggered less frequently than the P-SSM for cereals as a whole. This is likely due to two factors. First, the Q-SSM is an annual trigger, whereas the P-SSM is triggered on a shipment by shipment basis, which is likely to introduce greater variability. Secondly, prices are proxied by unit values, which are likely to embody significant measurement error, thereby potentially overstating the frequency of extreme prices. This is the case when looking at cereal commodities within each import region except for a few commodities which trigger the Q1-SSM significantly more frequently than the P-SSM for specific importers. Rice in the husk has a significantly higher potential Q1-SSM frequency in Taiwan, South Korea and China, yet comprises a small share of imports in all three markets. Durum wheat has a high frequency of triggering the Q1-SSM in India, which is interesting, given the fact that durum wheat never triggers the price based mechanism. This finding illustrates again that the implications of the two policy regimes differ significantly and that import prices in India seem to be relatively stable while import volumes appear to be unstable.

4. Conclusions

This research investigates the frequency and intensity of potential invocation of the proposed Special Safeguard Mechanism (SSM), which is a controversial feature of the current Draft Modalities for Agriculture in the WTO negotiations under the Doha Development Agenda. The SSM under discussion is broadly based on the special agricultural safeguard, and would allow developing country members of the WTO to levy additional safeguard tariffs on imports under certain conditions in the market. The SSM includes two triggers, one based on the price of imports and one on the volume of imports. Research shows that implementation of the SSM is expected to increase the volatility and levels of agricultural commodity prices [16]. Furthermore, the Q-

