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Economic Research Institute Study Paper

ERI #96-02

**REGULATORY BARRIERS IN AN INTEGRATING
WORLD FOOD MARKET**

by

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January 1996

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ABSTRACT

NOTE

REGULATORY BARRIERS IN AN INTEGRATING WORLD FOOD MARKET¹

*"As technology invades agriculture, more and more agricultural disputes
will turn on the use of additives, pesticides, drugs and genes."*

"Brie and Hormones," The Economist (Jan. 7, 1989)

I. Introduction

Policy and technological change (e.g., in communications and transport technologies) appear to be steadily integrating the world's national and regional food markets. Recent trade liberalization agreements, such as the North American Free Trade Agreement (NAFTA) and the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), have especially raised expectations of increasingly free and profitable cross-border commercial opportunities for American agricultural producers and processors. Improved market access under GATT and NAFTA, through tariff reduction and the conversion of quotas to tariffs ("tariffication"), holds out the promise of greater commercial food trade. But while recent trade agreements have addressed readily identifiable, traditional trade barriers such as quotas and tariffs, there nonetheless remain significant regulatory barriers to international trade in foodstuffs.

This paper considers the economics of regulatory barriers to international food trade, as well as their implications for policymakers and for U.S. agribusinesses looking to expand into foreign markets. Regulatory barriers appear to be growing in both absolute and relative terms, and have been the subject of some heated disputes, such as that over beef hormones with the European Community, with Canada over potato grading, with China about its wheat sanitary standards, and

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with South Korea over produce inspection and meat shelf-life standards. Our primary objective in this paper is to call attention to the more complex economics of these non-traditional trade barriers, and thereby stimulate more serious research and teaching on the topic. Good empirical research on regulatory barriers is in especially short supply. We know disturbingly little about the degree to which regulatory barriers raise transactions and other costs, restrict trade, and influence consumer demand or patterns of international trade and investment.

Several recent studies have pointed out the frequency and complexity of regulatory trade barriers and the challenges and issues they present for future trade liberalization efforts (Ndaysienga and Kinsey; Sykes). Traditional trade theory must be integrated with the theories and methods of industrial organization, information economics, and political economy in order to effectively address the economics of regulatory barriers. This paper is a simple first step in that direction. As a specific case in point, this paper considers post-NAFTA regulatory barriers to dairy trade, including their influence on U.S. firms' strategies with respect to the Mexican market.

II. Global and Agricultural Trade Trends and Policies

The increasing integration of national economies in part reflects steady decreases in real communication and transportation costs that reduce trade between spatially distinct markets. This phenomenon is especially important to trade in agricultural products because of their low value-to-bulk ratio and their perishability. Growing trade volumes are also attributable to a succession of trade liberalization accords that have steadily expanded coverage in both spatial and economic terms, and dramatically cut average duties and the incidence of quotas on covered commodities (Table 1).

Agriculture was largely exempt from most multilateral trade agreements before NAFTA and the Uruguay Round, and agricultural trade growth has lagged behind broader growth in merchandise

trade (Figure 1), in part due to slower trade liberalization.² Indeed, the volume of agricultural trade subject to nontariff barriers increased in virtually all countries until the early 1990s. Average nominal levels of protection in agriculture were almost 15 times manufacturing tariff rates in the industrial countries in 1992 (Ingco). A wide range of policy measures protected domestic agricultural producers and penalized consumers, including those in North America (Figures 2 & 3).

Trade liberalization for agricultural products was thus one of the primary goals of both NAFTA and the Uruguay Round. In general, NAFTA and the earlier Canada-United States Free Trade Agreement (CUSFTA) went much further than GATT in eliminating tariffs and quotas on trade in agricultural products within North America. Nonetheless, it remains to be seen how much the reduction or removal of traditional trade barriers will stimulate commercial agricultural trade between the signatory countries. Regulatory barriers remain an important potential obstacle.

III. The Economics of Regulatory Barriers

Regulatory barriers are likely to become increasingly common, in both absolute and relative terms, as importable industries lobby for regulatory protection in the face of the steady, negotiated erosion in tariff rates documented in Table 1. Meanwhile, improved standards of living fuel long-term growth in demand for consumer product safety, information and quality-differentiation, providing a parallel channel of increased pressure on governments to regulate imported commercial products. Government size and power facilitates the enactment and enforcement of regulatory barriers to trade for producer protectionist or consumer welfare purposes or both. This section presents some simple analytics of how regulatory barriers affect prices, output, welfare and trade.

