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International Standards for Regulating Trade When BSE Is Present: Why Are They Being Ignored?

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The Issue

The discovery of *bovine spongiform encephalopathy* (BSE) in Canada and the United States in 2003 prompted an immediate and decisive reaction from importers, with the closure of most markets to beef and cattle exports from Canada and the United States. Two years later, many of these bans have not been lifted or have been only partially lifted. These bans were put in place by national authorities attempting to protect the health of their citizens and may have been justified in the immediate period following the discoveries, but their long-term continuance is not supported by science. Trade regulations can be a powerful weapon in the fight against the spread of diseases and to protect health, but they can also unnecessarily restrict trade. Internationally agreed standards have been created in order to protect public health in the least trade restrictive manner. When dealing with BSE, however, the norm has been for countries' regulations to be far more restrictive than those they have previously agreed upon internationally.

Implications and Conclusions

The announcement of a case of BSE results in a much higher trade disturbance than is required by sound science to manage the threat the disease poses. There is a great deal of uncertainty surrounding BSE, and politicians want to appear to be doing everything possible to protect their citizens. The economic losses arising from the relatively small number of cases in Canada and the United States have been considerable. Thus, a significant incentive to cheat by not disclosing the discovery of BSE, or additional cases of BSE, has been created. When cases are not disclosed, protocols to control the disease are not put in place, and precautionary actions by policy-makers may actually place their citizens at greater risk. Closer adherence to internationally agreed standards would minimize economic losses from BSE and provide superior protection for consumers.

Introduction

Bovine spongiform encephalopathy (BSE) in cattle and *variant Creutzfeldt-Jakob* (vCJD) disease in humans are both fatal; there is no cure. The consequences and costs associated with the occurrence of either disease require particularly careful management because treating individuals or animals that are discovered to have the disease is not an option.[1] While the relationship between vCJD and BSE is not fully understood, the scientific evidence to date suggests that only specific materials from an animal infected with the disease can be a danger to humans if consumed. The disease is not contagious. The current scientific hypothesis is that BSE can be largely contained by ensuring that cattle do not consume material from infected animals in their feed – although spontaneous cases can arise. As a result, given the inherently low incidence of BSE, a long incubation period in cattle and the ability to remove risky material in processing, proactive policy, aggressive management and rigorous inspection can reduce the risks to humans and animals almost to zero and certainly to a point well below that which most individuals are willing to accept in other aspects of their lives. The question then arises as to why international trade policy reactions have been so severe when BSE is first discovered in a country. Further, given the serious economic consequences that can result from border closures, perverse incentives may be created that work against the effective management of the disease. Paradoxically, this reaction may increase the risk to consumers. This paper examines the discrepancies between internationally agreed-to responses to BSE and actual trade policies, focusing on the implications arising from the perverse incentives that are created.

International Agreements to Manage BSE vs. Border Policies in Reality

The World Organisation for Animal Health, originally (and still commonly) known as the Office International des Épizooties (OIE) was established in 1924 to devise international standards for trade in animals and animal products (Kerr, 2004). In the wake of the

discovery of BSE in the United Kingdom in 1986, negotiations took place to develop an agreed set of science-based rules on how international trade should be regulated if BSE were found to be present in an exporting country.

OIE Standards

The OIE standards are designed to impose increasing restrictions as the risk of BSE in a country increases. Even if an exporter has been designated as a high-risk country, a complete embargo on imports of cattle or beef from such a country is not recommended. In May 2005, significant revisions were agreed upon for the OIE's Terrestrial Animal Health Code relating to BSE. These changes were designed to encourage countries to adopt a less arbitrary and more risk assessment–based approach to BSE management, but the general principles remain the same. Table 1 summarizes the major changes. While the standards will be replaced in the future, this paper focuses on the OIE code that currently applies.

