Chapter II: Trends in Agri-markets and Trade Policy.

Tim Josling*

The Trend Toward Global Agricultural Markets

A remarkable transformation has been taking place in the world's food system over the past twenty years. The agriculture and food industries have now joined the list of "global" sectors, supplying a world-wide market place from a mutually supportive network of institutions that transcend national boundaries. The implications of this "globalization" are profound for farmers, processors, consumers and those governmental, scientific and business activities that support the food chain.[1] But farming is also under pressure to contribute to other societal objectives, in particular the maintenance of a rural environment that is ecologically sound and visually attractive. Moreover, the rapid development of some parts of global agriculture poses problems for those segments of the industry that might be left behind. This chapter is an attempt to look at some of these trends in the food chain and the reaction to these trends which is creating an entirely new agenda for trade policy. It concludes with a few suggestions about how to ensure that the benefits are spread as widely as possible.

In many respects agriculture has always been a global sector. Trading in foodstuffs is as old as civilization. The great expansion of commerce in the sixteenth and seventeenth centuries was based on the discovery of geographically-specific commodities, minerals and tropical plant products. By the eighteenth and nineteenth centuries, manufactured goods began to accompany

---

* Professor and Senior Fellow, Institute for International Studies, Stanford University. This paper was prepared as a contribution to the book "Plants and Politics", produced on the occasion of the centenary of the Dutch Plant Protection Service, and for subsequent presentation at the Conference on "International Plant Protection Policy and Market Development" planned by the Service for November 1999

[1] Others have called this trend the "industrialization" of agriculture. This, however, ignores the important consumer-driven nature of the structural changes.

the raw materials in global trade, but agricultural and mineral exports were still dominant. Even into the first half of the twentieth century, as the industrial countries began to emerge as major trading powers, many countries in the world still made a living from selling agricultural and food commodities to overseas markets. To them globalization of agriculture was always a fact of economic life.

Not all countries participated fully in the global food system. Some preferred to develop their own food processing industries based on locally produced raw materials. Nor was the trade system truly global. Much agricultural trade followed colonial paths, from the remote producer to the processor in the metropolis. The European empires fought over trading rights and sought to secure their own sources of supply. Agriculture was part of the imperial strategy of countries, extensive yet essentially preferential. Early this century global warfare broke up the empires, disrupted trade routes and destroyed confidence in relying on remote supplies. By the time of the Great Depression of the 1930s, food and agricultural trade was anything but global in scope. As in many other areas of international economic life, the last half of the century has been a slow march toward the restoration of the international agricultural and food systems that existed at the turn of the century.

The trends that have led to globalization of the food industry can be conveniently separated into those that stem from **technology**, those that come from **structural changes** in business activity and those that come from **public policy**. All three play a part in the story, and each in turn impacts upon the others. Technical improvements at the farm, processing and distribution levels have been important stimuli for the reorganization of business relationships. These business relationships take place within the context of a set of markets largely regulated by public policy. Farm and food policies themselves have had a major role in the development and adoption of new technology. But the causality can also flow in the other direction. The structure of the industry can influence policy as can the development of new technology. Each is a vital part of the equation, and each is worthy of attention. It is convenient to think of the agricultural and food markets as being components or links in a chain. The chain stretches from the suppliers of the inputs to agriculture, through the farming process and the processing of the raw materials, to the

distribution of the finished product to the consumer. Technology, structural change and public policy influence each link in the chain. The story of globalization is of the unshackling of the chain from the confines of national markets.

a) Agriculture goes Hi-Tech

Popular mythology would place agriculture among the “low-tech” industries. Farmers with the accumulated skills of centuries till the soil and tend the livestock in some rural haven often cut off from modern amenities. Farm products are sold on open local markets to merchants who process the raw products into food to be consumed by families within the region. This rudimentary food chain is rapidly becoming a thing of the past. Clearly such traditional systems do exist in parts of the world, but they are becoming scarce. More common in Europe and the Americas, and increasingly so in Asia, is the situation where a college educated farmer applies knowledge from scientific research, using seeds and chemicals supplied by sophisticated input supply industries and feeding carefully-monitored amounts of nutrients to deliberately bred animals. The farm product would then pass through several stages of processing, each a modern computer-controlled activity, and be sold in a market far from the point of origin. The industry may lack some of the glamour of the “high-tech” electronic sectors, but the technology used at various stages of the food chain it is as complex as the typical manufacturing process.