Figure 3.11 Q1-SSM Frequency for Top Cereals Exporters by Development Status

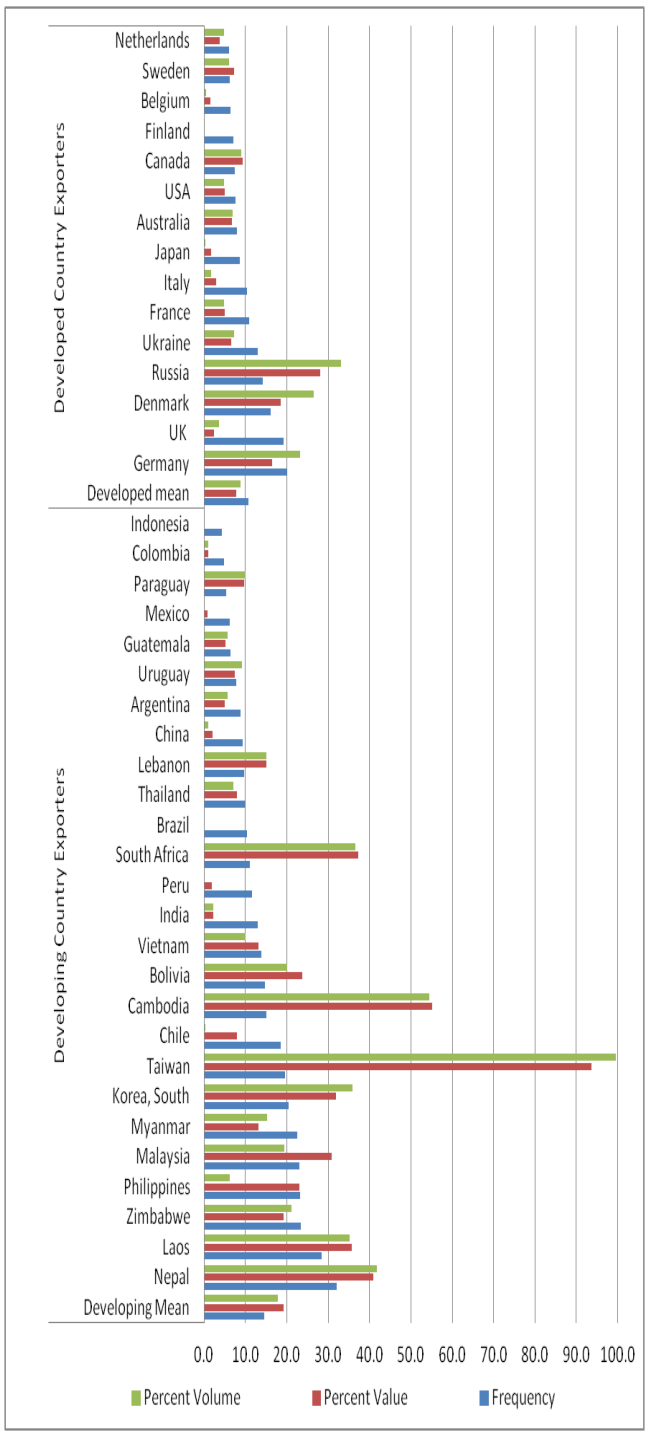


Figure 3.12 P-SSM Frequency for Cereal Grains Trade by Importer and Commodity

