Food Safety in Food Security and Food Trade

Balancing Risk Reduction and Benefits from Trade in Setting Standards

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CONFLICTING FOOD SAFETY STANDARDS

Growing concern over health risks associated with food products has prompted close examination of sanitary and phytosanitary (SPS) standards in industrialized countries. Standards are employed to protect human health from toxic additives, contaminants, toxins, or disease-causing organisms in foods and beverages, as well as to protect animal and plant health from diseases. Measures used to protect health include outright bans, standards that dictate the conditions under which products must be produced and/or characteristics of the end products, and labelling and other information requirements.

The World Trade Organization (WTO) Agreement on Sanitary and Phytosanitary Standards promotes harmonizing national standards with international standards and adopting standards set by organizations such as the joint Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Codex Alimentarius Commission (Codex) for food safety. The Agreement permits importing countries to impose more stringent measures than the international standards. But it requires scientific justification if differing standards create an obstacle to trade. In this respect, international standards may be considered a baseline for WTO members to follow. Trade disputes are likely to arise when differences in standards generate significant cost to exporting countries and deviate from principles of international science and best practices in risk assessment.

Both anecdotal and case-study evidence indicates that the cost of food-safety regulations indeed can be significant. This is especially true for developing countries attempting to penetrate developed-country agricultural markets. In low- and middle-income countries, for example, the share of food exports in total trade remained high at approximately 13 percent in the 1990s. If increasingly restrictive sanitary and phytosanitary measures limit market access, these countries will incur significant export losses. Therefore, a more detailed picture of the trade-off between appropriate levels of risk to human health and the costs of differing levels of food safety standards on trade is increasingly important in a public policy context.

The need for such a picture is reflected in the increasing frequency with which developed and developing countries have notified the WTO about national sanitary and phytosanitary standards. These notifications have increased fourfold between 1995 and 2002.

Since regulatory requirements and product standards are substantially different across countries, typically between developed and developing countries, trade disputes in a non-harmonized system are inevitable. One example of the widely different approaches to standards and food safety among trading partners is the European Union's (EU's) maximum allowable level of aflatoxins in imports of cereal, dried and preserved fruit, and nuts. This regulation, implemented in April 2002, has generated concern among exporting countries (many of them developing countries): Argentina, Australia, Brazil, Canada, Colombia, India, Indonesia, Malaysia, Mexico, the Philippines, Senegal, South Africa, Thailand, Turkey, Uruguay, and the US.

This example points to the conflicting interests, perceptions of risk, and estimations of what constitutes international scientific best practices regarding food safety. It also highlights the challenges developing countries face in meeting ever more stringent regulatory standards. The criteria to determine whether standards are "too high" or "too low" are likely arguable. In some cases, definitive judgments on risks to human health are not even possible, because risks and trade losses associated with regulatory regimes cannot be identified due to a lack of data and an analytical framework. Even in cases where risks and trade losses can be identified, social or political priorities attached to public health and trade tend to differ across countries and can trump scientific evidence. New approaches to quantifying the costs and benefits associated with changes in standards, therefore, are increasingly important.

THE IMPACT ON TRADE

A limited number of attempts have been made to quantify the impact of SPS standards on trade. Calvin and Krissoff have measured this impact by calculating the price effects of SPS standards on Japanese imports of U.S. Red and Golden Delicious apples. The tariff-rate equivalent of the Japanese standards came to 27.2 percent during 1994–97, which is high compared with the actual tariff rate of 19.3 percent. On the other hand, the SPS standards saved an estimated 26 percent of Japanese output from an outbreak of fire blight diseases.

The aforementioned EU regulation of aflatoxins imposes high costs on developing countries. Otsuki, Wilson, and Sewadeh have estimated the impact of changes in the EU standards for aflatoxin contamination levels on bilateral trade flows using trade and regulatory survey data for 15 European countries and 9 African countries between 1989 and 1998. They concluded that a 1 percent reduction in the amount of aflatoxin contamination of cereals and dried fruits and nuts would reduce trade flow by 1.1 percent for cereals and 0.43 percent for dried fruits and nuts. Among dried fruits and nuts, groundnuts were particularly sensitive to the aflatoxin standard, their trade flow decreasing by 1.3 percent with a 1 percent change in the standard.

