

## Article

# Funding Pandemic Prevention: Proposal for a Meat and Wild Animal Tax

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**Abstract:** Market prices fail to properly account for the risk of zoonotic diseases associated with animal agriculture and cross-border trade in domesticated and wild animal products, the magnitude of which is demonstrated by the COVID-19 pandemic. Corrective measures are required to internalize the cost of pandemics. Communicable disease prevention and mitigation is a global public good and contributions to its production should be made at the international level. To compel states to pay for costs resulting from domestic consumption patterns that are externalized to other countries, this paper proposes a global contribution regime based on state consumption of animal products. We lay out the technical aspects of a cost-internalizing tax that could accomplish this goal and demonstrate its feasibility in light of existing trade law constraints. The paper concludes that the proposed cost-internalizing tax would be an appropriate method to deter pandemic risk-inducing activities and fund zoonotic disease outbreak prevention and pandemic response.

**Keywords:** zoonotic disease; cost-internalization; taxation; trade law; animal agriculture; wildlife trade; pandemic prevention; global public good

## 1. Introduction

Market prices fail to properly account for the high risk of zoonotic diseases that are associated with animal agriculture and cross-border trade in domesticated and wild animal products. The economic, health, and social impacts of the current COVID-19 pandemic have exposed this risk, highlighting society's vulnerability to novel zoonotic disease outbreak. The threats posed to human wellbeing and development and the costs imposed on private and public finances are significant. Pandemics also weaken policies fundamental to sustainable development, such as those that seek to improve health and education, reduce inequality, and promote economic growth [1]. The impacts of pandemics include preventable loss of life, direct spending on research and health care, and loss of employment and economic activity across sectors. A March 2020 analysis by the UN Committee on Trade and Development projected that the economic loss following the current pandemic crisis would reach up to three trillion dollars [2]; a June 2020 report by the International Monetary Fund estimates that COVID-19 will result in 40 million deaths and reduce global economic output by USD 12.5 trillion by the end of 2021 [3]. While the health and social impacts of the COVID-19 pandemic are still evolving and cannot be properly accounted for in full, they are likely significant and long term [4–6]. A global response is needed to meet these costs. Accordingly, this paper proposes a trade-compliant design for funding an international response to pandemics that also addresses the source of this risk.

The first section demonstrates the need for pandemic prevention measures, introduces the role of taxation in achieving this goal, and establishes the normative basis for implementation at a global scale. Following this background, the second section presents a fiscal design to raise revenues in support of zoonotic disease outbreak prevention and mitigation, built on the principle of cost-internalization of

pandemic risk. We then discuss world trade law and its potential role in supporting the proposed fiscal policy. The paper concludes that a global cost-internalizing tax mechanism would be an appropriate and feasible method to address the cost of pandemic disease outbreak prevention, and reduce their prevalence.

It is beyond the scope of this paper to provide a specific timeline to implementation of the proposed taxation measure, or to analyze the appetite for such a reform by national actors. However, we note that several governments around the world have already announced or adopted various new forms of taxation in response to the COVID-19 pandemic [7,8]. The pandemic has highlighted the important repercussions of financial and logistical shortcomings in various international institutions, as well as our global vulnerability to disease outbreaks. In this context, we therefore propose that the introduction of a meat and wild animal tax policy to provide for a fair and effective global pandemic response system is both necessary and feasible.

## 2. Background

### 2.1. The Need for Pandemic Prevention at a Global Scale

The scale of the COVID-19 pandemic is unique, but it is by no means the century's only major disease outbreak. Other pandemics have occurred in the past and more outbreaks can be expected in the future. If appropriate measures are not taken, pandemics are expected to worsen and become more frequent. The costs of responding to the associated health crises are dispersed and significant, with a disproportionate impact on the poor [9,10]. Despite medical advances in the last century, a growing frequency of infectious disease is expected in the coming years, with an estimated global cost of USD 6 trillion over the course of the 21st century, or an average of USD 60 billion per year [11].

Much of this risk is attributable to zoonotic diseases, that is, diseases transmitted from animals to humans. In fact, of all new and emerging infectious diseases, zoonotic diseases are the most significant vector, representing 60–75% of the health burden associated with transmittable diseases [12,13]. Zoonotic disease outbreaks can occur through chance encounters between humans and wild animals, but the overwhelming majority are attributable to commercial human activities. Animal agriculture [12,14,15] and the wild animal trade [16–19] account for approximately 30% and 70%, respectively, of the risk of animal-to-animal and animal-to-human transmission [12].

To respond to the growing risk of disease outbreak and mitigate the broad economic and social impacts of pandemics, public health officials have called for improved zoonotic disease spread-tracing and response mechanisms at the international level, to support and coordinate national health systems [11]. The creation of such a body would likely necessitate a collaborative effort between the World Health Organization, the Food and Agriculture Organization, and the World Organization for Animal Health, as advocates of a One Health framework have suggested [20]. This role could be taken up by a body whose objectives and activities would be formalized by multilateral agreements or be worked into the roles of existing international collaborative bodies such as the G20, the OECD, or regional trade blocks. The Global Health Security Initiative and the Global Fund to fight HIV/AIDS, tuberculosis, and malaria can also serve as precedents; the latter having recently announced an expansion of its efforts to provide COVID-19 support [21]. Responses to zoonotic disease outbreaks by this reformed framework should take the form of capacity building as well as technical, financial, and material assistance [11,20,22]. Defining these roles and the actors who will fill them is a potential avenue for further policy research and beyond the scope of this paper.

