The pros and cons of animal health and harmonisation

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# SUMMARY

It has been argued that the global harmonisation of animal health procedures, regulations and responses will both improve animal health and provide economic benefits. Harmonisation of regulations and responses can be driven by trade reform, such as multilateral or bilateral agreements, or as a response to private quality assurance programs.

At an international trade level, trade reform is currently focused on reducing the costs of trading between countries. To achieve this, bilateral agreements where possible are harmonising regulations throughout all sectors of the economy. However, like any change, there are both positive and negative outcomes that should be explored to understand the net effect of change on animal health, the economy and society.

The article debates the economic foundations of harmonisation, alternative methods for developing harmonisation, and discusses the pros and cons of harmonisation in order to understand the opportunity costs from adopting the same level of risk to animal health.

**Keywords**

Animal Health – Harmonisation – Regulations – Trade – Unintended Consequences.

# Introduction

With the major gains from tariff reform being realised, trade reform policy has shifted its focus towards the removal of non-tariff barriers and harmonising regulations to increase the economic gains from trade integration. As the differences in regulatory frameworks between countries decrease, the cost of doing business between those countries also decreases, and a wider range of goods can enter the market at lower prices benefiting consumers. This is the law of comparative advantage that underpins free trade [1].

Regulation harmonisation can provide real economic and social gains especially in countries where regulations and institutions are lax [2]. Therefore, we can find the drive for harmonisation central to the World Trade Organization (WTO), and the drive for economic growth. Additionally, the adoption of private regulations can enable some individuals to take advantage of niche markets and higher prices by meeting social preferences [3].

However, the gains from harmonisation have been challenged by two central arguments. One, analyses typically only search for a positive impact on one sector of an economy from the harmonisation in one area [4], and fail to consider the complex spill over effects (both positive and negative) this may have across all sectors of society and the economy [5-7].

Two, it has been argued that trade is about ‘games of power’ and that a country’s hegemony can influence the level of harmonisation to benefit their economy and not the trade partners [8]. Thus, the failure to understand the complex changes from harmonisation (i.e. information asymmetry, may lead to regulatory capture [9]) may end up with a country adopting levels of risk (e.g. attitudes to antibiotic use, food health standards, etc) that were unpalatable to its society before harmonisation [10; 11]. As Hassoun [12] reflects, the design and implementation of harmonisation may actually reinforce the conditions for poverty and inequality within a country. Not every country has enjoyed harmonisation, and the cost of re-establishing a country’s independence to set their own regulations comes at a cost. By the end of 2020, it is predicted that the United Kingdom’s economy will have lost £200 billion in four years during Brexit, the removal of the United Kingdom from the European Union [13].

Animal health harmonisation will create both positive and negative effects for a country, but the true impact may only be fully realised once harmonisation is implemented or removed. Therefore, careful debate both before implementation or dissolution of harmonised regulations is required, to consider the wider impacts on society. As animal health harmonisation applies equally to: production inputs (e.g. registration pharmaceuticals and feed); regulation practices (e.g. cage size, animal welfare practices, and slaughter protocols); output definitions (e.g. what age is veal); and protocols for international animal health emergencies ( e.g. defined rules to apportion costs and responsibilities for dealing with animal diseases, their prevention, detection, and treatment [14]), the debate is complex.

To explore this complex problem, this article firstly outlines the basic economic foundations associated with harmonisation, then debates how harmonisation can occur via alternative government agreements and from private intervention, the pros and cons from harmonisation are explored and final comments are provided.

# Harmonisation and Trade

The economics of harmonisation and trade focuses on the impacts on producers and consumers. Let us consider a case of two countries (1 and 2) seeking to harmonise regulations on beef health requirements, in Figure 1.

Country 1 has lower animal health standards and production costs. In this country, producers can sell a kilogram (kg) of beef for price ($P\_{1}$). At this price, consumers will buy $Q\_{1}$ kgs of beef. Country 2 has more stringent animal health regulations, and producers must charge ($P\_{2}$) to remain viable, but at this price consumers in Country 2 will only buy $(Q\_{A})$ kilograms of beef.