Table 1 Major Provisions of OIE Terrestrial Animal Health Code Relating to BSE

Current Terrestrial Animal Health Code	Newly agreed Terrestrial Animal Health Code
Risk-free products include milk and milk products, semen and *in vivo*–derived cattle embryos, hides and skins (excluding hides and skins from the head), gelatin and collagen prepared exclusively from hides and skins (excluding hides and skins from the head), protein-free tallow, dicalcium phosphate.	Exclusions for hides and skins and gelatin and collagen from hides and skins from the head were removed. De-boned skeletal muscle meat from cattle 30 months of age or less (with conditions relating to slaughter) and blood and blood by-products were added to list of risk-free products.
BSE status classifications were BSE-free country or zone, provisionally BSE-free country or zone, country or zone with minimal BSE risk, country or zone with moderate BSE risk, country or zone with high BSE risk.	BSE status classifications are to be negligible BSE risk, controlled BSE risk and undetermined BSE risk.
Increasing restrictions and certifications necessary for exports of cattle and beef as level of risk increases.	Increasing restrictions and certifications necessary for exports of cattle and beef as level of risk increases.
Requirement for countries to have programs that encourage *recognition* of possible or actual BSE cases.	Requirement for countries to have programs that encourage *reporting* possible or actual BSE cases.
Very general surveillance recommendations with minimum number of samples to examine for size of cattle population over 30 months of age.	Significantly more detailed guidelines. Two types of surveillance recommended: type A – short-term, extensive surveillance to determine prevalence with higher degree of certainty; type B – maintenance surveillance, which is at a reduced surveillance level and focuses on higher prevalence subpopulations.

The existing OIE code has five country classifications: BSE free; BSE provisionally free; minimal BSE risk; moderate BSE risk; and high BSE risk. The risk classification of a country depends not only on the number of confirmed indigenous cases in a country but also on the country's surveillance system, BSE control mechanisms and their ability to track movements and offspring of affected cattle. These standards were agreed upon by over 160 members of the OIE, including the United States and Canada.

Unrestricted Trade

There are some products that the OIE deems to pose no risk to human or animal health regardless of the BSE status of the country. These products are listed in table 1. The only products for which the OIE recommends no trade after a case of BSE is discovered in a country are ruminant-derived meat-and-bone meal and greaves.[2]

Cattle Trade

If a country or zone is BSE free, no restrictions are recommended for cattle trade. For provisionally BSE-free countries or zones, cattle selected for export should be identified by a permanent identification system that enables them to be traced back to the dam and herd of origin. The veterinary service must also certify that the animals are not the progeny of BSE-suspect or BSE-confirmed females. In a country or zone with minimal or moderate BSE risk, the OIE recommends that cattle selected for export be identified by a tracing system to ensure they are not "exposed" cattle.[3] The cattle must also have been born after the effective implementation of the ban on feeding meat-and-bone meal and greaves derived from ruminants. In a high-risk zone, the OIE also requires the destruction of high-risk animals – any progeny of an affected animal within two years of clinical onset of BSE, and any exposed cattle. Cattle selected for export must be part of an identification system that enables officials to ensure they are not the progeny of BSE-suspect or BSE-confirmed females, and the cattle must have been born at least two years after the effective ban of meat-and-bone meal and greaves from ruminants (OIE, 2004).

Meat Trade

Countries designated as BSE-free or provisionally BSE-free are only required to carry out an ante-mortem inspection on cattle from which meat or meat product exports will originate. Minimal-risk countries must also ensure that cattle are not subjected to a stunning process[4] or to a pithing process[5] and that products destined for export do not contain a variety of materials, commonly called specified risk materials[6] (SRMs), or mechanically separated meat from the skull and vertebral column from cattle over 30 months of age. Similar requirements exist for countries with moderate risk, but such countries must exclude SRMs from all animals over 12 months of age, tonsils and intestines from all animals, and mechanically separated meat from the skull and vertebral column for all animals over 6 months of age. For countries designated as high risk, tonsils and intestines must be excluded, fresh meat from cattle over 9 months must be de-boned

and not contain nervous or lymphatic tissues, and SRMs must be excluded from cattle over 12 months. Mechanically separated meat from the skull and vertebral column of cattle of any age must be excluded. Additional tracing capabilities are also required to allow fresh meat and meat products to be traced back to the establishment from which they derive. Cattle from which the meat or meat products originate must not have been the progeny of BSE-suspect or BSE-confirmed animals and must either have been born after the effective feed ban or have been raised in herds which had no case of BSE within the last seven years. In addition, any affected or exposed cattle must be destroyed upon slaughter or death (OIE, 2004).

