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Comparative Levels of Food Safety Regulations in Three U.S.-Asian Trading Groups

Yuan Wang and Julie A. Caswell

U.S.-Asian trade currently represents about 35% of the total value of U.S. agricultural and food trade. Country-by-country comparisons show significant differences in levels of food safety regulations in the U.S., Japan, newly industrialized countries in Asia, and Asian developing countries. These disparities result in significantly different import requirements that may impede trade in agricultural and food products.

Key Words: Asia, food safety regulation, international food trade, nontariff trade barriers

In 1995, the total value of the agricultural and food trade of the United States was over $85 billion, of which U.S.-Asian trade represented 36% [U.S. Department of Agriculture (USDA), *Foreign Agricultural Trade of the United States* (*FATUS*)]. Because of the volume of Asian trade, it is critical that U.S. trading partners and policy makers have comprehensive knowledge of Asian food safety systems and how they will affect bilateral or multilateral trading relationships. This information is particularly important as the composition of agricultural and food trade continues to shift from bulk agricultural commodities to more processed food products (Handy and Henderson; Unnevehr, Deaton, and Cramer; Henderson, Handy, and Neff).

The impacts of national food safety systems on trading patterns have come under increasing scrutiny during the successive rounds of multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT) (Kinsey; Ndayisenga and Kinsey; Hooker and Caswell; Roberts and DeRemer). As a result of these agreements, the average tariff in industrial countries has been lowered from 40% to about 6%, with the recent Uruguay Round leading to even further reductions.

With the lowering of tariff barriers to trade, attention has shifted to the role of nontariff barriers in international trade. According to estimates by the United Nations Conference for Trade and Development (UNCTAD), there are more than 100 types of nontariff barriers to trade in developed countries (Laird and Yeats). For example, from 1960 to 1990, technical regulations and standards accounted for 33% of nontariff

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measures. Among these, food quality (especially food safety) regulation has been recognized as one of the most important, resulting in the inclusion for the first time of a Sanitary and Phytosanitary (SPS) Agreement in the Uruguay Round of the GATT Agreement concluded in 1994. This agreement joins the Technical Barriers to Trade Agreement of GATT in addressing important sources of potential nontariff barriers in agricultural and food trade.

The recent SPS Agreement and its eventual pattern of enforcement, as established by the World Trade Organization (WTO), provide an important context for discussion of potential nontariff barriers to trade resulting from safety regulation. The agreement recognizes the right of a country to regulate safety within its borders, but lays out several principles for judging whether that regulation is legitimate or may be considered an undefendable barrier to trade. Among these principles are that the regulation: (*a*) should be based on a sound risk assessment; (*b*) should be the minimum necessary to achieve the desired results; (*c*) should be transparent (i.e., easily known to and clearly understood by trading partners); (*d*) should be evenly applied to domestic and imported products; and (*e*) where appropriate, should be based on international standards established by organizations such as the Codex Alimentarius Commission (Codex).

In this analysis, we seek to characterize the level of potential nontariff barriers to agricultural and food trade between the United States and Asian trading partners using the SPS Agreement as context. We compare the level of food safety regulations of three U.S.-Asian trading groups: (*a*) the U.S. and Japan; (*b*) the U.S. and the newly industrialized countries (NICs) (South Korea, Taiwan, Hong Kong, and Singapore); and (*c*) the U.S. and Asian developing countries (with our focus on China, Thailand, India, and the Philippines).

Food safety includes a variety of quality attributes such as foodborne pathogens, heavy metals, pesticide residues, food additives, naturally occurring toxins, and veterinary residues. In the text that follows, we compare food safety regulations and standards in the three groups by analyzing the top food products traded in each. The impact of regulations in creating nontariff barriers to trade is assessed for each group. In the concluding section of this study, we provide a discussion of strategies for regulatory rapprochement that may fit each trading relationship.

Agricultural and Food Trade with Asian Countries

At just under $31 billion in 1995, trade in agricultural and food products between the U.S. and Asian countries represented about 36% of overall trade in these products. U.S. exports to Asia in that year were $25 billion, while imports from Asia were $5 billion.[1] U.S.-Asian agricultural and food trade increased by $6.8 billion from 1994 to 1995 (USDA, *FATUS*).