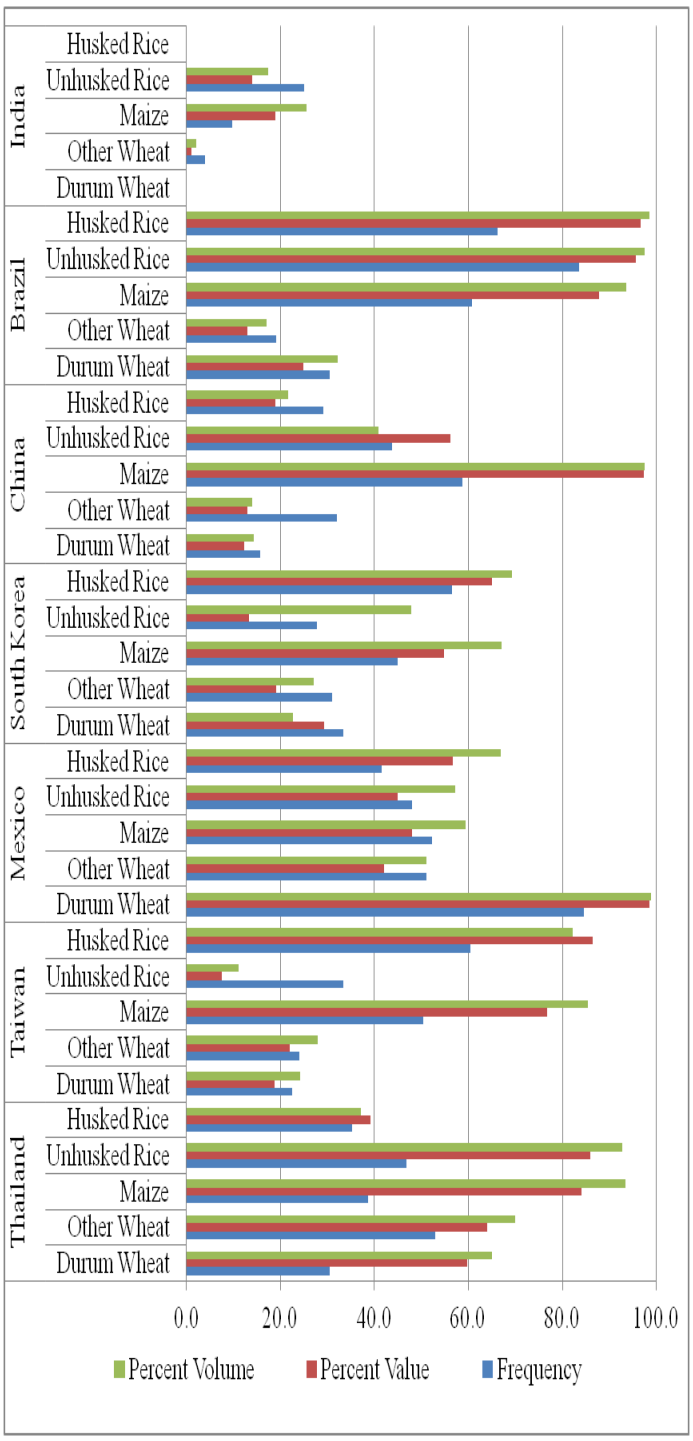


Figure 3.13 Q1-SSM Frequency for Cereal Grains Trade by Importer and Commodity

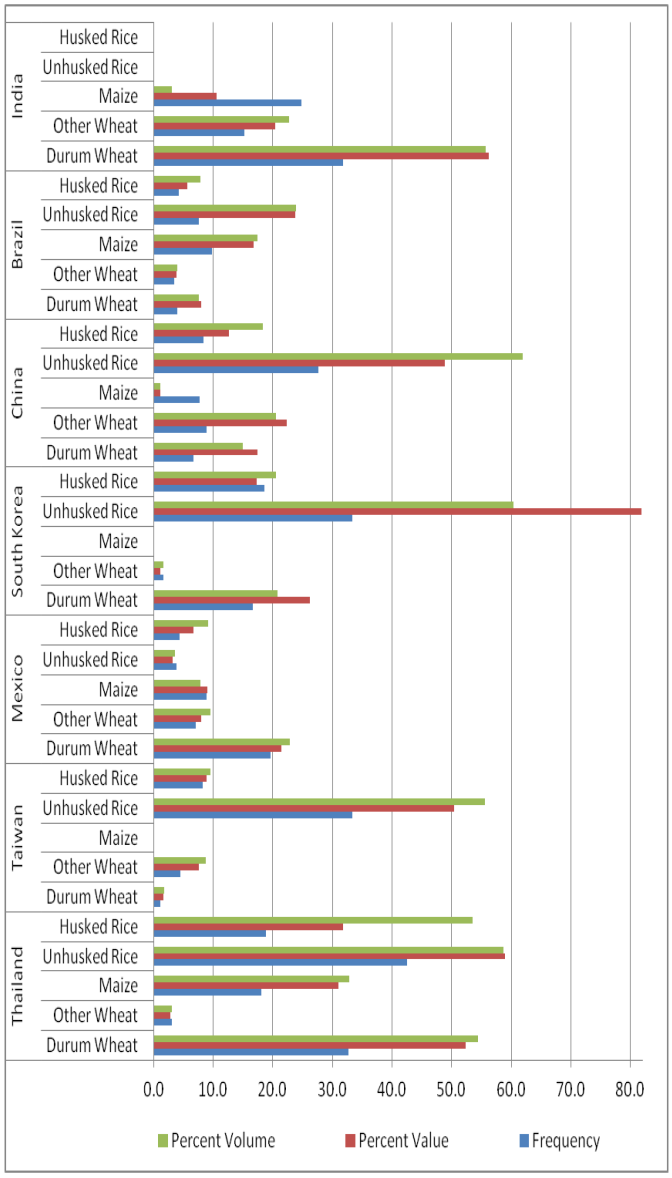
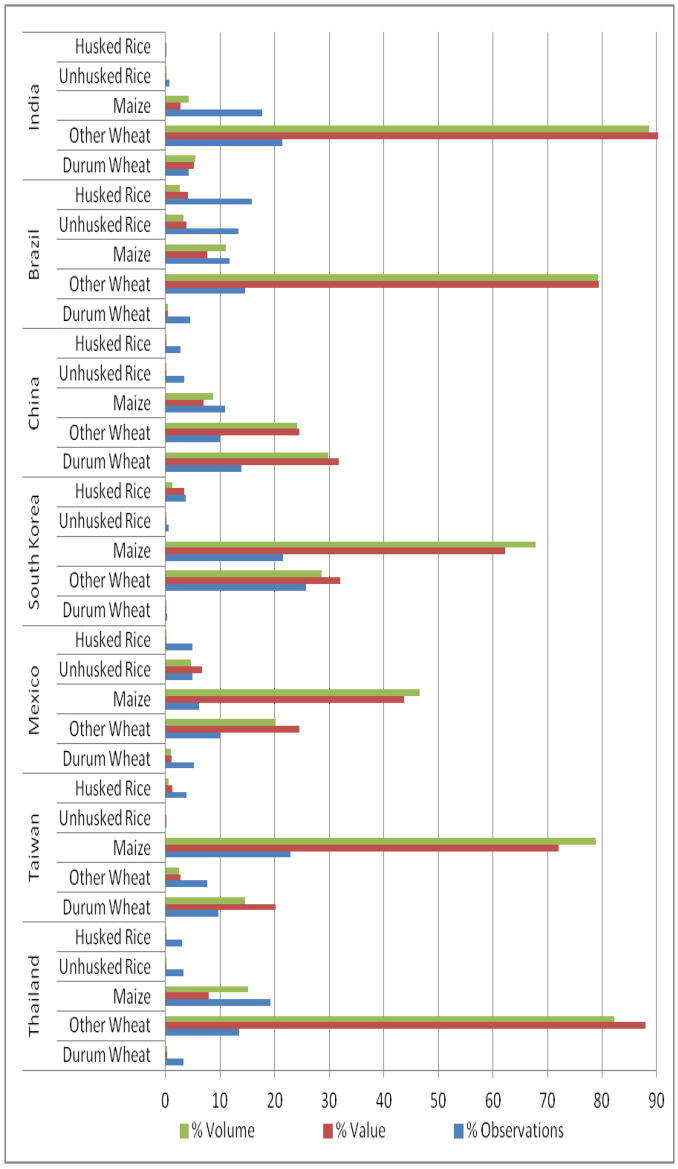