U.S. Import Regulations

The United States recognizes three groups with regard to BSE status: countries affected with BSE, countries with substantial risk associated with BSE, and others. Almost all of the EU countries are listed as affected with BSE or as having substantial risk. Other countries on the affected list include Canada, Israel, Japan, Oman and Switzerland. Countries on the substantial-risk list include a number from Eastern Europe. All of these countries, with the exception of Canada, which has been granted a special dispensation, are treated the same under the U.S. import regulations. Importation of fresh meat, meat products and edible products other than meat (excluding milk and milk products and, under certain conditions, gelatin) are prohibited from ruminants that have been in any of these countries (APHIS, 2001). Live cattle imports are also prohibited from all of these countries (with the exception of Canada and Mexico) (Veterinary Services, nd).

Canadian Import Regulations

Canada recognizes two groups of countries: BSE free and other. BSE-free countries include Argentina, Australia, Brazil,[7] Chile, New Zealand, Uruguay and the United States.[8] Live ruminants may be imported only from countries designated as free from BSE. Meat and meat products of ruminant origin may also be imported only from countries designated free from BSE. Canada generally follows the OIE guidelines for products not affected by BSE, such as milk (CFIA, 2003).[9]

Regulatory Divergence

As has been shown above, both Canada and the United States have regulations that are far in excess of the standards recommended by the OIE. For example, imports of cattle and beef from the United Kingdom are prohibited in both countries, despite the extensive measures put in place by British authorities since their discovery of BSE. The official justifications from the Canadian Food Inspection Agency (CFIA) or the Animal and Plant Health Inspection Service (APHIS) are that these regulations are protecting animal and human health. They do not, however, give any explanation of why, or how, a complete embargo of cattle and meat was deemed necessary when the OIE does not recommend this approach. In a statement calling for comments on proposed changes to Canada's

import policies, CFIA stated "[c]urrent science recognizes that the 'BSE-free' requirement is unnecessarily restrictive" (CFIA, 2005b). The most likely reason for excessive standards is that prior to the discovery of BSE in North America, it did not suit the interest of industry or policy-makers in Canada or the United States to adopt the least trade restrictive regulations (Loppacher and Kerr, 2005). The European Union has the incentive to adopt only scientifically justified restrictions, as BSE is present in almost all member countries. In 2001, the EU published regulations for both domestic controls relating to *transmissible spongiform encephalopathy* (TSE) diseases and import and export regulations. The EU follows the standards created by the OIE and has the same five risk categories based on risk assessments as the OIE.[10] The EU requires animal health certificates to certify the attributes recommended by the OIE, for example, certification that an animal was born after the effective implementation of the feed ban (European Commission, 2001).

Can the Divergence between Actual Trade Policy and International Commitments Be Explained?

Despite official international commitments, both Canada and the United States continue to exclude imports from countries that have admitted to cases of BSE. This is the case for the United Kingdom and, latterly, for Japan. The partial opening of the U.S. border to some Canadian beef products, and the partial opening of the Canadian border to U.S. products, is not the policy norm and is indicative of the highly politicized nature of the NAFTA relationship and in particular the dependence of the Canadian industry on the U.S. market. A full closure of the U.S. market to Canadian beef and cattle products had the potential to sour the U.S.-Canada relationship in areas far removed from the beef issue and do deep and lasting damage that politicians in neither country may have been willing to risk. While Canadian cattle producers have paid a substantial economic cost, in actual fact they have been given special treatment – better treatment than the Canadian government gives to foreign suppliers and better treatment than is given by the United States to other sources of imports.

