

Studies Evaluate Negative Impacts of Overly Stringent Standards on Developing Countries

I. Generally

“Trade and standards are not public policy objectives in themselves; they only become priorities as means to promote economic development. The evidence is overwhelming that larger trade flows – both imports and exports – not only bring a higher standard of living, but also a faster rate of growth. Estimates made of the benefits of trade liberalization...indicate that income gains range from 20 percent to 50 percent of the increased trade volumes. In other words, if liberalization increases imports (or exports) by \$100 million, the country’s income will rise by \$20 to \$50 million. If Central American countries could increase their trade-to-GDP ratios by 50 percentage points (a figure within reach), they could increase their per capita GDP levels by at least 10 percent” (emphasis added).¹

Several economic studies focus on the issue of mandatory standards imposed by national and/or regional governments and how they impact developing country exports. They highlight how mandatory standards can be used as protectionist trade barriers.

“Trade barriers, such as those embedded in mandatory standards...benefit powerful groups, even though they harm the whole country. They buy the economic status quo at the expense of economic growth. They are agreed to protect a way of life, even though many citizens, if given a choice, would actually prefer economic growth.”²

At least one study points out the subtle nature of regulatory trade barriers and the difficulty of identifying them.

“Technical barriers to trade – discriminatory technical regulations or cumbersome certification procedures, for example – are more difficult to pinpoint as trade barriers than tariffs and quotas. While a tariff can be identified as an explicit trade barrier– and eliminated through negotiations with trading partners – standards and testing procedures aim to serve the public good, and can actually promote rather than hinder trade.”³

“Goods sold by the Central American countries range from bananas to sugar. Largely agricultural economies, all countries must follow closely SPS provisions. Textile producers will also be aware that a large proportion of standards-related cases brought to the WTO have involved textiles. As they move to diversify their economies and welcome high-tech and manufacturing firms into their homelands, these countries will also be confronted with new standards to meet. As of 1999, the primary Central American country agricultural / food product exports were as follows. Guatemala’s principal exports were coffee, sugar and bananas, respectively⁴; Honduras’ principal

¹ Gary Hufbauer, Barbara Kotschner and John Wilson, “Trade Policy, Standards and Development in Central America” (2000), at p. 2. See, also: fn 2, citing Gary Hufbauer and Erika Wada, “Impact of Dollarization on Trade, Prices, Finance”, Conference paper, Strategic Assessments Group, (Nov. 1999), Table 1; David Dollar and Aart Kraay, “Growth Is Good for the Poor,” The World Bank Group.

(March 2000). “Integration into world markets not only triggers a step increase in income levels. It also fosters higher growth rates.” Ibid., at p. 2, and fn 3, citing J. David Richardson, “Exports Matter...And So Does Trade Finance”, Conference on the 65th Anniversary of the U.S. Export-Import Bank, (May 15-16, 2000).

² Ibid., at p. 6.

³ Ibid., at pp. 6-7.

⁴ In U.S.\$millions of dollars, coffee - \$586,797; sugar - \$316,629; bananas - \$194,634.

exports were coffee, bananas and melons, respectively⁵; Nicaragua's principal exports were coffee, sugar and other unwrought gold, respectively⁶; Panama's principal exports were fish, bananas and other sugar, respectively⁷; and El Salvador's principal exports were coffee, sugar and fish respectively.⁸

II. Study Quantifying the Impact of Technical Barriers to Trade⁹

At least one World Bank economist has opined about the important role that regulations and standards can serve. However, he also admonished that history has often shown them to be manipulated and used as means to gain a competitive advantage.

“In principle, regulatory barriers exist to achieve important objectives that would go under-served in the private market; such as public health maintenance or environmental protection. Elimination of such regulations could produce social losses in excess of any economic efficiency gains...Standards and regulations directly aim at overcoming market failures...*Thus, unless they discriminate between sources of supply*, they do not embody secondary trade costs and may be the least trade-restricting policies available. Indeed, under some circumstances, standards could expand trade. Any efficiency costs of standards are the investment societies make in achieving beneficial regulation... Removing technical regulations on trade would not necessarily achieve efficiency gains sufficient to overcome losses from weaker social protection...