The required system is projected to cost approximately USD 4.5 billion every year. This would be a substantial increase to the yearly operational budget of the World Health Organization at USD 2.4 billion [23], the Food and Agriculture Organization at USD 1.3 billion [24], and the World Organization for Animal Health at USD 35 million [25]. However, the cost is modest when compared to the alternative scenario, which projects USD 60 billion dollars per year in pandemic costs. Further, spending on prevention provides an opportunity for a double dividend. Indeed, strengthening

veterinary systems would increase formal trade opportunities and incomes for producers, and reduce the risks associated with informal trade. More broadly, improved public veterinary and human health systems would provide better control of other human and livestock diseases, including the 2.3 billion zoonotic infections that burden poor people every year [26].

## 2.2. *The Role of Taxation in Achieving this Goal*

Private firms that create and contribute to the risk of communicable diseases largely externalize these costs to individuals and communities at both the national and international levels. To properly account for the risk of pandemics resulting from this market failure, a method of ensuring equitable risk distribution is required. Taxation is a well-accepted method to efficiently compel cost internalization and avoid the free-rider effect [27].

At the national level, states can internalize some of the pandemic risk associated with the consumption and production of animal agriculture and wild animal products through domestic regulatory policies, including taxes. Many states use targeted taxes to offset externalities associated with carbon emissions, sugar consumption, and cigarette use (all linked to negative public health effects). A similar policy can be deployed to address pandemic risk. The goal is to internalize the economic and social costs of potential pandemics and allocate the financial burden to those who benefit from the risk-creating activities. The revenue thereby raised should be used to ensure that all states have the capacity to fund pandemic prevention and response [10].

A difficulty in designing such a regime is that no international law exists to address the costs associated with domestic consumption patterns that are externalized to other countries. A state that adopts a new tax to internalize such costs thus runs the risk of being accused of violating various international agreements, such as those respecting free trade. Any corrective regime must therefore be devised in a manner that respects the constraints of existing international law, perhaps especially world trade law.

To achieve this, we propose a global contribution regime to fund pandemic surveillance and response, pursuant to which the contributions owed by each state would be determined by their proportionate consumption of animal agriculture and wild animal products relative to the world as a whole. Consumption has been chosen as the basis for calculating tax contribution in order to account for the inherent disease risk associated to meat and wild animal consumption across the supply chain, including in their production, storage, and trade. The revenues raised by this regime would be targeted to ensure proper funding for the prevention of zoonotic disease outbreaks, even as they internalize the pandemic risks associated with the continued consumption of animal products. A fully successful deployment of the tax would theoretically reduce the risk of pandemic to zero and therefore be expected to raise no further revenue once all costs have been fully internalized.

The proposed regime would provide an accountability mechanism at both the national and international levels that would contribute to pandemic prevention in two ways. First, by ensuring a reliable flow of funds to an international disease surveillance and response body and second, by acting as a Pigouvian incentive to reduce the consumption of pandemic risk-inducing goods.

## 2.3. *The Case for a Global Response Regime*

A reasonable rejection of any proposal for a global regulatory regime is the principle of subsidiarity, which requires that issues be resolved at an institutional level that is consistent with their resolution. However, as the current pandemic has demonstrated, zoonotic disease outbreak is a global issue and the framework for its resolution can be addressed through existing global institutions. Given the nature of disease spread, global and regional responses to pandemic prevention would be more effective than individual state action.

States have recognized that infectious diseases pose severe risks to the entire global population [22]. The Covenant on Economic, Social, and Cultural Rights has stated that because some diseases are “easily transmissible beyond the frontiers of a (s)tate, the international community has a collective

responsibility to address this problem” [28]. The UN 2030 Agenda for Sustainable Development recognizes the importance of preventing communicable disease and other illnesses in order to achieve the goals of sustainable development [1]. Although to varying degrees, the economic, health, and social costs of pandemic events affect the entire global community, and all states gain from reducing these impacts. As such, the prevention of pandemics is a pure global public good and it is desirable that contributions to its production be made at the international level. A fundamental question thus arises: How should the responsibility to contribute to the production of this global public good be allocated across states?

To answer this question, we draw from international law and development principles in which allocation questions have received normative attention. Fairness in the allocation of responsibility is embodied in the international environmental law principle of common but differentiated responsibility, which holds that countries must contribute to the mitigation of a risk in proportion to the benefit they draw from the activities at its origin [29]. A similar equivalent concept exists in trade law in the “special and differential treatment” accorded to developing nations. “Common” suggests that certain risks affect every nation on earth and that all benefit from responding to them [30]. “Differentiated” accounts for the idea that the responsibility of each state to contribute to this global good is not uniform, but rather based on the needs of each state, to their present and historical culpability, and to their capacity to respond [22,30].