The image of agriculture is slowly changing. With the emergence of biotechnology, agriculture has its own legitimate “high tech” frontier. The first fruits of the extensive investments made in this area over the past dozen years are beginning to show up in markets. Leading the way have been herbicide-resistant and insect-resistant varieties of soybeans, cotton and corn. Similar varieties of wheat are not far behind. The uptake of these varieties by farmers has been very rapid. Cost reductions through easier weed and pest control save farmers money. In the US, 28 percent of the soybean crop is grown with modified seed, and this is expected to rise to 50 percent by the year 2000 (Schnittker, 1998). The second wave of biotech products is also reaching the commercial stage. This involves the improvement of the qualities of basic commodities, by changing their

chemical content. Leader in this race is high-oil corn, which has twice the oil content of the unmodified crop and thus a higher value as animal feed. Not far behind is corn with elevated lysine levels and soybeans with high oleic and sucrose content. Given the quantities of corn and soybean products fed to animals, such quality improvements are expected to be rapidly adopted.

Around the corner are more dramatic changes. It is becoming possible to change the fatty-acid profiles in soybeans, canola and other plants in ways which will have consumer benefits. Crops can also be modified to produce substances of value in pharmaceutical use, sometimes known as nutraceuticles and plantibodies. Some authors see the age of “prescription foods” coming, when carefully chosen dietary attributes would be bred into plants and individual consumers would be able to select the characteristics of the food to be consumed (Urban, 1998). Though such a clinical approach to the joyful necessity of eating may dismay some, the potential health benefits could be substantial. Nor will experimentation end with plants. Designer animals are also a reality, and again offer significant cost savings to farmers and better products for consumers. The question of consumer acceptance, of course, remains the large unknown. In a demand-driven sector one cannot get too far out ahead of consumer opinion.

b) Structural Change and Supply Chains

The structural changes in the sector in the past few years have been as far reaching as the adoption of new technology. Farmers were once considered the arch-typical small independent family business. Using family labor, supplemented by one or two workers, the farmer would make his own planting and harvest decisions and then offer the crop for sale in an open market. Now the farmer is often the manager of an enterprise essentially producing under contract in an agreed way to a product specification. The processor of the raw material might also have pre-sold the food product to the distribution chain or move it to another stage in the food preparation system. Increasingly, this chain of supply, from farm to retail store, is an integrated system

designed for quality control and accountability. These supply chains often cross national boundaries, making international trade a matter of internal concern for the chain.[2]

The phenomena of contract farming and of integrated supply chains are profoundly altering the structure of the industry. Both are strongly influenced by technology, and the trends are likely to continue as the biotech revolution develops. This is largely because the successful introduction of genetically improved varieties requires transparency and traceability in the supply chain. Both rely also on advances in information technology to allow the flow of information up and down the chain. Farmers are not averse to using computers. Satellite communications allow for even the most remote part of the chain to be in instant touch. The combination of easily accessed information and strict quality control made possible by the technical advances and structural change provide the basis for a consumer-driven global industry.

The most notable indication of these systemic changes is that the growth in trade in high value added products has been much greater than that in homogeneous bulk products. In 1985 trade in high value added products was barely one half of total agricultural trade. By the year 2000 it is estimated that this share will be around three-quarters of agricultural trade. Part of this is due to the effects of rising incomes, as consumers shift away from unprocessed foods. But much of the growth in high value added goods is due to increasing product differentiation as producers and food retailers attempt to convince consumers of the merits of particular geographical locations, recipes and brand names. Goods that were once considered "non-tradable" have found a place in foreign markets for ethnic and exotic foods. Product differentiation, segmentation of the market

---

[2] The emergence of supply chains appears to have been a by-product of the integration of the European food markets and the search by European food and retailing firms for expanded horizons in emerging markets in Latin America and Asia. US firms, including some farm-based corporations are also actively involved in such ventures. In addition to the commercial significance of these activities they have also spawned a new branch of agri-business management studies. Supply Chain Management, based on the firm intellectual foundations of transaction cost analysis and principal-agent contract theory, focuses on the benefits and hazards of managing these agri-food chains. (…) Contract farming has been common in some sectors for years, but now a significant part of the production of such commodities as pigs, poultry, beef, fruits and vegetables are grown under some form of contract negotiated before harvest. Increasingly, in the US at least, cereal and oilseed products are sold in advance, either to lock in particular prices (once the role of public policy through the loan rate) or to ensure a premium for a particular quality. Dairy production in both Europe and the US has long been sold under contracts tied to quotas and market allocations.

and quality attribution along with the growth of "non-traditional" trade is the key behind the growth of agricultural exports from many countries. Europe itself is enjoying a minor export boom in the same types of commodities, breaking out of the trap which for years had made it focus on a few undifferentiated products such as wheat, sugar, skimmed milk powder and butter which could only be sold with heavy subsidies.

