The Appetite for Risk

Submission to the Environment, Food and Rural Affairs Committee's call on 'Animal and Plant Health'

By

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Overview

Trade is good. One of the negative consequences of trade is biosecurity events (Adamson, 2010). A biosecurity event can cause direct and indirect harm to society, the environment and economic activity. This harm can include being prevented from engaging in international trade, the irreversible loss of capital, social and economic disruption via a reduction in movement, and significant public and private costs to deal with the biosecurity event both in the short and long run (Adamson, 2016). Trade is good but it comes with risk.

The 1995 WTO SPS Agreement allows a country to determine the sovereign level of risk they are willing to pass on to their society from engaging in trade. Countries can allocate resources to institutions and design regulations to reduce biosecurity risks and deal with those biosecurity events once they occur. This can include cost-sharing arrangements, between business and government, and introducing quarantine procedures at airports and ports that alter both the behaviours and experiences of passengers, importers and exporters.

Post-Brexit, the UK is self-determining its rules, regulations, and compliance with international treaties. The harmonisation of regulations between one (bilateral) or more (plurilateral to multilateral) allows for business costs to be reduced (i.e. paperwork reduction), it can reduce government costs (i.e. reduced need for institutions to set regulations), but it can come at a cost to society, the environment, and other economic agents (Adamson, Gilbert, Hamilton, et al., 2020; Adamson, Gilbert, Rothman-Ostrow, & Rushton, 2020).

This inquiry then becomes a question of the level of risk that the government is willing to pass on to society, the allocation of resources it is willing to allocate to deal with biosecurity, and explores society's understanding of these issues, and if society has any appetite for change. The committee has posed four questions to be considered:

1. the adequacy of personal import controls on animals, plants and their products and the enforcement of controls;
2. the adequacy of SPS controls on commercial imports, their enforcement, and the impact on businesses;
3. the performance of Defra and its agencies (such as the APHA) in delivering the Border Target Operating Model and communicating and engaging with stakeholders; and
4. how any concerns detailed in your submission may be remedied (in advance, or in the absence, of an SPS agreement with the EU).

To provide clarity to these four questions, this submission introduces the topic, outlines issues in biosecurity economics to consider, and explores each of the four questions in turn, before providing summary oversights.

Introduction

The 1995 WTO Agreement on the Sanitary and Phytosanitary Agreement (SPS Agreement) is not a trade-restrictive measure but a recognition that unintended consequences associated with trade exist. The consequences are real. They include: human health implications; impacts on the environment; and harm to agriculture. The SPS Agreement is a precautionary principle that can be legally applied to deal with the negative externalities associated with trade.

The SPS Agreement ensures that all governments have the sovereign right to determine the appropriate level of protection (ALOP) or risk from trade they are willing to pass on to their society.

Each government can harmonise regulations at an international level and follow the advice of the three sisters:

1. CODEX Alimentarius that deals with production chemicals and Food standards;
2. International Plant Protection (IPPC) that deals with plant protection; and
3. World Organisation for Animal Health that deals with animal diseases.

Or by using scientific evidence a government can alter regulations to reflect its attitudes to risk. The ALOP cannot be zero, but it can be very low levels of risk. Australia and New Zealand are key examples of low ALOP settings with proactive biosecurity protocols.

To reduce the economic confusion[2] this submission adopts the original definition of biosecurity, where biosecurity only refers to an exotic invasion event, we consider the risk to the UK (social, environmental, and economic), the management of the event (no response to eradication) and the outcome of those actions. Consequently, this submission applies only to new exotic biosecurity events that pose a (and potentially irreversible) loss to capital (social, environmental, social).

We adopt the Narin Review concepts (Nunn, 1997), see Figure1, of dividing biosecurity into:

1. Pre-border (all issues that concern biosecurity before the UK border)
2. Border (all issues about biosecurity once it arrives at the UK border)
3. Post-border (all issues concerning a biosecurity event once eradication is not possible)

This separation enables an exploration of how harmonization at (1), changes regulations/process at (2), and determines if and how (3) alters in response. Then depending on how (3) may alter what strategies processes and resources at (2/3) can be implemented to reduce the risk of irreversible capital loss (social, environmental/economic) at (3). With complete harmonisation, all border controls (2) are removed between the trade partners. The committee needs to understand the value of border controls (2), before they remove them.