²Structural factors (e.g., low income elasticities of demand for agricultural commodities) have also played a major role.

The economics of regulatory barriers helps elucidate why the political economy of food regulation can be particularly complex and the great need for careful empirical research in this area.

According to official estimates, there are over 100 types of nontariff measures (NTMs) in place worldwide (Ndayisenga and Kinsey), a substantial portion of which are classified as “technical barriers,” a term used to describe potential obstacles to trade associated with product attributes. Technical barriers comprise two distinct, hierarchically ordered subsets: “product standards” and “regulations.” Following Sykes, the distinction is that firms comply with “standards” voluntarily (e.g., computer and electronics compatibility) while they are legally bound to abide by “regulations.” We are concerned with the latter sort, state-imposed product attributes; hence our use of the term “regulatory barriers.”

Both the Uruguay Round and NAFTA reiterate nations’ rights to maintain stringent health and safety regulations and to prohibit imports not meeting these standards. Indeed, subnational jurisdictions (e.g., the state of California) can also unilaterally enact such regulations. These regulatory barriers are to be supported by scientific criteria, although the evidentiary standards for “scientific” criteria are as unclear as the mechanisms to settle disputes.³ Regulatory barriers thereby provide a method to continue protection of domestic markets from import competition. Yet, unlike conventional trade barriers like quotas, one cannot automatically conclude that regulatory barriers are therefore social welfare reducing.

All governments impose health and safety, environmental protection, product labelling, and many other sorts of standards on domestic and foreign produced goods. Product quality and safety

³For instance, the dispute between the U.S. and the European Community over beef growth hormones and meat inspection procedures began in 1985 and is still not fully resolved. Similarly, China has barred imports of grain from the U.S. Northwest on the basis of sanitary standards despite 20 years of scientific evidence that U.S. grains pose no such risk to China.

regulations can be beneficial as means to resolve imperfect information problems that can lead to low-quality market equilibria⁴ or socially superoptimal risk bearing. Product labelling and safety regulations may thus increase effective demand by relieving consumers' concerns about product quality. This is a principal way in which regulatory barriers differ from tariffs, quotas and other more traditional trade barriers: they may stimulate demand. In so doing, they cannot only increase domestic producers' welfare but consumer welfare, too. On the other hand, regulatory barriers can be just a trade quota disguised in scientific rhetoric.⁵ The key problem is thus distinguishing between product regulation that resolves information-based market failures, which can increase net social welfare, and those that simply protect domestic producers, thereby reducing net social welfare. The complication is that both have the same observable price effects. The effects of regulatory barriers on trade volumes and aggregate welfare are thus analytically ambiguous.

Figure 4 explains this complexity using a three-panel graph depicting each of two trading countries' markets and the international marketplace. Consider the impact of regulatory barriers imposed by an importing nation (Country 1) on trade volumes, prices and aggregate welfare in both its own economy and that of its trading partner (Country 2). Under free trade, and assuming no transfer costs, the equilibrium price in both nations is P^A , with consumption (production) at point B (A) in country 1 and at point L(K) in country 2, implying a trade volume equal to $B - A = K - L = b$.⁶

⁴Economists will recognize this as the "market for lemons" problem (Akerlof).

⁵This has been an issue in domestic agricultural marketing for years. Famous dairy product cases include an Illinois company's challenge of Wisconsin laws prohibiting the sale of chocolate milk substitutes (*Dean Foods v. Wisconsin*) and a Wisconsin company's challenge to Ohio regulations prohibiting the sale of a condensed milk substitute containing 6 percent coconut oil (*Hebe v. Calvert*).

⁶Note we use subscripts to identify the country, uppercase letters to identify country-specific effects, and lowercase letters to identify trade volumes in the international market.

