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38. Can the WTO/GATT Agreements on Sanitary and Phyto-Sanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology?

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Chapter 38

Can the WTO/GATT Agreements on Sanitary ad Phyto-Sanitary Measures and Technical Barriers to Trade be Renegotiated to Accommodate Agricultural Biotechnology?

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Introduction

The ability to transfer genetic material between species in ways which cannot be achieved through natural reproduction - transgenics - probably represents the most significant technological change of the modern scientific era. This is because the technology has the potential to greatly increase society's control over the biological factors which affect human existence. Biotechnology has potential applications which can improve human health, increase the productivity of renewable natural resources and ease the conflicts that arise from attempting to simultaneously satisfy material wants and preserve the natural environment. As with any major technological change, however, biotechnology brings with it a number of unknowns. Along with benefits to human health there may also be increased health risks; the improvements to the productivity of renewable natural resources may not be costless and new threats may be posed to the environment. Further, new technologies and the changes they bring are often unsettling to many individuals - one has only to remember the often virulent resistance in some quarters to the first trains, automobiles, computers and, more recently, the internet. In the case of biotechnology, the change is so fundamental that it has raised complex ethical issues. It takes time for new technologies to be accepted, or rejected, and for regulatory regimes to be put in place. Individual nation states are the final arbiters of how new technologies are to be regulated within their jurisdictions. As neither regulatory procedures nor the eventual regulations have to be internationally harmonised, both the pace at which regulations are established and the regulatory regimes put in place will differ among countries. In an increasingly global marketplace, the variation in regulatory regimes may inhibit international commerce.

Under the General Agreement on Tariffs and Trade (GATT) administered by the World Trade Organisation (WTO), regulations imposed by governments which inhibit the free flow of international commerce are considered non-tariff barriers to trade. One of the responsibilities which has been mandated to the WTO is determining when non-tariff barriers to trade are legitimate and when they are being used capriciously to protect domestic vested interests.

A major international dispute is brewing over the issue of whether the regulatory regimes being put in place to govern Genetically Modified Foods (GMFs) and other transgenic organisms of agricultural significance are capricious barriers to trade. The

current focal point of the dispute is the European Union (EU) but one suspects that many countries are watching the evolving situation closely to see what precedents arise. The relatively new institutions of the WTO may be severely tested over the issue of GMFs and exceedingly acrimonious debates regarding biotechnology can be anticipated at the new round of WTO agricultural negotiations mandated to begin in 1999. This paper examines the capacity of the existing institutions of the WTO to deal effectively with the issue of GMFs, whether the institutions need to be reformed or whether a new set of WTO institutions may be required to deal with the broader issues of biotechnology.

The WTO/GATT

The WTO/GATT is not an international legal system. The WTO and the provisions of the agreements it administers are voluntarily agreed to by member nations and can be voluntarily withdrawn from. It has always been recognised that for the WTO to be politically acceptable to domestic politicians, there has to be provisions which allow governments to ignore their WTO commitments when domestic pressure for protection becomes politically unmanageable (Kerr and Perdikis, 1995). This is to prevent countries from having to withdraw from the WTO over individual trade disputes and, hence, increases the survivability of the organisation. The initial formulation and historical development of the GATT and subsequently the WTO can, in part, be seen as an attempt to impose and then raise the political costs for governments choosing to ignore their WTO commitments.

The central principles of the WTO - compensation or accepted retaliation, non-discrimination and transparency - act jointly to maximise the costs which can be imposed on a country which chooses to ignore its commitments. Non discrimination means that if a country feels that it must, for example, raise tariffs in violation of its WTO commitments to protect a domestic industry, it is not allowed to raise them against one (or a few) members of the WTO. It must raise them against all members. This prevents targeting weak trading partners. If a country breaks its WTO commitments, then it may choose to pay compensation to all trading partners whose trade is impaired. If a country chooses not to pay compensation then all trading partners whose trade is impaired have the right to impose retaliatory border measures on the exports of the offending country up to the value of trade lost. The offending country accepts this retaliation meaning it has agreed not to re-retaliate thus preventing *beggar thy neighbour* trade wars. It is expected that the threat of retaliation from all affected WTO members represents a sufficient cost to prevent governments ignoring their commitments. Rarely have countries persisted in policies which contravene their WTO commitments and borne the costs arising from retaliation. When retaliation is observed it probably signals that there is no longer a consensus on the provisions of the international agreement governing the commitment in question and renegotiation will be requested (Kerr, 1999a).