In addition to the increase in international trade in food products one must note the rise in the sales of foreign affiliates in the food business. When an international fast food outlet in a foreign country sells a piece of chicken or a hamburger, the transaction is reinforcing the global nature of the food sector. Capital, technology, managerial know-how and service skills are transmitted to the host country even if all the supplies are purchased locally. More often than not, the outlet will have purchased some of the ingredients abroad, increasing the amount of trade. Even when this does not happen, trade can increase as a result of the changes in taste brought about as a result of the spread of "international" cuisine.[3]

(c) Policy Changes and the Food Supply Chain

The changes in technology and in industrial structure have been promoted by, and in turn have supported, shifts in public policy. Public policy has for many decades helped liberate agricultural production from the constraints of traditional knowledge, exemplified by the public commitment to agricultural education and research which is widespread in Europe and the United States. This body of knowledge, together with the adaptation of it to tropical and other environments, has become the bedrock of global agriculture. But a second set of policies has emerged which have allowed the food industry to integrate across borders. These policy changes are in the economic sphere, and range from the liberalization of capital markets in the world economy to the setting

[3] It appears that, in the case of food and agricultural products, investment is complementary to rather than a substitute for trade. Though some investment is obviously in place to "jump" a trade barrier, most seems to be part of the search for new markets, taking advantage of economies of scale by spreading managerial and financial assets over a wider market.

up of a rule-based system for agricultural trade in the GATT Uruguay Round Agreement on Agriculture.

In addition to the trade rules established in the Uruguay Round, other shifts have been taking place at the international level which are beginning to impact on the food system. One of these shifts relates to the domestic policies of the industrial countries. The form of market intervention that had spread to almost all developed countries since the 1930s was based on the notion that commodity markets did not in themselves provide an adequate and stable income to producers. Thus it fell to government to manipulate such markets through various means, including the taxing of imports, the subsidizing of exports or the intervention in the internal market. This market intervention began to break down in the early 1980s under the weight of modern technology that increased yields of the price-supported commodities.

Rapid changes in the agricultural sector have made the old style agricultural policy mechanisms less relevant to the needs of the industry. The support of raw commodity prices in the market through the withholding of supplies or the buying up of surpluses effectively breaks the link between producer and consumer. Though the market was getting more sophisticated and differentiated, the policy was still sending the message to farmers to “produce low quality goods for government stocks”. Just when supply chains were being set up for the provision of goods to supermarkets, farmers were being encouraged to take land out of production and live on payments for keeping farmland idle. Clearly the vast expense of farm policy was no longer helping farmers to meet the challenges of providing for modern consumers. The farmers that have prospered have been those that took advantage of the changed conditions and began to service the differentiated market. Those that continued to produce un-salable commodities for intervention buying have not done as well.

Agricultural trade policy developments have thus taken place against the backdrop of the slow but inevitable changes in domestic agricultural policy. Domestic reforms in the industrial countries have allowed countries to bring agriculture in to the trade policy reforms, generally involving the removal of non-tariff barriers and the setting of low fixed tariffs against imports.

Domestic policy reform is again at the top of the policy agenda. In the European Union, reform is complicated by issues of enlargement to include the countries of Central and Eastern Europe. But it remains in essence a search for better targeted assistance to specific types of rural family, and more support for farming which is recognized as benefiting the environment, all framed within a comprehensive policy for "rural development". These are "food-chain friendly" domestic policy developments.

II. The Trade Policy Environment for the Global Food System

It was possible to maintain the traditional farming systems by a combination of basic research into yield-increasing technology, guaranteed markets for undifferentiated raw materials, fixed and profitable margins for processing activities which tended to locate near the production base, and various parastatal marketing agencies in case markets were oversupplied. Trade policy acted as handmaiden to these domestic policies. Tariffs and non-tariff barriers were used by governments as instruments to protect domestic markets from competition from abroad. Globalization brings new challenges and requires new policy approaches. Moreover the old policies often get in the way of those that are needed for the new food system. Nowhere is that more clearly seen than in the trade policies.

The main focus of international trade policy has traditionally been the conditions of **access into markets**. As globalization has progressed so the scope of trade rules has expanded. The new trade policy environment has a number of different elements. These include the **health, safety and environmental rules** that ensure quality and acceptability in discriminating markets; codes for the treatment of **foreign direct investment**; the regulation of **conditions of competition**; and the codification of the rights granted to the owners of **intellectual property**. These various facets of trade policy are illustrated in the Table, and their interface with the global food system is discussed below.

Table: Interface between Trade Policy and Elements of the Food Supply Chain

	Inputs	*Farming*	*Processing*	*Distribution*	*Consumer*
Trade Rules for Market Access		Trade Liberalization, Domestic Policy Reform	Search for low-cost supplies	Intra-firm trade in supply chains	Food Security
Health, Safety and Environmental Standards	Potential damage from transgenic processes	Environmental hazards of chemical farming		Hazard control and accountability in supply chain	Food Safety, Confidence in Standards Agencies, Role of Science
Investment Codes			Globalization of processing activities	Investment in supply chain	
Competition Regulations	Monopoly control of genetic material			Concentration of control over distribution (public and private)	
Intellectual Property Rights	Patents on biotechnology practices and materials			Geographical labels	

(a) Trade Rules

The core of any global industry is the ability to ship raw materials and products from one country to another as determined by consumer tastes and production costs. Once the industry is established at a global level, trade impediments caused by government policies become irritants to the system. What previously appeared to be a reasonable device for sheltering a rural family from the shocks of a hostile world market becomes seen as an obstacle to the rational development of the food system. Sometime in the mid 1980s governments in the OECD countries shifted their focus from farm income maintenance to food system development. This change was the key to enacting new trade rules that limited what governments could do to protect farmers in their own markets.