[1] The U.S.-Asian trade is more heavily weighted toward exports than is overall trade in agricultural and food products. In 1995, the total U.S. agricultural and food trade of $86 billion included exports of $56 billion and imports of $30 billion.

Table 1. U.S.-Asian Agricultural and Food Trade, 1995

	U.S. Exports to		U.S. Imports from		Total	
U.S. Trading Partners	Mil. $	%	Mil. $	%	Mil. $	%
Japan	10,957	43	300	6	11,257	37
NICs[a]	8,125	32	373	7	8,498	28
Developing Countries	6,380	25	4,483	87	10,863	35
Asia Total	25,462	100	5,156	100	30,618	100

Source: Computations by the authors using data from USDA, *FATUS*.
[a] Newly industrialized countries of South Korea, Taiwan, Hong Kong, and Singapore.

In our analysis, the U.S.-Asian trade is divided into three groups based on country income levels. As identified earlier, these three groups are: (*a*) Japan; (*b*) the newly industrialized countries (NICs) (South Korea, Taiwan, Hong Kong, and Singapore); and (*c*) Asian developing countries. As shown in table 1, U.S. trade with these three groups is roughly equivalent, with each representing about one-third of the dollar volume. The individual composition of the trade, however, varies considerably. U.S. agricultural and food trade with Japan and the NICs is one-sided, with U.S. imports at only 3–5% the size of exports. In contrast, trade with the Asian developing countries is more balanced, with U.S. imports at about 70% the volume of exports.

The data for our analysis of comparative levels of food safety regulations come from several sources. Major sources are the U.S. Department of Agriculture (USDA), the U.S. Department of Health and Human Services (DHHS), and their subagencies. The various Agricultural Affairs Offices of the USDA/Foreign Agricultural Service (FAS) provided country-level food market reports highlighting the basic food laws of each country that has an agricultural trading relationship with the U.S.[2] The Division of Import Operations and Policy Office of the Food and Drug Administration (FDA), under the DHHS, provided information on the regulatory procedures for importing foods into the United States.

In the following subsections, we discuss the food safety regulations and potential nontariff barriers to trade that characterize the agricultural and food trade relationships governing each of the three U.S.-Asian trading groups.

The U.S.-Japan Trading Relationship

Although heated arguments have arisen over many traded products, both the United States and Japan have profited greatly through bilateral trade. Japan is a huge market for U.S. agricultural and food products, with trade being largely one way—flowing

[2] These USDA/FAS reports may be accessed through the USDA's Worldwide Web home page on the Internet.

from the U.S. to Japan. According to USDA/FAS's "Food Market Report" for Japan, Japanese consumers demand high-quality food and products from the United States, but these products continue to face a sometimes mixed reception. In FAS's opinion, American products enjoy a cachet resulting from close cultural ties that have developed with Japan since World War II. However, U.S. food products often are perceived as having less sophisticated product formulation and packaging than those of Japan and Europe.

Japanese consumers also express concern that U.S. use of pesticides and chemical additives results in products that are less safe. Japanese standards in this area are strict. For example, according to the Japanese Ministry of Health and Welfare, there are currently over 50 types of food colors and additives used by U.S. exporters that are in violation of Japanese law. Fungicides applied post-harvest must be approved as food additives in Japan, but not in the U.S. Japanese producers generally do not use these treatments, and the approval process for them is lengthy and complicated.

Although the U.S. and Japan both have relatively strict levels of food safety regulation, these regulations still may pose significant nontariff barriers to U.S.-Japanese trade because of differences in regulatory targets and/or standards. Here we analyze the food safety regulatory system of Japan because of the dominant one-way trade flow from the U.S. to Japan. In 1995, the U.S. exported $11 billion in agricultural and food products to Japan (table 1). Nearly 48% of this total was accounted for by consumer-oriented food products (USDA/FAS, 1995i, "BICO Report"). The top two food exports—meat and poultry products, and fruit and vegetable products—accounted for over 80% of all U.S. food exports to Japan, with 55% of these being meat and poultry products.