The principle of common but differentiated responsibility developed in international environmental law has been suggested as a basis for allocating the shared responsibility to prevent disease emergence and spread [22]. In the context of pandemics, such a framework would assign greater responsibility for prevention to those who have contributed to the emergence of disease and who have the resources and capacity to respond to such threats [22]. This outcome can be achieved by distributing the responsibility to contribute to mitigation in proportion to each country’s benefit from the activities at the source of most zoonotic disease outbreaks.

We propose to calculate this benefit based on the aggregate consumption of animal agriculture and wild animal products of each state. In doing so, the states that are the largest consumers of these goods, and that are as such the largest beneficiaries of the continued failure to account for pandemic risks, would bear a larger monetary responsibility towards disease prevention. States that may produce these goods but are not the ultimate consumer, and as such not the driving factor in their production, would therefore not bear as large of a burden as the states in which more consumption takes place.

While not all states would contribute the same amount to pandemic prevention, all states would receive the same benefits from the implementation of a disease surveillance and response body. Even if a given state contributes very little, or not at all, it would still be able to receive assistance and benefit. This accounts for the different capacity of each state to contribute to pandemic prevention without neglecting those most in need of a global response. Over time, with the help of assistance from the globally funded regime, the capacity of a state to respond to disease outbreak would improve, thereby also reducing the global risk of pandemics. This results in a common benefit to all, due to the transmissibility of infectious diseases beyond state borders.

This accounts for differentiated responsibility, where “differentiation requires that actors internalize the detrimental effects that they impose on others” [22]. The formal undertakings are uniform in the sense that the percentage of responsibility for each state is based on the same criteria (current consumption of animal agriculture and wild animal products), but their impacts are not. Some states will bear a larger monetary responsibility than others, because of their greater contribution to the risk. Understood in this way, the principle is no more controversial than declaring that the polluter should pay [30].

The same logic applies at the national level, where risk-taking citizens that benefit from certain activities should be accountable for their externalized costs. Direct parallels can be drawn from the international to the national level concerning the principle of common but differentiated responsibility. Reducing the externalized social, health, and economic costs of animal agriculture and wild animal

trade through domestic taxation can provide a benefit to all residents of a state. However, just as at the global level, only those who partake in the targeted activities should be responsible for the tax. A domestic tax policy could and should be applied by member states to fairly attribute within their population the burden of compliance with the proposed international contribution system.

### 3. Cost-Internalizing Tax Design Proposal

The proposed fiscal design has both a global and a domestic component to ensure both adequate support for communicable disease outbreak prevention and the fair internalization of the cost of pandemic risk.

At the international level, the contribution payable by each state to disease surveillance and the response body would be calculated in reference to each state's respective participation in the risk-creating activity. As stated above, the total required contribution amount needed to create and sustain a global pandemic surveillance and response system is USD 4.5 billion per year at first, with lower amounts needed in future years as the tax produces the Pigouvian effect. We propose that each year, thirty percent of the total contribution amount be based on the volume of animal agriculture products consumed within each state as determined by Food and Agriculture Organization data, while the other seventy percent be based on that state's share of wild animal imports as determined by Convention on the International Trade in Endangered Species data and other sources. These percentages reflect the risks associated with each source and their focus on consumption respects the principle of common but differentiated responsibility for risk mitigation as discussed above [12]. Although an estimate, this distribution stems from research on economic activity at the source of zoonotic disease outbreak and is used as the basis for the tax design calculations.

The contribution would have two rates: a base rate corresponding to a share of the yearly total contribution amount (initially, the USD 4.5 billion mentioned above) and a punitive rate applied in the case of non-payment. The punitive amount would be calculated in reference to a share of the yearly USD 60 billion cost of unmitigated pandemic risk. Table 1: Contribution calculation provides an illustrative example.

**Table 1.** Contribution calculation.

Example of Contribution Calculation
<p>What is the contribution payable by a given country X, given its share of global animal agriculture and wild animal products consumption?</p> <p>Country X has a 3% share of global consumption of animal agriculture products and a 6% share of global consumption of wild animal products for a contribution year. Based on the above calculation, its contribution must amount to 3% of USD 1.35 billion (30% of USD 4.5 billion) and 6% of USD 3.15 billion (70% of USD 4.5 billion), for a total of USD 607.5 million for that contribution year.</p> <p>Using Food and Agriculture Organization data on Food Supply—Livestock and Fish Primary Equivalent (tonnes), it is possible to calculate the contribution attributable to each member state based on their share of animal agricultural products consumption. For example, in 2013, the United States and China would be responsible for 9.39% and 14.15%, respectively, of the USD 1.35B portion indexed to animal agriculture consumption, or USD 127M for the United States and USD 191M for China.</p> <p>As explained above, it is not currently possible to conduct such calculations for the portion indexed to consumption of wild animal products due to a lack of reliable data.</p>

The comparison between each member state's consumption volume is complicated by the fact that the pandemic risk contribution of each product is not reducible to a single unit of measurement. There is variation among the functional units and the amount of risk associated with each. Thus, for example, functional units of "animal products" include such varied items as 100 g of animal sourced protein, 100 kcal from animal fat, a pound of beef, a meter of wool, a liter of milk, a chimpanzee hand ashtray, a square meter of leather, a bat, mink fur, 100 g of powdered rhino horn, etc. Normalization of consumption volumes to the value of consumed goods would not solve this issue, as it would not account for tastes and scarcity. Even if functional units could be standardized to a monetary value,

there is variation in the pandemic risk represented: for example, an equal amount of sheep's wool and cashmere may embody similar pandemic risks but have vastly different purchase value. We therefore suggest using the mass of domesticated animal products consumed for food as a proxy for all animal agriculture product consumption, and the number of units of "individuals" hunted, purchased or bred as a proxy for wild animal consumption, to reflect the risk of these activities.