The long-term import bans that are normally applied to countries admitting to incidents of BSE also run counter to the long-standing (and supposedly strongly held) position of the governments of both the United States and Canada relating to the need for a scientific basis, including a risk assessment, when imposing trade barriers for sanitary and phytosanitary (SPS) reasons (Isaac, 2002). The United States and Canada both argued strongly for science-based rules for trade and formal risk assessments in their dispute over the EU ban on imports of beef produced using growth hormones (Kerr and Hobbs, 2005) and in their sparring over trade in products of biotechnology (Isaac and Kerr, 2005). As is often the case with apparently dubious trade barriers, the obvious place to look for the true rationale is economic protectionism.

In the case of BSE and North America, this is a hard case to make. Beef from the UK is not cost competitive in the North American market. The only UK imports into the United States and Canada prior to the discovery of BSE in the UK were breeding animals. This small-scale trade was not an economic threat to the North American purebred cattle industry and is not the reason for the continuation of the ban. The cost of producing beef in Japan is one of the highest in the world (Kerr et al., 1994; Anderson, Hobbs and Kerr, 1992). Closing the border to Japanese beef and cattle cannot have a nefarious economic motivation.[11] Certainly, the lobbying and legal manoeuvres of the U.S. cattle producers' group R-CALF to keep the U.S. border closed to Canadian beef had an economic motivation. However, this was a reaction to the U.S. Administration's attempt to open the border, an attempt that was inconsistent with the existing import ban policy toward countries with BSE. It was the "business as usual" import ban that enabled R-CALF to act opportunistically to keep the border closed.[12]

If neither science nor economically motivated protectionism is the reason behind the import bans that follow a declaration by an exporter that it has discovered a case of BSE, what can be hypothesised as the explanation? Political precaution – where the fear of negative political consequences makes politicians and policy-makers act with (undue) caution – is one possible explanation (Kerr, 2004). Political precaution has become more prominent in trade policy with the increase in consumer awareness (but not necessarily informed awareness) regarding food safety problems and with the rising angst among some consumers regarding perceived risks. For politicians and policy-makers, one of the worst possible events would be a breakdown in the food safety system, resulting in death or widespread health impairment. Thus, if there is a food safety event, decision makers often feel the need to be seen to be dealing forcefully with the problem. An example is the Japanese decision to test every cow in the wake of domestic BSE cases regardless of its efficacy as an animal health measure; another example is not taking actions that might have health repercussions in the future – such as re-opening a border. Thus, political precaution can be either proactive or passive.

BSE has certainly been an emotive issue for consumers in the United Kingdom (Loader and Hobbs, 1996), in the European Union and in Japan.[13] For policy-makers, an import ban exhibits the appropriate degree of "precaution" no matter what was agreed to be "good science" and appropriate risk at the OIE. If acting in a precautious matter is seen as "costless" by politicians and policy makers, then there is little likelihood that commitments to international standards will act as a constraint on their actions. Is political precaution costless?

Political Precaution and the Incentive to Cheat

Faced with the significant costs associated with a permanent or semi-permanent border closure, the incentives to report a case of BSE to the authorities so that the threat of the disease can be effectively dealt with are altered considerably. In effect, overly stringent

import regulations imposed for reasons of political precaution provide an incentive to cheat, which can lead to an increased probability of importing the disease. This could cause the very domestic crisis that acting in a precautionary fashion was attempting to prevent. Decision makers need to understand that policies put in place for reasons of political precaution are not costless.

The incentive to cheat by concealing the presence of BSE can be illustrated graphically through the effects on producer surplus in the exporting country. It is assumed that following the discovery of BSE three potential outcomes are possible. First, that the exporter follows an "honest" strategy, revealing the presence of BSE in its domestic herd. The honest strategy (scenario 1) results in a reduction in exports as importers respond with a temporary import restriction: a "moderate" trade reaction that is consistent with OIE guidelines. It is assumed that there is a negligible domestic consumer reaction given measures in place to remove specified risk materials from the food supply.