The GATT provides the international framework under which trade in goods is conducted. Central to the Agreement is the desire to limit the ability of domestic vested interests to obtain protection against imports. Historically, the only protectionist interests

recognised by the GATT are domestic producers of goods. Originally, as its name suggests, the GATT's primarily focus was the control and reduction of tariffs. The GATT had considerable success in reducing or eliminating tariffs. This success, however, had two results. First, the reduction or elimination of formal border measures meant that a myriad of domestic regulations which had been put in place behind high tariffs increasingly began to inhibit trade flows. These regulations had not been put in place with any protectionist intent. Second, domestic politicians faced with GATT limits on the imposition of formal border measures - no new import quotas or tariffs and existing tariffs *bound* at levels agreed during GATT rounds - began looking for alternative means to inhibit trade. The original GATT dealt explicitly with only one non-tariff barrier - import quotas. In the case of food and related products, health, sanitary and phyto-sanitary regulations were seen as inhibiting trade - whether by accident or design. Technical barriers to trade were found in domestic regulation pertaining to, among others, consumer protection - labelling, safety specifications for products, etc.

While some progress in these areas was made in earlier GATT rounds, it was not until the Uruguay Round (1986-93) that significant progress in limiting the use of these non-tariff barriers was made. Further, the new WTO was mandated with a much more effective dispute settlement mechanism. The two agreements arising from the Uruguay Round which are central to the case of GMFs are the Agreement on Application of Sanitary and Phyto-sanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT).

Agreement on Sanitary and Phyto-sanitary Measures

The SPS must first be considered within the context of the intent of the WTO/GATT and not within the context of GMFs. The WTO/GATT, as currently constituted, is designed to inhibit the ability of politicians to provide protection to domestic producers. The SPS is consistent with that tradition. The concern addressed at the Uruguay Round negotiations was that regulations with a legitimate domestic purpose to protect the health and safety of human, animal and plant populations could also be used to provide protection for domestic producers of food (or other biologically based products) facing competition from imports. The negotiators attempted to establish a system based on objective measures - in this case the principle that the *best available scientific information* be the criteria used for establishing border measures. The intent was two-fold: (1) to force countries to provide generally accepted scientific evidence for the initiation and design of regulations and; (2) to move the criteria out of the political realm and into the realm of science. It was hoped that moving to science based criteria would prevent countries from capriciously promulgating regulations in response to producers lobbying for protection. In addition, the SPS states that the least costly means of achieving the desired level of safety be used. This was to prevent governments from putting in place scientifically sound regulations which were purposely cumbersome and/or costly for foreign firms to comply with as a means of providing protection to producers.

It was also recognised that safely is a relative rather than an absolute concept. Risk assessments were also mandated. Account was also taken of countries' unwillingness to equally accept the same level of risk, hence, they were each allowed to specify their own levels of risk. The need to prove that a risk exists was added to prevent scientifically sound but costly regulations which had no purpose other than the protection of producers. While countries were allowed to set their own levels of risk in their regulations, the levels set for imports had to be comparable with domestic regulations on the same (or similar) products. This prevented risk levels being set abnormally high for particular imports simply to provide protection to producers.

The framers of the SPS also recognised that there may not be a consensus on what constitutes *best available scientific information* and that WTO dispute panels were not the best venue to sort out what are complex scientific issues. Members of the WTO have committed to international co-operation in the design of food safety, sanitary and phytosanitary regulations. The WTO is not to be directly involved in this process, rather, existing international standards organisations are expected to take the lead in the process. Three international standards organisations have been explicitly singled out. These are: for food safety the Codex Alimentarius Commission; for animal health the International Office of Epizootics; and for plant health the Secretariate of the International Plant Protection Convention. These multilateral organisations remain largely the realm of individuals with professional or technical expertise. They develop standards, guidelines and other recommendations through long consensus building negotiations. Slow and careful deliberations are the hallmark of these organisations (Kerr, 1999b).

Given this outline of the SPS structure, it is easy to see the type of problem the SPS was designed to resolve. A government of a member state of the WTO is faced with intense political lobbying from producers of a food product - e.g. beef. There is increasing competition from imports but not at levels sufficiently dramatic to qualify as a surge under the WTO definition. Thus, the imposition of standard border measures such as tariffs or import quotas is not a political option unless the costs associated with retaliation can be politically justified. An enterprising bureaucrat brings forth as an alternative a change in import regulations which will impose high costs on export suppliers. The regulation is justified in the name of improving food safety. Protection is achieved. If the country has accepted an international food safety standard agreed at the Codex, and the new regulation exceeds that standard, then an exporters' challenge would be upheld. If no international standard had been agreed, the exporters could demand to be provided with the scientific justification for the new regulation. If the justification was not forthcoming or considered contentious, a challenge could be mounted at the WTO and a disputes panel could judge on the validity of the underlying science. Further, the challenger could ask for information regarding the risk assessment undertaken which could then be compared to the importer's domestic standards or standards for other products. While there can be arguments about science and risk at the margin, the SPS should function sufficiently well to prevent the capricious imposition of measures meant to protect producers. Note, however, the case described above is very different from the GMF situation where the technology is new and scientific information is scarce, where

the situation is evolving rapidly and where the motivation does not appear to be the protection of producers.