The successful completion of the Uruguay Round of trade negotiations marked an historic turning point in the reform of the agricultural trade system. The Uruguay Round Agreement on Agriculture (URAA) puts in place a set of rules which have gone some way toward improving the conditions under which agricultural goods are traded (Josling, Tangermann and Warley, 1997; IATRC, 1996). Bound tariffs have replaced non-tariff import measures, export subsidies have been curbed and domestic programs have been codified on the basis of their potential to distort trade. The establishment of such rules is the foundation of the global food chain.

The Agreement did little, however, to liberalize trade in agricultural products and improve market access. The majority of export subsidies still exist, and are in effect legitimized. The domestic farm policies of the major industrial countries have been required to make only relatively minor changes to bring them into conformity with the Agreement (IATRC, 1997). The process of "tariffication" has produced a number of tariffs bound at such high levels that it is difficult to see any profitable trade developing in their shadow. Where tariff rate quotas were negotiated to prize open these markets a little, the prospect of quota rents has led governments to agree to a network of bilateral deals which guarantee continued state involvement in trade for years to come. This has in turn exacerbated the problem of competition between state trading enterprises and the private trade. But the Uruguay Round itself paved the way for the next step. In late 1999 another round of multilateral talks will begin to complete the job started by the Uruguay Round (Josling, 1998).

Agricultural trade policy used to be dominated by farm groups and those arguing for more protection. One major shift in the 1980s was the involvement in trade talks of multinational food firms in the negotiations. This trend is likely to continue. First, the processing sector has a strong incentive to look for low-cost supplies. There is therefore the incentive to lobby government for the ability to import those supplies from world markets so as to remain competitive with firms located in countries where prices are lower. In many cases the low cost food suppliers are in the Americas, as are the main competitors in the global market place. Hence one would expect continued pressure from the food industry to allow raw material prices to fall to roughly US

levels over a period of years. Given the disinclination of governments to support these prices indefinitely, the inclination of the food industry will come to dominate in the end.

The tendency for the international food companies to search for low-cost supplies will be reinforced by the pressure from those firms that are already operating in several countries. For these firms, including those in the distribution and retailing business, international trade is often intra-firm trade. Any restriction on the movement of food items within the firm will tend to cause problems for the firm, and hence will be resisted.[4] But just as intra-firm movement of goods can be thwarted by government regulations so too can the contractual obligations of firms that have come together in other forms of alliance. One would expect that those firms which have been pioneering supply chains, linking producers in one country to wholesale and retail outlets in another, would also find government restrictions on trade irksome. Thus one might expect these supply chains to add their voice to pressures for trade liberalization.

(b) Health Safety and Environmental Standards

Though the trade system is being driven largely by those that seek access to wider markets and less expensive sources of raw material, there is another set of trade policy issues that have emerged as the process of globalization has proceeded. As the traditional trade barriers fall so other trade impediments become visible, like rocks in an ebbing tide. Many of these are a result of different regulatory regimes that developed at the time of autarchic national markets. The global economy cannot thrive with significantly different regulations in different countries. On the other hand, legitimate differences may exist among the objectives of regulation and among the sensitivities of national markets. The resolution of this dilemma is still being worked out in the world of trade policy. The agri-food system happens to be at the center of the controversy and has a lot at stake in the outcome.

---

[4] When European food firms owned production facilities in overseas countries, as a part of the colonial food system, duties and other restrictions were rare. The spread of European food firms into retailing has sometimes been called "Supermercado colonialism".

One particularly contentious issue that is directly relevant to the global agri-food system is the extent to which the use of genetically modified organisms (GMOs) is harmful to the environment or indeed to consumer health. Concerns with transgenic crops, such as those with herbicide resistance built into their genetic make-up, have centered around the possibility of unpredictable crosses with wild species and hence the development of herbicide resistant weeds. Clearly there needs to be vigilance to avoid the undesirable side-effects of otherwise useful technology. Other fears are that consumers that suffer from plant-related allergies may react to the presence of genes from those plants to which they are allergic (IPC, 1997). The most commonly recommended remedy for preventing such problems is adequate labeling, but even this creates problems for public policy.

The rise of environmental consciousness in OECD countries, together with increasing concern over food safety and the conditions under which livestock is reared, is also having a significant impact on the farming part of the food chain. These concerns began to impinge on agricultural policies primarily through the presumed link between intensive, chemically-dependent farming practices and the cleanliness of water supplies, the health of the food supply and the habitat for wildlife. Thus the domestic farm policies came under pressure to change in a way that would reduce the conflict between chemical farming and a safe environment. This pressure is still increasing in most of the OECD countries to modify farm policies to incorporate more directly the needs of the environment in farming decisions (Runge, 1998).