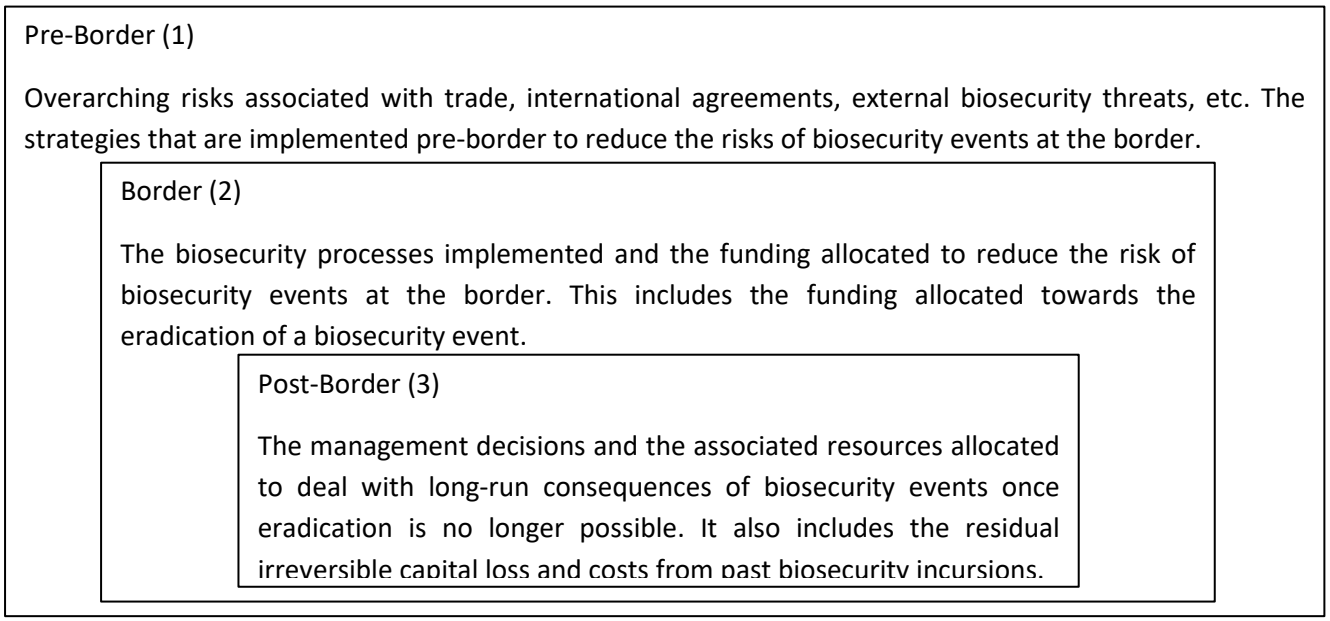

Figure 1 Biosecurity Concepts: Pre-Border, Border and Post-Border

[2] The decision-making behavioural response between exotic and non-exotic pests is fundamentally different due to the risk to capital (Adamson, et al 2014).

Harmonisation

Harmonisation provides greater economic integration from countries adopting similar rules and regulations. As Adamson, Gilbert, Rothman-Ostrow and Rushton (2020) debate, gains from harmonisation primarily exist for: businesses with entities in both countries; those who engage in trade as they face reduced transition costs; and society from cheaper goods and greater freedoms to travel and engage, but harmonisation is not costless. To determine the net benefits from harmonisation, the thee forms of costs must be explored:

- first, there are complex spillovers in harmonisation and not all sectors will benefit;
- second, games of power exist in trade. When either information asymmetry or hegemony is present, then those who set the rules win! (Adamson, 2016);
    - for example, harmonisation changes the regulations concerning production protectants. Who is setting the rules about what chemicals can be used? The EU may ban chemicals that the UK needs; and
- third, the frequency and severity of biosecurity events may increase. This can occur when there is freedom to move stock or machinery.

Will the committee be considering the full first and second-round economic implications of harmonisation? It is concerning that the committee's questions do not directly consider the impact on the environment.

