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Governance of International Trade in Genetically Modified Organisms: Is Future Global Food Security at Risk?

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It is now twenty years since the first commercial production of GM crops. Domestic regulatory regimes for agricultural biotechnology and GM foods differ considerably across the globe. As a result, international trade and other forms of exchange are considerably inhibited, leading to reduced returns for those investing in the technology and, hence, less investment in R&D for agricultural biotechnology. The latter means that biotechnology cannot fully contribute to meeting the food security challenges of the next four decades. Part of the problem is that no international regulatory regime for trade in the products of biotechnology that enjoys widespread support has been forthcoming. The Sanitary and Phytosanitary Agreement of the WTO was concluded prior to the commercialization of agricultural biotechnology and was not re-opened for negotiation in the Doha Round – which, of course, has not been concluded. In the absence of WTO engagement on the issue an alternative international institutional arrangement has been developed but does not have the support of the countries that represent the major developers and adopters of agricultural biotechnology – the Biosafety Protocol. In the absence of discernable progress in the Doha Round, countries have turned to preferential trade agreements to garner the benefits of trade liberalization. The question this article examines is whether preferential trade agreements can break the logjam on trade in the products of agricultural biotechnology. Three preferential trade agreements are examined: the recent EU-Canada agreement; the TransAtlantic Trade and Investment Partnership and the Trans Pacific Partnership. The conclusion reached is that these agreements, in and of themselves, cannot provide the solution, but they may be able to set the stage for progress in developing harmonized standards. For there to be success

stemming from this process, however, there needs to be institutional innovation. If there is success, it will not be quick in coming.

Keywords: agricultural biotechnology, CETA, GMOs, preferential trade agreements, TPP, T-TIP

Introduction

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

The first commercial production of genetically modified (GM) crops took place in the mid 1990s. Hence, trade in agricultural products produced using modern biotechnology was not a concern during the Uruguay Round of multilateral trade negotiations whose agenda was established in in 1986. The Agreement on Sanitary and Phytosanitary Measures (SPS) of the World Trade Organization negotiated during the Uruguay Round and accepted by all members of the organization, including the European Union, is the area of trade law that is applicable to the trade in GM products and has proved to be most contentious (Isaac, 2007). Once commercialization of GM crops began to spread, concerns about the appropriateness of the technology were expressed around the world (Gaisford et al., 2001). The intensity with which those concerns were expressed varied from country to country, leading to a variety of public regulatory responses ranging from outright bans on its use to wholesale adoption – with labeling and coexistence requirements being common. Differences in regulatory regimes can lead to barriers to trade and disagreements over how international trade in such products is to be governed (Hobbs, 2007; Isaac, 2007).

One of the reasons that agricultural biotechnology became such a contentious public policy question is that it is an issue where four already existing groups with strong preferences coalesced (Kerr, 2001). In this, agricultural biotechnology was unique. These civil society groups were (1) people who were already concerned about the quality of the food they were eating;[1] (2) people who were interested in protecting the natural environment; (3) people who questioned the ethics surrounding the technology;[2] and (4) people disturbed by the influence of large multinational firms on

the food industry.[3] Given the strength of preferences held by these individuals, and the civil society groups they formed (or joined), biotechnology became a lightning rod for protest and political activity. In the EU it became an issue similar to that of gun control in the United States. While biotechnology was more readily accepted in the United States, those with strong anti-GM preferences were not vanquished and political battles are ongoing at the sub-national level (Clark et al., 2014). Over time, anti-GM vested interests arose in, for example, the organic industry[4] and some NGOs, which found "beating the anti-GMO drum" a good fundraising strategy (Marantelli, 2002).[5] The resulting divergence in domestic regulatory policies dealing with GM products has led to a gradual increase in trade barriers to GM products around the world. These trade barriers have economic effects that far exceed the disruptions to trade flows, because they inhibit investment in research and development (R&D) in GM crops (Smyth et al., 2011). Given that significant increases in agricultural productivity will be needed simply to maintain existing levels of food security, much less improve them, actions that reduce investment in productivity-enhancing technologies such as genetic modification require careful scrutiny.