More recently this debate has taken a new twist. Politicians have discovered the multifunctionality of agriculture, the fact that the sector provides for much more than just the provision of agricultural commodities for the food chain. Two interpretations are placed on this discovery. On one interpretation the existence of multifunctionality gives a constructive guide to the solution to some of the problems of rural areas. To expect the viability of rural areas to be held up solely through the maintenance of a high price for wheat, milk or olive oil is to ignore the reality of the marketplace. Payments unrelated to commodity prices have to be made in order to ensure the maintenance of the countryside or the preservation of wildlife, hedgerows and native plants. There is no intrinsic conflict with global agri-food chains, in fact the policy directions are

complementary. The only problem comes in determining the form of such payments. The less benign form of the argument uses the existence of multifunctionality to make the case for continued isolation of the agriculture in particular regions through the use of trade policy. Such protection is justified on the grounds that the commodities produced in such a multifunctional system cannot be expected to compete with the output from other (unifunctional) areas of the world.[5] This variant is quite at odds with the globalization of agriculture and food, and seems somewhat retrospective. The struggle between these two positions will arise in the next round of negotiations on agricultural trade liberalization, in particular on the matter of the definition of the "green box" of acceptable domestic policy instruments.

With the growing internationalization of the food industry, new products emerging from the mastery of biotechnology, and the firming up of trade rules for agricultural products, trade conflicts over food safety issues are becoming more common. Most of these conflicts arise from differences in regulations which are imposed on food trade for the ostensible reason of protecting plant, animal or human health from disease or other affliction as a result of trade. The fear is often expressed that such regulations do little more than protect the livelihood of local producers who would otherwise be unable to compete. As non-tariff barriers to trade, the spotlight has been turned on the elimination of such back-door protective measures. The Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement), adopted as part of the Uruguay Round package, attempted to make it easier to distinguish between legitimate (science based) regulations and those which appear to be protecting producer interests. It in effect also rules out those regulations which reflect irrational consumer fears not based on scientific evidence (Roberts, 1998).

There has for a long time been a troublesome difference of opinion between those who see the trade system as introducing problems for the consumer, through the possible importation of goods from countries with different (and presumably lower) safety standards, and those that

[5] This is sometimes known as perpetuating the "European Farming Model", and avoiding the "Kansasification" of EU agriculture.

view such consumer resistance as a disguised form of protectionism, preventing imports on dubious grounds in order to favor domestic producers. But the problem is made worse if the consumer reaction is not based on "objective" concerns about quality of the product itself but on "subjective" views about how the product was made or transported. The question of the moment seems to revolve around a simple but fundamental choice: should one take into account consumer sentiment (as opposed to hard scientific evidence) when setting import (and domestic) standards.[6]

The two sides of the argument are clear. From the point of view of trade policy, any rule-based system has to guard against implementation that reacts to the headlines of the day and pressure from those groups looking to manipulate consumer opinion for other purposes. The SPS agreement appeared to put in place the principle that scientific evidence is required to justify a stricter standard than those in international use. From the point of view of politicians, however, consumer confidence and voter sentiment are not unconnected. It may not be wise to appear to be bowing to a ruling from a panel of trade policy experts (themselves possibly swayed by evidence from vested interests) in the face of adverse public opinion. Politicians are the servants of the public and not answerable to trade dispute panels.

The problem will eventually be resolved by ensuring that each national regulatory body has the confidence of consumers and the public and is neither under the influence of self-interested local producers nor captured by political movements that have agendas broader than public safety and information. These national bodies should themselves be involved in the dissemination of information reflecting scientific consensus. They should also assist in the construction of international standards that they can recommend to governments to accept. They should work with the industry to devise appropriate labeling systems that would give consumers the choice when controversy surrounds the properties and consequences of particular foods (Bureau, 1997). In other words, if the national regulatory agencies adopted a science-based approach, the problem

[6] The SPS Agreement already allows countries to take account market impacts in the case of animal and plant health.

would not show up as a trade friction. This is only likely to happen if those bodies themselves are free of direct influence from vested interests (on both sides of the issue) and have their independence guaranteed by governments.[7]

The reaction of the authorities to these consumer concerns has been to review food safety policy "from plough to plate" (EU Commission, 1997, FDA, 1997, Ministry of Agriculture, 1998). One aspect of this comprehensive approach is the widespread adoption of the concept of Hazard Analysis of Critical Control Points (HACCP). This approach is based on the identification of those stages in the food chain where contamination can take place and the focus of remedial controls on those points. Supply chains of a contractual nature have to develop their own type of HACCP procedure as an overall part of quality control.