On the other hand, the economic cost of the honest strategy may rise considerably if the exporting country is faced with a permanent or semi-permanent border closure imposed for reasons of political precaution if it reports a case of BSE. Faced with the threat that the industry may suffer a significant market disruption and financial losses, the exporter is faced with a strategic choice.[14] An exporter may, instead, choose a "cheat" strategy by concealing an initial case of BSE. Two outcomes are possible following the cheat strategy: first, cheating is undetected, domestic consumers and importers are not aware that the exporter has experienced a case of BSE and it is "business as usual", with no effects on the domestic market or trade (scenario 2). Another outcome from the cheating strategy is possible if the attempt to conceal a case of BSE is detected (scenario 3). In the case of detected cheating, it is assumed that there is a "major" trade effect with the permanent closure of the border.[15] In this scenario, we also assume that the revelation of cheating weakens domestic consumer confidence in the measures being taken to prevent or detect BSE, destroying any goodwill premium that was present in scenario 1.

Figure 1 illustrates the effect on the exporter for each scenario in terms of changes to producer surplus.[16] Prior to the discovery of BSE in the exporting country, world price, as determined by the intersection of the excess supply and demand schedules in the world market, is P_0. Producer surplus in the exporting country is given by area P_0-*a*-*e* and will be denoted by the variable X in the analysis that follows. Scenario 2 (undetected cheating) results in the maintenance of the status quo, with producer surplus remaining as area P_0-*a*-*e* or X. Scenario 1 (honest strategy), in which the exporter discloses a case of BSE, results in a reduction in demand from the importing country (a "moderate" trade effect), shifting excess demand to ED_1.

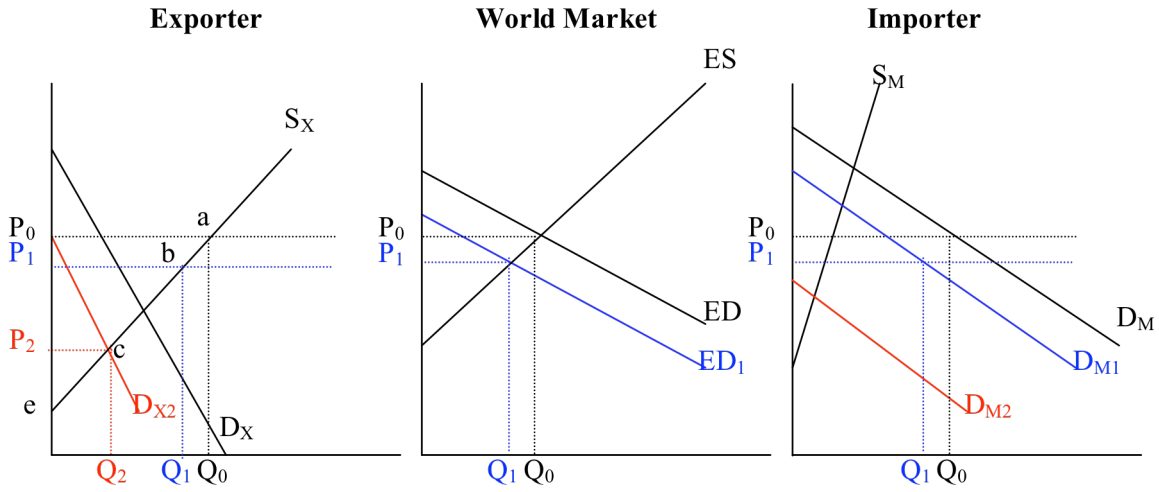

Figure 1 Moderate and major trade effects with BSE.