Despite this benign view of technical regulations in the abstract, history demonstrates that countries may use them for questionable purposes in practice. Thus regulations may discriminate against foreign suppliers, both in their construction and in their outcomes. They may be used to gain strategic international trade advantages for domestic firms over foreign competitors. They may be non-transparent and needlessly force firms to duplicate certification costs. They may be written to exclude both domestic and foreign entrants into a particular market, serving to support entrenched monopolies. Finally they may be stronger than necessary to achieve a particular level of social protection, imposing excess costs on consumers and using industries.

[Similarly,] [s]tandards arise for numerous reasons. In principle they are designed to facilitate production and exchange, reduce transaction costs, guarantee quality, and achieve the provision of public goods. *They also operate, by design or by circumstance, to restrain competition...*” (emphasis added).¹⁰

As a matter of international trade law, he believes that health and safety regulations must be evaluated based on scientific evidence; but this has not eliminated the potential for disputes.

“The WTO Agreements require that regulations reference where available international norms and in the case of the SPS Agreement, that regulations in areas of risk to health and safety, be assessed on available scientific evidence...[However,] reliance on science alone to evaluate disputes may not provide adequate guidelines for their settlement.”¹¹

Indeed, the reliance on science has also given rise to additional disputes concerning the use of environmental standards, eco-labeling requirements and regulations for packaging and recycling. Apparently, there is no clear international consensus on net costs or benefits of these regulations or their specific impact on exports of developing countries.

⁵ In U.S.\$millions of dollars, coffee - \$431,329; bananas - \$115,000; melons - \$22,067.

⁶ In U.S.\$millions of dollars, coffee - \$167,032; sugar - \$43,810; other unwrought gold - \$32,162.

⁷ In U.S.\$millions of dollars, fish - \$226,953; bananas - \$139,519; other sugar - \$25,589.

⁸ In U.S.\$millions of dollars, coffee - \$324,541; sugar - \$77,635; fish - \$38,000.

⁹ Keith E. Maskus, John S. Wilson and Tsunehiro Otsuki, “Quantifying the Impact of Technical Barriers to Trade”, World Bank Research Group (Dec. 2000).

¹⁰ Ibid.

¹¹ Ibid., at p. 12.

However,

“Evidence does suggest that labeling requirements do pose significant obstacles for developing countries to meet. (Ja Markandya and Vossenaar (1999). Environmental standards and labeling are increasingly, however, a source of trade friction. For example, the EU has proposed mandatory labeling for packaging material to indicate whether the packaging is suitable for recycling. The regulation would differ from international standards and those in place in other markets. Informed analysis based on quantitative data would be beneficial to understanding the impact of regulations such as these, as well as, building consensus and identifying specific implications of future trade-policy decisions in this area...Quantitative evidence on technical barriers would have particular relevance for developing countries. They must absorb information on international standards to meet their WTO obligations and face pressures to align national standards with international ones. Developing countries have limited resources to participate in these processes.

...Developing members of the WTO consider standards and technical barriers a priority item in the post-Seattle trade agenda. A review of the formal and informal submissions by developing countries to the WTO in advance of the Seattle Ministerial in November 1999 reveals strong interest in addressing trade-related aspects of technical barriers and standards. This interest was expressed by large developing countries such as India, high-income countries such as members of the Association of East Asian Nations (ASEAN), and least developing countries in Sub-Saharan Africa and Central America. These members raised two critical issues among many. First, they need technical assistance in implementing WTO obligations on standards and conformity assessment. Second, they are concerned about the use of environmental regulations by developed countries to block imports” (emphasis added).¹²

“Developing countries produce and market more manufactures as a share of total exports. Given the nature of global manufacturing, they are also the location for production of components manufactured as inputs to final products – parts for electric motors that are assembled in a third country to manufacture a lawn mower, for example. As regulatory requirements conflict and dispersion of economic activity around the world continues, pressure on the WTO system in addressing technical barriers will increase.”¹³

“Compliance involves one-time costs of product re-design and building an administrative system. It also involves recurrent costs of maintaining quality control and testing and certification. Moreover, there may be indirect costs, such as reformulating the ingredients of a food product because of a requirement to list its nutrition characteristics. Thus, a rich menu of cost-raising possibilities exists, in which varying standards can raise entry barriers (higher up-front costs) or diminish the ability to compete (higher marginal costs)...[Furthermore,] compliance costs can provide an advantage to large firms in global competition”, considering that large firms are better able to absorb the costs of modifying product design to accommodate particular markets. Costs incurred to meet precise technical regulations (conformity assessment) presents the largest potential technical barrier to trade.