Regulatory barriers in country 1 increase the cost of exporting into 1 (assuming there are no effects on the domestic supply schedule⁷), thus shifting 2's excess supply schedule to the left (from ES_2 to ES'_2). If there are no demand-stimulus effects from the regulatory trade barriers, as should occur when they resolve uncertainty over product quality or safety, then prices rise (from P_1^A to P_1^B), trade volume declines (from $B - A$ to $b - c$, equivalently from b to a), and aggregate welfare declines (by $ABCD$) in country 1, relative to the free trade benchmark.⁸ But what if government 1's regulatory control of imports resolves consumer concerns about product quality and safety, thereby stimulating demand (from D_1 to D'_1 in the leftmost panel and from ED_1 to ED'_1 in the rightmost one)? There will again be higher prices than under free trade (P_1^C instead of P_1^A), but trade volumes and aggregate welfare could be greater (if and only if $c > b$ and $EFGH > ABE$, respectively) than under free trade. Moreover, if and only if the demand-side effects of the regulatory barriers sufficiently stimulate demand such that trade volume is greater (less) than the free trade equilibrium, i.e., $c > b$ ($b > c$), then prices and aggregate welfare rise (fall) in Country 2, e.g., from P_2^A to P_2^C and by $KLMN$, respectively, in Figure 4. This implies that exporting firms in country 2 can be made better off by demand-stimulating regulatory barriers imposed by the government in country 1.

The trade volume and aggregate welfare effects of regulatory trade restrictions are thus analytically ambiguous. Since the information provided by a regulatory barrier to consumers is the key to its welfare effects, we henceforth distinguish between “informative” and “uninformative” barriers. Note that while importing country consumer surplus unambiguously falls with the imposition of an uninformative regulatory barrier and changes ambiguously with an informative one,

⁷This is equivalent to saying that domestic suppliers already meet an informal product standard that the government begins to enforce as a legal regulation on foreign competitors.

⁸Prices and welfare fall in Country 2, from P_2^A to P_2^B and by the area $IJKL$, respectively.

importing country producer surplus rises in either case. Importable producers prefer an informative barrier to an uninformative one, due to demand (and thus price) expansion effects, but they prefer either sort of regulatory trade barrier to free trade. This creates strong incentives for producers to lobby for regulatory barriers, whether or not they are informative. This makes the political economy of regulatory barriers complex, for if producers “cry wolf” too often, policymakers may begin to disregard their claims of potentially Pareto-improving regulatory barriers, and prospective improvements to aggregate welfare may be foregone. Yet if producers’ claims are accepted uncritically, government intervention may come at substantial social cost.

Under certain circumstances, a free market might endogenously ensure product quality in manufactures, largely eliminating the prospect for welfare-enhancing government product regulation.⁹ But this is unlikely to occur in food safety and health matters because of information problems (Sykes), or when firms’ *ex ante* market share is quite uneven, as is often true in cases of international trade. Product quality and safety standards can alleviate consumer uncertainty about the wholesomeness of a product, thereby stimulating demand. Hence, collective action efforts designed to produce universally agreeable product safety and labelling standards, such as the Codex Alimentarius Commission (Codex) or the International Organization for Standardization (ISO), provide a minimum standard, although these standards are difficult to establish and may not address controversial issues.¹⁰ Higher prices result for quality-regulated products, but it is not entirely clear

⁹For instance, in networks characterized by consumption externalities in which no one firm holds a dominant position firms, may freely cooperate to establish product standards. For a good introduction to the literature on product compatibility and network externalities see the symposium in the Spring 1994 issue of the *Journal of Economic Perspectives*.

¹⁰Yang and Barrett (1996) also show that importing nations have strong incentives not to comply with agreed international standards.

whether regulatory barriers increase prices mainly by increasing production and transaction costs and thereby restricting supply, as seems the common belief, or by resolving product quality and safety uncertainty and thereby stimulating demand.¹¹

Why are regulatory barriers threatening? Five broad reasons are summarized here. First, they involve technical policy matters that tend to receive less public scrutiny and thus may be more subject to interest group “capture” by producer groups seeking government protection against foreign competition. The political economy of defensible protection prompts some governments to use consumer safety issues as a means to justify domestic producer protection. Ironically, trade negotiations, such as NAFTA, by stripping away traditional protection by quotas or tariffs may provide an incentive to develop more complex, less transparent means to protect domestic industries. Such trade protection may be less vulnerable to criticism from outside parties, especially if trade barriers are tied to politically sensitive topics such as food safety (Chambers and Pick; Kramer), an issue of increasing prominence in international trade (Ndayisenga and Kinsey). Where regulatory trade barriers are highly product specific, they may also yield greater firm- or industry-specific benefits than more general quotas and tariffs, thereby fuelling more intense lobbying on the part of industry beneficiaries by the logic of collective action (Olson). This issue is especially important in processed foods manufacturing where product differentiation can create monopolistically competitive industries that easily lapse into inefficient, noncompetitive markets if trade barriers restrict the competition from imperfect (imported) substitutes.