Though public agencies must always take the lead in protecting health and safety, private standards also have an important place in the global system of commerce. Firms selling differentiated goods in overseas markets rely on repeat business. No longer can producers hide behind the anonymity of international trade. Once again, supply chains have pioneered the way by developing systems of accountability of producers and traceability of supply. Basically, in the modern food chain, many consumers like to know where foods come from. This means that they are willing to pay for some amount of information and will remember if they are dissatisfied. Supply chains can cater to those consumers as well as those less concerned about the origins of their food ingredients.

(c) Investment Codes

The global system, whether in agri-food products or in automobiles or computers, depends on investment. Capital accumulated in one country is invested in others, to the mutual advantage of both economies. But global investment also requires rules, and these are not yet fully developed. Several issues are at stake in the area of investment. One is the assurance by the investor that the

[7] Of course how the participants in these national "FDA-type" agencies are chosen will be important in determining whether they will really solve the dilemma.

assets owned by foreigners will not be expropriated, that earnings from investments can be taken out of the country, and that there will not be undue restrictions (such as requirements to use domestic inputs or to export a share of outputs) on the foreign operation. Firms have alternatives, and countries that maintain policies that are not investment-friendly may lose the opportunity to participate in the global division of labor. The global reach of food retailing and processing similarly requires the assurance that facilities abroad will not be expropriated and that undue restrictions are not placed on the repatriation of earnings. Supply chains also need the environment of predictability that comes from an open investment policy.

Some start to the forging of an investment policy was made in the Uruguay Round. More recently, the OECD countries have been trying to work out a Multilateral Agreement on Investment (MAI). At present the MAI is moribund, a victim of both bad publicity and unfavorable reactions from the non-OECD countries. But the EU has promised to raise the issue again for inclusion in the next Round of trade talks. The continued growth of the global food industry depends to an extent on the satisfactory resolution of this issue.

(d) Competition Regulations

A global trade system needs global competition laws. This apparently uncontroversial conclusion has had little effect so far on trade policy discussions. Whilst some are calling for full scale negotiations on international competition policy, others maintain that the most you can do is to make sure that each trading country has its own anti-trust policy in place. But the minimalist approach is unlikely to be satisfactory by itself. The best policy for curbing misuse of market power in any one country is an open trade system. But the very openness of the trade system allows large firms to develop market power in the world market. Global competition policy should be more about market power in world markets than about enforcing competition policy in each national market.

An emerging competition issue is the concentration of market power in the agri-food distribution chain. This has two separate but related aspects. One is the use of market power by public agencies or by parastatals given the ability to act in a restrictive way. This issue of “state

trading" is coming to the fore in trade talks. At one extreme it represents a concern among those countries which do not practice state trading that those that do can gain an "unfair" advantage through hidden export subsidies and import barriers. At the other extreme are fundamental systemic issues such the behavior of the state trading entities in China and indeed the extent to which the government controls, albeit indirectly, all trade decisions in that country. As a major player in agricultural trade markets, the terms under which China should be allowed into the World Trade Organization (WTO) will have a significant impact on the rules that can be set for other countries with parastatal agencies active in the market.

The issue of competition also is at the heart of another potential problem facing the agri-food system. Concentration of economic power is not confined to public agencies given monopoly rights in importing or exporting. Private firms can have significant market power to influence prices. Should there be any rules relating to the use of market power in international markets? What are the dangers that the rules are trying to prevent? Is the problem the withholding of supplies to raise the price of commodities? This seems relatively unlikely in the case of basic foods, but could happen with vital supply components. Or is the problem one of dumping and market disruption? The incorporation of anti-dumping rules in a set of more comprehensive competition regulations is the object of many trade economists. Whatever is agreed will have significant implications for global agriculture.

(e) Intellectual Property

Among the newer aspects of international trade policy is the setting up of rules regarding intellectual property. The emergence of international rules predates the GATT Uruguay Round, with the establishment of the World Intellectual Property Organization (WIPO), but there was insufficient incentive for countries without intellectual property protection to join. But the breakthrough came in the Uruguay Round when the negotiating countries signed the Trade Related Intellectual Property (TRIPS) agreement. TRIPS brought a degree of harmonization to the disparate treatment of patents, copyrights and trade-marks in various trading countries.

One important area where the rules on intellectual property are significant is in the input industries. The seed sector, in particular, has already made use of such international facilities to try to reclaim some revenue from farmers. The ability to patent plant varieties has been controversial topic for some years. Now one has the possibility to patent particular manipulations of genetic material such as is at the root of biotechnology. This would give a much greater chance for companies to license new varieties to others to plant.[8] This is of concern among some who fear that the highly concentrated seed industry could extract considerable profits from farmers world wide, as they would have to pay from season to season for planting even their own retained seed. Of course one could foresee some difficulty in enforcing such laws, but firms could in principle use so-called "terminator" genes that will prevent a plant from reproducing.[9]

The other key aspect of intellectual property rights that impinges on the global agri-food system is that of the “appellations” or guarantees of geographical origins. It is widely held that such geographical labels help the consumer to pick a brand on which they can rely. It is also possible that the same useful information can have the effect of inhibiting competition and earning scarcity rents for the holder of the patent. But, regardless of the merits of particular types of labeling, some form of brand identification is an important part the new consumer-driven food system.