Evolving International Trade Regimes for Agricultural Biotechnology

The WTO

In the approximately 20 years since the SPS came into force in 1995 with the conclusion of the Uruguay Round, and coincidently the first commercial planting of GM crops, there has been no change to the WTO's rules governing trade in GM products, although there has been considerable clarification of those rules through adjudication of disputes. The major reason that no changes have occurred is that opening of the SPS for renegotiation was not included in the agenda of the Doha Round of negotiations that commenced in 2001. Of course, the Doha Round was never expected to take the time it has and is currently languishing in a diplomatic limbo without official termination but with no end in sight. Any changes to the current SPS will require an end to the Doha Round, either a successful outcome or a failure, followed by an agreement among the members to have a new round along with an agreement that the SPS be opened for renegotiation in the new round. Given the current apparent indifference of many members of the WTO to it as a forum for negotiating new trading arrangements and the vested interests of some countries such as the United States and Canada in the current science-based SPS rules, there is little

likelihood of a major initiative to alter the SPS in the foreseeable future. It should be remembered that decision making at the WTO is by consensus.

Having agreed to having science as the basis for decision making in trade rules pertaining to sanitary and phytosanitary issues in the Uruguay Round, some countries have found it very difficult to live up to their SPS commitments when putting in place their domestic policies – and biotechnology has been at the heart of that difficulty.[6] The groups in civil society with strong anti-GM preferences have persistently and stridently lobbied their governments for both domestic production bans and import restrictions on GMOs. Their basic position is that they do not want the technology used in their environment and do not want products derived from the use of the technology in their markets. The WTO has no mechanism to allow governments to respond to such demands from groups in civil society and, hence, governments under such pressure have had to seek alternative justifications for restricting market access (Kerr, 2010).[7] Given that the concerns expressed by those demanding bans or heavy restrictions on GM technology and products relate to human health and threats to the environment – sanitary and phytosanitary concerns – it is probably not surprising that governments facing strong pressure from groups in civil society turned to the SPS for the means to justify trade restrictions. When they did, they ran into the need for a scientific justification for their trade measures. The underlying premise of the SPS is that members of civil society will defer to scientific experts in the process of policy making on sanitary and phytosanitary issues (Smyth et al., 2011). This has proved to be a flawed assumption in the case of those with strong anti-GM preferences. They argue that there is no consensus among scientific experts,[8] that insufficient science has been done to allow the use of the technology, and that, in any case, scientific experts are in the pay of the multinational companies that are profiting from the use of the technology. WTO panels have tended to defer to scientific experts when judging SPS issues, leading to trade barriers erected on SPS grounds being struck down.[9]

The evolution of EU biotechnology policy – both for domestic regulations and trade measures – has been a reaction to the strong anti-GM preferences expressed by some members of civil society and their ability to influence governments in a number of EU member states. Up until 1999, EU GM policy was roughly in line with science-based regulation. In 1999, in reaction to rising concerns expressed in civil society, the existing policy was withdrawn while a new regulatory and trade regime would be developed. In the interim, until a new policy could be developed, a moratorium on approvals of GM crops and a moratorium on imports were put in place. The development of a new EU regulatory regime, however, proved to be very difficult and time consuming. Faced with the ban, the United States, Canada and others brought a