¹¹Methodological research in disentangling the demand- and supply-side effects of product quality and safety standards is badly needed. The dearth of good empirical research on regulatory barriers—their incidence, and the degree to which they affect costs, trade volumes, market structure and prices—is a serious impediment to policymaking and agribusiness decision-making in this area.

Second, regulatory barriers are unusually subject to differential and disputed enforcement, creating uncertainty and incentives for corruption (Sykes). As the extensive literature on rent-seeking and the political economy of trade quotas makes clear, any time government drives a wedge between the world and domestic market prices and must certify those who move product between the two markets, there are incentives to bribe and cheat to capture rents. Consumers soon discover substandard quality goods that obviously evaded product regulations, with adverse effects on consumer confidence and demand, sometimes leading to a low-quality market equilibrium.¹² Hence, the emphasis placed on transparent weights, measures and quality standards in contemporary agricultural marketing reforms internal to developing and transition economies. Uninformative regulatory barriers may create similar problems in international marketing.

Third, regulatory barriers are difficult, if not impossible, to quantify as tariff equivalents, thus impeding negotiation toward liberalized access. As Sykes (p. 10) puts it, “they are often hidden in the firm-specific costs of modifying a product to meet a standard or regulation, in the costs of testing and certification procedures and their attendant delays, or in the ways that noncompliance with a standard may affect consumer purchasing decisions.” Much as many economists disdain tax breaks instead of explicit subsidies for special interests because the former hide the true cost of the policy, so do regulatory barriers disguise the extent of trade distortion in an economy. The conversion of quotas to tariffs (“tariffication”) has been central to multilateral trade agreements. While there are broadly accepted methods for calculating tariff equivalents for quotas, there are no such methods for regulatory barriers. The producer and consumer subsidy equivalents depicted in Figures 2, 3, 5, and 6, for instance, do not capture the effects of product certification, labelling, or safety standards

¹²Similar stories about milk marketing in Asia prompted Akerlof’s “market for lemons” model.

because there are not yet accepted means to measure those effects. Thus, while enormous progress has been made over the past half century in reducing quotas and tariffs, international negotiations over regulatory barriers have been largely unsuccessful.

Fourth, regulatory barriers are often episodic, enacted in response to heightened political pressure or events.¹³ Even if subsequently rescinded, they create costly uncertainty for exporters. Fifth, regulatory barriers add to transactions costs, thereby countering in part the benefits of the costs of trade which are declining. As Sykes puts it (p. 2) “even when conformity to foreign standards and regulations is not difficult, the burden of *demonstrating* conformity to the satisfaction of consumers or regulators abroad can still be considerable” (emphasis in original).

These concerns are especially pronounced in agricultural trade, particularly in subsectors like the dairy industry where attributes relating to food quality and safety are commonly governed by regulations. Health concerns expressed by consumer groups may be exploited by special interests seeking protection. Delays resulting from certification are most costly with perishable products¹⁴ and can be a serious obstacle in low-margin industries such as dairy.

Regulatory barriers are also likely to increase. First, food safety is a luxury good, and long-term increases in real incomes will fuel greater demand for legitimate regulatory barriers. Consumers are willing to pay a premium for safer food products (Eom). However, prices and perceptions of potential food safety risks appear to affect preferences more than does technical information, making it possible to manipulate consumer demand and grass-roots political support

¹³The U.S. response to Canadian beef imports following *e.coli* poisoning in the Pacific Northwest a few years ago is an example.

¹⁴Consider, for instance, a recently settled dispute with South Korea. Meat products were assigned a 30-day shelf life (down from the previously recommended 90 days), which represented barely enough time for the products to clear customs.

for regulatory barriers. Second, product variety is also a luxury good, and increasing product differentiation within food manufacturing industries concentrates the gains from precise regulatory barriers and opens up opportunities for the exercise of market power where government regulation restricts competition by foreign producers. Third, with traditional quota and tariff barriers restricted by international treaties, protectionist pressures are increasingly concentrating on regulatory barriers. As with consumer preferences and incomes, national standards differ greatly across countries, giving rise to regulated product standards. It is costly for a firm to comply with varying regulatory standards, an issue likely to become more important as firms market in more countries. Fourth, increasingly sophisticated chemically and genetically engineered production and processing technologies (e.g., BST hormone) raise new issues of product safety.