In Japan, both domestic and imported food products are regulated for sanitary purposes under the Food Sanitation Law of Japan by the Ministry of Health and Welfare. As stated in "Procedures for Importing Foods and Related Products into Japan Under the Food Sanitation Law," issued by the Japan External Trade Organization, the law is designed to prevent health hazards arising from food and related products, and to help improve and promote public health. It prohibits imports of unsanitary foods, meat from diseased animals, and foods not conforming to Japan's established standards of manufacturing, storage, or ingredients.

Japanese inspection standards often are considered strict by international standards. For example, while the U.S. rejects imports of fresh fruits and vegetables upon detection of harmful insects not already present in the U.S., Japan rejects products carrying any live insect, even if benign, and even if already established in Japan (USDA/FAS, 1994, "Field Office Report"). The entire lot must be fumigated or alternatively may be destroyed or reexported, depending on relative costs. In FAS's opinion, the risk of fumigation imposed by Japan's standards is probably the single biggest impediment to U.S. produce exports to Japan.

While all U.S. fresh fruits and vegetables must be accompanied by a valid Phytosanitary Certification issued by the USDA (USDA/FAS, 1994, "Field Office Report"), 16 kinds of U.S. fruits and vegetables (including cabbage, peaches, potatoes, and tomatoes) were prohibited from entering Japan in 1995 due to certain pests. Many

U.S. exporters believe Japanese standards constitute significant nontariff barriers to their participation in the Japanese market, while others have responded to the regulations by instituting production and processing practices tailored to the Japanese market.

For meat and poultry imports, Japan requires that all U.S. products be accompanied by USDA/Food Safety and Inspection Service (FSIS) Form 9060-5 ("Certificate for Wholesomeness") and FSIS Form 9290-1 ("Certificate for Export to Japan"). Microbiological standards and residue testing are similar in both countries. However, coloring agents and certain food additives are not permitted in raw meat products in Japan.

Since 1990, there have been consumer movements in Japan to protect its historical policies on food safety (Leonard). Movement proponents are concerned that some Japanese regulatory agencies will relax domestic safety standards for the purpose of increasing international trade and placating the United States. In its 1995 trade policy review of Japan, the WTO reports that overall, the number of Japanese standards corresponding to international norms has doubled since 1992, and Japan is gradually increasing its scope of permission for foreign testing, certification, and factory approval. Japan also applies the same food safety standards to domestic and imported foods in compliance with WTO standards.

Nevertheless, U.S. exporters assert that significant nontariff barriers still exist for U.S. food products, and more may arise because Japanese domestic food safety requirements are stricter than U.S. standards. Under the SPS Agreement, these regulations cannot be challenged simply because they are strict, but they may be challenged if they are not based on scientifically sound risk assessments. Such challenges can be divisive. Because of the large trade volume flow from the U.S. to Japan, bilateral negotiations to minimize nontariff barriers to trade in the Japanese market are a high priority for the U.S. government.

The U.S.-NICs Trading Relationship

Newly industrialized countries (NICs) in Asia include South Korea, Taiwan, Hong Kong, and Singapore. In 1995, U.S. agricultural and food exports to NICs totaled $8 billion, or 32% of the total value of exports to Asia (table 1). At the same time, the U.S. imported only $373 million in agricultural and food products from NICs. While income levels in the NICs have shown rapid progress, their food safety regulations are generally less extensive than those of the U.S. In some cases, however, U.S. food exports to NICs may be limited due to food safety rules imposed on imported products. Similarly, food products from NICs may have limited access to the U.S. market because of food safety standards. Here we analyze the two-way trade flow between the U.S. and NICs.

Consumer-oriented food products accounted for $2.5 of the $8 billion in U.S. exports of agricultural and food products to NICs during 1995. The two leading exports were meat and poultry products (40%) and fruits and vegetables (29%). Of all U.S. food exports to the NICs, 44% went to Hong Kong, 28% to South Korea, 20%

to Taiwan, and 8% to Singapore. The remaining $5.5 billion in trade was in bulk and intermediate agricultural exports, with coarse grains, soybeans, cotton, and hides and skins being the leading commodities (USDA, *FATUS*).