...Developing countries lag behind developed countries in their capacities for effective certification and accreditation of testing facilities. This situation has three important implications. First developing countries find it difficult to develop adequate standards and reach mutual recognition agreements (MRAs) with other nations. Second, they also have not integrated themselves through accepting testing results from abroad. Third, because authorities in developed countries may not have trust in inspection procedures in developing countries, the former group are liable to collaborate on standards and MRAs that exclude the latter group. The potential for trade and investment diversion in this scenario seems extensive” (emphasis added).¹⁴

¹² Ibid.

¹³ Ibid, at pp. 16-17.

¹⁴ “Developing countries may wish to achieve more effective representation at the deliberations of international standards bodies...Developing countries should also closely examine the adoption of technical standards developed in industrial countries, such as the U.S. or Canada. From an economic perspective, there is no reason why developing countries need to construct domestic capacities for standards development in all industrial sectors. By moving toward more harmonized

III. Studies Examine EU Standards Relating to Aflatoxins in Nuts, Dried Fruits and Cereals ¹⁵

One World Bank study examined the impact of stringent precautionary principle-based standards imposed by the EU on African food exports containing naturally occurring aflatoxins.¹⁶ Believing that aflatoxins are human carcinogens,¹⁷ the EU banned such African food exports during 1989-98. The study's findings strongly suggest that the implementation of stringent EU harmonized standards would have a significant negative impact on African exports of cereals, dried fruits and nuts.

The Bank's study found that the EU harmonized standard when implemented would decrease African exports in such products by 64% or U.S.\$670 million in contrast to regulation set at an international standard.¹⁸ The study estimated that the harmonized EU aflatoxin MRL standard, which is more stringent than Codex, would cause African export revenue from 15 European country importers to decrease by 59% for cereals and 47% for dried and preserved fruits and edible nuts, compared to export revenue under the pre-harmonized standard. The difference is estimated [for the 9 African countries in the study]¹⁹ to be approximately U.S.\$400 million for cereals dried and preserved fruits and nuts.²⁰ The study also found that trade flow of these products would increase by nearly \$670 million from pre-harmonization levels if a standard is imposed based on an extension of current Codex standards instead of the EU harmonized standard.²¹

As the Bank's study notes,

“...The use of import bans and regulatory intervention by the European Commission is increasingly justified, in part, under *the precautionary principle*.²² This principle suggests that regulatory action against risk be taken, even when science has not established direct cause and effect relationships. The

regulatory approaches, developing countries would directly absorb the technological knowledge inherent in standards and also promote inward technology transfer.” Maskus, Wilson & Otsuki at p. 20.

¹⁵ John S. Wilson and Tsunehiro Otsuki, “Food Safety and Trade: Winners and Losers in a Non-Harmonized World”, World Bank Development Research Group – Trade, (2001).

¹⁶ Aflatoxins “are a group of structurally related toxic compounds that contaminate certain food and have been associated with acute liver carcinogens in humans. The different types of poisonous aflatoxins found in food are B1, B2, G1, and G2. Aflatoxin B1 is the most toxic and common aflatoxin. It is generally present in corn and corn products, groundnuts and groundnut products, cottonseed milk and tree nuts (e.g., Brazil nuts, pecans, pistachio nuts and walnuts).” Ibid., at p. 6.

¹⁷ “Severe aflatoxicosis, a pathological condition caused by aflatoxin intake is produced when moderate to high levels of aflatoxins are consumed. Acute episodes of disease ensue, and may include hemorrhage, acute liver damage, edema, adulteration in digestion, absorption and/or metabolism of nutrients, and possibly death. Chronic aflatoxins can result from ingestion of low to moderate levels of aflatoxins. Some of the common symptoms of this condition are impaired food conversion and slower rates of growth...In developing countries, aflatoxin contamination rarely occurs at levels that cause notable aflatoxicosis in humans. Studies on human toxicity from ingestion of aflatoxins, therefore, have focused only on their carcinogenic effect.” Tsunehiro Otsuki, John Wilson and Mirvat Sewadeh, “Saving Two in a Billion: Quantifying the Trade Effect of European Food Safety Standards on African Exports”, World Bank Development Research Group (Oct. 2000), at p. 4.

¹⁸ Ibid., at p. 1.