If the cost to harmonise allows beef to be sold at ($P\_{H})$/ kg, then regulations have increased Country 1’s costs and decreased Country 2’s costs. Now, the quantity of beef consumed in Country 1 falls to $Q\_{2}$ and increased the quantity of beef bought to $Q\_{B}$. In this example, there are winners and losers in harmonisation, and economics can provide an understanding of the likelihood of these impacts across society.

Price of beef

Price of beef

Country 1

$$S\_{N1}$$

$$S\_{N2}$$

Country 2

$$S\_{L2}$$

$$S\_{L1}$$

$$P\_{2}$$

$$P\_{H}$$

$$P\_{1}$$

$$D\_{1}$$

$$D\_{L}$$

Quantity of beef

Quantity of beef

$$Q\_{B}$$

$$Q\_{A}$$

$$Q\_{2}$$

$$Q\_{1}$$

Figure 1: Harmonisation

What the basic story of harmonisation neglects is: who sets the standards and second-round effects of change. For example, if standards were set to Country 2 levels, Country 1 may not be able to produce any beef. Alternatively, if Country 1’s standards are adopted, it may introduce a level of risk that creates negative animal and human health impacts from exotic outbreaks of disease [10]. Additionally, second-round effects of change can impact wages, lead to structural change in the production sector and labour redistribution [15-17].

Both theoretically and practically, these are critical issues for harmonisation of animal health regulations. The next section explores the operationalisation mechanism (private or public) of how harmonisation deals with these actions.

# Harmonisation Standards: Public Versus Private?

The operationalisation of harmonisation can occur in three ways: the first is via multilateral agreements via the World Trade Organization (WTO); the second is via bilateral (2 countries) and plurilateral (3 or more countries) agreements; and the third is via private standards being introduced.

Multilateral trade agreements: The WTO SPS Agreement

With 164 member countries and 23 observer nations, the WTO[[1]](#footnote-2) provides a unified platform for negotiations to help the development of rules, and to deal with disputes associated with the trade in goods, services and intellectual property. Central to the discussion here, is that an individual country’s hegemony is diminished in a larger group and as processes unfold [18].

The WTO provides a platform for recognising relevant SPS international standard-setting bodies as responsible for developing the global standards for trade harmonisation, in the areas of animal and plant health, and food safety. This is enshrined in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement), which was adopted in 1995. This Agreement sets out the rights and obligations (and exceptions) for WTO Members with respect to measures intended to address animal and plant health risks, and food safety risks. Specifically, the SPS Agreement relies on three international standard-setting bodies (also known as the three sisters) for developing SPS-related standards, guidelines and recommendations: the World Organisation for Animal Health (OIE), that specifies animal health-related standards; the International Plant Protection Convention (IPPC), that specifies standards in the plant health area; and the Codex Alimentarius, that specifies food-safety related standards, including acceptable levels of chemical use in food production systems [e.g. maximum residue limits (MRLs)]. In this respect, the SPS Agreement views harmonisation as countries basing their SPS regulations on the international standards, guidelines or recommendations developed by these three sisters, and the Agreement encourages countries in this process.

While the three sisters set the standards, each country can still set their own appropriate level of protection (ALOP) and standards if they can back the adjustments with science. The ALOP is the level of risk to a country’s economy, ecosystem and human population that a country is willing to accept from being involved in trade.

Bilateral and Plurilateral trade agreements

Reaching consensus in multilateral agreements is a timely process and countries have been engaging in bilateral/plurilateral agreements, often called Free Trade Agreements (FTAs), to avoid protected negotiations.

However, harmonisation of animal health and food safety regulations via this bilateral/plurilateral process can define a set of mutually agreed regulations for animal health and food production, that may differ to that of the standards of the ISSBs recognised under the WTO SPS Agreement (see prior section). In this situation, the ALOP between countries harmonises, and in given situations the regulatory authority can transition away from public institutions towards corporate power. Labonté et al. [7] detail the United States–Mexico–Canada Agreement’s (USMCA) impact on Mexico and Canada and the transfer of power to US corporations in the public health sector; the desire to harmonise to the US ALOP; and the removal of the right for Canada to use dispute settlement concerning investor state disputes.