According to the USDA/FAS "Korean Food Market Report," South Korea has a reputation as a difficult market to enter because of its use of various nontariff trade measures as a means of protecting South Korean producers. As an illustration, processed food products must follow standards of identity stated in the South Korean Food Code. The products also must follow South Korea's *Official Book of Food Standards* for shelf-life and the *Official Book of Food Additives* for the approximately 370 food additives approved for use. These official standards have the potential of curtailing imports from the U.S. For example, when there are no standards for the shelf-life of a product, a determination is made by the South Korean National Institute of Health (NIH). In the view of USDA/FAS ("Korean Food Market Report"), these decisions seldom reflect information provided by the U.S. exporter, and often are not based on scientific data.

The 1994 dispute between the U.S. and South Korea over processed meat imports arose because of an NIH decision. The U.S. called on South Korea to revise its stringent food codes on imports that sharply reduced the allowable shelf-life for hot dogs imported from the U.S. from 90 to 30 days. The case was settled eventually through bilateral negotiation, heading off the United States taking the disagreement to the newly established World Trade Organization. Shelf-life limits also have been used to block imports of numerous other products. For instance, U.S. exports of fresh and chilled beef to South Korea were almost negligible in 1994. However, the South Korean government is implementing shelf-life standards to be determined by manufacturers. The new system is to be phased in over three years, and the U.S. government anticipated substantial growth in beef exports once the shelf-life problem was resolved (USDA/FAS, "Korean Food Market Report").

Other trade problems between the U.S. and South Korea due to food safety concerns have been centered on bulk agricultural commodities or fresh fruits. South Korean residue standards are much stricter than international or U.S. standards (USDA/FAS, "Korean Food Market Report"). Under the SPS Agreement, the South Korean standards will continue to be scrutinized by the U.S. to assure they are in compliance with the agreement's principles.

Singapore and Taiwan have similar levels of food safety standards that can be characterized as less strict than those of South Korea but more strict than those of Hong Kong. Import of food to Singapore is regulated by that government's Sale of Food Act of 1973, the Food Regulations of 1988, and subsequent amendments. The Food Control Department of the Ministry of the Environment enforces the legislation. It mandates that all imported food products follow labeling and packaging requirements specified in the Food Regulations of 1988, and that product ingredients be consistent with those specified in the law (USDA/FAS, "Singapore's Food Market Report"). In FAS's view, the most important obstacle facing U.S. exports to Singapore is the limited shelf-life standards on items such as meat, snack foods, and fresh produce.

Taiwan is slowly altering some potential nontariff trade barriers for imported agricultural and food products. According to the USDA/FAS "Food Market Report" for Taiwan, Taiwanese consumers perceive U.S. food products to be of higher quality than domestic products, but of lower quality than Japanese and European products. Imported agricultural and food products are routinely tested for compliance with standards and other requirements, while local products usually are not. Uneven application of regulations to domestic and imported products violates the principles of the SPS Agreement. Imported fruits and vegetables with residues of chemicals not approved for use in Taiwan are controlled through testing and possible court actions against the importer. Despite differences between U.S. and Taiwanese regulations, Taiwan is the fourth largest market for U.S. fruits and vegetables.

Of the four NICs, Hong Kong has the lowest barriers related to food quality (USDA/FAS, "Hong Kong's Food Market Report"). Labeling requirements generally are not restrictive; labels may appear in either English or Chinese. Two exceptions are that certain colorings and flavorings are not allowed, and products with a shelf-life of less than 18 months must show an expiration date. In FAS's assessment (compared to South Korea, Singapore, and Taiwan), Hong Kong represents the best opportunity for expansion by U.S. food exporters because of its strong trend toward Westernization and its low barriers related to food quality standards.

Overall, it has been common for the governments of NICs to adopt higher food safety standards for imported than for domestic products—in violation of WTO principles. This practice can be observed in the meat and poultry standards and inspection systems applied by NICs to U.S. products. As noted above, meat and poultry products accounted for 40% of total U.S. food exports to NICs during 1995. Of these, Hong Kong had the largest share, with 49%, followed by South Korea at 40%, Taiwan at 6%, and Singapore at 5%. All four countries require that U.S. meat and poultry plants exporting to them be federally inspected. However, documentation preparation, microbiological standards, and residue testing among the NICs are quite different for U.S. meat and poultry products.