¹⁹ The nine African countries [whose exports were considered] in the Bank's analysis included Chad, Egypt, the Gambia, Mali, Nigeria, Senegal, South Africa, Sudan and Zimbabwe. These countries have been among the leading exporters of food products to Europe.” Otsuki, Wilson and Sewadeh, “Saving Two in a Billion...”, at pp. 11-12.

²⁰ Ibid., at p. 17.

²¹ Ibid.; Wilson and Otsuki, “Food Safety and Trade”, at p. 7.

²² “The EC argued to the SPS that ‘there was a justification for governments to be prudent and take a precautionary approach especially in situations where the scientific evidence was incomplete’”. See: H. Newing and S. Harrop,

Commission's approach has been challenged in trade policy talks on the basis that import restrictions have been imposed without sufficient support in international science. The European ban of hormone-treated beef is one recent high-profile example" (emphasis added).²³

Indeed, at least one non-Bank study views the EU's invocation of the precautionary principle in regard to aflatoxins as "part of a general lobby from the EC to promote the *precautionary principle* in [the] WTO" (emphasis added).²⁴ It points out that this was expressed clearly in the recent White Paper on Food Quality: "The Community plays an active role in the SPS Committee and in other WTO Committees, to ensure that the international framework encourages and defends the rights of countries to maintain high public health standards for food safety. The Community has the objective to clarify and strengthen the existing WTO framework for the use of *the precautionary principle* in the area of food safety" (emphasis added).²⁵ It furthermore notes that, "the European approach is based...not on the minimum common ground [as it is believed would be reflected in an international standard developed by Codex] but, rather, "on a higher standard derived from its own scientific opinion, coupled with a precautionary margin of error to ensure that the quantity of aflatoxins in imported products conform with a 'no risk' approach..."²⁶

The problem with the precautionary approach, as it is being employed by the EU, however, as noted by this study, is that it is being employed on a systemic (i.e., across the board, one-size-fits-all) basis rather than on a case-by-case (ad hoc) basis (that is facts and circumstances-dependent). And, when employed in this manner, precaution can actually work against both global environmental and social objectives and against the interests of developing countries, and thereby, impede sustainable development.

"[This] creates an interesting dilemma for environmental and human rights movements, who have fought hard for acceptance of the precautionary principle in pressing for increased control over agrochemicals, GMOs and new pharmaceutical products. Invoking the precautionary principle, while desirable from the point of view of food quality, could also open the door to new trade barriers with little need for scientific justification. In the case of aflatoxins, it may weaken economic arguments for the conservation of Amazon rain forests and increase rural poverty, by damaging the Brazil nut industry."²⁷

The Bank study on aflatoxins found that, although "[a] number of studies... revealed an association between liver cancer incidence and the aflatoxin content of the diet...these studies have not

"European Health Regulations and Brazil Nuts: Implications for Biodiversity, Conservation and Sustainable Rural Livelihoods in the Amazon", *Journal of International Wildlife and Policy* 3(2), pp. 109-124, at p. 10 (2000), citing "Summary of SPS Committee of 12-13 March 1998, G/SPS/R/10.

²³ Otsuki, Wilson and Sewadeh, "Saving Two in a Billion...", at p.2. In the case of the EU beef hormones ban, (the EC Hormones case) the EU failed to present scientific evidence of a cause and effect relationship between beef hormones and the alleged risk to human health. The WTO Appellate Body confirmed that an SPS regulation (in this instance, banning the import of beef that was fed artificial hormones) could be justified by *minority* scientific opinion as to the level of risk. Contrary to popular rhetoric from the environmental "protest industry", the *Beef Hormones* case does *not* stand for the proposition that SPS risk assessments must carry the imprimatur of the scientific establishment. A country is entitled to apply any risk tolerance level it wishes, including zero risk. However, it must come forth with sound scientific evidence (even if the evidence is accepted by only a minority of qualified scientists) that the product in question exceeds the specified risk level. *A country cannot ban a product (as the EC did with imported beef) simply because popular opinion fears there might be risk. Any European consumer can choose not to purchase hormone-fed beef; and reasonable labels can be affixed that distinguish natural beef. The WTO violation occurred when imports of hormone-fed beef were banned even before they reached the meat counter*"(emphasis added). Gary Hufbauer, Barbara Kotschner and John Wilson at pp. 27-28.

²⁴ Newing and Harrop, at p. 10.

²⁵ Ibid.

²⁶ Newing and Harrop at p. 12.