While there is little systematic empirical evidence of the frequency, magnitude, or effects of regulatory barriers to agricultural trade, these barriers may be more common than one might surmise from the international trade literature, and are particularly prevalent in industries such as dairy. Ndaysienga and Kinsey measured the frequency and type of nontariff barriers in developed countries but were limited by two factors: (1) most of the EC countries did not keep a record of health and safety standards as trade regulations, and (2) unlike tariffs, regulatory barriers provide little or no information on the impact they have on the economics of trade. Table 2 summarizes their results. In general, health and safety measures are among the most common regulatory trade barriers. Dairy products, meat products, and fruits and vegetables were the most frequently regulated agricultural products in the reporting countries, and the results are probably similar in other, nonreporting countries. For instance, Devinney and Hightower estimated creation of an open internal European Community (EC) market resulted in a \$910 million reduction in costs associated with regulation of

EC food industries. While little is known about the empirics of regulatory barriers, there are important and political economy reasons to be concerned about them, to anticipate they will grow, in both absolute and relative (to more traditional trade barriers) terms, and that they are of particular importance to agricultural trade, especially in higher-value-added, quality-differentiated products of the sort U.S. agribusinesses are increasingly attempting to export abroad and to market domestically in the face of foreign competition.

IV. Implications for Strategies for Expanding Markets Internationally

Business growth generally depends on expanding one's market, including foreign market entry through trade or direct investment. Firms weigh alternative market entry and operations strategies, taking into consideration the usual demand and supply characteristics of the market under consideration as well as policy variables such as exchange rates and trade restrictions. This section focuses on how regulatory trade barriers might influence patterns of cross-border market entry.

International market expansion is inherently risky. Perhaps the most obvious obstacle to cross-border commercial operations comes from exchange rate risk. But direct investment also involves political risk of asset expropriation and (sometimes) restrictions on the rate of profits repatriation, while trade adds uncertainty associated with tariffs, quotas, and regulatory barriers to exchange rate risk. Extensive study and historical exchange rate data make exchange rate risk manageable for firms, especially through currency futures, options and forward markets that enable firms to defray or eliminate the exchange rate risk associated with all major currencies over periods of up to one or two years. Moreover, market power may permit pricing strategies that offset some currency risk (Pick and Park).

The uncertainty posed by regulatory barriers or possible asset expropriation is qualitatively different from exchange rate risk. Political risk assessment, although less scientific than exchange rate risk assessment, is likewise familiar to a firm's bankers, if not its Board. But regulatory barrier uncertainty remains relatively obscure. Fox and Tversky note that people and firms shy away from unfamiliar and unquantifiable uncertainty, in favor of the familiar and the quantifiable. If agribusinesses likely follow this rule, regulatory barriers of uncertain duration, enforcement, and evidentiary standards may serve to discourage trade at the margin. Indeed, policymakers in some parts of the world allegedly advance regulatory barriers not only as a form of protection for domestic producers but also as a blunt incentive to induce foreigners to invest locally, thereby stimulating local employment and services. Alternatively, foreign firms faced with uncertain regulatory barriers may enter into joint ventures or marketing alliances with indigenous firms, some of which may directly enrich regulators.

While regulatory barriers may serve to induce some substitution of direct investment (or other nontrade forms of market entry) for trade, we suspect that these effects are dominated by a general market entry deterrence brought about because trade is the primary channel through which most firms resolve uncertainty with respect to political risk. Businesses typically use trade to establish relationships with potential partners in licensing or direct foreign investment; direct investment without significant prior commercial interaction is relatively rare. We hypothesize that dampening trade thus hurts the process of discovery that ultimately encourages foreign investment.