The SPS also allows countries to put in place domestic regulations and trade measures temporarily when they feel that sufficient evidence does not exist for a definitive assessment to be made. The imposing country is expected to seek out information to clarify the issue (Roberts, 1998). It should be noted that this evidence should relate to normal food safety concerns and animal or plant health considerations. In other words, temporary is taken to mean a relatively short time span rather than a long term process of information gathering such as that which typifies the licensing process for new drugs.

Agreement on Technical Barriers to Trade

The TBT is also designed to protect exporters from the capricious use of regulatory barriers by politicians in importing countries seeking to find a means to extend a measure of protection to domestic producers. It is explicitly stated in the TBT that the cost of implementing the standard imposed on the exporter must be proportional to the purpose of the standard. This means that standards imposed in the case of, for example, food labelling must not be unduly onerous relative to the benefits consumers receive from labelling (Kerr 1999c). As with the SPS, the clear intent is to prevent governments from imposing high cost regulatory regimes on importers which do not provide commensurate benefits to consumers - the focus is clearly on the effect those regulations might have in protecting producers.

Misapplication of WTO Rules

Limiting capricious protection for domestic producers is the central focus of the WTO, including the SPS and TBT. The WTO/GATT takes no account of the possibility that other interest groups might also wish protection from imports. In the case of GMFs and some other recent issues, it may be that new interests groups - specifically consumers (and environmentalists) may also be seeking protection from imports. Given the current structure of the WTO/GATT, governments have no legitimate means to respond to consumer desires for protection from imports as they explicitly do in responding (even if the cost is high) to protectionist pressure from producers. Hence, governments have been forced to attempt to find ways of extending protection to consumers through mechanisms which have a producer focus. The result has been, in a least one case, predictable - an untenable political result for the imposing country and an apparent breakdown of the WTO system.

The EU-US and EU-Canada beef hormone cases points to the dangers which surround the necessity of using producer-oriented rules to respond to consumers' desire for protection. Assume for the moment that the EU hormone ban is a genuine response to consumer concerns - a view given little credence in Canada and the US. With no

legitimate means to respond to consumers' concerns, the EU was forced to attempt to justify its regulations under the SPS criteria. The WTO panels consistently rejected the evidence which the EU attempted to use to justify its regulations under the SPS. Specifically, the panel found that: (1) the ban was not based on a risk assessment; (2) the ban was not based on existing international standards; (3) the EU had not presented evidence that constituted a scientific justification of the ban which the EU claimed resulted in a higher level of protection than that provided by international standards; and (4) the EU ban on beef produced with hormones provided a level of protection that arbitrarily or unjustifiably varied from the level of protection provided by other EU measures (Roberts, 1999). This ruling suggests that the SPS is working as it should - preventing protection for producers. Unfortunately, the primary group asking for protection was consumers. With no other option, the EU used every possible delaying technique to stave off having to open up its market to imports of beef treated with hormones. In the process, it turned the appeal/compliance process into somewhat of a travesty and reduced the reputation of the new disputes settlement institutions. In the end, the EU decided to defy the WTO and accept retaliation. As suggested above, this can be interpreted as a breakdown in the political compromise which underpins the WTO system and indicates that there is a need for new negotiations.

The beef hormone case is a relatively isolated incident in the history of the WTO/GATT. The issue of GMFs, however, is not likely to be a single event, but the precipitator of a spate of disputes (Kerr, 1999b). Hence, the issue of whether the desire for protection is consumer driven, particularly in the EU at the present time, needs to be explored in greater depth.

One additional complication arises which will tend to confuse the issue of GMFs. Biotechnology is an improvement in technical efficiency. Hence, it will confer a cost advantage to those firms which are allowed to use GMFs relative to those who are not. As a result, an exporting firm in a country which has approved the use of a transgenic product will always perceive that trade measures put in place to limit market access for their product in countries where the transgenic product has not been approved will provide existing firms in the non-approving country with protection. They will be correct in their perception. Hence, they are likely to lobby their government for the case to be taken to the WTO. An exporter, which operates in a regulatory regime where the transgenic product is designated as safe, is bound to perceive foreign regulations as capricious. Thus, the improved technological efficiency embodied in transgenic products has a built-in propensity to lead to disputes when producers are the only recognised source of protectionist pressure. This *inconvenient* convergence of consumer and producer protectionist interests was certainly present in the beef hormone case (although the issue may have had more to do with the Commission's need to reduce the cost of its beef regime than directly responding to producer protectionist pressure). The situation led to a misperception among North American producers, governments and the wider public regarding the primary motive for protection in the EU.