Biosecurity (Exotic Pest Invasions) Economics & Risk

Mumford and Norton (1984) provide the seminal foundations for understanding pest management and decision-making. Their work on understanding the severity (density) of each pest event is crucial in then understanding the behavioural decision model they describe. In other words, we respond differently to the realisation of the severity of the event in question and the impact that event has.

Building on these foundations, the state-contingent approach to risk and uncertainty has provided significant insights into understanding and justifying expenditure associated with harmonisation, investing in emergency preparedness, and justifying policy changes (Perry et al., 2020). The approach carefully describes each state of nature (i.e. a biosecurity event), and can explore how the frequency of the state occurring can change in response to harmonisation.

In Table 1 there are four possible states of nature, each state of nature is described, and a stylised example where harmonisation prevents the event from being stopped early at the 'Border', see Figure 1. In this case, we have explored total harmonisation where border controls have been completely removed and subsequently, while the total probability of a biosecurity event has not changed (i.e. 90% of the time there is no biosecurity event), the absence of border control has shifted the severity of biosecurity from small events to medium and severe events.

This approach then allows for: modelling and exploring the appropriate management responses for each state of nature; the costs for each management response, and subsequent consequences for society, the environment and economic activity. The adoption of this approach has provided significant insights for understanding and dealing with low-probability and high-consequence events and understanding the benefit of preventing events from occurring.

Table 1 State-Contingent Representation of Biosecurity Risk and Uncertainty

State of Nature	Description	Frequency of each state of Nature	
		Without Harmonisation	With Harmonisation
No biosecurity event	There is no biosecurity event occurring	90%	90%
Small event	A biosecurity event is stopped early at 'the border'	6%	1%
Medium event	A biosecurity event is stopped at 'the border' and dealt with	3%	7%
Severe event	A large-scale biosecurity event that threatens the existence of one or more economic sectors and takes years to eradicate, or overcome trade restrictions (e.g. mad cow disease or FMD)	1%	2%

Risk to Natural Capital (Environmental loss)

Surprisingly, the committee has not asked the public to consider the consequences to natural capital from changing biosecurity regulations. The environment cannot defend itself and is subsequently reliant on others (the public, etc) to eradicate biosecurity events or mitigate the damage caused by the biosecurity event.

The UK natural environment/capital (from woodlands to marine) is already at risk from biosecurity issues (Lusardi et al., 2024). On-going biosecurity events have already reduced the resilience of UK natural capital to other risks. For example, under a changing climate, the environment may no longer absorb as much carbon, compromising the gains made towards achieving a net zero target

With farm payments incentivising biodiversity and natural capital investments, how compatible is this process with that social aim?

Adequacy and Enforceability on Persons

This submission provides no information regarding society's willingness to embrace new regulations and constraints to the current quarantine barriers at the border. However, we will discuss issues that you should consider at the border and post-border:

- Movement at the Border
    - Harmonisation will increase the speed and reduce costs to meet biosecurity protocols at the border

- Movement Post-border
    - Harmonisation will increase the imports (flowers, seeds, animals) as the border no longer exists.

    - The public can have very poor acceptance of emergency procedures to deal with biosecurity events:
        - Restriction of movement and decontamination process
        - Social licence (Dumbrell et al., 2020) may be absent for the destruction and disposal of animals

- The threat of potential destruction of pets (inclusive of horses) may lead to deliberate movement/hiding of animals outside of containment zones
- The public response may create the need for greater funding to deal with biosecurity events.

Adequacy and Impact on Business

Regulation re-harmonization between the UK and the EU would reduce costs and time. This would provide greater supply leading to more choice in products and cheaper prices for consumers. This has the added benefit of making supply chains more resilient to additional shocks. However, harmonisation comes at potential costs to those who produce/harvest primary products (terrestrial and marine).

We can consider those that directly import goods are risk makers while those that produce primary products face an increased frequency of a biosecurity event occurring. For this submission, we divide economic activity into two sectors, non-agricultural and agriculture.

Non-Agriculture

These are all economic agents post the farm gate/boat. All non-agricultural importers and exporters not will benefit from harmonization. Many of these agents were caught up in post-Brexit de-integration by the changes and costs of new processes. The UK is heavily reliant on imported foods from around the world and the EU has traditionally been and still is the UK the largest supplier of fresh produce[3].