²⁷ Ibid., at pp. 12-13.

established a direct cause and effect relationship... Scientific research on relationships between chronic aflatoxicosis in humans and the amount of aflatoxin intake is inconclusive. To date, a risk assessment completed by a Joint FAO/WHO Expert Committee on Food Additives ('JEFCA) provides the most comprehensive information on aflatoxin risk to human health...²⁸ That same study recommended that, "...aflatoxins should be treated as carcinogenic food contaminants, the intake of which should be reduced to levels as low as 'reasonably achievable',²⁹ and estimated that reducing the aflatoxin standard from 20 parts per billion (ppb) to 10ppb [would] decrease two cancer deaths a year per billion people."³⁰

The EC proposed its first uniform (harmonized) aflatoxin standard in 1997, "of 4 ppb in cereals, edible nuts, dried and preserved fruits and groundnuts intended for direct consumption, and...of 10 ppb in groundnuts subject to further processing. It also established a level for aflatoxin M1, which is usually present in milk, at 0.05 ppb."³¹ In response,

"Exporters to Europe, including [developing countries such as] Bolivia, Brazil, Peru, India, Argentina...Mexico, Uruguay...and Pakistan requested that the Commission provide the risk assessment on which it had based [it]. In comments submitted to the WTO, a representative of Gambia maintained that the proposed standard would effectively restrict entry of Gambia's groundnuts and essentially the groundnuts from producer countries in the developing world to the EU...Peru suggested that the measure constituted an unjustifiable trade barrier, and a violation of the WTO Agreement on Sanitary and Phytosanitary [SPS] standards...India also raised concerns...In its submission to the WTO, India stated that, in the case of milk, it is understood that the calculation of aflatoxin composition for all contaminants/pesticides are based on the maximum consumption figures of 1,500 grams per person per day, which is 7-8 times higher than the world's consumption of milk. Such an evaluation, based on exaggerated assumptions, would naturally result in unrealistic and impractical standards leading to creation of non-tariff trade barriers...Several Asian countries also expressed concern about the impact of the regulation on exports of cereals. Thailand had previously suffered considerable losses in corn exports as a result of high levels of aflatoxins and requested EU assistance..."³²

As a result of such EC trading partner concerns, the EC, in part, relaxed its proposed aflatoxin standards in cereals, dried fruits and nuts. Pursuant to a July 1998 Commission regulation, "the revised aflatoxin standard [became] 15 ppb (8 ppb for B1)...[for] groundnuts subject to further processing and 10 ppb (5 ppb for B1) for other nuts and dried fruits subject to further processing. For cereals, dried fruits and nuts intended for direct human consumption, [however] the [revised] standard was much more stringent and was set at 4 ppb (2 ppb for B1)."³³ By comparison, "the Codex standard on total aflatoxin contamination in processed *and* unprocessed cereals, dried fruits and nuts was set at 15 ppb" (emphasis added).³⁴ According to the Bank, the Codex standard "assumes that 50-70 percent or around 7.5-10.5 ppb of the total aflatoxin level of 15 ppb is caused by aflatoxin B1. Therefore, the Bank figured "the overall Codex standard...[as] approximately 9 ppb" (emphasis added).³⁵

The Bank's study, moreover, found that the EU harmonized standard arguably violated the SPS Agreement because it did not constitute a 'temporary provisional measure', within the meaning of SPS Art. 5.7.

²⁸ Tsunehiro Otsuki, John Wilson and Mirvat Sewadeh, "Saving Two in a Billion...", at pp. 4 and 8.

²⁹ Ibid., at p.4.

³⁰ Wilson and Otsuki, "Food Safety and Trade", at p. 6; Otsuki, Wilson and Sewadeh, "Saving Two in a Billion...", at p. 8.

³¹ Otsuki, Wilson and Sewadeh, "Saving Two in a Billion...", at p. 6.

³² Ibid., at p. 6.

³³ Wilson and Otsuki, "Food Safety and Trade", at p. 7; Otsuki, Wilson and Sewadeh, "Saving Two in a Billion...", at p. 6.

³⁴ Otsuki, Wilson and Sewadeh, "Saving Two in a Billion...", at p. 6.

³⁵ Wilson and Otsuki, "Food Safety and Trade", at p. 7.