Figure 3.14 Percentage of Imports for Cereal Grains by Importer and Commodity



SSM is expected to be more trade distorting and has the potential to deepen poverty in the countries that use it [17]. Accordingly, the potential for the SSM to improve global food security is unlikely.

This work measures the potential frequency of the P-SSM tariff as the ratio of the total number of shipments triggering the P-SSM relative to total shipments traded (where shipments are proxied by monthly trade observations). This is consistent with the percentages of trade value and volume that would have triggered the safeguard, had the P-SSM been in place historically. The Q-SSM measurements mimic this approach.

Approximately 45 percent of shipments would reach the P-SSM trigger in all import regions save India, where less than 25 percent of shipments would have triggered the safeguard tariff. The intensity measurements show the value of the P-SSM duty permitted relative to commodity-specific world average import prices. The mean intensities are significantly higher than the trade weighted intensities, which suggest that relatively high permissible P-SSM duties could have been levied on shipments comprising relatively small trade flows. China and Brazil could have levied duties that are nearly 10 percent higher than the global average intensity of 29 percent. Furthermore, we find that the percentage of total trade volume meeting the trigger is nearly 10 percent higher than the percentage of trade value meeting the tariff. This indicates that the duty would have been levied more on lower value exporters, in accordance with the findings of de Gorter, Kliauga and Nassar (2009) and Finger (2009) [18],[19].

Q-SSM results are not as uniform across import markets when compared to results from the P-SSM regime. India

could have levied quantity based duties on nearly 30 percent of import shipments, which is the opposite of what was found for the P-SSM regime. This suggests that import prices in India for cereals are relatively stable, while volatility in import volumes seems apparent. Q-SSM triggered shipments account for 8 to 15 percent of trades in the other import regions and the frequency measures for the Q-SSM are higher than the value and volume percentages for all countries, which is not the case when considering the P-SSM.

The commodity-specific P-SSM frequency results suggest that shipments of rice, both husked and unhusked, would have triggered the price based safeguard most frequently. Durum and other wheat trade would have been triggered relatively little, yet the mean intensity of the tariff on durum imports is nearly 50 percent. The trade weighted intensity of durum P-SSM invocation is just 5 percent, and the intensity measures for grain sorghum follow this same pattern, again suggesting relatively high duties on smaller trade flows. Husked rice, maize seed and other cereals have substantially higher volume and value measurements than frequencies. The commodities triggering Q-SSM duties relatively more frequently and for a higher percentage of import values and volumes are other cereals, buckwheat, maize seed and rye.

One key limitation in the Q-SSM frequency analysis presented here is that historical trade flow data is measured against the three year moving average of imports that drive the trigger levels of the three tiers of the quantity based measure. Once a duty is applied after the first tier of the Q-SSM is breached, import quantities would adjust to the distortion. Therefore, frequency measures for the second and third tier of the duty are overstatements of what would be expected if the Q-SSM policy were enacted. This further highlights the need for analysis of the features of the safeguard in a global setting allowing for market adjustments once the first tier of the Q-SSM is reached and the duty is applied.

The proposed SSM is complex, controversial, and expected to continue to be a critical point of discussion within the context of the WTO. This piece highlights the importance of commodity markets where the SSM is likely to prevail, and evidence suggests there is potential for both the Q-SSM and P-SSM to be triggered in major grain markets in developing countries. This could in turn lead to harmful long-term consequences with regard to poverty reduction and development and result in an increase in volatility in global grain markets. Research shows that nationalist policies aimed at insulating domestic commodity markets forces increased volatility into the international marketplace and exacerbates the potential for food insecurity on a global scale.