Redirection towards corporate control may create outcomes where those that set the risk are not responsible for dealing with the negative outcomes from the risk. It is within bilateral/plurilateral settings where games of power are central to...

“...to strategically manipulate the outcome of the deal [8] are evident. Consequently, rarely do FTAs actually mean free trade. Rather FTAs stipulate a set of conditions that solidify advantage to one or more countries at the expense of another.”

Private standards

Private standards or quality assurance programs can be a top down (e.g. from an oligopolistic purchaser [19]), or bottom up (e.g. consumer preferences [3; 20]). Such standard setting mechanisms operate as a signalling mechanism between producers, retailers and consumers [21]. While social expectations may direct private standards and incentivise producers to meet the desires of the public, they are not regulations [22]; nevertheless, failure to comply with private standards may still result in some form of penalty such as a lower price or denial of market access. Private standards are considered a ‘mixed blessing’[[2]](#footnote-3) by the OIE as they can both enhance the SPS Agreement and in some situations be considered a barrier to trade [23].

In countries with weak institutions, the adoption of a basic level of private standards may provide significant gains in terms of economic activity and animal welfare [24], but in countries with strong institutions the gains are likely to be less. In given situations, private standards can be a response to creative marketing, where a lack of information or misinformation is used to gain a greater share of a market through fear. The 2016 Hungry Jack’s hormone-free beef promotion is one such example [25].

Why harmonise?

Central to the debate about harmonisation is why would a country be willing to give up the sovereign right to set its own regulations? Whose regulations should countries adopt and are the standards higher or lower than those set by the international standard-setting bodies recognised by the WTO SPS Agreement (i.e. OIE, IPPC and Codex); and do all signatories of a trade deal benefit equally? The operational approach to harmonisation plays a central role into the benefits harmonisation can have. The choice for harmonisation then is complex and the next section outlines the common pros and cons of harmonisation.

# Possible Positive Effects from Animal Health Harmonisation

The five points below summarise the harmonisation debate, where harmonisation is considered only as the removal of barriers. In some cases, harmonisation can lead to more regulations but that is not explored in this debate.

1. The harmonisation of regulations and the cutting of red tape will improve efficiency [26] and reduce costs [27]. This argument relies on the comparative advantage to work and reduce costs once harmonisation has occurred, and may lead to decreased competition in the long run, as well as higher prices for existing monopolies or oligopolies that are no longer protected [28].
2. Government regulatory institutions and the legal frameworks are unable to keep pace with technology improvements. If we adopted a multilateral regulation and verification process[[3]](#footnote-4), the rate at which new goods enter the market would increase, and all cost savings could be diverted into further research or price reductions.

This argument sells the idea that the next miracle cure is on the horizon [29], or that regulations are preventing a new practice which could unshackle current production constraints [30].

1. The cost of developing good institutions can be prohibitive for some countries and their limited public funds would be better allocated to some other activity. In other words, if a country with good institutions deems the practice safe, then a country with under-resourced institutions should benefit from adopting the findings of other countries. In this case, the opportunity cost of having sound science should not be put in the way of helping resource-strapped countries gain from the introduction of good veterinary practices and drugs [31].

In this case, harmonisation can be of particular benefit if there are currently few animal health products being used. By understanding the concepts of diminishing marginal benefits, there are significant gains from the introduction of basic animal health inputs to production.

1. Greater market certainty, freedom and profits will encourage a new wave of funding leading to new cures potentially in areas where there is a lack of research already undertaken [32].
2. Clearly defined and harmonious procedures and cost-sharing mechanisms for dealing with emergency veterinary response, will reduce the cost of dealing with emergency outbreaks. A potential pooling of resources may occur lowering the costs of monitoring and enforcement.