Otsuki, Wilson, and Sewadeh compared three regulatory scenarios: (1) a pre-EU-harmonized standard (status quo), (2) an international standard indicated by guidelines set by Codex,

and (3) the new EU-harmonized standard implemented in April 2002. They found that the EU-harmonized standard imposed a considerable loss of revenue from cereal, edible nut, and dried and preserved fruit exports by African countries. The Codex standard imposed the least costly trade impediments of all three standards. The EU-harmonized standard decreased African export revenue from Europe by 59 percent for cereals and 47 percent for dried and preserved fruits and edible nuts, compared to export revenue under the pre-EU-harmonized standard. This decrease amounts to approximately US$400 million. Compared to the Codex guidelines, the EU-harmonized standard decreased the value of African exports by US$670 million.

Wilson and Otsuki extended this analytical approach to 15 importing (4 developing) and 31 exporting (21 developing) countries. The results confirm the findings of their previous study, which showed that the aflatoxin B1 standard negatively affected trade in cereals and nuts, but not in dried and preserved fruits.

Wilson and Otsuki also found that adopting the Codex standard for aflatoxin would increase cereal and nut trade among countries in the study by US$6.1 billion, or by 51 percent above the 1998 value of trade resulting from standards imposed individually by these importing countries. The Codex standard would generate US$12.2 billion or 67 percent more than the value of exports if all 15 importing countries harmonized their standards with the EU-harmonized standard.

Wilson, Otsuki, and Majumdar studied the issue of antibiotics, which has been a high priority for WHO and the Office International des Epizooties (OIE). Their study attempted to determine whether maximum residue limits on tetracycline (a widely used antibiotic) affect beef trade. For 6 importing and 16 exporting countries, the results suggested that a tighter regulation of tetracycline, namely a 10 percent increase in regulatory stringency, would lead to a decrease in beef imports by 5.9 percent.

If all 6 importing countries adopted the Codex guideline, the total trade value of beef would reach US$8.8 billion—US$3.2 billion, or 57 percent, higher than the value of total trade under the pre-EU-harmonized level and US$5.1 billion higher than the trade value under the EU-harmonized level. If all importers adopted the Codex standard, beef exports from the Organisation for Economic Co-operation and Development (OECD) countries in our sample would increase significantly. The low-income countries in our sample would decrease their beef exports.

Scientific research on the relationship between health risks and the amount of intake of aflatoxins and antibiotics is inconclusive. To date, a risk assessment completed by the FAO/WHO Joint Expert Committee on Food Additives (JECFA) provides the most comprehensive information on aflatoxin risk to human health. Based on JECFA's study, Otsuki, Wilson, and Sewadeh calculated that the new EU standard would reduce approximately 1.4 deaths per billion people a year, compared to the Codex standard. A report of the Institution of Medicine in the United States estimates that 6 to 20 deaths per year in the US population are attributable to subtherapeutic uses of penicillin and/or tetracyclines. These findings suggest that it is difficult to justify trade losses based on gains in public health, although these cases cannot be generalized.

CONCLUSIONS

The case studies noted above suggest that sanitary and phytosanitary standards—set at levels more stringent than those suggested by Codex standards—can severely limit access to international export markets. But, at the same time, less-stringent standards do not necessarily help developing countries, as the case of beef indicates. A common international framework and common criteria to weigh the benefits and costs of regulations are clearly difficult to establish. Nonetheless, these case studies indicate that public policy decisions need to be informed by empirical evidence on the trade impact of standards set at differing levels of regulatory stringency. Moreover, the current international standards and regulatory system need careful review, because governments continue to set national standards that do not align with international standards.

Progress must be made to support harmonization of international SPS standards set by international standard-setting bodies. A concerted effort to identify key standards affecting food safety that have not been harmonized by international bodies, and efforts to identify action that can accelerate this process through international consensus, would help avert trade friction caused by divergent national standards. ■

For further reading see World Bank, *Global Economic Prospects 2001* (Washington, D.C., 2001); L. Calvin and B. Krissoff, "Technical Barriers to Trade: A Case Study of Phytosanitary Barriers and U.S.–Japanese Apple Trade," *Journal of Agricultural and Resource Economics* 23 (No. 2, 1998): 351–366; T. Otsuki, J. S. Wilson, and M. Sewadeh, "Saving Two in a Billion: Quantifying the Trade Effect of European Food Safety Standards on African Exports," *Food Policy* 26 (2001): 495–514; J. S. Wilson and T. Otsuki, *Global Trade and Food Safety: Winners and Losers in a Fragmented System*, World Bank Working Paper 2689 (Washington, D.C., 2001); and J. S. Wilson, T. Otsuki, and B. Majumdar, "Balancing Food Safety and Risk: Do Drug Residue Limits Affect International Trade in Beef?," World Bank mimeo, Washington, D.C., 2002.

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