References

1. Dethier, J.J. and A. Effenberger, (2011) “Agriculture and Development: a Brief Review of the Literature.” Policy Research Working Paper No. 5553. The World Bank, Washington, D.C.
2. Headey, D. and S. Fan, (2010) “Reflections of the Global Food Crisis. How Did it Happen? How Has it Hurt? And How Can We Prevent the Next One?” International Food Policy Research Institute. Research Monograph 165.
3. Abbott, P. and A. Borot de Battisti, (2011) “Recent Global Food Price Shocks: Causes, Consequences and Lessons for African Governments and Donors,” Journal of African Economies, 20 (suppl. 1), 2011, pp. i12-i62.
4. Hertel, T.W., W. Martin, and A.M. Leister, (2010) "Potential Implications of a Special Safeguard Mechanism in the World Trade Organization: the Case of Wheat." *The World Bank Economic Review* 24(2):330-359.
5. WTO, (2008a) ‘Revised draft modalities for agriculture,’ Committee on Agriculture, Special Session, World Trade Organization, Geneva, TN/AG/W/4/Rev.4 and TN/AG/W/7, 6 December.
6. GATT, (1994) “The Results of the Uruguay Round of Multilateral Trade Negotiations.” GATT Secretariat, Geneva.
7. Hallaert, J., (2005) Special Agricultural Safeguards: virtual benefits and real costs—lessons for the Doha Round, IMF Working Paper WP/05/131, International Monetary Fund, Washington DC.
8. Morrison, J. and R. Sharma, (2005) ‘Modalities for an SSM: product eligibility and alternative triggers’ Presentation to Informal ICTSD Dialog on Special Products and the SSM, 25 November 2005. www.ictsd.org
9. South Centre, (2009) ‘The volume-based special safeguard mechanism: analysis of the conditionalities in the December 2008 WTO agriculture chair’s texts’ Analytical Note SC/TDP/AN/AG/9, South Centre, Geneva, November.
10. Valdés, A. and W. Foster, (2005) “The New SSM: A Price Floor Mechanism for Developing Countries,” International Centre for Trade and Sustainable Development, Geneva. www.ictsd.org.
11. Martin, W., and M. Ivanic, (2011) "A Need for Caution in Applying the Volume-Based Special Safeguard Mechanism." Paper presented at Joint Annual Meeting of the Agricultural and Applied Economics Association (AAEA) and the Northeastern Agriculutral and Resource Economics Associations (NAREA), July 24-26th 2011. Pittsburgh, PA.
12. Ferrier, P. and A.M. Leister, (2011) “Trigger Points of the Special Safeguard Mechanism.” Working Paper. Economic Research Service, Washington, D.C.
13. Valdés, A. and W. Foster, (2005) “The New SSM: A Price Floor Mechanism for Developing Countries,” International Centre for Trade and Sustainable Development, Geneva. www.ictsd.org.
14. Finger, J.M., (2009) “A Special Safeguard Mechanism for Agricultural Imports and the Management of Reform.” The World Bank Development Research Group Trade and Integration Team. Policy Research Working Paper No. 4927.
15. Trostle, R., (2008) “Global agricultural supply and demand: Factors contributing to the recent increase in food commodity prices.” United States Department of Agriculture, Washington, D.C

16. Hertel, T.W., W. Martin, and A.M. Leister, (2010) "Potential Implications of a Special Safeguard Mechanism in the World Trade Organization: the Case of Wheat." *The World Bank Economic Review* 24(2):330-359.

17. Martin, W., and M. Ivanic, (2011) "A Need for Caution in Applying the Volume-Based Special Safeguard Mechanism." Paper presented at Joint Annual Meeting of the Agricultural and Applied Economics Association (AAEA) and the Northeastern Agriculutral and Resource Economics Associations (NAREA), July 24-26th 2011. Pittsburgh, PA.

18. de Gorter, H., E. Kliauga, and A. Nassar, (2009) 'How current proposals on the SSM in the Doha impasse matter for developing country exporters' Instituto de Estudos do Comercio e Negociacoes Internacionais, Sao Paolo, Brazil.

19. Finger, J.M., (2009) "A Special Safeguard Mechanism for Agricultural Imports and the Management of Reform." The World Bank Development Research Group Trade and Integration Team. Policy Research Working Paper No. 4927.