The Demand for Protection from GMFs

Evidence of Consumer Concerns

There is mounting evidence that a considerable segment of the consuming public in the EU is unsettled by the arrival of GMFs. They have been described as *Frankenstein* foods by the chief executive of a major supermarket chain and heavily criticised by opinion makers including Prince Charles. The sensational headlines reflect a widespread consumer ground swell in favour of a careful approach to licensing and protection from imports containing GMFs. The result of consumer opinion polls and the reaction of consumer organisations around Europe consistently point to a genuine fear among European consumers. For example, a MORI (UK) poll conducted in June 1998 for the Genetic Engineering Group found that 77 per cent of the public believed there should be a ban on growing genetically modified crops and food. Further 61 per cent did not want to eat GMFs (GeneWatch 1999). In July 1998, the National Federation of Women's Institutes (265,000 members in 8,000 chapters across England and Wales and the Channel Islands) carried out a survey which showed that 98 per cent of women want more public debate on GMFs foods and 93 per cent want all GMFs labelled. A further survey by NOP in October 1998 showed that 58 per cent of UK shoppers wanted GMF free supermarkets. A Consumers' Association poll found that 92 per cent of UK consumers felt that all preserved derivatives of genetically modified ingredients, even those detected in the final product, should be clearly labelled on food packaging (*Which*, 1999).

Just prior to the election for the Scottish Parliament in May 1999, a MORI (Scotland) poll commissioned by Greenpeace showed that 59 per cent of those interviewed believed that the Scottish Parliament should ban the production and sale of food containing genetically modified ingredients. Out of those responding, 44 per cent said they would prefer to vote for candidates who would ban GMFs in Scotland. Sixty nine per cent said they believed that increased support should be given to organic farming so that it can develop as an alternative to GMFs.

In the Netherlands, where like the UK the government is largely pro-biotechnology, a wide spectrum of environmental and consumer interests, including the Dutch Association of Housewives, signed a petition requesting a moratorium on the cultivation (including field trials) and the importation of GM products and technologies. The Dutch Consumers Union, while endorsing a ban on cultivation, did not agree to other restrictions. International consultants Healey and Baker found that 61 per cent of Europe's shoppers were trying to avoid purchasing genetically modified products.

While the main target of consumer and environment groups' unease has been the US multinational Monsanto, it would be wrong to see this issue as simply anti US. Companies based in both the European Union and Switzerland are heavily involved in research into biotechnology, e.g. Hoechst, Zeneca, Novartis. The financial benefits of producing technologies that can deliver bigger crop yields, better nutritional content

requiring fewer herbicides and pesticides, etc. are not lost on European companies. That the US companies have a lead over their European rivals is undeniable. Currently 30 million hectares of GM seeds are sown world wide with the US accounting for the lion's share. Of the US total, 40 per cent is committed to soya beans and 20 per cent to corn (maize). In Europe, as yet, no GM crops are grown commercially. Field trials are being conducted in a number of EU countries but some countries, such as Austria, France and Greece, have real or de facto bans on production and imports. It could be argued that, as laggards in this technology, it would make sense for the EU to act strategically to restrict imports of these products. While aspects of EU policy could be construed in this way, on closer scrutiny, this does not appear to be the case. Governments and those closely associated with the biotechnology industry are cognisant that the legislation needed to calm consumers' fears may be harmful to the development of an industry with considerable long run potential. This is illustrated most clearly in the UK where government ministers and even the Prime Minister have tried to allay consumer fears and allow policy to be determined by science rather than emotion. It has been suggested cynically that the concerns of consumers have been *manufactured* to provide EU biotechnology firms the breathing space they need to bridge the technological lead enjoyed by the US. Such a strategy would be counterproductive, since altering negative consumer attitudes, once acquired, may be extremely difficult. Further, stringent regulations put in place to allay consumers' fears are likely to be difficult to remove. Neither governments' nor producers' vested interests have been pushing for protection.

The Approval Process

Member states must submit an authorisation request to the EU Commission for the planting and marketing of genetically modified seeds on behalf of companies. The application is studied by EU scientific committees and can be subject to a vote by member states' chief scientists. Currently eighteen genetically modified products have been provisionally approved for use but the last four have been rejected due to growing safety concerns.

The EU is trying to do two things simultaneously. It is trying to revise rules on the release of new genetically modified organisms into the environment to speed up the approval and adoption process while meeting consumer demands concerning food safety. Proposals to streamline the system will probably not be agreed until 2000. Wide differences remain between EU states and the European Parliament which share decision making power on environmental issues.

Denmark, Britain and France have called a partial halt to approvals for genetically modified organisms while Austria, Luxembourg and France have unilaterally banned new crop strains. These three countries plus Greece have declared an import and selling ban on corn (maize) and canola (rapeseed) despite their having received EU approval.