One notable exception should be applied to wild fish and invertebrates. Although these types of animals, imported for food, constitute the greatest volume of wild animal consumption, they present a markedly lower risk of zoonotic disease transmission at every step of their supply chain [31,32]. Therefore, all products derived from these types of animals and used as a food source should be accounted for as part of a member state's consumption of animal agriculture products, rather than wild animal products. However, all live individuals (including fish, reptile, and amphibians) bred or imported as pets should be accounted for as individuals in the wild animal consumption category. This is because the risk of live individuals spreading communicable diseases to humans or domestic animal populations is higher than that from animal agriculture products [33,34].

At the national level, contributing states may decide to allocate revenue generation responsibility to risk-taking individuals to internalize the cost of pandemic risks associated to the targeted economic activities. This could take the form of fiscal measures on income, consumption, or a combination of tax bases, which differentially target risk creators, such as suppliers and consumers. For example, an excise tax on domestic animal products and bred wild animals, alongside a border adjustment on the same products, could be used to target consumption, while a surtax on profits arising from industrial animal farms and wildlife importers and breeders would target production. Higher tax rates on wild animal products and their breeders and manufacturers, compared to animal agriculture products, would be desirable to reflect the higher risk contribution of the former. Distribution of contribution obligations among market actors responsible for pandemic risks would translate Pigouvian effects from the state to individuals and firms, enhancing the fairness and political acceptability of these measures. Further research would be required to determine more precisely the effects of such a tax on national production and consumption patterns.

### 3.1. Base Measurement Challenges

In order to ensure the effectiveness of these policies, the challenge of consumption under-reporting and the possibility of increased illegal animal trade must be addressed.

Under-reporting of national animal product consumption occurs either from voluntary avoidance or as a result of poor customs enforcement on illegal animal trade. Data on the volume of wildlife trade originating from the Convention on the International Trade of Endangered Species (CITES) and the World Customs Organization, in particular with respect to illegal trade, are particularly problematic and often do not taxonomically discriminate between imports from domesticated or wild sources.

This may be remedied by ensuring that import data closely match export data from source countries, with the average used for contribution calculation. Data from the Convention on the International Trade of Endangered Species should also be used in conjunction with data from the Harmonized System (HS) administered by the World Customs Organization (HS data are more extensive than CITES data but seldom differentiate between the agricultural or wild source of animal products. Accordingly, we would encourage the extension of HS codes from 6 to 10 digits in order to enable such differentiation, as has been suggested in the literature [35]). Data on national consumption of animal products for the purpose of undertaking contribution calculations cannot be expected to offer a perfect picture. However, it must reach a level that is generally perceived as a fair base for the determination of contributions, much like the demographic and economic data used to calculate contributions to other international bodies, such as the United Nations.

Increased taxes on legally traded animal products will inevitably incentivize the use of illegal channels, which are already quite developed. However, the same can be said for many forms of taxation including standard value-added taxes, already in place in many states. Further, funding for

strengthened disease surveillance in wild animal populations systems, one of the intended results of the proposed mechanism, would provide useful data for the application of the Convention on the International Trade in Endangered Species and is likely to contribute to reduced illegal trade of bush-meat [20].

### 3.2. Enforcement Mechanism

Unlike the residents within a state, states themselves are not accountable to any authority that can compel their contributions in the absence of a multilateral agreement. An efficient enforcement mechanism that respects international law principles is therefore needed to ensure the effectiveness of the proposed contribution design. At the global level, a system relying on naming-and-shaming has proven to be ineffective in encouraging delinquent states to contribute to the production of other global public goods, as demonstrated by the UN General Assembly and peacekeeping budgets, which suffer chronic arrears by major contributors [36]. If a similar contribution system was relied upon to fund a surveillance and response system, it would be at the mercy of national leaders and potentially face cash flow issues when its full capacity is most critically needed [37].

A solution can be devised in that quantifiable externalized costs are created by the failure to fund communicable disease prevention. Within the international trade law regime, the internalization of benefits and the externalization of costs on other market actors can provide some grounds for redress from a dispute settlement panel. For example, to address instances of illegal subsidies, tariffs, or dumping, the World Trade Organization can authorize member states to seek redress against internal state policies that break international trade rules or adversely affect trade [38]. A similar regime can be devised to address the externalities associated to agricultural and wild animal products. In the present context, when a member state fails to contribute to the proposed regime of pandemic surveillance and response while partaking in the consumption of animal products, it gains an unfair trade advantage by free-riding on the contribution of other member states towards pandemic mitigation. The World Trade Organization's mandate could be extended to recognize the effects of pandemics on trade and enforce the internalization of costs associated with traded goods to member states that benefit from the trade and consumption of these goods yet externalize their costs onto other states. The World Trade Organization's dispute resolution institutions offer an attractive mechanism to ensure the enforcement of the proposed contribution. However, a similar result could also be achieved through other institutions, such as regional trade agreements and tax treaties. Alternative enforcement mechanisms may have to be devised to account for the current lack of cooperation at the international level.