By harmonizing procedures, not only should the time required to deal with an emergency issue be reduced, but due to harmonization, disruption in the trade in goods should be minimised, as attitudes to risk are homogenous, and disputes avoided.

The arguments for harmonisation via private standards are idealistically compelling as they demand the removal of unnecessary government interference in the market, and by creating a level playing field, the best will emerge victorious in a competitive market. In such a classical foundation, two key assumptions must hold, markets must be perfect and private institutions are fundamentally more efficient than government agencies.

These assumptions are more based in faith than fact. Health, food safety and animal welfare are a combination of both private and public goods, and those markets are prone to market failure and underinvestment [33]. Consequently, rules and regulations are designed not only to address those market failures, [34] but to reflect society’s expectations, minimise the risk of adverse events, and in part ensure that there is some balance between risk creators (i.e. those whose actions create, and those impacted by adverse events [9].

Gray [11] suggests that applying static neo-classical economic models to the question of regulatory integration supports harmonisation in terms of facilitating the free movement of direct investment, technology and labour, but ignores the cost of diminishing a nation’s right of self-governance and wider social settings. This includes animal health. It is therefore prudent to also examine the potential negative impacts of harmonisation.

# Possible Negative Effects From Harmonisation

A series of writers have challenged the argument that greater deregulation is always beneficial:

1. The harmonisation of ALOP implies that all countries share the same opportunity costs [33], have the same values and attitudes to the precautionary principle.[[4]](#footnote-5) The precautionary principal suggests that in instances where there is a risk but insufficient information, that waiting to collect new information provides net social gains [35]. Regulations are designed to collect data, prevent market power and concentration from occurring, prevent unintended consequences and reflect societies values [9], harmonisation then needs to truly understand the changes to all sectors of the economy to determine its benefits.
2. In the case of public health, the reduction in regulations did not lead to an expansion of private research funding [5] or necessarily a reduction in costs. Rather Baker et. al. [5] found that harmonisation of intellectual property rights reduced economic welfare due to the contracting number of pharmaceutical firms, enabling them to increase their prices. With the global animal health pharmaceutical market dominated by 10 key firms, and high upfront fixed costs as the barrier to entry [36], harmonisation may lead to a loss of firms, resulting in high animal health costs.
3. Whiting [37] suggested that a consistent ALOP can lead to the freedom of animal movement between countries that could introduce exotic diseases into naïve populations. This issue was raised with regards to the trade deal between the USA and Canada, and the threat of anaplasmosis spilling over into the Canadian herd.
4. Adamson [10] highlights the danger of hegemonic relationships in harmonisation taking the example of a net exporting small country. By using Australia as the net exporting ‘small country’ (with a domestic market of 24.5 million people) and noting that 80-90% of agricultural income is derived from export earnings, Adamson (2016) notes that if market access is denied, the domestic population cannot consume excess production leading to price reductions. In this case then, not only is the industry that is denied market access in trouble, but all industry substitutes are also impacted as they suddenly face competition at a much lower price. In extreme situations this could lead to a sudden reduction in national herd size, and a long-term loss of export markets to competitors.

# CONCLUSIONS

While there can be great gains from harmonisation, the choice to harmonise is a sovereign right. The benefits and risks of harmonisation are not constant across countries, nor are all regulations a burden on society. It is up to individual countries to determine if regulations should be harmonised. Further, the level of risk a country is willing to accept from harmonisation needs to be debated in a public forum.

The desire to harmonise may originate with net exporters, net importers, or those countries aiming to gain market access for goods. Considering the specifics of the production sector, the risk of adverse or unintended consequences and potential redistributive effects is important, as not all countries and not all economies are the same.

Care must be taken to consider who is setting the standards, and which countries bears the cost of adopting harmonised standards.

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**References**

[1] Tiebout C.M. (1956). – A Pure Theory of Local Expenditures. *Journal of Political Economy,* **64** (5), 416-424. doi: 10.1086/257839.