The national governments of the EU member states are not immune from consumer suspicion. In a recent opinion poll it was revealed that only 35 per cent of

people questioned trust the UK government to make biotechnology decisions on their behalf (The Independent 1999). Suspicions were heightened or raised when the House of Commons banned GMFs from its dining rooms in August 1998.

Industry and Government Responses to the GMF Problem

There have been a number of domestic responses to the strong consumer reaction to GMFs. With the announcement that the UK's leading supermarket chain, Tesco, would remove genetically modified ingredients from its own brand of products (April, 1999), all leading UK supermarket chains and retailers have adopted this as a common policy. All claim that their decision was based on commercial/consumer preferences.

In the UK, Unilever and Cadbury, major food manufacturers, have agreed to ban genetically modified inputs from their products. Unilever had already declared itself free of genetically modified products in both Sweden and Germany by 1997. Nestlé has also agreed to do away with using genetically modified ingredients, however, where it cannot provide that guarantee at present it will label the product clearly, thus allowing consumer choice.

The market for organic products, which are perceived as being non-genetically modified, has grown in the UK from $162.3 million in 1993 to $260 million in 1997. It was expected to grow by another 40 per cent in 1998. Applications for licences to produce organic products were up 500 per cent in February 1999 over the previous year.

There has also been a shift in demand in the grain market towards non-genetically modified varieties. In France in late March 1999 non-genetically modified corn (maize) fetched a 15-30 franc per tonne premium. In Spain and Portugal there are clear signs of a shift away from US corn which may contain genetically modified variants towards non-genetically modified corn from Hungary.

Several producers of genetically modified products have abandoned field trials. They have attributed their actions to negative public opinion and lack of government support. For example, in Austria, Forum Biotechnology shelved plans to begin trials of a genetically modified corn developed by Pioneer-HiBred International even though it was cleared by the EU.

In the UK one of the largest owners of farmland, the Co-operative Wholesale Society, (80,000 acres – 32,380 hectares) has reversed its decision to allow its land to be used for trials. This has affected the trials of Agrevo, a Hoechst and Schering joint venture company. Novartis has been taken to court in France by Greenpeace to prevent the planting of three corn strains. Another challenge is being mounted on twelve other varieties. All of these actions seriously hinder Novartis' commercial activities. Major farm organisations which represent the traditional producers' vested interests in the EU have been relatively silent throughout the debate.

The European Parliament and the member states governments are in conflict over the revision of the EU's biosafety regulatory scheme. The conflict over the revision to Directive 90/220 on the Deliberate Release of Genetically Modified Organisms means that final approval of a new biosafety law will not become likely until the middle of 2000. The Parliament proposed that producers of genetically modified products accept liability for damage to health, that there should be a ban on antibiotic genes in genetically modified organisms and that there should be a minimum twelve year period for approving a genetically modified organism. The EU Commission, however, rejects these proposals.

Given the strong signal European politicians feel they are being given by consumers, the high profile private sector response to consumers' concerns and the state of regulatory flux in the EU, it is probably not surprising that the EU wants to negotiate a means by which it can respond to these pressures at the WTO. The protectionist group is clearly consumers and, as yet, no producer vested interest in protection can be identified. If farmers are denied access to genetically modified inputs due to domestic regulatory initiatives, however, they will add their voice to those asking for protection. Those making trade policy should not be misled by this convergence of protectionist interests.

Renegotiating the GATT

Under considerable political pressure from consumers, the opening salvo in the battle to renegotiate the existing GATT provisions to allow for consumer demands for protection was launched by then EU agricultural commissioner Franz Fischer in early 1998. He suggested that the EU would like to re-negotiate the SPS to permit trade restrictions for reasons of *consumer preference*. The US response was quick and predictable. Peter Scher, special agriculture negotiator for the US Trade Representative, told the Commodity Club on 17 February, 1998, that for the US *there are few higher priorities* than fighting this *very disturbing proposal* (*Inside US Trade,* 1998). As best we can determine, the EU had no particular mechanism in mind and was simply attempting to react to the difficult domestic political situation with which it was faced. The US was correct in rejecting renegotiation of the SPS to allow for *consumer preferences*. The SPS seems well structured to deal with its primary objective of preventing capricious protection for producers through the abuse of sanitary and phyto-sanitary measures. Keeping the scientific based criteria for that purpose seems essential. Opening the SPS up to *consumer preference* justifications would seem likely to open the flood gates for uncontrolled use of these measures to protect producers. Similar arguments could be made regarding renegotiation of the TBT.