case against the EU at the WTO. The essentials of the new EU regulatory regime for biotechnology were put in place in 2003 but remained a "work in progress". The WTO panel brought down its judgement in 2006 and found the EU in violation of its WTO commitments (Viju et al., 2012). The EU moratorium that had been the subject of the dispute had already been replaced. In response to the panel's ruling, the EU stated that its new policy would comply with its WTO commitments but that it would take time to come into compliance (Viju et al., 2012). The new EU regulatory regime allowed for approvals of new GM products and imports, but obtaining approvals is a slow process. Thus, it took a considerable period to discern if the regime was compliant with the science-based principles of the SPS. It does not appear to be in compliance, primarily because science only informs the approval process, but a political process that can consider non-scientific factors in its decisions ultimately decides on GM approvals and trade measures (Viju et al., 2012). The EU's regulatory regime, however, would require a new challenge through the WTO disputes system to determine whether it is in compliance.[10] As yet, no such challenge has been mounted. Part of the reason no challenge has been mounted is that if the EU were to lose it would be unlikely to be able to bring its regime into compliance, and as with the case pertaining to beef produced using growth hormones, retaliation would be authorized. The size of the retaliation in the beef case was relatively modest (Kerr and Hobbs, 2005). In the case of GM products, the size of the retaliation would be very large – sufficiently large to create a major international confrontation. Further, countries like the United States and Canada which are most likely to bring a case have been seeking preferential trade agreements with the EU. A challenge of this magnitude, one can speculate, could lead to the EU withdrawing from such negotiations. This is the current situation with regard to biotechnology at the WTO. There is little or no prospect of re-negotiating the SPS, and any change in the status quo will have to await a challenge through the disputes system.

Events in the EU, however, may precipitate new challenges to the EU regulatory regime at the WTO. The rise of disruptions to trade flows arising from detection of low-level presence – or adventitious presence – of GM material co-mingled in shipments of non-GM crops is likely to become a growing problem as more and more GM crops are approved around the world. The EU has a zero tolerance policy toward such co-mingling, meaning the refusal of shipments and ongoing import embargoes in the wake of the detection of low-level co-mingling (Hobbs et al., 2013). A reasonable case can be made that this facet of the EU import regime is not compliant with the SPS because the import refusals and embargoes do not conform to the requirement to examine scientific evidence and to carry out a risk assessment (Viju et al., 2014). Of

course, a determination of the compliance of the EU regulatory regime pertaining to low-level presence will have to await a WTO challenge.

The second major potential area where a challenge might be mounted is in response to the current changes to the EU governance of GM approvals. It also points out how visceral an issue GM technology has become within the EU. While the current EU regime for approvals of new GM crops may not be WTO compliant, it has approved new varieties recently.[11] The approvals should mean that the GM varieties can be grown EU-wide.[12] This has proved to be very contentious in some EU countries, and a process for individual countries to opt out of growing approved GM varieties is working its way through the EU political institutions. One could end up with farmers in some EU countries cultivating GM crops while use of the technology is denied to others. How this will work in a single market without border controls is unclear. In previous cases where farmers were denied the use of GM crops while their competitors in neighbouring countries could use the technology, farmers soon found illicit means to procure seeds in the other country. Argentina was, for example, an early adopter of GM soy, while Brazil lagged. GM soy was soon being cultivated widely, but illegally, in Brazil.

In the trade context, the EU negotiates as a single entity at the WTO and, hence, its policies must apply across all states. If seed imports are, for example, allowed by some EU member states but not others, this could be cause for a challenge.

The Biosafety Protocol

While the EU and other countries facing strong anti-GM pressure have chafed under their commitments to the SPS and been frustrated by not being able to renegotiate its provisions, they have not sat idly by. They have taken the position that biotechnology is a transformative technology, which has led to state of disequilibrium in the agricultural economy and is surrounded by sufficient uncertainty to warrant a separate set of rules for governing its international trade. They note that a number of multilateral environmental agreements (MEAs) have trade provisions that differ from those of the WTO (Kerr and Hall, 2004).[13] The MEA that has been negotiated multilaterally to deal specifically with trade in genetically modified organisms (GMOs) is the Biosafety Protocol (BSP), housed within the broader framework of the Convention on Biological Diversity (CBD). The EU has been a major proponent of the Biosafety Protocol and a large number of countries have ratified it. While the initial rationale for the BSP was to provide protection for biological diversity, early on its remit was extended to deal with threats to human health, thus moving it from an environmental agreement to one dealing with broader SPS issues (Holtby et al., 2007).