[2] Surak J.G. (2010). – Chapter 20 - Harmonization of International Standards. *In* Ensuring Global Food Safety (C.E. Boisrobert, A. Stjepanovic, S. Oh & H.L.M. Lelieveld, eds), Academic Press, San Diego. 339-351.

[3] Olynk Widmar N.J. (2018 ). – Social License to Operate. *In* How to Feed the World (J. Eise & K. Foster, eds), Island Press, Washington DC, United States. 165-175.

[4] de Frahan B.H. & Vancauteren M. (2006). – Harmonisation of food regulations and trade in the Single Market: evidence from disaggregated data. *European Review of Agricultural Economics,* **33** (3), 337-360. doi: 10.1093/eurrag/jbl015.

[5] Baker D., Jayadev A. & Stiglitz J.E. (2017). – Innovation, Intellectual Property, and Development: A Better Set of Approaches for the 21st Century. *In* AccessIBSA, AccessIBSA, New York, U.S.A.

[6] Gleeson D. & Friel S. (2013). – Emerging threats to public health from regional trade agreements. *The Lancet,* **381** (9876), 1507-1509. doi: [http://dx.doi.org/10.1016/S0140-6736(13)60312-8](http://dx.doi.org/10.1016/S0140-6736%2813%2960312-8).

[7] Labonté R., Crosbie E., Gleeson D. & McNamara C. (2019). – USMCA (NAFTA 2.0): tightening the constraints on the right to regulate for public health. *Globalization and Health,* **15** (1), 35. doi: 10.1186/s12992-019-0476-8.

[8] Abbott P.C. & Panu K.S.K. (1996). – Implications of Game Theory for International Agricultural Trade. *American Journal of Agricultural Economics,* **78** (3), 738-744. doi: 10.2307/1243297.

[9] Laffont J.-J. & Tirole J. (1991). – The Politics of Government Decision-Making: A Theory of Regulatory Capture. *The Quarterly Journal of Economics,* **106** (4), 1089-1127. doi: 10.2307/2937958.

[10] Adamson D. (2016). – Pandora's Box and the Level Playing Field: Food Safety and Regulations. *Farm Policy Journal,* **13** (3), 33-43.

[11] Gray H.P. (1993). – Economic Integration and Nationhood: An Extension. *Journal of Economic Integration,* **8** (1), 58-67.

[12] Hassoun N. (2011). – Free Trade, Poverty, and Inequality. *Journal of Moral Philosophy,* **8** (1), 5. doi: <https://doi.org/10.1163/174552411X549390>.

[13] O'Brien F. (2020). – $170 Billion and Counting: The Cost of Brexit for the U.K. *Journal*, Available at: <https://www.bloomberg.com/news/articles/2020-01-10/-170-billion-and-counting-the-cost-of-brexit-for-the-u-k> (accessed on 24 Janurary 2020).

[14] European Communities (2007). – A new Animal Health Strategy for the European Union (2007-2013) where “Prevention is better than cure”, Office for Official Publications of the European Communities, Luxembourg.

[15] Bartel A.P. & Thomas L.G. (1987). – Predation through Regulation: The Wage and Profit Effects of the Occupational Safety and Health Administration and the Environmental Protection Agency. *The Journal of Law and Economics,* **30** (2), 239-264. doi: 10.1086/467137.

[16] Wacziarg R. & Wallack J.S. (2004). – Trade liberalization and intersectoral labor movements. *Journal of international Economics,* **64** (2), 411-439.

[17] Revenga A. (1997). – Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing. *Journal of Labor Economics,* **15** (S3), S20-S43. doi: 10.1086/209875.

[18] Lindeque J. & McGuire S. (2007). – The United States and trade disputes in the World Trade Organization: Hegemony constrained or confirmed? *Management International Review,* **47** (5), 725-744. doi: 10.1007/s11575-007-0042-0.

[19] J Sainsbury plc (2018). – Animal Health & Welfare Report 2018, J Sainsbury plc, UK.

[20] Regmi A. (2001). – Changing Structure of Global Food Consumption and Trade, WRS-01. *In*, Market and Trade Economics Division, Economic Research Service, U.S. Department of Agriculture, Agriculture and Trade Report. , Washington, DC.