Harmonisation:

- will increase the quantity of trade
- depending on how the savings (costs to meet regulations, reduced prices from increased market access) are passed along the supply chain we will see
    - increase the profitability of imports
    - reduce consumer prices
- May increase the frequency of biosecurity events.

Will the committee be considering:

- If those that benefit from trade will be required to offset the potential losses from increased biosecurity events, and, if so, how?

Agricultural producers

To engage in trade exporters must meet the global market requirements associated with their output. Compliance with these requirements increases the number of market opportunities and potentially provides access to higher prices. Trade is good.

Biosecurity events can be particularly devastating for agricultural producers. By assuming that farmers are rational profit-maximising individuals, we can state that current investments have

[3] https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2022/chapter-13-overseas-trade

considered the background pest load (expected natural pests) (Adamson et al., 2014) and how to manage known risks (Tisdell & Adamson, 2017; Zalucki et al., 2009). When a biosecurity event occurs, the comparative advantage of investments alters and can lead to the irreversible loss of capital. Depending on the nature of the loss, for example the destruction of perennial rootstock or breeding animals, the ability to rebound from such events can be severely compromised.

Is the committee considering increased compensation and/or increased institutional expenditure to prevent or deal with biosecurity events if harmonisation occurs?

DEFRA Performance

I have no practical engagement with DEFRA on this topic.

However, lessons on how to justifying expenditure on preparedness programs using the state-contingent approach can be found in Gilbert et al. (2023) and Railey et al. (2024).

Bilateral/Plurilateral/Multilateral SPS provisions outside the WTO Agreement

Throughout this document, suggestions have been raised on the economic justification of harmonisation and issues to consider.

Concluding Comments

Brexit required the rapid development of regulations and the enhancement of institutions. Despite best efforts, there are gaps and limitations with those regulations and institutions[4]. Funding is required to maintain these regulations and institutions.

When the processes and consequences of transitioning to new regulations are not fully understood frustration and anger occur. Both individuals and businesses faced increased costs, time delays, and complications learning to adapt to new importing and exporting requirements once Brexit was implemented. There is fundamentally a difference in communication between an institution and the capacity of individuals to absorb/access that information. Some people are prepared, accessed the information and others did not.

The SPS Agreement allows for sovereignty over the ALOP. It is this level of risk to the public, the economy, and the environment that the committee needs to consider. Is this committee determining the harmonisation standards or is it adopting someone else's perception of the ALOP? This committee must understand the political wins (reduced costs from harmonisation) and balance them against the costs of harmonisation. Understanding the trade-offs with harmonisation is something that requires far greater debate, for example:

- with current farm payments focused on biodiversity payments, it is concerning that the committee has not asked for public opinion about the risk to that public funding and the natural capital.
- Is society willing to embrace reduced costs for goods and services at the risk of using public funding to deal with a possible increase in large scale biosecurity events, and all that comes with it with the destruction of stock.

[4] https://committees.parliament.uk/committee/127/public-accounts-committee/news/173453/delays-to-postbrexit-regulation-posing-risks-to-uk-consumers-and-businesses/

When dealing with low-probability, high-consequence events traditional approaches to risk and uncertainty fail to understand the economic, social and environmental consequences of such events. It may be time for the committee to explore its risk appetite and how to model the consequences.

The objective of this submission is not to provide solutions but rather ask the committee:

1. What is the level of risk to society that it is willing to consider, to reduce business costs?
2. Can it justify changing the level of risk that may occur towards all capital (social, environmental and economic)
3. How will society, environment, and economic agents be compensated when a biosecurity event does occur from harmonisation?
    a. how or will the risk creators (those benefiting) from harmonisation be asked to pay the losers (inclusive of the environment) from a biosecurity event
    b. will full compensation and restoration of capital occur?
4. Does DEFRA
    a. receive sufficient funding to deal with biosecurity events;
    b. does it use the best approaches to risk and uncertainty; and
    c. does it understand the economic arguments for preventing irreversible capital loss for all parts of the economy from adverse biosecurity events?
5. Has the committee understood the resources it has at its disposal outside of government agencies?
    a. There are leading international researchers throughout the UK who could help you understand the risks and consequences of this change.

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