Given that the source and nature of uncertainty are of great significance to firms and that compliance with legally required product standards is costly, regulatory barriers are a major obstacle to international market integration unless they effectively stimulate demand by addressing consumer

concerns about product quality or safety. Although traditional trade barriers are gradually disappearing, the persistence, much less the expansion, of regulatory barriers may lessen the gains from free trade. This is especially true for agriculture. The increased popularity and proliferation of processed food products means these barriers will become even more important to potential exporters. The proliferation of product variety has accompanied rising incomes in developed countries and similar demand conditions would be expected in strengthening middle-income economies, like Mexico's. We must better understand the relationship between food safety regulations and consumer demand in order to distinguish informative regulatory barriers from uninformative ones, and to establish which regulatory controls on trade should be treated as remaining obstacles to the efficient international flow of goods, services and investment capital.

V. The Example of Post-NAFTA North American Dairy Trade

GATT and NAFTA terms considerably improved market access in North America, not least of which for U.S. dairy exports to Mexico, the primary direction of dairy trade in North America. While there is strong long-term potential for rapid U.S. dairy export growth to Mexico, the emergence of new obstacles, of which regulatory barriers are perhaps the most likely, could pose problems in important market niches. We thus use the example of North American dairy trade to highlight a few features of regulatory barriers' effects on international trade and agribusiness market expansion.

Dairy products are one of the most protected agricultural commodities worldwide. North American dairy market CSEs and PSEs are greater in magnitude than the corresponding measures for agriculture more broadly (compare Figures 5 and 6 with Figures 2 and 3). Signatory countries

to the Uruguay Round, including the three North American nations, committed to (1) reduce internal support to the dairy industry by 20%, relative to 1986-88 base levels, (2) convert all quotas and import licenses to tariffs and reduce these by at least 15% from 1986-88 base levels, and (3) maintain import access amounting to at least 3% of each market for each product, based on 1986-90 consumption volumes, and increase import access to at least 5% by the year 2000. Budgetary reductions have already reduced internal support in the North American countries, but the other criteria must still be implemented. U.S. dairy quotas are being converted to tariff-rate quotas (TRQs). Under NAFTA, Mexican and U.S. dairy TRQs have a zero tariff within quota, and out-of-quota tariffs are to be phased out within 15 years. Import licenses have historically been the greatest barrier to entry into the Mexican market, and Canada must accept more dairy imports to reach the 3% import access requirement of GATT.¹⁵ U.S. producers and processors are well-positioned to take advantage of these developments.¹⁶

The Uruguay Round also affects export subsidies. U.S. dairy exports to Mexico reached record levels in 1993, and exports were nearly as high in 1994 despite reduced sales under the Dairy Export Incentive Program (DEIP). Indeed, U.S. commercial exports of dairy products to Mexico have increased steadily and rapidly. Mexico is the world's largest importer of NDM and the largest purchaser of U.S. dairy products, accounting for about 20% of U.S. nonfat dried milk (NDM)

¹⁵U.S. market access will likewise need to expand to reach the 5% minimum by the year 2000. Few economists predict any increase in Canadian or U.S. dairy imports beyond GATT's minimum access requirements since above-quota tariff rates will remain prohibitively high.

¹⁶To date, there are no major movements of dairy products north out of Mexico nor south from Canada, so these issues concern almost exclusively U.S. exports in the near term. In the longer run, however, it is quite possible that Mexican, or less probably Canadian, dairy products will be exported in substantial volume.

exports (USDA). The required 21% reduction in subsidized export volumes (36% of value) will have a major effect on NDM exports.

Mexico is expected to be a primary market for world trade as its economy strengthens and per capita income increases. Increasing population and incomes in Mexico will increase food imports from the United States, a trend intensified by NAFTA, if interrupted briefly by Mexico's 1995 recession. In addition to trends in aggregate demand, policy reforms have also made the Mexican dairy market far more attractive to American agribusinesses. For decades, the Mexican government placed price controls on almost all basic foods, including milk. In March 1994, the government eliminated price controls for all commodities except milk. The monopoly position of CONASUPO (the Mexican government's agricultural supply management agency) with respect to food imports has been weakened substantially.¹⁷ Anticipating increased Mexican demand for value-added products and a more competitive marketplace in which to operate, many U.S. dairies, co-ops, and processors became interested in trade and marketing alliances with and direct investment in Mexico.

Shelf-stable (ultra-high temperature, or UHT) milk is one dairy product for which the Mexican market seems attractive. Urban middle and upper class consumers purchase UHT milk as a status product. Moreover, the limited refrigerated distribution channels for fluid milk and limited access to safe water offer an attractive market for shelf-stable milk among a subpopulation presently absent from commercial markets for dairy products.¹⁸ The massive devaluation of the Mexican peso

¹⁷A subsidy for milk consumption to low-income families is provided through CONASUPO's dairy products affiliate, LICONSA.