[21] More S.J., Hanlon A., Marchewka J. & Boyle L. (2017). – Private animal health and welfare standards in quality assurance programmes: a review and proposed framework for critical evaluation. *Veterinary Record,* **180** (25), 612. doi: 10.1136/vr.104107.

[22] Dumbrell N. (2018). – To what extent should society determine the right to farm? *Farm Policy Journal,* **15** (4), 19-26.

[23] OIE (2010). – Resolution No. 26: Roles of public and private standards in animal health and animal welfare OIE, Paris.

[24] Fulponi L. (2007). – The globalization of private standards and the agri-food system. *In* Global supply chains, standards and the poor: How the Globalization of Food Systems and Standards Affects Rural Development and Poverty (J. Swinnen, ed), CAB International, Wallingford. 5-18.

[25] Locke S. (2016). – Accusations fast food giant Hungry Jack's is feeding consumers fears over added hormones. *In* ABC News.

[26] Productivity Commission (PC) (2016). – Regulation of Australian Agriculture: Draft Report, Australian Government, Canberra, Australia.

[27] Institute of Medicine (2013). – International Regulatory Harmonization Amid Globalization of Drug Development: Workshop Summary, The National Academies Press, Washington, DC.

[28] MacLaren D. & Josling T.E. (1999). – Competition policy and international agricultural trade. *In* Working Paper Series 99-7, International Agricultural Trade Research Consortium, Minnesota.

[29] HealthforAnimals & Oxford Analytica (2016). – Innovation in animal health: Historic success, current challenges & future opportunities, HealthforAnimals, Brussels.

[30] Bricher J.L. (2010). – Chapter 1 - Ensuring Global Food Safety—A Public Health Priority and a Global Responsibility. *In* Ensuring Global Food Safety (C.E. Boisrobert, A. Stjepanovic, S. Oh & H.L.M. Lelieveld, eds), Academic Press, San Diego. 1-4.

[31] Rothman-Ostrow P., Gilbert W. & Rushton J. (2019). – Economic background to veterinary product. *In* Options assessment for regional regulatory harmonisation for livestock products in Sub-Saharan Africa, University of Liverpool., UK.

[32] Bain J. (1956). – Barriers to new competition, Harvard University Press, , Cambridge, Massachusetts. .

[33] Quiggin J. (2019). – Economics in Two Lessons: Why Markets Work So Well, and Why They Can Fail So Badly, Princeton University Press, New Jersey, USA.

[34] Bromley D.W. (1989). – Entitlements, missing markets, and environmental uncertainty. *Journal of Environmental Economics and Management,* **17** (2), 181-194. doi: [http://dx.doi.org/10.1016/0095-0696(89)90031-4](http://dx.doi.org/10.1016/0095-0696%2889%2990031-4).

[35] Grant S. & Quiggin J. (2013). – Bounded awareness, heuristics and the Precautionary Principle. *Journal of Economic Behavior & Organization,* **93** (1), 17-31. doi: <http://dx.doi.org/10.1016/j.jebo.2013.07.007>.

[36] Tisdell C.A. & Adamson D. (2017). – The importance of fixed costs in animal health systems. In The economics of animal health (J. Rushton, ed.). *Scientific and Technical Review of the Office International des Epizooties (Paris),* **36** (1), 49-56.

[37] Whiting T. (2005). – Anaplasmosis, animal welfare, and bilateral trade between Canada and the USA. *The Canadian veterinary journal = La revue veterinaire canadienne,* **46** (10), 935-941.

1. <https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm#observer> [↑](#footnote-ref-2)
2. <https://www.wto.org/english/news_e/news07_e/sps_28feb_1march07_e.htm> [↑](#footnote-ref-3)
3. That is if the object passes the regulations standards in one country, it doesn’t need to pass regulations in another country [↑](#footnote-ref-4)
4. Europe and the US having opposing views on the use of growth promoting hormones in animal production [↑](#footnote-ref-5)