The major differences between the BSP and the SPS are that it requires that science only need inform decisions to put trade barriers in place against GMOs – other considerations are allowed into the decision process; that it formally recognizes the precautionary principle; and that it has no dispute settlement mechanism (Hobbs et al., 2005). The latter means that an importing country can unilaterally undertake a scientific assessment leading to trade barriers, can allow non-scientific factors to trigger the imposition of trade barriers and can invoke the precautionary principle as a justification for import barriers without there being any recourse by exporters. There is no mechanism for an exporter to challenge the basis of a decision by an importer. There is no mechanism to challenge the use of other considerations when imposing trade barriers under the BSP.[14] There is no mechanism to challenge the "absence of sufficient scientific evidence" used to justify an importer's invocation of the precautionary principle. In essence, it gives importing countries a virtual *carte blanche* to impose trade barriers (Hobbs et al., 2005; Holtby et al., 2007). Thus, it removes the major constraints imposed by commitments in the SPS.

The BSP, however, does not allow the EU and other subscribing countries to fully escape the SPS. This is because the United States, Canada and Argentina – major producers and exporters of GMOs – have not agreed to be signatories to the BSP.[15] Under international law the provisions of the BSP cannot be applied to them and, rather, as almost all countries belong to the WTO, disputes will be handled by the WTO under the provisions of the SPS Agreement. If, however, both countries that are parties to a dispute have acceded to the BSP then, under international law, the later-in-time BSP would apply (Kerr et al., 2014b).[16] The EU has actually been "encouraging" countries to sign up to the BSP by, for example, making the granting of reduced tariffs to developing countries under the general system of preferences (GSP) contingent upon the recipient country acceding to the BSP (Khorana et al., 2012). Similar requirements to accede to the BSP are embedded in the regulations surrounding whether a country can supply biofuels to the EU market and receive credit towards meeting the quantity mandate for renewable fuels (Williams and Kerr, forthcoming). If both countries have acceded to the BSP then it will be the agreement that is applicable if there is a dispute. In effect, this removes the limitations of the SPS on the EU. It also removes the protection of the SPS and the WTO's disputes system for developing countries that have issues regarding EU trade policies (and those of other members of the BSP) pertaining to GMOs.

Unlike the SPS, the BSP is not static; it is a work in progress. While countries can unilaterally restrict imports based on their own assessments of science and the associated risks, there is a concerted push by some members of the BSP for

socioeconomic considerations to be more formally included in the BSP. In other words, rather than science alone being a reason to reject GMO imports, they could also be rejected on the basis of the potential negative impact they could have.[17] These negative socioeconomic effects relate to the disruption brought by the new technology and not the costs associated with, for example, a disease outbreak arising from importation of infected materials. All new technologies create economic losers as well as winners (Kerr et al., 2014a). It is not possible to identify technologies that produce only winners (Kerr, 2014). If one wished to use socioeconomic factors in the assessment of a technology, this suggests that the appropriate approach should be a cost-benefit analysis. A cost-benefit approach has been rejected at the BSP in favour of examining only potential negative impacts. As these can always be found, this approach biases assessments against acceptance of biotechnology. The end result of this line of reasoning is that the only technologies that will be acceptable will be those that bring only positive benefits. For example, in its domestic biotechnology regulations, Mali will not allow registration of a GM crop that will have any negative economic effects (Convention on Biological Diversity, 2014). As potential negative economic effects are relatively easy to identify, allowing their use as a justification for restricting imports releases countries from having to find scientific justifications for the imposition of trade barriers.[18]

Having socioeconomic considerations included in the BSP in the way described above may also have longer term ramifications for WTO jurisprudence. While the issue is evolving, there is a line of thinking that suggests that WTO dispute settlement panels should take provisions of MEAs into account in their judgements (Kerr et al., 2014b). Thus, having consideration of socioeconomic effects embedded in the BSP may, over the long run, influence WTO jurisprudence.