III. Implications for the Future

The implications of the emergence of a technically sophisticated, global agricultural sector are profound. Some are in the field of education and training. The requirements for entrants into the industry will be increasingly demanding. Farm managers need adequate knowledge of plant chemistry and animal biology. But in addition they need business skills, including accountancy

[8] Though plant breeders rights have been recognized since the 1930s in the US, it has proved impossible to patent improvements that come through selection in the field (landrace crosses) and not easy to see the justification for doing so. But when the improvement comes in the laboratory, as a result of using particular genetic material in a biotech process, the case for restricting unlicensed use increases.

and planning. Rural high-schools need to emphasize science and mathematics and turn out students that can continue to university or college level. Such an education has always been desirable: today it is indispensable for anyone contemplating a position of responsibility within the industry.

There is however another area of public education that may need some attention. The public understanding of modern agricultural and food technology is not profound, and this may indirectly threaten continued public support for the industry. Will the public go along with the rapidly expanding field of bio-technology? “Designer plants” have already run afoul of environmental and consumer groups: what will be the reaction to “designer animals”? What is the role of the government in such debates? On the one hand the government should not dictate to consumers their preferences: on the other hand there is an obligation to retain some degree of objectivity when it comes to informing consumers about health and other risks. For the government to be passive is as undesirable as if it merely "rubber-stamped" each fleeting concern of interest groups.

All these changes are in the direction of a more sophisticated agricultural industry aware that the future depends on satisfying a variety of consumer tastes and competing for the consumer dollar with other goods and services. More actors become involved in the political process, and the center of gravity will shift perceptibly away from the primary producer. Policy will become less “commodity” focussed as the emphasis switches to adding value to the raw material and marketing the final product. These changes are crucial to the future of agricultural trade policy. In a situation where the “market” is an administered price supported by public purchasing agencies, free trade poses a real threat. In a world where farmers produce for the market, improvement in access to overseas markets compensates in part for more competition on the domestic market. A freer agricultural market no longer means a collapse of prices and mass rural depression. Today it

---

[9] The other side of this coin is the possibility of the introduction of apomixis, the ability of plants to reproduce without seed. If this were to be feasible there would be some restraints on the ability of the seed companies to extract rents for the use of patented technology.

is more likely to spark rural entrepreneurship and healthy market development based on response to the changing food habits of middle-class consumers.

There is no indication that this process of shifting up the value-added chain is likely to slow down in the near future. The emerging science and practice of biotechnology holds enough tantalizing promise to excite the most jaded imagination. Indeed for many the key to feeding the world at a reasonable cost is to make full use of the new knowledge and skills in this area. The biotechnology industry is itself undergoing structural change, as large corporations search for the profitable products that will pass the scrutiny of regulators and not be rejected by the public.

As was indicated earlier, not all producers have become a part of the global food system. What is the obligation of governments toward such sectors of the industry? On the one hand the technology and structural changes put a premium on information and education. This tends to disadvantage producers in remote areas, those who are on the verge of retirement, and those where educational opportunities are absent. Clearly, parallel social and regional programs may be needed to prevent personal hardship in such cases. At another level, the new technology is actually liberating to many who would not have been able to accumulate the capital and land to make a profit producing undifferentiated commodities. There is no barrier to entrepreneurship. Obviously some proportion of farmers will fail in the face of competition: that is the price for success. But social safety nets are designed to catch those that fall off the economic juggernaut, and are preferable to running a more intrusive rural welfare system through commodity price supports.

IV. Conclusion

The new “global” food sector that has emerged in the past two decades has specific policy needs that are different from that of the nationally-based system that preceded it. Over time, governments should also be encouraged to remove quantitative production and marketing controls, thus freeing up the natural entrepreneurship of agricultural producers. Above all, global agriculture requires a trade system that allows the outsourcing of supplies without undue taxation

and quantitative restriction, and rewards the search for markets without impediments unrelated to quality controls.

These market access policies have to be supplemented by a regulatory regime that is predictable and equitable. The hope for the future therefore rests with the establishment of regulatory bodies that have the confidence of the domestic consumer and the environmentalist. In some countries these bodies may be cautious, and not go far beyond generally-accepted views about food risks. Others will take a less cautious approach, and allow more market innovation. But to the extent that the consumers are sophisticated and trusting, either approach should make communication between regulator, consumer and the industry more productive than at present.