Domestic demand in the exporting country remains unchanged by assumption. Given the new world price, producer surplus is reduced to P_1-*b*-*e*. This area is denoted by the variable Y in the analysis that follows. Scenario 3 (detected cheating) results in a larger reaction from importing countries, a "major" trade effect. In the figure, this is represented by the complete loss of the import market and a movement to a no-trade situation for beef from the exporting country. In addition, domestic consumer confidence in the exporting country is damaged, reducing domestic demand to D_{X2}. As a result, producer surplus falls to P_2-*c*-*e*. The producer surplus from scenario 3 will be denoted with the variable Z.[17]

This simple graphical analysis indicates that the economic incentive to cheat depends, in part, on the relative size of the producer surplus outcomes. The size of the producer surplus outcomes depends on the strength of the reaction from both domestic consumers and importing countries to the discovery of BSE, in the presence and absence of cheating. Another key variable is the probability of cheating being detected. Figure 2 maps out the various outcomes from each scenario and enables an examination of the factors affecting the incentive to cheat.

From figure 1, we know that X > Y > Z. Therefore, the incentive to cheat by concealing a BSE case depends on the relative size of (X-Z) versus Y, or the potential "premium" to cheating. The closer in value Y is to Z, the more likely it is that an exporter will conceal BSE. In other words, if importing countries are expected to react strongly and disproportionately to the announcement of BSE in an exporting country, there is a stronger incentive for the exporter to conceal the disease. Thus, if the trade effect of revealing BSE is no longer "moderate", but instead is likely to result in a prolonged exclusion from export markets for a significant portion of the exporter's product – it approaches a major trade effect – there is a stronger incentive to cheat.

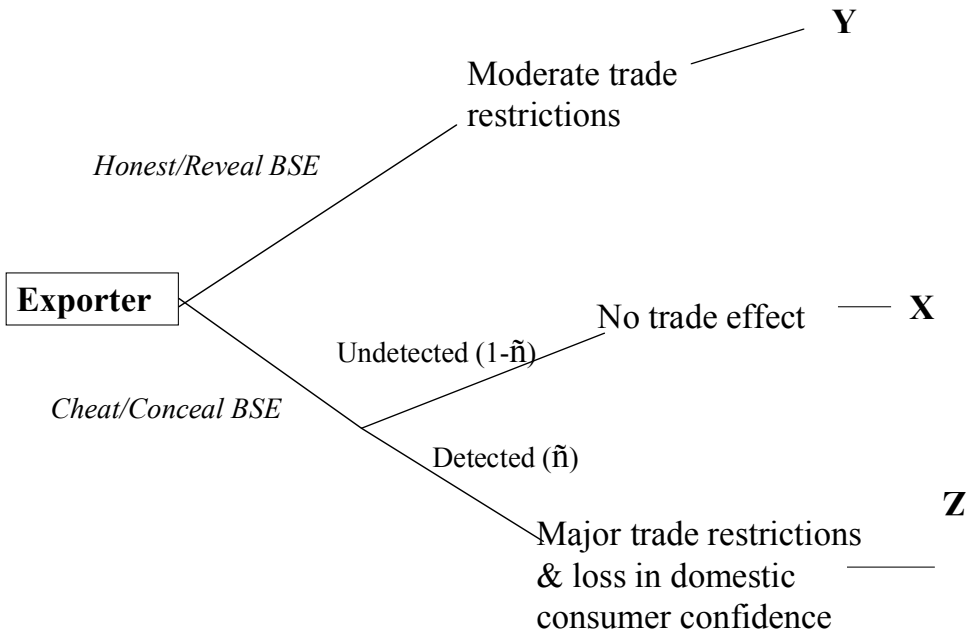

Figure 2 Map of outcomes and the incentive to cheat.

The incentive to cheat also depends on the probability, ρ, of cheating being detected. The closer ρ is to 1, the weaker the incentive to cheat. As ρ approaches zero, the incentive to cheat becomes very strong. The probability of detection (ρ) will be influenced by the feasibility of monitoring the BSE status of exported products, the efficacy of an importer's detection system and the resources it takes to circumvent the exporter's domestic BSE surveillance system.