Preferential Trade Agreements

Given the stalemate in the Doha Round, countries have been turning to preferential trade agreements to achieve progress in trade liberalization. In recent years a large number of these agreements have been negotiated or are in the process of being negotiated. Only three will be dealt with here – the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada that was completed September 2014; the TransAtlantic Trade and Investment Partnership (T-TIP) currently being negotiated between the United States and the European Union; and the Trans Pacific Partnership (TPP) being negotiated among 12 countries around the Pacific Rim including the United States and Japan. These trade negotiations may provide a number of insights regarding the influence of trade agreements on policy making for GMOs.

The Comprehensive Economic and Trade Agreement

The EU and Canada negotiated for almost six years before the CETA was agreed. Canada is one of the major adopters and developers of biotechnology and has, some would argue, suffered disproportionally from EU policy on GMOs – Canadian canola being shut out of the EU market for oilseed rape; the Canadian flax market suffering trade disruptions, loss of market and high testing costs due to an adventitious presence incident (Viju et al., 2014); and, arguably, the failure to commercialize GM wheat. Canada definitely had an interest in gaining some concessions from the EU regarding market access for GM products. Despite assurances from Canadian negotiators that "everything was on the table" there was speculation that the EU would prove to be intransigent on the issue (Viju et al., 2010). The negotiations were held in strict secrecy so that the negotiating positions were unclear, but there were indications that the negotiations in this area were difficult (Viju and Kerr, 2011). The secret negotiations also allowed for a diplomat's solution to the problem – an agreement that allows difficult issues to be "kicked down the road". What was agreed was the establishment of a mechanism for dialogue on issues related to biotechnology – a place to talk and talk but with no mechanism to bring closure to the issues discussed. The CETA text on biotechnology reads as follows:

> Article X.03: Bilateral Cooperation on Biotechnology
>
> 1. The Parties agree that cooperation and information exchange on issues related to biotechnology products are of mutual interest. Such cooperation and exchange of information will take place in the bilateral Dialogue on Biotech Market Access Issues …. The dialogue covers any relevant issues of mutual interest to Canada and the EU, including, among others:
>
> (a) Biotechnology product approvals in the territory of Canada or the EU as well as, where appropriate, forthcoming applications of commercial interest to either side;
>
> (b) the commercial and economic outlook for future approvals of biotechnology products;
>
> (c) any trade impact related to asynchronous approvals of biotechnology products or the accidental release of unauthorised products, and any appropriate measures in this respect;
>
> (d) any biotech-related measures that may affect trade between Canada and the EU, including measures of EU Member States;
>
> (e) any new legislation in the field of biotechnology; and
>
> (f) best practices in the implementation of legislation on biotechnology.

The list of topics is comprised largely of those of interest to Canada and likely represents the only concessions Canada could obtain in the negotiations. This was a clear win for the EU.

In addition to the official text of the CETA there was a side letter Toni Borg of the EU Commission addressed to the Canadian Minister of Agriculture, Gerry Ritz dated April 24, 2014 which states,

> The Commission will ensure that proposals for the authorization of genetically modified (GM) events, in particular GM canola, are processed as fast as possible within the procedures laid down in the EU approval legislation, e.g. submission of decisions to the Member States once an EFSA opinion is available (Ref Ares 2014).

It is not clear exactly what advantage this commitment would give Canada. GM events will still have to clear the European Food Safety Authority's (EFSA) scientific assessment. Further, the EU–post EFSA procedures will still have to be followed – which are cumbersome and time consuming.[19] Of course, there is no guarantee that the Canadian GM event would be approved once submitted. Further, current moves to allow individual member states to deny approval for GM events even after they receive EU-wide approvals may erode even the limited benefits that may arise from the letter.