The improvement of the trade system includes removing the arbitrariness of export subsidies, curbing the unfair competition from parastatal firms and the reducing the widespread availability of government-supported export credits. It also implies placing restrictions on the ability of governments to restrict exports just to keep low the price on domestic markets. And it requires rules regarding competition, investment and intellectual property that encourage the positive aspects of the globalization process whilst avoiding the misuse of economic power for the perpetuation of economic rents at the expense of basic equity. The Uruguay Round made a bold start in that direction. The continuation of the talks in the Round that is about to begin in November 1999 is essential for the continuation of this process.

Bibliography

Beers, George, Adrie Beulens and Jan van Dalen (1998) Chain Science as an Emerging Discipline, paper presented to the Third International Conference on Chain Management, Wageningen, Netherlands, May 28-29

Bureau, Jean-Christophe, Stephan Marette and Alessandra Schiavina, Non-Tariff Trade Barriers and Consumers' Information: The Case of EU-US Trade Disputes on Food Products, Institut National de la Recherche Agronomique, Department d'Economie, Unité de Grignon, July, 1997.

Crutchfield, Steve, Jean Buzby, Tanya Roberts, Michael Ollinger and C.-T. Jordan Lin, An Economic Assessment of Food Safety Regulations: The New Approach to Meat and Poultry Inspection, United States Department of Agriculture, Economic Research Service Report, Number 755, July, 1997.

European Commission, Communication from the Commission: Consumer Health and Food Safety, April 30, 1997.

European Commission, The General Principles of Food Law in the European Union, Commission Green Paper, COM(97) 176.

European Commission, The Commission Proposes Rules for the Labeling of Food Made from Genetically Modified Soya Beans and Maize, Brussels, December 3, 1997.

Food and Drug Administration, *et al,* Food Safety from Farm to Table: a National Food Safety Initiative, Report to the President, May, 1997.

Henderson, Dennis R., Charles R. Handy and Steven A. Neff (eds.) (1996) Globalization of the Processed Foods Market, USDA/ERS, Agricultural Economic Report No. 742

Hughes, David (ed.) (1993) Breaking with Tradition: Building Partnerships and Alliances in the European Food Industry, Wye College Press

International Agricultural Trade Research Consortium (1994), "The Uruguay Round Agreement on Agriculture: An Evaluation", IATRC Commissioned Paper Number 9, July.

International Agricultural Trade Research Consortium (1997) "Implementation of the Uruguay Round Agreement on Agriculture and Issues for the Next Round of Agricultural Negotiations". IATRC Commissioned Paper No. 12, November.

International Policy Council (1998) "Building a Global Open Food System", IPC Position Paper, August

Josling, Tim, Stefan Tangermann and T.K.Warley, Agriculture in the GATT, Macmillan, Houndmills, 1996

Josling, Tim (1998), Agricultural Trade Policy: Completing the Reform, Institute for International Economics, Washington D.C., April.

Kalaitzandonakes, Nicholas and Richard Maltsbarger (1998) "Biotechnology and Identity-Preserved Supply Chains", Choices, Fourth Quarter

Marsh, John (1998) "The Economics of New Technology" in Global Agribusiness, Premier Issue, December

Minister Of Agriculture, Fisheries and Food, The Food Standards Agency: A Force for Change, The Stationery Office, CM 3830. January, 1998.

Roberts, Donna, Tim Josling and David Orden, Technical Barriers to Trade: An Analytic Framework, United States Department of Agriculture, Agricultural Economic Report, November, 1997.

Roberts, Donna, The WTO SPS Agreement: Overview and Implications for Animal Health and Animal Product Import Decision Making, Paper Presented at USDA Workshop, Riverdale, MD, March 24-25, 1998

Runge, C. Ford (1998) "Global Trade and Sustainability", Choices, Fourth Quarter

Schnittker, John A. (1998) “An Agricultural Revolution with Implications for Sustainability", Choices, Fourth Quarter

United States Department Of Agriculture, The Food Safety Enforcement Enhancement Act of 1997, Washington, 1997.

Urban, Thomas N., “Beyond Industrialization: The Prescription Food System”, Choices, Fourth Quarter

World Trade Organization, EC Measures Concerning Meat and Meat Products (Hormones) Complaint by the Unites States, WT/DS26/R/USA, August 18, 1997. (Report of the Panel)

World Trade Organization, EC Measures Concerning Meat and Meat Products (Hormones), WT/DS26/AB/R and WT/DS48/AB/R, 16 January,1998. (Report of the Appellate Body, AB-1997-4)

World Trade Organization, The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts, WTO, Geneva, 1995

Chapter II: Trends in Agri-markets and Trade Policy.

by

Tim Josling

Professor and Senior Fellow

Institute for International Studies

Stanford University

This paper was prepared as a contribution to the book “Plants and Politics”, produced on the occasion of the centenary of the Dutch Plant Protection Service., and for presentation at the Conference on “International Plant Protection Policy and Market Development”, November 1999