The proposed role for the World Trade Organization would be the following. If a member state defaults on one or several yearly contributions, other member states would be authorized, either individually or as a coalition, to collect an amount corresponding to all or part of the defaulting state's outstanding contribution, calculated using a punitive rate. Collection occurs through countervailing measures, namely the removal of agreed trade benefits, resulting in the imposition of import tariffs or the withholding of tax on exports to and from the defaulting member state. The legal imposition of such countervailing measures requires authorization by a World Trade Organization panel (While this recourse would only be accessible to World Trade Organization members, this includes the vast majority of states and all major consumers of animal products. The only non-member states are Aruba, Curacao, Eritrea, Kiribati, Kosovo, Marshall Islands, Micronesia, Monaco, Nauru, North Korea, Palau, the Palestinian Territories, San Marino, Sint Maarten, Turkmenistan, and Tuvalu). In the proposed regime, a successful submission would require the putatively enforcing member state(s) to prove the outstanding contribution by the defaulting state, and to submit the proposed countermeasures and the projected amount to be collected at the punitive rate. The measures would cease once the defaulting state complies with its contribution obligation.

An uneven distribution of the amount to be collected across the balance of trade between the enforcing state and the defaulting state may confer an unfair trade advantage to the enforcing state.

However, the enforcing state should nonetheless be able to decide which goods to target with the proposed countervailing measures, just as they are in other trade disputes. Furthermore, while an amount corresponding to the defaulting state's contribution in arrears should be disgorged to the body administering contributions to the global pandemic surveillance and response system, the enforcing state should be allowed to keep the balance collected. In both cases, as long as the amount of the contribution in arrears is paid, and the total amount collected through countervailing measures does not exceed the amount allowed under the punitive rate, the possibility of an advantage to the enforcing state should be allowed. This would encourage enforcement and discourage arrearage, which is the objective of the measure.

The defaulting state would accordingly be given a final opportunity to pay its outstanding contribution in full or face countermeasures, as illustrated in Table 2: Contribution enforcement.

**Table 2.** Contribution enforcement.

<b>Example of Contribution Enforcement</b>
<p>What if country X fails to contribute for a given year and country Y and Z wish to enforce the contribution?</p> <p>Since country X refuses to contribute to risk mitigation efforts, it exposes itself to countervailing measures by other member states, calculated using the punitive rate, amounting to 3% of 18B (30% of USD 60 billion) and 6% of USD 52 billion (70% of USD 60 billion), for a total of USD 3.66 billion. First, the international organization in charge of collecting contributions for a global pandemic surveillance and response system will issue a notice of non-payment to country X and all other member states. Countries Y and Z, which, respectively, import USD 100 billion and 70 billion of goods from country X, would submit that they aim to apply USD 2.15 billion and 1.5 billion in tariffs on country X, respectively, to a WTO panel (The indexing of import tariffs to the import volume of each enforcing country is used for simplification purposes only. Enforcing countries should be free to agree on a workable approach to the application of tariffs, as flexibility will incentivize enforcement).</p>

#### 4. Compatibility with Trade Law

The international trade regime relies on institutions of the free trade system and its rules. Given that the proposed global contribution to pandemic prevention relies on the role of the World Trade Organization to enforce state obligations, we must establish how the proposed intervention is compatible with the current normative foundation of that system. As a distinct issue, if states choose to allocate the contribution obligation to risk takers through fiscal policy, they must consider the restrictions imposed by trade rules.

##### 4.1. Normative Basis for WTO Enforcement

We have proposed that the failure to account for the cost of the high risk of pandemics is a market failure that can justify the intervention of the World Trade Organization's processes and institutions. Through this enforcement role, non-compliance would be accompanied by a punitive sanction, encouraging compliance. While these advantages are clear, the basis for situating the proposal within the international trade system must be established given that accounting for pandemic risk is not part of the "traditional" vision for the World Trade Organization.

First, the question of whether states would have a legal standing to impose countervailing measures must be addressed since the failure to pay a contribution to prevent pandemics does not constitute a violation of trade rules per se. To this point, case law has established that no legal interest is required to bring a claim before the World Trade Organization; legal standing is required only to impose countervailing measures [39,40]. Further, the "nullification or impairment" of benefits caused by a party's failure to carry out certain obligations can be sufficient to justify countermeasures [41]. Since, as we argued above, communicable disease prevention is a global public good, all state members benefit from its existence. All states are also harmed by a member state's failure to contribute, due to the resulting increase in pandemic risk. Under the proposed mechanism, all member states would have standing to impose countervailing measures to secure compliance with the contribution obligation. These could be recognized by multilateral agreement if necessary.