The TransAtlantic Trade and Investment Partnership

The T-TIP negotiations represent an attempt by the two largest developed economies to garner some of the gains from trade liberalization that have not been forthcoming from the Doha Round. Both see it as a way to re-invigorate their economies in the wake of the doldrums both markets have experienced since the financial crisis of the previous decade. There appears considerable enthusiasm in both the United States and the European Union for an agreement, but as per normal in trade negotiations there are major sticking points. A trade regime for agricultural biotechnology is one of them. The negotiations are being conducted in strict secrecy, so it is hard to know the direction bargaining is taking. The official position of the United States is that science – often referred to as sound science – should form the basis of trade rules for GMOs. In other words, keep the rules of the SPS. Further, the regulatory treatment of incidents of adventitious presence should be handled in a fashion that is consistent with what commercial shippers can reasonably accommodate – i.e., a relaxation of the EU zero-tolerance rule for such events. The United States also wants the time for approvals to be reduced in the EU. The EU, on the other hand, wants its current system, whereby science only informs decisions but the ultimate decision making

inhabits the political sphere. In other words, there is a double hurdle: first pass the scientific test, and subsequently the political test. The EU will not contemplate lowering its human health and environmental protection standards. Further, it is currently a difficult time for the EU to negotiate over GMOs because its domestic regulatory regime is in considerable flux, with member states insisting that they not be bound by EU-wide decisions to approve new products. Given the heightened profile of EU biotechnology policy at the current time, any concessions in trade negotiations would be seen as "selling out to the interests of U.S.-based multinationals". Further, in the EU it is not simply civil society groups that oppose any concessions on GMO policy but also the governments of some member states. Thus, for the EU Commission negotiators, any concessions will be difficult. Thus far, outside the (secret) negotiating room there are few suggestions for compromise being floated.

There has been considerable discussion of harmonization, but this remains largely in the realm of general principles rather than specific – or realistic – proposals. Harmonization can mean a number of things. Suppose there are two countries, A and B, that have differing standards and regulatory procedures. Changing standards will impose costs. There are three possible outcomes: (1) Country B agrees to harmonize to the standards of Country A – meaning all the costs of harmonization are incurred by Country B; (2) Country A agrees to harmonize to the standards of Country B – and incurs all the costs of harmonization; and (3) the two countries collaborate to develop a new, joint set of standards – with both countries having to bear some of the costs associated with change. Of course, Country A prefers the first outcome, and Country B the second outcome. Either of these outcomes can arise from trade negotiations. Thus far, in the United States harmonization discussions seem to revolve around the EU harmonizing to U.S. standards, no matter how unrealistic that outcome is. In the European Union there is little direct discussion of the United States harmonizing to EU standards – although the hard line taken on the sanctity of EU food safety and environmental standards suggests that this is the only logical harmonization outcome.

If neither of those harmonization options is a likely outcome, then there needs to be the development of new, joint standards. This cannot be done in a trade agreement. These will be long and difficult negotiations. All that can be agreed in something like the T-TIP is that these discussions will take place. This is the CETA outcome. The trick is to embed something in the agreement that will force closure on the negotiations. This was not the case in the CETA and so, while discussions are mandated, they can go on and on without end. The NAFTA experience is relevant. A large number of institutional arrangements were built into the NAFTA to foster regulatory harmonization (Kerr, 1992). In general, they have not worked as expected

(Kerr, 2006b). This is largely because they were constituted with no closure mechanisms and became no more than discussion forums (Kerr, 1997).[20] If there is to be harmonization regarding biotechnology in the T-TIP, it will require institutional innovation to force closure on the process of devising a mutually acceptable system.

The Trans Pacific Partnership

The Trans Pacific Partnership negotiations represent an ambitious attempt to move the trade liberalization agenda forward in response to the Doha Round stalemate. These negotiations are notable in that they involve 12 countries; both the United States and Japan are part of the negotiations; they involve a mix of developed and developing countries; and they have been open to additional countries joining even after the commencement of negotiations. Each of these features alone complicates negotiations; together, they present a significant challenge and it will represent a major diplomatic achievement if the negotiators can come up with an agreement (Kerr, 2013). The 12 countries involved are Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam. While the challenges are great, most of the countries involved are kept together by the single motive of garnering better access to the U.S. market.[21] For the United States, better access to the Japanese market is a priority, but having a major trade liberalizing agreement success is also important.