¹⁸According to United Nations data, 94% of Mexico's urban population had access to safe water, but only 66% of its approximately 28 million rural residents did (UNDP).

from late December 1994 through mid-April 1995 sharply reduced both the competitiveness of U.S. dairy products in Mexican markets and Mexican demand for dairy products.¹⁹ Yet, in some niches of the dairy market, like UHT, regulatory barriers, including some implemented post-NAFTA, already threatened trade.

Procedures for the importation of almost all agricultural products, including processed foods, are poorly defined in Mexico. Health certificates are required for imported fluid milk, NDM, yogurt, whey, butter, butteroil, ice cream, and cheese (Cox et al.). Mexican dairy product safety standards are strict but inconsistently enforced, which poses a real obstacle for some dairy producers and processors. Moreover, the regulations themselves change. For example, in early 1995, Mexico introduced a 48-hour shelf-life standard from the time of pasteurization for imported packaged milk, effectively eliminating the Mexican export market for U.S. producers of the UHT product. There is no evidence that this regulatory barrier in any way stimulates Mexican demand for UHT milk by allaying consumer concerns about product safety. Although scientifically indefensible, the barrier poses a serious, if perhaps temporary, obstacle and, along with the peso devaluation, effectively discouraged at least one major U.S. UHT supplier from pursuing Mexican distribution possibilities, either through trade, marketing alliances, or direct investment. In short, dairy product trade among North American countries has significantly increased in the recent past and could accelerate with the removal of quotas and tariff reduction under NAFTA, but the market potential may still be hindered by regulatory uncertainties.

¹⁹Income elasticities of demand for dairy products are typically superunitary, meaning demand for these products changes at a faster rate than, and in the same direction as, income. Devaluation sharply reduced real Mexican incomes and, subsequently, dairy product demand.

VI. Policy Implications and Summary Discussion

In spite of growing integration among the world's food markets, most governments will likely continue to explore new methods of protecting industries. In addition to the traditional protectionist lobbying efforts of producers, governments are also responding to consumers' calls for improved product health, information, and safety standards. Regulatory barriers to agricultural trade, especially in foodstuffs, are thus likely to proliferate. Recent trade agreements have largely failed to address the potential impact or increasing presence of regulatory trade barriers. Indeed, our analytical tools are as yet quite poorly adapted to incorporating such barriers (e.g., in the estimation of CSEs and PSEs) and the base of empirical research on regulatory barriers is inadequate for even terse analysis.

The increasing integration of national economies means that "domestic" policies, such as product health and safety standards, increasingly affect international trade and investment patterns. The product standards governments adopt or enforce can have effects similar to those of quotas or tariffs: they may limit foreign supply, thereby driving up domestic prices and domestic producer surplus at the cost of aggregate welfare. An important difference, however, is that product standards can also mitigate consumer uncertainty over product attributes, especially on foodstuffs. So it is unclear what effects regulatory barriers have on domestic consumer surplus and aggregate welfare. Regulatory trade barriers can provide valuable food safety information by merely attempting to reduce foreign competition or both. Analysis of regulatory barriers is consequently somewhat more complex than the study of traditional trade policy instruments.

In deciding whether to adopt regulatory trade barriers, government must distinguish between, on the one hand, legitimate regulatory barriers that might allay consumer concerns about product

quality or safety, potentially inducing increased domestic consumer and producer surplus alike, and illegitimate barriers that protect importables' producers at substantial social cost, on the other. The current base of empirical research on regulatory barriers is far too thin to provide even useful rules of thumb at this stage. However, considerable recent research on the economics of food safety, product labelling and consumer uncertainty should facilitate improved policymaking in this area.