“[While] the SPS Agreement provides for ‘precaution’ by members when an importing nation believes that the science and risk factors in any given case are such that restrictive measures must be taken...this should be a temporary measure...until scientific analysis and risk factors have become clearer...The European standard for aflatoxin at the new harmonized level is *not* intended to be temporary and is being promulgated in a context of a substantial amount of internationally accepted scientific evidence on the risks associated with aflatoxins” (emphasis added).³⁶

Lastly, in light of the difficulties experienced by developing countries in satisfying international standards, the Bank study called for importing countries to consider ways to manage risk other than by exercise of the precautionary principle, through less trade-restrictive means. In particular, it suggested that

“An initiative to encourage international standards, along with mechanisms to directly assist developing countries in raising standards to international levels merits serious consideration. In this specific case of aflatoxin standards, one might consider programs to provide vaccinations against hepatitis B to lower risk of liver cancer (along with other serious health risks), [thereby] encouraging the development of an international standard to be adopted worldwide, and to aid least developed producers of agricultural commodities most affected by aflatoxin contaminants rather than impose trade sanctions.”³⁷

At least one non-Bank study has argued that the EU regulation that decreased “acceptable levels of aflatoxins in Brazil nuts to 4 ppb may cause a crash in the Brazil nut trade” and that as a result, “European policies on food quality, development cooperation and forest conservation are likely to work in opposition.”³⁸ The authors of this study argue that,

“Brazil nuts are probably the most economically important plant product that is harvested sustainably from the natural Amazonian forest, and Brazil nut harvesters include the poorest sectors of society in a region with some of the highest levels of biodiversity in the world. [While] the European Union and its member states have given considerable support to the Brazil nut industry and related extractive systems, however, the industry currently faces a threat from an apparently unrelated area of EU policy that has also grown in part from environmental concerns, in the form of increasing food quality control...Producer countries fear that the [EU] aflatoxin Regulation could close the European market for some time to come and cause a slump in global Brazil nut markets. If so, the probable results would include extensive loss of livelihoods by the poorest sectors of society in producer regions and a dramatic increase in deforestation across a large area of southwestern Amazonia which contains some of the highest levels of biodiversity anywhere in the world.”³⁹

The fears of Brazil nut harvesters and the risks posed to the Brazil nut market in Europe are not unfounded. Recently, the European Union reported that,

“Following findings of high levels of aflatoxins, the European Commission decided today to impose special conditions for the import of Brazil nuts in shell originating from Brazil. Levels of more than 100 times the legal maximum level were found in Brazil nuts in shell *from Brazil*. In addition, an inspection by the Commission’s Food and Veterinary Office in January/February 2003 revealed shortcomings in the production chain and control systems intended to prevent aflatoxin contamination in Brazil nuts intended for export to the EU. The special conditions agreed today include certification of all consignments by the Brazilian competent authorities and an additional control at import by the competent authority of the importing EU Member State. In addition, only designated points of entry may be used to import Brazil nuts and there are strict conditions for

³⁶ Otsuki, Wilson and Sewadeh, “Saving Two in a Billion...”, at p. 18.

³⁷ Wilson and Otsuki, “Food Safety and Trade”, at p. 21. Hepatitis B vaccinations were recommended because, according to JECFA, “some studies had suggested that there is an effect in humans only if they are already suffering from other risk factors, most notably hepatitis B infection...” See: H. Newing and S. Harrop, “European Health Regulations and Brazil Nuts: Implications for Biodiversity, Conservation and Sustainable Rural Livelihoods in the Amazon”, *Journal of International Wildlife and Policy* 3(2), pp. 109-124, at p. 6 (2000).

³⁸ H. Newing and Harrop, at p. 1.

³⁹ *Ibid.*, at pp. 1-2.

sending back non-complying consignments to the country of origin. In addition to reporting risks through the usual Rapid Alert System for Food and Feed, Member States will be required to make quarterly reports of the analytical results of their controls on imported Brazil nuts. The above measures will be reviewed in May 2004” (emphasis added).⁴⁰

The economic and social costs and burdens imposed by these strictures are certain to have a severely adverse impact on the Brazil nut trade for at least the next year or so, especially in countries such as Brazil, Peru and Bolivia. According to the study,