To not recognise that consumers can represent a legitimate source of protectionist pressure is, however, short sighted and puts the WTO system at risk. The WTO is a political compromise. Its rules represent a political balance between the need for surety by those firms wishing to engage in international commerce and the desire of politicians to be able to respond to the demands of their constituents who require protection - historically producers. To deny politicians an *out* when faced with a different set of

constituents with protectionist demands denies the reality of the WTO. The trick is to find ways to raise the costs of using the *out* to levels which will prevent abuse. This is consistent with current WTO practice. Refusing to consider negotiations pertaining to consumers' desires for protection is counter-productive.

The case of GMFs illustrates the problems associated with attempting to tie trade policy responses to consumer concerns and to scientific criteria. The use of the *best available scientific information* criteria has two aspects - the risk assessment discussed above and *appropriate science* (Caswell and Hooker, 1996). The use of the *best available* criteria for trade policy making is centred on the hypothesis that there exists a general consensus regarding what constitutes *appropriate science*. While scientists may disagree on specifics, there is probably a near consensus among the scientific community regarding what constitutes *appropriate science* based on the application of the scientific method - the drawing of hypothesis based on existing scientific knowledge; devising and conducting tests of those hypothesis; and establishing protocols for the ongoing monitoring of processes in a commercial environment. There is, however, a further implicit assumption underpinning the *appropriate science* criteria, i.e. that consumers will accept, or defer to, the judgement of the scientific community regarding what constitutes *appropriate science*.

A growing body of evidence now exists which suggests that sufficient numbers of consumers are no longer willing to passively accept the scientific evidence used by those scientists charged with ensuring human, animal and plant health (Frewer et al., 1996). In this case, *sufficient numbers* means that those who hold these views cannot easily be ignored by policy makers. In these circumstances, insisting on scientific criteria only serves to *box in* policy makers and simply refuses to deal with the underlying problem. This would be like forcing policy makers to insist that domestic firms simply exit the industry when they cannot compete with imports rather than extending them protection. While this position may be theoretically defensibly, it is not politically practical in all situations.

In the case of GMFs, consumer concerns do not appear to be easily accommodated by the food safety focus of the SPS. Transgenics represents a radically new technology. Certainly short run food safety concerns can be handled by the SPS - if I eat this genetically modified tomato for lunch will I be ill by the evening? The firms marketing GMFs see it in their own interest to ensure this level of safety is provided. The questions which consumers wish answered regarding GMFs are, however, long term - will there be a long term toxic build up if a certain GMF is consumed over an extended period, or are their any significant side effects I should be aware of if I consume GMFs? In this way, GMFs are classified by consumers less like foods and more like pharmaceuticals in terms of the information and personal security they desire. This might suggest that to ensure consumer confidence in GMFs, licensing (and, hence, trade) should be based on the protocols developed for approval of pharmaceuticals. Even this extremely costly approach may not mollify sufficient numbers of consumers given that many of them may have ethical, religious or moral objections to the underlying technology. The strongest food safety protocol will not satisfy consumers who see

biotechnology as *interfering with 'God's' plan* or *playing with nature's building blocs*. They may simply not want them in their market. Politicians must be allowed the flexibility to respond to a wide spectrum of consumer preferences.

The SPS risk criteria is also not applicable in the case of GMFs. While the SPS explicitly includes provisions that allow non-quantitative assessments of risk (Roberts, 1998), the concept of risk implicitly presupposes the existence of statistically determinable probabilities. Uncertainty, on the other hand, applies when there is insufficient information to establish probabilities (Knight, 1921). Given that the potential problems with transgenic products relate to their long-term effects, in the current period there is insufficient information regarding the future events attributable to transgenic products to establish probabilities. As the current situation pertaining to GMFs is one of uncertainty rather than risk, it will not be possible for countries to reveal a satisfactory method of determining risk to trade partners. The rejection of EU arguments relating to risk in similar circumstances in the beef hormone case supports this view[2]. Constraining countries to using the SPS mechanisms to deal with consumer concerns for which it was not designed, threatens the credibility and future effectiveness of the SPS and the broader WTO.

It should be clear that a strong argument exists for negotiating additional provisions in the WTO/GATT which make explicit allowances for consumer demands for protection. This would eliminate the pressure which may be put on existing WTO/GATT institutions to deal with trade problems for which they were not designed. The current and future efficacy of existing institutions would be increased.

The major objection to introducing consumer concerns as a rationale for the application of trade measures is likely to come from those who believe that such provisions would be subject to a wide range of abuse and open to manipulation by traditional producer-based protectionist interests. The belief in the inherent vulnerability of consumer based rationales for the imposition of trade barriers is based on two premises: (1) that the costs to governments of using consumer provisions could not be set sufficiently high to prevent their capricious use and; (2) that the current state of social science relating to consumer studies is not sufficiently advanced to provide meaningful guidance as to the legitimacy of claims for the existence of consumer concerns.