In terms of biotechnology, the current regulatory environment is a "dog's breakfast". About the only constant among the 12 countries is that they all belong to the WTO and have agreed to the SPS. Half of the countries, however, have ratified the BSP – meaning they likely had something different from the SPS in mind for the regulation of biotechnology. In most of the developing countries involved in the TPP negotiations, GMO regulations are under development. Four of the countries have *de facto* cultivation bans. Two have import prohibitions. Three require the labelling of GMOs, and a number of others have labelling regulations under development. Within each of these broad categories considerable differences exist in the regulations from country to country. Beyond trade, there are also important differences in intellectual property policy, capacity and practice. In a number of countries there are strong anti-GM groups in civil society which will oppose any loosening of GM regulations.

Harmonization is bandied about, primarily in the United States. One might infer from this that what is envisioned is harmonization to the U.S. standards and processes. Given how contentious the issue of GMOs is in, for example, Japan, New Zealand and Peru, this outcome seems unlikely. This means harmonization will require devising a new, mutually acceptable regulatory framework for biotechnology. Again, this cannot

be done in a trade agreement negotiation. Thus, what likely can be achieved in the agreement is the institutionalization of discussions regarding biotechnology. The efficacy of that process then will depend on whether some form of closure to those discussions can be put in place – otherwise they will simply be places to talk and talk.

Conclusions

To garner support and enthusiasm for a potential trade agreement, much is promised. Underlying the interest in trade agreements is economic theory that teaches that trade liberalization is welfare enhancing. Of course, trade liberalization creates both winners and losers, and potential losers can be expected to (very effectively) "beat the protectionist drum". In the wake of the success of the GATT in reducing tariffs and other formal trade barriers over 50-plus years, trade barriers are increasingly found in ostensibly domestic regulations. To achieve further liberalization means that agreements must reach deeply into domestic regulatory competencies. This type of liberalization is much more complex than the lowering of tariffs – and resistance more tenacious than protectionists seeking the retention of tariffs. The international governance of biotechnology represents that form of liberalization challenge. Given the strong desire of U.S. biotechnology companies to gain improved access for their products across the world and the equally strong anti-GM preferences of some segments of civil society (and some governments) where trade and regulatory restrictions on GMOs are onerous, there appears to be little room for compromise. Effective negotiations require room to compromise. Preferential trade agreements are currently the "only game in town" in terms of trade liberalization. In the past the United States and European Union may have been able to use their "economic muscle" to obtain better terms in their regional trade agreements (Kerr and Hobbs, 2006; Kerr, 2006c). In the case of the T-TIP they face each other and no significant economic advantage exits. In the TPP, Japan acts as a considerable counterbalance to the United States.

Biotechnology is divisive in terms of both food policy and environmental protection. Trade agreements cannot be relied upon to create change in the policy making environment identified so accurately by Adam Smith in 1776 in the quote that began this article. This means that adoption of, trade in and, most importantly, investment in agricultural biotechnology will be inhibited. This cannot be a desirable result given the global food security challenges of the next four decades.

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Endnotes

[1] Manifest in preferences for organic food, vegetarian diets, health foods, etc.

[2] Concerned, for example, about transgenic transfers of genetic material that could not happen with natural selection – in essence concerned that developers of the technology were "messing with God's work".

[3] Given that most biotechnology crops were being developed by large agribusiness firms which possessed intellectual property rights in their innovations.

[4] The organic industry self-proclaimed itself GMO-free, astutely surmising that they could attract additional customers among those who did not wish to consume GM foods. Co-existence policies were then requested to protect this vested interest.

[5]Examples of such fundraising efforts by NGOs can be found at http://www.cban.ca/donate and http://watchdog.org/168910/vermont-gmo-food-fight-fund/.