“Although global trade in Brazil nuts is not large...the patchy distribution of Brazil nut trees means that production is concentrated in southeastern Amazonia...Brazil nuts are Bolivia’s second largest agro-industrial export product and are produced in the remote area of 100,000 km in the Amazon Basin, or 10 % of the national territory. 80% of households in the region are below the poverty line and the region has possibly the poorest infrastructure in the country. It is estimated that more than 50% of the economically active population is directly involved in Brazil nut production, which provides about 4,500 jobs in processing and involves an additional 7,500 families in harvesting. In Madre de Dios in Peru, the Brazil nut industry is estimated to provide an income for 30% of the rural population. In Acre in Brazil⁴¹, the Brazil nut trade has contracted over the past ten years to due to competition from Bolivia but is still a significant economic activity...estimated to involve about 2,000 people...”⁴²

The study also emphasizes the environment-friendly nature of the Brazil nut harvesting process as well as the Brazil nuts themselves.

“Brazil nuts are seen as an environmentally friendly product because they are probably the only Amazonian product with a sizeable world market supplied almost entirely from the wild...From a natural resource management perspective, harvesting of Brazil nuts presents few problems in terms of sustainability; there are some concerns about the effects of overharvesting on regeneration but these should be amenable to technical assistance. Brazil nuts have a high quality timber, but felling has been prohibited in Peru and Brazil in recognition of the greater medium-term value of the nuts.”⁴³

The study, further, discussed the socio-economic and environmental consequences that are likely to follow from the overly stringent aflatoxin restrictions imposed by the EU on Brazil nuts.

“Brazil nuts have been an important local food since pre-Colombian times and have been traded globally on a small scale for at least four centuries, but only became primarily a commercial product only after the end of the rubber boom...As the demand for wild rubber contracted, many rubber estates survived by developing commercialized Brazil nuts as a complimentary product and increasing small-scale agriculture. The three activities [have been] carried out in different seasons, and the result [has been] a mixed economy based on an agro-extractive seasonal cycle – Brazil nuts were collected in the rainy season from mid-December until March; rubber was tapped from April to June and again from October to mid-December, and new fields were prepared from July to September. This cycle still exists and changing markets for the two commercial products are accommodated in part by a change in the balance between the three activities. Thus, the further contractions of the rubber trade in Bolivia in the late ‘80’s caused a rise in the Brazil nut extraction activities together with increased urban migration. In both Bolivia and Peru, Brazil nuts are now the more important product, and since the market for wild-harvested rubber is currently very poor, a sudden contraction of the Brazil nut industry would almost certainly result in a massive increase in slash-and-burn agriculture.”⁴⁴

⁴⁰ “The measures were decided in agreement with the Standing Committee for the Food Chain and Animal Health, consisting of representatives of the EU Member States.” See: “Aflatoxins: Commission Imposes Special Conditions for Import of Brazil Nuts in Shell from Brazil”, EU Midday Express, News from the Press and Communication Service's Midday Briefing, (7/4/03).

⁴¹ “Formerly, the Brazilian states of Para and Amapa in eastern Amazonia were also important but production has declined because of deforestation.” Ibid., at p. 2, fn 6.

⁴² Ibid., at pp. 2-3.

⁴³ Ibid., at p. 3.

⁴⁴ Ibid., at p. 3-4.

Bolivia had previously advanced this argument, “emphasizing the value of the Brazil nut trade for forest conservation and rural livelihoods,” in response to the original aflatoxin MRL established for Brazil nuts that the EU subsequently amended in 1998.

“[A]s a result of intense Brazil nut production activity over the past five years, in spite of the high cost of transport, the inhabitants of the area now have access to food, provisions and supplies for everyday existence which have given them a more dignified standard of living. [Thus] given the current commercial value of harvesting Brazil nuts in the shell, the inhabitants of the area have an interest in preserving the forest...the maintenance of this activity is fundamental to the prevention of deforestation of the Amazon forest.”⁴⁵

IV. Study Evaluating EU MRL Standard Relating to Tetracycline Use in Beef⁴⁶

This study examined the trade impact of EU regulations that banned the import of foreign beef produced with antibiotics that exceeded the EU’s maximum (drug) residue limits.⁴⁷ The ban was precipitated because of concerns about the potential effects of such antibiotics on human health – that “inappropriate use of antibiotics in animals...can promote the spread of drug-resistant bacteria which may affect the treatment of life-threatening diseases in humans.”⁴⁸ As of the date of this report, there were NO veterinary medicines approved for use as growth-promoting agents in the EU.