Second, the punitive character of the proposed sanction as it relates to the principle of proportionality must be examined. Punitive sanctions usually contravene the principle of proportionality, whereby a complainant's retaliatory response may not go beyond the level of the harm caused by the respondent [38,40,41]. However, we submit that the punitive rate proposed above is in fact proportional to the harm caused by a defaulting state. The sanction imposed corresponds to the portion of the USD 60 billion cost of unabated pandemic risk attributable to that particular state. It represents the real cost of their failure to contribute to pandemic prevention and response. Therefore, the proposed punitive rate does not only act as an incentive to compliance, but it is also trade correcting. In some cases, such as this one, the use of pecuniary countermeasures can increase compliance, strengthen the cooperative multilateral trade framework, and ensure fairness to weaker nations [39]. In fact, states have seen little success in pushing compliance, in part because of the ineffectiveness of countermeasures. The difficulty is especially acute when there is an imbalance of power between states [39]. As such, the proposed punitive sanction does not conflict with existing World Trade Organization principles but rather enhances their trade liberalizing objective [42]. An added benefit is produced in that a portion of the revenue collected via sanction, corresponding to contributions in arrears, is to be remitted to the pandemic response body.

Finally, while there are currently no collective remedies or sanctions by the World Trade Organization's membership as a whole [39], our proposal is a step towards further cooperation. Member countries would have the ability to file a complaint as a group, allowing each to impose countervailing measures unto the defaulting country. This would not only permit enforcing states to raise adequate revenue more quickly, but also, and perhaps more importantly, it would increase the effectiveness of the measure and promote collective action at the international level [43]. While pandemic prevention is not necessarily at the heart of the World Trade Organization, its rules need not restrict the ability of states to implement strict consequences and enforcement mechanisms. The multilateral trading system's overriding purpose is to enable trade to flow as freely as possible while ensuring that there are no undesirable side effects on economic development and wellbeing [43]. This objective cannot be furthered without addressing the very real threat to economic and human development posed by pandemics. If the World Trade Organization fails to account for pandemics and to play a part in addressing trade failures, it cannot properly play the role for which it was created.

At the time of writing this proposal, the World Trade Organization is under high pressure to reform its institutions, and its continuity is under question [44]. As such, the proposal is unlikely to gain sufficient traction in the current state of international cooperation. However, a future when multilateral cooperation becomes feasible again can be envisioned. In such a space, it is useful to envision a renewed mandate for the institutions of international trade and their role in addressing global challenges. A mechanism to account for the contribution of world trade to the risk of pandemics could also be incorporated into regional trade agreements or other multilateral cooperation instruments.

#### 4.2. Domestic Fiscal Policy

At the national level, a fiscal policy targeting both consumers and suppliers could be deployed to allocate revenue generation responsibility for the proposed global contribution to risk-taking citizens. This would directly affect the trade flow of such targeted products, and therefore, must be structured to comply with fundamental trade principles. A tax policy, even if globally applied and in the interest of a global public good, cannot be justified if it unduly restricts trade and is applied in a way that discriminates between World Trade Organization members.

In regards to an income tax policy, states have a large degree of flexibility, because generally, such a policy is not considered to be trade distorting (Income taxes, because they are taxes not normally directly levied on products, are generally considered not to be subject to the national treatment principle, as confirmed by the WTO panel in Argentina—Measures Affecting the Export of Bovine Hides and the Import of Finished Leather (WT/DS155/R), paragraph 15). This leaves states with the ability to raise revenue through income taxation for any number of reasons, which could include pandemic

prevention [45]. A tax on consumption can also be implemented so long as it does not only target foreign products. If animals and animal products traded into the country are taxed at the same rate as those traded within the country, and if all countries receive the same tax treatment at the border, no claim in discrimination should arise [46]. Similarly, a tax with a uniform rate across agricultural animal products, and a different, but uniform, rate across wild animals could be applied, so long as these different categories are clearly not “like”. Each state would have to carefully consider the implications of other existing treaties in the development of their national tax policy. Specific rules contained in World Trade Organization technical agreements must also be considered.

## 5. Conclusions

The current COVID-19 pandemic crisis has highlighted the need for a coordinated response to pandemic prevention. This paper’s contribution to this need is to propose a sustainable method of funding the disease and surveillance body that public health officials have requested. The proposed state contributions respond to the common threat of pandemics in a way that accounts for the common responsibility of states and respects their differentiated responsibility in doing so. The contribution obligation is ensured through efficient enforcement at the international level. It can further be sourced from a domestic tax policy that internalizes some of the risk of pandemics, while preserving national regulatory autonomy in determining the manner in which to do so.

Funding a global zoonotic disease surveillance and response body through a market-correcting mechanism furthers fairness, ensures a steady revenue stream, and is consistent with domestic and international legal standards. Although world economies have been highly impacted by the current crisis, the COVID-19 pandemic also provides a moment of political feasibility for establishing such a regime. The proposed enforcement role of the World Trade Organization, although sensitive, would provide accountability at the international level. As stated above, a similar result could also be achieved through agreements tied to regional trade agreements or through the participation of the World Health Organization.

The proposed design may also inspire future research on similar mechanisms that could be deployed to account for all of the externalized costs of animal products beyond potential pandemics, such as the larger impacts of climate change, water scarcity, and other issues. A similar strategy may also be appropriate for other products with high externality costs, such as petroleum products. Coordinated efforts at the international level are important “vehicles for mobilizing and sharing knowledge, expertise, technologies and financial resources to support the achievement of the sustainable development goals in all countries” [29]. The proposed approach may not be readily achievable in a world of practical politics and compromise but it provides an appropriate theoretical baseline [47]. Just as the constellation of United Nations institutions were created “in one unshakable unity of determination—to find a way to end wars”, the same unity of purpose must now be mustered to reform these institutions to preserve humanity from the threat of pandemics.