[6] Of course, biotechnology has not been the sole domestic regulatory issue where conformity to SPS rules has been a challenge. The first major test of the science-based principle of the SPS was the EU ban on imports of beef produced using growth hormones. It led to a failure of the EU to comply with a ruling from a WTO panel and subsequent retaliation by the United States and Canada (Kerr and Hobbs, 2005). Accepting retaliation, while part of WTO law, has

seldom been manifest, and the EU's use of this escape from its commitments is unprecedented (Kerr, 2006a).

[7] The entire intellectual foundation of the 1947 General Agreement on Tariffs and Trade (GATT) is a partial equilibrium, neoclassical trade model where consumers are expected to benefit from the lowering of trade barriers – and thus never ask for protection. Only producers benefit from trade barriers and are expected to ask for/fight to retain trade barriers. Thus, the GATT/WTO rules did not anticipate calls for protectionism from consumers (and other groups in civil society) (Kerr, 2007).

[8] While the SPS looks to a scientific consensus for decision making, the reality is that while an overwhelming majority of scientists may agree on a particular paradigm, there is never a full consensus among the scientific community. Scientific progress is premised on the idea that there will always be those that challenge the ruling orthodoxy. Thus, those looking for scientists that have differing views on, for example, climate change or biotechnology are likely to find them (Smyth et al., 2011).

[9] In the case involving the EU ban on beef produced using growth hormones the EU's own scientific experts found no scientific reason to support the ban (Kerr and Hobbs, 2005).

[10] It should be remembered that a country can use any trade measures it wishes in the absence of a challenge through the disputes system.

[11] The process is slow, costly and risky. Approvals have taken up to five years to move through the process (Viju et al. 2012).

[12] Subject to co-existence regulations of individual member states.

[13] Well known examples include the Convention on International Trade in Endangered Species (CITIES) and the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

[14] One of the main reasons for negotiating the SPS was to prevent the imposition of nefarious trade barriers justified on SPS grounds whose actual goal was to provide economic protection (Smyth et al., 2011).

[15] In the case of the United States, it has not ratified the CBD and, hence, is not eligible to belong to the BSP (Holtby et al., 2007).

[16] There are issues with the later-in-time principle in international law. For example, if the Doha Round were to be successfully completed sometime in the future, it is not clear whether the WTO would then be considered later in time than the BSP (Kerr, et al., 2014).

[17] It should be noted that the SPS allows economic considerations to be part of the assessment process, but the economic input is constrained to that arising from the importation of, for example, a disease. The cost in terms of lost output or the costs in terms of disease mitigation arising from imported plant material can be included in the assessment underlying the imposition of trade barriers.

[18] It is becoming increasingly difficult to identify scientific justifications for refusals of GM products as information accumulates. In terms of human health, North Americans have been consuming GM products on a large scale for 20 years – the experiment writ large – without any reported negative effects. In terms of risks to the environment, in a similar fashion, as GM crop acreages expand globally without an environmental "incident", it becomes harder to justify refusals based on environmental risk or on the basis of the precautionary principle due to too little information.

[19] See Viju et al. (2012) for a description of the EU's procedures for approving GMO events.

[20] There was one attempt to put a mechanism for closure into the 1988 Canada-US Trade Agreement (CUSTA) that preceded the NAFTA. This clause dealt with antidumping and countervail actions and provided for a seven-year negotiation process to devise a new, mutually acceptable dispute settlement system for such actions (Kerr, 1988). If there was no successful resolution to the negotiations, the entire CUSTA could be cancelled. There was little progress and the deadline was quietly removed in the subsequent NAFTA negotiations in

1994 (Kerr, 2001b). No harmonized system for disputes relating to dumping and trade-distorting subsidies between the United States and Canada yet exists.

[21] The two exceptions may be Canada and Mexico, which already have preferred access to the U.S. market under NAFTA. They certainly could be motivated by not wishing to see their preferred access eroded. Mexico is particularly sensitive to increased competition in the U.S. market from other developing countries, and Canada has an incentive to maintain its preferred access for products such as beef, which international competitors such as Australia and New Zealand do not have. Of course, they are interested in garnering better access to the Japanese markets and opening up new developing-country markets.