In addition, with the announcement of a case of BSE having severe economic consequences, particularly when border closures have no scientific basis or international legitimacy, a country's monitoring authorities may also be willing to slacken their enforcement efforts or be willing to "turn a blind eye" to the problem. As they understand that the real risk to both their domestic population and foreign customers is negligible given the mechanisms in place to protect consumers throughout the supply chain, they may not feel compelled to either "find" or report a case – in other words, the value of ρ is reduced. As a result, trust is lowered toward both the private sector and its regulators. The lowering of trust takes place in both the domestic and export markets. The rising level of distrust increases the pressure for an even more precautionary approach in the case of importing governments.

Given that currently, no matter what *ex post* systems have been put in place to deal with BSE, borders will close with the announcement of a case, the only policy option an exporting country has is to prevent cases from arising. Controls on ingredients that can be

fed to livestock appear to lower incidence of the disease, but BSE may occur spontaneously in cattle (OIE, WHO and FAO, 2002), so an active policy of prevention cannot completely remove the risk of a border closure, only lower it. Hence, there is no alternative to cheating if a country wishes to avoid the consequences of a border closure.

The failure to report or detect a case of BSE means that borders remain open and there is a risk of a country importing cattle that have the disease. The decision makers that attempted to act in a precautionary manner may well have increased the probability of a domestic policy crisis. If this country is also an exporting country, they have the same incentives to cheat. The result is an international systems failure and an increased probability that the disease can gain a foothold so that an "incident" becomes an "outbreak". The British experience with a relatively high incidence of BSE and continuing cases, albeit at a lower level, suggests just how difficult it is to eradicate the disease.

Perverse Incentives and Distrust

While there is no confirmed evidence of cheating, there is considerable evidence that the perverse incentives are well understood and that a great deal of distrust exists as a consequence. The leader of the provincial government in the province most adversely affected by the announcement of the North American BSE case, Alberta's (then) Premier Ralph Klein has been the most prominent official to have openly acknowledged the incentive to cheat. His (now famous) quote was, "I guess any self-respecting rancher would have shot, shovelled and shut up, but he didn't do that".[18] Examples also exist in the United States. Lester Friedlander, a former USDA veterinarian, has publicly stated that after a suspected case of BSE in 1991 in the United States, and discussions regarding the economic impact of a discovery of BSE,

> The next day he (Pat McCaskey, USDA pathologist branch chief) called me up at my USDA office and said, "If you ever find it (BSE), don't tell anybody."[19]

After the detection of two suspected cases in the United States in 1997,

> Dr. Masuo Doi, the U.S. Department of Agriculture veterinarian who initially investigated both 1997 cases, [said] he is haunted by fears that the right tests were not done and that his own department did not properly investigate whether the cow had BSE (Canadian Broadcasting Corporation, 2005).

Such revelations reduce levels of trust about the efficacy of government monitoring services:

> The scientists' comments raise new questions about how the U.S. industry has been able to essentially escape BSE when Canada's much smaller industry, observing almost identical safety and testing practices, has had four cases in the past two years (Canadian Broadcasting Corporation, 2005).

While none of these allegations have been proved, the lack of trust has spread to members of the general public. An Internet search of "mad cow" and "cover up" returns literally thousands of websites claiming governments and industry are covering up information about BSE. While some of these groups may be using BSE to push their own agenda, it is obvious that there are segments of the public that do not believe that everything possible is being done to protect their safety.

The OIE has recognised this problem and the newly agreed standards make several references to the issue. For example, both the 2004 and 2005 versions call for an ongoing awareness programme for veterinarians, farmers and workers involved in the transportation, marketing and slaughter of cattle. In the 2004 code, the goal of the programme is "to encourage the *recognition* of progressive behaviour changes and neurological disease in adult cattle" (OIE, 2004) but in the unofficial 2005 code, the goal is "to encourage the *reporting* of all cases showing clinical signs consistent with BSE…"(OIE, 2005) (emphasis added). With regard to surveillance, the 2005 code also states "[t]he reporting of these suspect animals when at the farm will depend on the owner's motivation based on cost and socio-economic repercussions" (OIE, 2005).