These two issues can be dealt with separately. As suggested above, the entire history of the WTO/GATT can be interpreted as a process which has slowly raised the cost for politicians of using the *outs* embedded in the agreements. It is up to those who negotiate provisions relating to the imposition of consumer oriented trade barriers to devise a system of high costs from the outset. The existing WTO principles of transparency and non-discrimination should be applied. One suggestion might be to allow a country to impose a trade barrier on the basis of consumer concerns without having to provide a justification, but that such an imposition would automatically mean that the imposing country would agree to pay compensation. The size of the compensation to be paid should be open to negotiation but if no agreement can be reached after a short period, subject to compulsory arbitration. Making compensation the

benchmark of costs both forces the imposing government to make a budgetary expenditure and raises the welfare costs significantly above the current GATT standard.

The current GATT standard allows countries to choose either to pay compensation or to accept retaliation in the form of trade sanctions being applied against its exports. The goods to which retaliatory measures apply are chosen by the complaining country. In practice, this means that rational countries will always choose retaliation rather than paying compensation. The measure used to determine the size of the penalty is the value of trade forgone. In the case of compensation, this is the expenditure which must be made by the offending government. In the case of retaliation, it is the value of the exports foregone. Exports displaced from one market by trade barriers, however, simply move to their next best market opportunity. Hence, the entire value of export revenue is not lost. In other words, the true value of the loss is a net value rather than a gross value. Compensation is based on the gross value of trade forgone. Even in the extreme case where the products displaced by the retaliatory barriers have no alternative market opportunity (either foreign or domestic), the resources used to produce the displaced output could be moved to their next best alternative use and, hence, cannot be considered a loss[3]. Of course, the reason why retaliation is allowed is because the WTO has no way to compel a country to pay compensation. This would still be the case with consumer based barriers. Making compensation the standard, however, would allow for retaliation based on multiples (5 times, 10 times, 20 times, whatever would be considered a credible deterrent) of the compensation value - explicitly recognising the net versus gross character of the two penalties.

Forcing countries to choose compensation would have the added advantage of providing direct assistance to the sector damaged by the trade barrier and of not introducing distortions in other markets as is the case with retaliation. In addition, the budgetary expenditure must be directly justified by politicians whereas the political costs of retaliation is likely to be somewhat opaque to voters and dispersed over a number of vested interests. Compensation would, hopefully, be a sufficient deterrent to limit the capricious use of the consumer justification. Of course, negotiators could come up with any number of alternatives to compensation as an appropriate penalty for allowing imposition of border measures.

While the - *no questions asked as long as compensation is paid* - approach to the imposition of trade barriers based on consumer concerns may provide a useful *out* for governments under pressure from consumers to act quickly, it is unlikely to be an acceptable solution over the longer term. It may well be that many consumer concerns are transient, sparked by media scare-mongering or incomplete information, in which case imposing an import ban for six months (and paying compensation) may represent sufficient time for the politically unacceptable level of consumer concern to dissipate and the barrier removed. If high levels of consumer concerns appear to be sustained, then governments should be allowed to demonstrate that they are responding to legitimate concerns and allowed to impose barriers without penalty. If they fail to convince a WTO panel of a level of consumer concern sufficient to justify the imposition of trade barriers,

then they should accept that compensation be paid if they still wish to impose the trade barrier. All of this is consistent with current WTO practice.

Determining whether a sufficient level of consumer concern exists, however, becomes crucial to the success of the system. Assuming that this cannot be done, however, totally depreciates the abilities of social scientists and the credibility of the social science discipline itself. The poor perception of the ability of social science to provide an answer to this type of question may be founded upon perception that, relative to the science community, social science exhibits a significantly poorer ability to reach a consensus (the infamous "one-handed economist" comes to mind). Of course, the reality is that there is little consensus among the science community. One has only to observe the difficulties that the Codex Alimentarius Commission, the International Office of Epizootics or the Secretariate of the International Plant Protection Convention have in harmonising international standards to realise that there is little consensus among the scientific community and that what appears to be consensus is, rather, some workable compromise. Social science has, in fact, had considerable success in arriving at workable compromises in international negotiations. The OECD, for example, was able to reach a workable compromise for the calculation of producer subsidy equivalents and consumer subsidy equivalents. A harmonised system for tariff classifications has also been developed. Hence, there is no *a priori* reason to believe that a means of determining appropriate measures for evaluating consumer concerns cannot be devised. Of course, moving the process of establishing evaluation criteria to a professional venue similar to the Codex would remove it from direct political interference and, hopefully, increase the probability of success.