Table 2 provides a detailed comparison of meat import safety requirements by the four NICs. Each of the four countries requires USDA/FSIS Form 9060-5, the "Certificate for Wholesomeness." Because Hong Kong requires no additional documentation, virtually no barrier is posed to U.S. products, as illustrated by Hong Kong's imports of almost $500 million in meat and poultry from the U.S. in 1995 (USDA, *FATUS*). For its imports of U.S. meat and poultry products, Taiwan further requires FSIS Form 9290-1, "Certificate for Export to Japan." This implies that only products which meet strict Japanese standards may be exported to Taiwan. Although only 15% of Singapore's population is Muslim, Singapore traders prefer Halal chicken produced under the acceptable Muslim ritual accompanying animal or poultry slaughtering (USDA/FSIS, Export Library System). This preference has resulted in negligible whole chicken imports from the U.S. during recent years, which has benefitted European Union (EU) exporters who have adopted Halal methods of chicken slaughtering.

In summary, Asia's NICs represent a large market for U.S. foods, especially meat and poultry products. Yet, numerous potential nontariff barriers (such as South Korean

Table 2. NICs' Safety Requirements for Imported U.S. Meat and Poultry Products, 1995

NICs	Documentation Required	Microbiological Standards and Residue Testing	Other Restrictions
South Korea	▸ Importer must obtain an import permit for each shipment ▸ Meat: FSIS 9060-5 (Certificate for Wholesomeness) Poultry: FSIS 9060-5; FSIS 9305-2A	▸ Coliform–negative (Not required to issue certificate, but the Ministry of Health and Social Affairs reserves the right to test shipments)	▸ Three-year shelf-life for all bottled or canned products
Taiwan	▸ FSIS 9060-5 ▸ FSIS 9290-1 (Certificate for Export to Japan) ▸ Additional statement for poultry: FSIS 9060-5, + Avian influenza-free	▸ Bureau of Commodity Inspection and Quarantine of Taiwan performs mandatory inspection: - Plate Count: < 30 mill/gram (chilled) < 3 mill/gram (frozen) - *E. coli*: 0–50/gram - Volatile base of nitrogen: < 15 mg/gram ▸ Sample check *Salmonella*–No standard yet Chemical residue standards vary	
Singapore	▸ FSIS 9060-5 ▸ FSIS 9435-1 (Certificate for Export to Singapore) ▸ Additional statement needed for canned products on FSIS 9060-5	▸ No specific requirements	▸ Halal chicken or animal slaughtering ritual is preferred
Hong Kong	▸ FSIS 9060-5 ▸ No need for Certificate for Export to Hong Kong	▸ Product may be subject to laboratory examination ▸ Hong Kong officials reserve the right to sample for microbiological exam	

Source: Data taken from files in USDA, Food Safety and Inspection Service (FSIS) Export Library System.

shelf-life limits and residue standards in Taiwan) may impede U.S. trade flows to these markets. It has been common practice for NICs to impose stricter food safety rules for imported foods than for domestic products. Solving these problems requires the U.S. to seek regulatory rapprochement through bilateral or multilateral negotiations with NICs.

On the other side of the trading relationship, the NICs in aggregate exported $373 million in agricultural and food products to the U.S. in 1995. Consumer-oriented food products represented $235 million (63%) of this volume, with South Korea accounting for $64 million, Taiwan for $78 million, Hong Kong for $79 million, and Singapore for $14 million. Canned food products, especially processed fruits and vegetables, are the major exports of NICs to the U.S. In 1995, $49 million in processed fruits and vegetables were exported to the United States (USDA/FAS, 1995i, "BICO Report"). NIC products destined for export are under stricter and more detailed safety and quality control/inspection requirements than those for domestic markets.