Conclusions

Perverse incentives can lead to perverse results. The agreed OIE guidelines would appear to be well grounded in science and well designed to deal with a disease that, if properly managed, presents a very small risk to public health. The current policy of an importing country closing its borders on a permanent or semi-permanent basis when an exporting country discloses that it has a case of BSE, while having the political optics of appearing to take decisive action, may actually lead to an increased probability of importing the disease. Policies should not be implemented without due consideration of the incentives they create. A system where producers are willing to comply voluntarily with the regulations, monitoring institutions work as intended and trust is high is much preferred to the false security created by policies motivated by political precaution and a downward spiral of distrust. Countries that espouse a belief in science-based regulations need to exhibit the courage of their convictions.

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Endnotes

[1] While current science cannot detect BSE in a live animal, advanced symptoms of the disease may be recognisable through the behaviour of the animal.

[2] The unmelted residue left after animal fat has been rendered.

[3] Cattle that were reared with affected cattle during their first year of life or, if the investigation is inconclusive, any animals born in the same herd, within twelve months, as affected cattle.

[4] Injecting compressed air or gas into the cranial cavity.

[5] Laceration, after stunning, of central nervous tissue by means of an elongated, rod-shaped instrument introduced into the cranial cavity.

[6] SRMs include brains, eyes, spinal cord, skull, vertebral column and derived protein products.

[7] Must include a health certificate from Brazilian authorities.

[8] Canada still has some restrictions on U.S. cattle and beef exports, and these are slowly being lifted. Following the announcement of a second confirmed case of BSE in the United States, the Canadian Food Inspection Agency (CFIA) announced it did not see the need for additional import restrictions. The discovery may, however, slow the process of removing restrictions that are still in place.

[9] The CFIA is currently accepting public comment on proposed changes to Canada's import policies. The draft regulations generally follow the standards created in the yet-to-be finalized 2005 OIE Terrestrial Animal Health Code (CFIA, 2005a). There are some discrepancies remaining that may have an important economic impact.

[10] The European Union uses different terminology from the OIE to denote their classifications, but the risk assessments and trade restrictions behind each of these categories are the same.

[11] The failure to open the North American market to Japanese beef when both the United States and Canada were lobbying the Japanese government hard to re-open its market to their beef in the wake of the discovery of BSE in North America is one of the most

mystifying examples of non-reciprocation in recent trade history. The asymmetry was not lost on the Japanese.

[12] If the United States had been following the OIE standards, there would have been no expectation that the border could remain closed.

[13] Based on experience elsewhere, the supportive behaviour of the vast majority of consumers to the discovery of BSE in both Canada and the United States could not have been expected by policy-makers. The loyalty of beef consumers in North America is evidence of the trust they have for the food safety system, something that does not exist, for example, in the EU (Hobbs, Fearne and Spriggs, 2002).

[14] It can be argued that the Canadian and U.S. beef industries did not understand that borders would close on a permanent or semi-permanent basis, nor did they understand the full extent of the costs the closure would impose. They will not make the mistake again.

[15] The reaction of the importing country may be to make it even more difficult for the border to open in the long run than if no cheating were to take place, but the most significant damage will take place in the short and intermediate run before the industry in the exporting country can adjust its investment strategies. We do not differentiate here between the major trade effects arising with or without cheating.

[16] A more detailed discussion of this analysis can be found in Little (2005).

[17] The producer surpluses are purely illustrative, as the restrictions are likely to be in place over a number of production periods. Thus, the actual values of X, Y and Z will be the discounted present values of the changes in producer surplus over the time periods when the restrictions are in place.

[18] As reported by the Canadian Broadcasting Corporation (2003).

[19] As reported in United Press International (2005).