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## References

1. United Nations Department of Economic and Social Affairs. Available online: <https://sdgs.un.org/goals> (accessed on 25 August 2020).
2. Coronavirus: Can Policymakers Avert a Trillion-Dollar Crisis? Available online: <https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2300> (accessed on 20 August 2020).

3. World Economic Outlook Update. 2020. Available online: <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUTupdateJune2020> (accessed on 26 August 2020).
4. Paterson, R.W.; Brown, R.L.; Benjamin, L.; Nortley, R.; Wiethoff, S.; Bharucha, T.; Zandi, M.S. The emerging spectrum of COVID-19 neurology: Clinical, radiological and laboratory findings. *Brain* **2020**. [CrossRef]
5. Ivanov, D. Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case. *Transp. Res.* **2020**, *136*, 101922. [CrossRef]
6. Torales, J.; O'Higgins, M.; Castaldelli-Maia, J.M.; Ventriglio, A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int. J. Soc. Psychiatry* **2020**, *66*. [CrossRef]
7. International Monetary Fund, Policy Responses to COVID-19. Available online: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19> (accessed on 20 September 2020).
8. OECD, Tax and Fiscal Policy in Response to the Coronavirus Crisis: Strengthening Confidence and Resilience. 19 May 2020. Available online: [https://read.oecd-ilibrary.org/view/?ref=128\\_128575-o6rakt0aa&title=Tax-and-Fiscal-Policy-in-Response-to-the-Coronavirus-Crisis](https://read.oecd-ilibrary.org/view/?ref=128_128575-o6rakt0aa&title=Tax-and-Fiscal-Policy-in-Response-to-the-Coronavirus-Crisis) (accessed on 20 September 2020).
9. Oppenheim, B.; Yamey, G. Pandemics and the Poor. 2017. Available online: <https://www.brookings.edu/blog/future-development/2017/06/19/pandemics-and-the-poor> (accessed on 10 June 2020).
10. Bollyky, T.J.; Bowen, C.P. The Tragedy of Vaccine Nationalism: Only Cooperation Can End the Pandemic. *Foreign Aff.* **2020**, *99*, 96–108.
11. National Academy of Medicine Secretariat. The Case for Investing in Pandemic Preparedness. In *The Neglected Dimension of Global Security: A Framework to Counter Infectious Disease Crises*; Commission on a Global Health Risk Framework for the Future; National Academies Press: Washington, DC, USA, 2016.
12. Jones, K.E.; Patel, N.G.; Levu, M.A.; Storeygard, A.; Balk, D.; Gittleman, J.L.; Dasza, P. Global trends in emerging infectious diseases. *Nature* **2008**, *451*, 990–993. [CrossRef]
13. Cleaveland, S.; Haydon, D.T.; Taylor, L. Overviews of Pathogen Emergence: Which Pathogens Emerge, When and Why? In *Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances and Consequences of Cross-Species Transmission*; Childs, J.E., Mackenzie, J.S., Richt, J.A., Eds.; Springer: Cham, Switzerland, 2007; Volume 31, pp. 85–111.
14. Slingenbergh, J.; Gilbert, M.; de Balogh, K.; Wint, W. Ecological sources of zoonotic diseases. *Rev. Sci. Tech. Off. Int. Epizoot.* **2004**, *23*, 467–484. [CrossRef]
15. Jones, B.A.; Grace, D.; Kock, R.; Alonso, S.; Rushton, J.; Said, M.Y.; McKeever, D.; Mutua, F.; Young, J.; McDermott, J.; et al. Zoonosis emergence and agroecological change. *Proc. Natl. Acad. Sci. USA* **2013**, *110*, 8399–8404. [CrossRef]
16. Rosen, G.E.; Smith, K.F. Summarizing the evidence on the international trade in illegal wildlife. *EcoHealth* **2010**, *7*, 24–32. [CrossRef]
17. Smith, K.M.; Zambrana-Torrel, C.; White, A.; Asmussen, M.; Machalaba, C.; Kennedy, S.; Karesh, W.B. Summarizing US wildlife trade with an eye toward assessing the risk of infectious disease introduction. *EcoHealth* **2017**, *14*, 29–39. [CrossRef]
18. Karesh, W.B.; Cook, R.A.; Bennett, E.L.; Newcomb, J. Wildlife trade and global disease emergence. *Emerg. Infect. Dis.* **2005**, *11*, 1000–1002. [CrossRef]
19. Pavlin, B.I.; Schloegel, L.M.; Daszak, P. Risk of importing zoonotic diseases through wildlife trade, United States. *Emerg. Infect. Dis.* **2009**, *15*, 1721–1726. [CrossRef] [PubMed]
20. Keusch, G.T.; Pappaioanou, M.; González, M.C.; Scott, K.A.; Tsai, P. (Eds.) *Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases*; US Institute of Medicine: Committee on Achieving Sustainable Global Capacity for Surveillance and Response to Emerging Diseases of Zoonotic Origin: Washington, DC, USA, 2010.
21. The Global Fund to Fight AIDS, Tuberculosis and Malaria. Available online: <https://www.theglobalfund.org/en/covid-19/#mechanism> (accessed on 22 August 2020).
22. Sirleaf, M. Responsibility for Epidemics. *Tex. Law Rev.* **2018**, *97*, 285–354.
23. World Health Organisation. *Programme Budget 2020–2021*; 2019 WHO/PRP/19.1; WHO: Geneva, Switzerland, 2019.
24. Food and Agriculture Organisation Strategic Planning. Available online: <http://www.fao.org/about/strategic-planning/en/> (accessed on 20 August 2020).
25. World Organisation for Animal Health. Annual Report 2018. Available online: [www.oie.int/report2018](http://www.oie.int/report2018) (accessed on 20 August 2020).