During 1995, the U.S. FDA executed 1,000 import detentions on 183 types of food products from NICs.[3] These accounted for 20% of the number of detentions for all Asian product imports. Processed fruits and vegetables accounted for most food quality problems, including filth, decomposed materials, mandatory labeling omitted, and pesticide and chemical residue problems. While South Korea, Taiwan, and Singapore face more diffused food safety problems related to exports to the U.S., Hong Kong was responsible for over 50% of FDA import detentions of products from NICs. Canned mushrooms, Hoisin sauce, and dried fruits were the most troublesome products. The FDA has been seeking to tailor its sampling program for imported products to yield more effective and efficient quality control for imports. It is clear that U.S. food quality regulations have impeded the flow of NIC goods into the U.S. They will continue to pose a barrier to trade in the future if NICs are unable to meet U.S. standards.

The U.S.-Asian Developing Countries Trading Relationship

In 1995, 87% of U.S. agricultural and food imports from Asia originated from developing countries (table 1). As food safety standards increase in the U.S., food products coming from these countries may experience increasing difficulty entering the U.S. market. Such products may be viewed by U.S. consumers as less safe than domestic products, even though they may offer a price advantage. Food laws that control food quality standards in Asian developing countries have been criticized as poorly established, especially in the areas of pesticide residues, packaging and labeling requirements, and government inspection (Wehr; World Resources Institute). In some Asian developing countries, there still are no standards set for pesticide residues,

[3] These data were computed by the authors from U.S. Department of Health and Human Services, FDA "Import Detention Reports," January–December 1995.

Table 3. Detentions versus Value of Imports for Asian Developing Countries: China, Thailand, India, and the Philippines, 1995

Developing Country	No. Detentions in 1995	U.S. Food Imports (mil. $)	No. Detentions per $1 Million Imports
China	1,296	540	2.40
Thailand	695	1,500	0.46
India	657	330	1.99
Philippines	446	273	1.63

Source: Data computed by the authors from U.S. Department of Health and Human Services, FDA "Import Detention Reports," January–December 1995.

Note: Table figures include seafood imports.

which means food products with pesticide residues will pass inspection even if the residues exceed safe levels. Further, packaging and labeling requirements are not mandatory in most cases, with a manufacturing date, product expiration date, and nutrition label most frequently being absent (USDA/FAS, "Food Market Reports" for China, India, and the Philippines).

Although Asian Developing Countries require higher safety standards for products being exported to the U.S., they accounted for 76% of U.S. import detentions and 68% of import alerts for Asian products.[4] Here we focus on the experience of the four countries with the largest number of import detentions: China, Thailand, India, and the Philippines. Collectively they accounted for over 80% of all food safety problems occurring among Asian developing countries in 1995.

Table 3 shows the number of import detentions per $1 million of imports to the United States for China, Thailand, India, and the Philippines. China experienced bigger problems than the other countries, both in absolute number of detentions (1,296) and in rate of detention per million dollars of trade (2.40). The three most frequently detained goods from China during 1995 were canned mushrooms, rice sticks, and bean curd products. Chinese mushroom exports to the U.S. have been reduced from 70% to 30% of China's total production since the U.S. put China under an import alert due to chronic food safety problems occurring in these products.

India and the Philippines had import detention rates per million dollars of trade of 1.99 and 1.63, respectively (table 3). Thailand, on the other hand, experienced a relatively low detention rate of 0.46 per million dollars of trade. For Asian developing countries with high detention rates, improvement in food safety standards would provide more opportunities for exporting products to developed countries. Although low price may be an advantage if products are allowed into the U.S. market, the products will be forced out of the U.S. market if consumers lose confidence in their safety and quality, or if they do not meet government standards (Singh). Products from

[4] These data were computed by the authors from U.S. Department of Health and Human Services, FDA "Import Detention Reports," January–December 1995.

Asian developing countries who adopt more international standards, and whose safety requirements are closer to those of the U.S., clearly will have better access to the U.S. market.

Strategies for Regulatory Rapprochement

In the preceding sections, we have compared overall levels of food safety regulations and have identified significant barriers to trade. In the past, governments have addressed trade problems arising from regulatory differences through bilateral negotiation, multilateral negotiation among small groups of countries, and multilateral discussion among large groups of countries through institutions such as Codex. The WTO SPS Agreement places a higher premium on these efforts because it establishes a means for member countries to formally challenge one another's regulations through a dispute settlement process. Although not all countries—and in Asia, notably not China—are currently WTO members, the SPS Agreement is nevertheless the main framework in which food safety regulation conflicts are being discussed.

