INTERNATIONAL POLICIES TO CONTROL PLANT AND ANIMAL DISEASES

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Summary

Gains in productivity, changing consumer preferences, and an international movement towards open markets have resulted in expansion of trade. While there are demonstrable benefits to trade, the nature of agricultural products make them vectors for pests and diseases that have the potential to adversely affect domestic agricultural production and human health. Though much of worldwide agricultural growth has resulted from changes towards intensive mono-crop and mono-animal production, modern intensive production practices also create situations where disease can be highly transferable if not isolated. To keep out potentially harmful products, regulations establishing quotas and quarantine traditionally have been used.

With the signing of the General Agreement on Trade and Tariffs (GATT), countries have the opportunity to demonstrate, through risk assessments, that the likelihood of the transfer of a pest or animal disease of economic significance is at an acceptable, low level and thus, gain access to international markets. New mechanisms also formalize and facilitate dispute resolution between nations. Concerted efforts have been undertaken by countries to eliminate disease and pest problems that limit trading opportunities. Risk assessments are playing an increasing role in this process. Elimination of trade barriers based on outcomes of risk assessments has opened up markets for many countries that have not been able to participate in global trade.

1. Introduction

One of the major purposes of the General Agreement on Trade and Tariffs (GATT) was to enable nations worldwide to benefit from free trade. An associated question is how long will this take and will all countries, regardless of their income, be able to participate? While there indeed may be gains from trade, there may also be external diseconomies, such as plant and animal pests harbored on imported plant and animal products. As most diseases are difficult and costly to eradicate, the "modus operandi" for countries free of certain diseases has been to keep products out. Or, in cases where there is a high demand for specific products, to allow entry of products using a series of control measures, such as quarantine of live animals or fumigation of fresh produce.

With the signing of GATT, countries now have the opportunity to trade by demonstrating through a risk assessment that the likelihood of a pest or animal disease of economic significance is at an acceptable, low level. Mechanisms are also currently in place to facilitate dispute resolutions when outcomes are challenged. In theory, the ability of countries to gain from the newly liberalized trade environment now depends on their own capacity to overcome disease and pest concerns of importing countries and their ability to demonstrate this condition.

Despite mechanisms established through GATT to ensure access to international markets, many countries are concerned that – as tariffs are negotiated away – there is the potential for misuse of technical measures. One concern is that technical measures will be used as non-transparent obstacles to trade, even when the broad desirability of lowering risks to health and safety is acknowledged, and despite the new international rules. For instance, the U.S. Department of Agriculture (USDA) has estimated that approximately $434 million U.S. dollars of United States export market share to Latin America (Central and South America) is currently threatened or denied because of plant health requirements the United States deems questionable. About $12 million of U.S. exports are either threatened or denied because of animal health concerns and a larger amount ($843 million) due to food safety barriers.

The purpose of this article is to explain why technical barriers related to plant and animal diseases are of economic concern, and to suggest ways in which disease eradication efforts may affect trade in the future. This article begins by summarizing the potential impact of animal and plant diseases and their control mechanisms. Following this, trade data is used to examine how trade patterns may be altered in response to disease outbreaks. Next, the increased use of risk analysis to alter trade decisions is

discussed. UN harmonized data is used to identify changes that occurred after a risk assessment resulted in a new decision. The issue of non-tariff trade barriers is then explored. United States import data is used to determine if there are significant differences in frequency of interceptions of specific of fruits, vegetables, and meat products from specific countries to assess the potential non-tariff trade barriers with regards to fresh agricultural products. The article concludes with a discussion of disease concerns, risk assessments, and the potential impact of disease eradication on trade.

2. Impact of Diseases and Mechanisms for their Control

Consequences of disease to consumers, livestock, and food crops are among the most important concerns confronting producers as they expand production, face consumer demands for safer products, and consider accessing export markets. This concern stems from the recognition that although much of worldwide agricultural growth has resulted from increased productivity and changes in the structure of many industries towards intensive mono-crop and mono-animal production, modern intensive production practices also create situations where disease can be highly transferable if not isolated. This is particularly evident in cases where small farmers and backyard producers fail to eradicate disease. The proximity of small producers to larger scale operations creates potential for constant re-infection. Epidemics affect not only farmers, but also the agricultural industry and national economy. Consequently, many countries have implemented eradication and control programs to combat epidemics and prevent the introduction or reintroduction of contagious diseases.