26. Grace, D.; Mutua, F.; Ochungo, P.; Kruska, R.; Jones, K.; Brierley, L.; Ogutu, F. *Mapping of Poverty and Likely Zoonoses Hotspots*; Zoonoses Project 4; Report to the UK Department for International Development; ILRIL: Nairobi, Kenya, 2012.
27. Arthur, C.P. *The Economics of Welfare*, 4th ed.; MacMillan & Co., Ltd.: New York, NY, USA, 1932.
28. UN Economic and Social Council. *General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12 of the Covenant)*; UN Committee on Economic, Social and Cultural Rights (CESCR): Geneva, Switzerland, 2000.
29. Hey, E. Common but Differentiated Responsibilities. *Max Planck Encyclopedia of Public International Law* 2011. Available online: <https://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e1568?rskey=Crdr9W&result=1&prd=MPIL> (accessed on 20 August 2020).
30. Stone, C.D. Common but Differentiated Responsibilities in International Law. *Am. J. Int. Law* **2004**, *98*, 276–301. [CrossRef]
31. Gauthier, D.T. Bacterial Zoonoses of Fishes: A Review and Appraisal of Evidence for Linkages between Fish and Human Infections. *Vet. J.* **2015**, *203*, 27–35. [CrossRef]
32. Rohr, J.R.; Barrett, C.B.; Civitello, D.J.; Craft, M.E.; Delius, B.; DeLeo, G.A.; Tilman, D. Emerging human infectious diseases and the links to global food production. *Nat. Sustain.* **2015**, *2*, 445–456. [CrossRef]
33. Weese, J.S.; Fulford, M.B. (Eds.) *Companion Animal Zoonoses*; Wiley-Blackwell: Hoboken, NJ, USA, 2011.
34. Stull, J.W.; Peregrine, A.S.; Sargeant, J.M.; Weese, S.J. Pet Husbandry and Infection Control Practices Related to Zoonotic Disease Risks in Ontario, Canada. *BMC Public Health* **2013**, *13*, 520. [CrossRef]
35. Chan, H.-K.; Zhang, H.; Yang, F.; Fischer, G. Improve customs systems to monitor global wildlife trade. *Science* **2015**, *348*, 291–292. [CrossRef]
36. General Assembly of the United Nations Committee on Contributions. Contributions Received for 2020 for the United Nations Regular Budget. 2020. Available online: <https://www.un.org/en/ga/contributions/honourroll.shtml> (accessed on 20 August 2020).
37. Ollstein, A.M. Trump Halts Funding to World Health Organisation. 2020 Politico. Available online: <https://www.politico.com/news/2020/04/14/trump-world-health-organization-funding-186786> (accessed on 14 June 2020).
38. World Trade Organisation. Principles of the Trading System. Available online: [https://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/fact2\\_e.htm](https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm) (accessed on 20 August 2020).
39. World Trade Organisation. *European Communities—Regime for the Importation, Sale and Distribution of Bananas, Complaint 539 by the United State*; WTO: Geneva, Switzerland, 1997.
40. Joost, P. Enforcement and Countermeasures in the WTO: Rules are Rules—Toward a More Collective Approach. *Am. J. Int. Law* **2000**, *94*, 335–347. [CrossRef]
41. World Trade Organisation. GATT General Agreement on Tariffs and Trade 1994. In *Marrakesh Agreement Establishing the World Trade Organisation*; WTO: Geneva, Switzerland, 1994.
42. World Trade Organisation. *Understanding the WTO*; WTO Information and External Relations Division: Geneva, Switzerland, 2005.
43. World Trade Organisation. *Marrakesh Agreement Establishing the World Trade Organisation*; WTO: Geneva, Switzerland, 1994.
44. Lester, S. Can Interim Appeal Arbitration Preserve the WTO Dispute System? *Cato Institute Free Trade Bulletin* **2020**, *77*, 1.
45. Daly, M. *Is the WTO a World Tax Organisation? A Primer on WTO Rules for Tax Policymakers*; International Monetary Fund: Washington, DC, USA, 2016.
46. Bähr, C.C. Greenhouse Gas Taxes on Meat Products: A Legal Perspective. *Transnatl. Environ. Law* **2015**, *4*, 153–179. [CrossRef]
47. McGinnis, J.O. The Political Economy of Global Multilateralism. *Chic. J. Int. Law* **2000**, *1*, 381. [CrossRef]

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