The political economy of trade is an increasingly complex field of research. Regulatory barriers are technically oriented and thus tend to be less transparent protectionist policies than a quota or a tariff. Consequently, they may be attractive targets for rent-seeking by those who would benefit from their implementation. Similarly, regulatory barriers are unusually subject to differential and disputed enforcement, creating uncertainty and incentives for corruption. In both cases, import-competing industries (which Figure 4 demonstrates would consistently benefit from regulatory barriers) have an incentive to "cry wolf" about the need for improved food safety standards, whether they are necessary or not.²⁰

In spite of trade liberalization agreements such as GATT, NAFTA, and CUSFTA, regulatory trade barriers may pose more serious and costly impediments. Regulatory barriers are far more widespread than is commonly perceived. They tend to be more episodic than either quotas or tariffs, and more costly and politically difficult to combat. Trade constraints well understood are being replaced by less clear regulatory standards that deter firms' ability to make management decisions.

Because incomes and tastes vary across countries, national governments necessarily impose different regulatory standards on products entering their markets. This can create imperfect information problems for firms. Where trade impediments result from the failure to understand

²⁰Note that these protected industries may not be certain of the legitimacy of the regulatory barrier either, but since they consistently gain from legitimate or illegitimate barriers, they will always support such policies.

foreign trade laws and cultural differences (Wehr), governments may be able to intervene efficiently. Firms with international interests have a strong and growing demand for trade information, certification, and testing services. Toward this end, some jurisdictions, e.g., Oregon's Department of Agriculture, have established export service centers to offer exporters assistance in complying with foreign trade regulations and certifications.

Food markets are influenced by public policies and regulations. Establishing a uniform, scientifically based set of minimum specifications for all trading nations, as is done in GATT and Codex, would facilitate trade and protect national sovereignty over consumer safety issues to relieve some of the uncertainty about regulatory deterrents currently faced in the global market. True safety objectives involve complex technologies and standards, and may require the use of objective scientific panels. Recognizing that a broad spectrum of knowledge contributes to social judgment, policymakers might better serve the public by attempting to solicit and communicate the best available information, scientific, economic, or otherwise.

Recent efforts to develop international standards with respect to food quality and safety, primarily through Codex Alimentarius, and agreements to restrict national policymaking discretion with regard to sanitary and phytosanitary measures reflect the importance of regulatory barriers to international commerce. Academic and industry researchers must address these issues using empirical analysis to delineate accurately the ambiguous results obtained from theoretical analysis. Currently, little is understood about how regulatory barriers impact trade and investment volumes, nor how they affect the economic welfare of various global consumer populations.

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Table 1: Multilateral Trade Liberalization

<i>GATT Round</i>	<i>Number of Years</i>	<i>Trade Volume Signatories</i>	<i>Average Cut Covered</i>	<i>in All Duties</i>
Geneva	1947	23	\$10.0 billion	21.1%
Annecy	1949	33	N/A	1.9
Torquay	1951	34	N/A	3.0
Geneva	1956	22	2.5	3.5
Dillon	1960-61	45	4.9	2.4
Kennedy	1964-67	48	40.0	36.0
Tokyo	1973-79	99	155.0	29.6
Uruguay	1986-93	117	755.0*	20.0*

*Estimates.

Sources: Baldwin, Yarbrough, and Yarbrough, various press releases on Uruguay Round.

Table 2: Regulatory and Dairy Nontariff Barriers (NTBs)

<i>Country</i>	<i>Total Number of NTBs*</i>	<i>Dairy NTBs</i>	<i>Regulatory NTBs**</i>	<i>Number of Dairy Regulatory NTBs</i>
Australia	418	23	358	16
Austria	254	22	1	N/A
Canada	1471	37	826	18
Finland	302	13	N/A	N/A
New Zealand	323	4	135	4
Norway	393	10	141	4
Sweden	709	7	145	3
United States	300	43	N/A	N/A

*Note that barriers (e.g., a single health and safety standard) may be applied against multiple commodities.

**These are government-reported trade barriers and quite likely offer an incomplete listing.

Source: Ndaysienga and Kinsey.

Figure 1

World Trade Trends, 1961- 1991

Source: USDA

Figure 1**World Trade Trends, 1961- 1991**

Source: USDA

Figure 2 **Agricultural Producer Subsidy Equivalents Among NAFTA Members**

Source: USDA

Figure 3 **Agricultural Consumer Subsidy Equivalents Among NAFTA Members**

Source: USDA

Figure 4

The Effects of Regulatory Trade Barriers

Figure 5

Milk Producer Subsidy Equivalents Among NAFTA Members

Source: USDA

Figure 6 Milk Consumer Subsidy Equivalent Among NAFTA Members

Source: USDA