Further, it is clear that any workable compromise arrived at by social scientists is likely to be far from perfect and open to theoretical criticism. The WTO/GATT, however, is full of examples of workable compromises that are not theoretically defensible, yet are accepted by the members. The most obvious example is the current practice in anti-dumping actions - neither the market price comparison method nor constructed value are theoretically sound (Schmitz et al., 1981). After years of fruitless attempts to identify theoretically subsidies which could be considered decoupled (non-trade distorting) (Kerr, 1988), the Uruguay Round negotiators simply segregated subsidies arbitrarily into *boxes* of varying degrees of acceptability. The calculations used to determine the tariff equivalent of the protection provided by import quotas for tariffication purposes are another example. The methods used to calculate countervailing duties are also wanting. The members of the WTO have learned to *live with* these less than perfect mechanisms. The ability to find workable compromises underlies the essentially political nature of the organisation. It is hard to believe that any rules devised to assess claims of consumer demands for protection could be more flawed than some existing WTO procedures.

A Modest Proposal

We propose that the Millennium Round agenda:

1. Include negotiations to allow explicitly for consumer concerns as a legitimate reason for countries to apply trade measures;

2. That a separate Agreement on Trade Related Aspects of Consumer Concerns (TRACC) be the objective of the negotiations. Having a separate agreement within the GATT umbrella would allow consumer based trade restrictions to be formally separated from producer based trade restrictions. This separation would also facilitate the development of alternative and more appropriate enforcement measures within the broader WTO/GATT principles.

3. That a professional, social science based institution - a Commission on Consumer Issues and Trade - similar to the Codex be established to develop harmonised international procedures for evaluating the existence and intensity of consumer concerns.

Conclusions

Can the WTO/GATT agreements on Sanitary and Phyto-sanitary measures and Technical Barriers to Trade be Renegotiated to accommodate agricultural biotechnology? The answer is no, nor should they be. The SPS and TBT are well designed to deal with trade issues arising from attempts to misuse regulations in these areas to provide protection for producers. To deny the importance of consumer desires for protection in the WTO is, however, myopic.

The GMFs controversy points out the difficulties politicians face in dealing with consumer demands for protection within the present WTO institutions. Using science based criteria, such as those which are embedded in the SPS, when consumers' objections may relate to ethical concerns which are totally divorced from food safety issues and in circumstances where risks cannot be assessed is difficult to defend. Further, failing to recognise that there can be legitimate desires for protection from imports by consumers only serves those who do not wish the WTO to succeed. We conclude that it would be far more reasonable to tackle the problem head on than to pretend it does not exist. The latter only forces governments to attempt to find relief in inappropriate WTO/GATT mechanisms and simply erodes the credibility of the WTO.

While negotiations to include consumer concerns within the WTO structure are likely to be difficult, and the compromises eventually reached not optimal, broadening the WTO to accept that there are alternative motivations for protection can only strengthen the organisation. Given the volume of disputes which are likely to arise from the technological change that underlies GMFs, getting an appropriate institutional structure in place to deal with the controversy quickly would seem to be of primary importance.

Endnotes

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[2]See Roberts (1998) for a discussion of the hormone judgement.

[3]The authors are indebted to J. D. Gaisford for this point.

References

Caswell, J. A. and N. Hooker. 1996. HACCP as an International Trade Standard. *American Journal of Agricultural Economics* 78(3):775-79.

Frewer, L. J., C. Howard, and R. Shepherd. 1996. Effective Communication About Genetic Engineering in Food. *British Food Journal* 98(4S):48-52.

Genewatch. 1999. June 14.

The Independent. 1999. May 23.

Inside US Trade. 1998. 20 February.

Kerr, W. A. 1988. The Canada-United States Free Trade Agreement and the Livestock Sector: The Second Stage Negotiations. *Canadian Journal of Agricultural Economics* 36:895-903.

Kerr, W. A. 1999a. *Emerging Issues for the International Harmonisation of Food Safety*. Proceedings of a conference entitled, Food Safety and International Competitiveness, Banff, Canada, April 14-16.

Kerr, W. A. 1999b. International Trade in Transgenic Food Products: A New Focus for Agricultural Trade Disputes. *The World Economy* 22(2):245-259.

Kerr, W. A. 1999c. Genetically Modified Organisms, Consumer Scepticism and Trade Law: Implications for the Organisation of International Supply Chains. *Supply Chain Management* 4(2):67-74.

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

Knight, F. 1921. *Risk, Uncertainty and* Profit. Boston: Houghton Mifflin.

Roberts, D. 1998. Preliminary Assessment of the Effects of the WTO Agreement on Sanitary and Phytosanitary Trade Regulations. *Journal of International Economic Law*: 377-405.

Schmitz, A., R. S. Firch, and J. S. Hillman. 1981. Agricultural Export Dumping: The Case of Mexican Winter Vegetables in the U.S. Market. *American Journal of Agricultural Economics* 63:645-654.

Which. 1999. March.