Countries have generally prohibited imports of a foreign agricultural product if the product has been associated with an unwanted pest or disease in the exporting country. Until 1995, importing countries would not permit any products from exporting countries having certain diseases or pests, even if they originated from a geographically isolated region that did not have the disease or pest. Article 6 of the Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS agreement) introduced the concept of regionalization, which recognizes pest and disease free zones, or areas of low pest or disease incidence for trade purposes. Regionalization provides for the acceptance of such imports if the exporting country can prove that they originate from a disease-free or pest-free area, creating the potential for wider trading opportunities. Countries with advanced veterinary and plant health infrastructures, such as surveillance systems, quarantine programs and regional control have a comparative advantage in the establishment of trustworthy and effective pest or disease free zones. The adoption of the SPS agreement also enabled the private sector within countries to aid in the eradication of a specific region and promote trade from that region. For example, large-scale swine operations, recognizing the benefit of being declared regionally free of hog cholera, financially aided in the eradication of disease in small-scale operations in the Yucatan Peninsula of Mexico. Following this, in 1994, Mexico officially requested that the states of Sonora, Sinaloa, Chihuahua be declared free of hog cholera, thus permitting greater trade.

Most developing countries do not have the technical capacity to combat outbreaks within their own boundaries. Since there is a known set of livestock diseases for which treatment methods have been developed, the international provision of support for the

control of livestock diseases has been an international long-term priority. Veterinarians worldwide are working with the Office International des Epizooties (OIE) to prevent the spread of animal diseases, and also in aiding developing countries in building domestic capacity. Such an approach is not as easy to duplicate with phytosanitary control. Less is known about the complete set of plant diseases, particularly in the tropical regions of the world. However, plant protection officers and plant pathologists are working together with the International Plant Protection Convention (IPPC) and other regional organizations to control the spread of plant disease and pests. Similar to the OIE, the IPPC is aiding developing countries in their monitoring and control efforts.

Though this article does not directly address food safety, it is recognized that what is in or on agricultural products can affect human health. Microbial pathogens may find their way onto produce and animal carcasses by way of feces from nearby animals, soil (soil organisms), irrigation water contaminated with raw or improperly treated sewage, green or inadequately composted manure, air (dust), and human handling. As a result, rules to protect human health that govern the amount of specific pathogens may alter livestock and produce production methods. The Hazard Analysis and Critical Control Point (HACCP) system is being increasingly used to control adverse human health effects for some parts of the farm to table food system in the European Union, Australia, New Zealand, Canada, and the United States. Thus, any discussion on plant and animal diseases affecting fresh products and the methods used to control them also needs to address human health.

The spread of animal or plant diseases from one country to another requires some sort of transmission mechanism (air, wind, animals, humans, etc). In the past, countries have prevented the spread of these diseases indirectly through embargoes and quotas. To some degree, these limits have worked as *de facto* disease controls. More recently, policies have been employed to restrict the importation of infected products or require some sort of decontamination treatment to be applied. The rationale behind such policies is that pest or disease invasions are likely to decrease the quantity and quality of domestic crop or livestock production and increase the costs of agricultural products for both the producer and consumer. However, some treatments may alter the shelf life of a product, increase the costs of getting products across the border and affect the price received.

2.1. Livestock

2.1.1. Cost of Disease

Disease can result in increased mortality and morbidity in livestock populations. Disease may affect an animals performance through reduced fertility, delays in reaching maturity for reproduction or sale, decreased production of milk, eggs, or wool, decreased draught power, or decreased weight of fattening or cull animals. The long-term effect of these outbreaks can be extremely costly when the result is depopulation, compensation of producers, disease elimination, or potential loss of a countrys export market. One such example is the 1997 Hog cholera outbreak in the Netherlands, which led to the destruction of over 11 million pigs at a cost of $2 billion US. Another example is the 1997 foot-and-mouth (FMD) outbreak in Taiwan. Prior to the FMD

outbreak, Taiwan was the third largest exporter of FMD-free pork, with most of their exports going to Japan. The outbreak resulted in 184 000 pigs dying and 3.85 million being slaughtered as part of the eradication campaign, and a drop in the domestic price of pigs to one quarter of the level before the outbreak.