Jacobs identifies three possible strategies for regulatory rapprochement: coordination, mutual recognition, and harmonization. Coordination involves a gradual narrowing of relevant differences among regulatory systems, often based on voluntary international codes of practice. For example, Codex has produced international standards on issues such as hygiene, pesticide residues, and food labeling. As countries adopt these standards, at least as a floor, their regulations become more similar and are less likely to create nontariff trade barriers. The strategy of mutual recognition is defined as the acceptance of regulatory diversity in meeting common goals—with countries mutually accepting products produced in other countries, under the other countries' standards, as suitable for sale in the importing country. This approach is used extensively within the European Union for regulation of nonsafety issues. Finally, harmonization involves standardization of regulations in identical form. The European Union's ongoing pursuit of consistent food safety standards is the best example to date of this approach.

Country-to-country trade relationships may be negotiated on a bilateral or multilateral basis employing any or all three of the above strategies. At the same time, private parties are actively engaged in efforts to surmount nontariff barriers to trade. For example, companies may specifically tailor their operations to recognize and respond efficiently to differing standards and preferences across countries. However, country-to-country negotiations provide the contours of the playing field on which these efforts take place.

Regulatory rapprochement strategies are ways in which U.S.-Asian trading partners can address their differences in the arena of food regulation. The strategies applied for the three trading groups discussed here are likely to vary based on differences in the structure of their regulatory systems. Most food trade between the U.S. and Asia currently is conducted under bilateral food safety agreements and understandings which become more difficult to manage as standards become more demanding.

Considering the similar levels of food safety regulation in combination with the significant nontariff barriers to trade existing between the U.S. and Japan, the strategies of harmonization or mutual recognition of food safety regulations may offer the most promise for resolving differences. Through bilateral negotiation, the U.S. may persuade the Japanese government to adopt more international standards and give up what the U.S. views to be nonscience-based measures. In turn, Japan may challenge some U.S. standards and require concessions in other areas of trade. Harmonization may proceed very slowly, however, because of each country's firm belief in its own systems. Japanese consumers may be unwilling for their government to relinquish its food safety rules and standards. Japanese consumers, as well as Japanese producers, may use their resources to protect their interests (Jussaume and Judson). In this situation, mutual recognition is an alternative strategy that would seek to minimize current differences in food safety regulation. A key input to this approach is for the countries to agree on means of judging the equivalence of outcomes (e.g., risk levels) resulting from differing regulatory structures. In addition to harmonization or mutual recognition, the U.S. can seek to increase exports to Japan by lowering U.S. prices for food products, which could help to overcome the disadvantages (costs) of regulatory barriers.

Harmonization of internal food safety regulations across Asia's newly industrialized countries would promote trade among themselves and with the U.S. In this case, U.S. acceptance of food products from one newly industrialized country would ease acceptance of the same products from other NICs. However, current differences in regulations between the U.S. and the NICs make harmonization between them impractical at this time. Mutual recognition of regulations through bilateral or multilateral negotiations is viable for some food products. In the near term, coordination is likely to remain the most frequently used strategy for managing differences in standards between the U.S. and Asia's NICs.

It is often difficult for developing countries to meet the up-front requirements of food safety regulations in developed countries. These barriers can be overcome by improved safety programs combined with cost advantages in production. At the current stage, coordination appears to be the best strategy for the U.S. and Asia's developing countries gradually to narrow relevant differences across regulatory systems. The developing countries are making efforts to improve their regulation of the processed food industry. Steady progress in this area is critical to gain full access to the U.S. market.

The extent to which food safety regulations cause nontariff barriers to trade is under intense scrutiny. A comparison of food safety standards and regulations among the U.S. and its Asian trading partners is important because this trade has been expanding dramatically during the last decade, with the emergence of Asia as the dominant regional market for U.S. agricultural and food products. In-depth comparison and analysis can help to facilitate and ameliorate U.S.-Asian trade relationships. It also can be an important input to policy making as the U.S. and its trading partners implement the current SPS Agreement and contemplate future agreements.

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