In the past, countries have justified efforts to eradicate diseases of food animals based on the argument that such efforts serve either to increase productivity or eliminate from the food supply sick animals that may transmit diseases to people. The net economic benefits from controlling animal disease have been very cost-effective, ranging from a 200 percent to 1 500 percent return on investment. Disease controls have had a considerable role in increasing animal productivity. Recently, a desire to reduce the potential of sick animals transmitting diseases to humans has intensified with an increasing number of reports of zoonotic diseases, which are food-borne diseases originating from microorganisms in animals that are pathogenic to humans but do not necessarily cause visible signs of disease in carrier animals. For example, in the United States in 1994, there was a *salmonellosis* epidemic affecting more than 200 000 people caused by the consumption of ice cream prepared with pasteurized milk that was transported in tankers previously carrying a contaminated liquid egg substance.

2.1.2. International Efforts to Standardize Control

To minimize the impact of outbreaks, animal health officials worldwide have acted together to monitor and minimize the spread of important animal diseases that affect productivity and human health. Many nations work with the OIE: (1) to notify Governments of the occurrence and spread of animal diseases throughout the world, and of ways to control these diseases, (2) to coordinate, at the international level, studies devoted to the surveillance and control of animal diseases, and (3) to harmonize regulations for trade in animals and animal products among member countries. Notification includes information on the measures taken to prevent the spread of diseases, including quarantine measures and restrictions on the movement of animals, animal products and biological products and other miscellaneous objects that could be responsible for transmission of disease. If an outbreak were to occur in a previously free country, depending on the circumstance, the country may lose access to a fresh meat market. For instance, the recent outbreak of FMD in Argentina resulted in suspension of exports to the United States and Canada. Prior to this outbreak, Canada was importing an average of 3 000 metric tons per month and the US 2 000 metric tons. Through the OIE, an International Animal Health Code has been developed that lists the disease status within every country and the time frame and conditions for a country or zone to be considered under each status category.

There are two major classes of disease recognized by the OIE. List **A** diseases are defined as being transmissible diseases that have the potential for very serious and rapid spread, irrespective of national borders, are of serious socio-economic or public health consequence and are of major importance in the international trade of animals and animal products. These include foot and mouth disease, vesicular stomatitis, swine vesicular disease, rinderpest, peste des petits ruminants, contagious bovine pleuropneumonia, lumpy skin disease, Rift Valley fever, bluetongue, sheep pox and goat pox, African horse sickness, African swine fever, classical swine fever, highly

pathogenic avian influenza, and Newcastle disease. Of the outbreaks that occurred in 1997, the most reported list **A** diseases were New Castle disease, FMD, and Classical swine fever (CSF). Fifty-nine countries reported one or more outbreaks of FMD, 38 countries reported one or more outbreak of CSF, and 87 countries reported one or more outbreaks of New Castle disease. List **B** diseases are transmissible diseases that are considered to be of socio-economic and/or public health importance within countries and that are significant in the international trade of animals and animal products. Many of the list **B** disease are also considered a significant public health concern because of their zoonotic nature (table 1). Not all of these are food-borne. For instance trypanosomes is a major zoonotic concern, but is not food-borne.

Wild animals (e.g., bats, rodents), draught animals (e.g., horses), and food animals (e.g., poultry, cattle) have all been implicated in the epidemiological cycles of these newly emerging diseases. In addition, the zoonotic nature of some other human diseases, such as Ebola and the new variant form of Creutzfeldt-Jakob disease from BSE-infected animals in the UK, is suspected but not yet demonstrated. Some of the reasons for the increasing trend in zoonotic diseases are thought to be: 1) alteration of the environment affecting the size and distribution of certain animal species, vectors, and transmitters of infectious agents of humans; 2) increasing human populations favoring an increased level of contact between humans and infected/affected animals; 3) industrialization of foods of animal origin causing changes in food processing and consumer nutritional habits; and, 4) increasing movements of people as well as trade of animals and animal products and decreasing activities for the surveillance and control of major zoonoses. It is possible that growing concern about zoonotic diseases may result in closer scrutiny being placed on livestock products in the future.

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