The study found that,

“Antibiotics and antimicrobial drug residues are present in animals even after they are slaughtered...In addition, cattle fed with antibiotics can lead to the development of antibiotic-resistant pathogens...Overall, however, *the direct scientific evidence of risks associated with veterinary uses of antibiotic and antimicrobial drugs is very limited*. Aside from a few isolated cases, it is very hard to link human illness with consumption of veterinary drugs in animal feed or used for animal health protection. A report of the Institute of Medicine in the United States (1989) cites that the likeliest estimate of excess deaths attributable to subtherapeutic uses of penicillin and or tetracyclines...is in the range of 6 per year and that the likeliest estimate of deaths...arising because of increased difficulty of treating is 20 per year” (emphasis added).⁴⁹

The study acknowledged that developing countries are affected in a significant way in both how these concerns are addressed, as well as by the balance between risk and safety reflected in how standards are set. The study found that if international standards set by Codex⁵⁰ (maximum residue limits –

⁴⁵ Ibid., at p. 10-11.

⁴⁶ John Wilson, Tsunehiro Otsuki, Baishali Majumdar, “Balancing Food Safety and Risk: Do Drug Residue Limits Affect International Trade in Beef?”, World Bank Development Research Group – Trade (2002).

⁴⁷ The study evaluated the MRLs for six importing countries (Australia, New Zealand, U.S., Canada, EU and Japan). The country with the least stringent MRL was the U.S. (2.0ppm). Both the EU and New Zealand had the most stringent MRL (0.1ppm). The international standard proposed by Codex is 0.6ppm.

⁴⁸ Ibid, at p. 4.

⁴⁹ Ibid, at p. 6.

⁵⁰ According to the authors, “The objective of the Codex Alimentarius is to develop international food safety standards that guarantee consumer health while not impeding trade...The office of International des Epizooties (OIE) works closely with Codex to avoid contradictory standards and to address gaps which may exist among current standards. International standards also support goals in the Sanitary and Phytosanitary Agreement (SPS) of the World Trade Organization (WTO). In case of veterinary drug residues, the Codex maximum residue limits (MRLs) are supposed to be consistent with the safe levels of Acceptable Daily Intakes (ADI) when veterinary drugs are used in accordance with good veterinary practice.” Ibid., at p. 3. “The major tasks of the OIE include collection and analysis of the latest scientific information on animal disease control, and dissemination of the information gathered by its member countries on animal diseases detected in their own regions. The OIE also plays an important role in developing standards for animal health.” Ibid., at fn 1, p. 38.

MRLs) were followed in antibiotics (e.g., tetracycline and penicillin⁵¹), global trade in beef would rise by over \$3.2 billion as compared to trade flow under the pre-harmonization level.⁵² Among developing countries, South African exports would rise by \$160 million, Brazil's by \$200 million and Argentina's by over \$300 million.^{53 54}

This is problematic because the report found also that

“The use of veterinary drugs in developing countries is likely to rise as a result of increased beef production and availability of drugs through imports from developed countries. In addition, the use of drugs in these markets is likely to increase as their application can significantly raise animal borne food production levels.”⁵⁵

Consequently, the study found that if the Codex standard is accepted as a general guideline to protect public safety, the more restrictive national standards currently in place may pose an excessive restriction on beef trade.”

“The total elimination of risks associated with all animal diseases and drug residues is not economically or technologically feasible. Tightening food safety regulations in the use of veterinary drugs can induce significant additional costs to livestock producers because veterinary drugs are widely used to prevent infectious diseases caused by bacteria. They are also used to reduce the amount of feed needed for each animal and to increase the rate of weight gain in livestock (stimulate growth). Tighter food safety standards consequently would require producers to adopt alternative means to control animal diseases, if they must reduce the use of veterinary drugs in cattle and other animals”.⁵⁶

V. Study Evaluating EU Pesticide MRL Standards for Bananas⁵⁷

The World Bank again delved into the “increasingly contentious debate over the balance between risk, precaution and multilateral obligations”⁵⁸ when it examined the extent to which EU regulations and

⁵¹ “Among veterinary drugs, tetracycline is one of the most widely used around the world to promote animal health and growth... There is a small difference in the use of tetracycline vs. penicillin for animal health protection. Penicillin is only used for medication of individual animals. Tetracycline is used in animal feed to stimulate growth.” Ibid., at pp. 3-4.

⁵² This is “U.S. \$5.1 billion higher than the trade value when the most stringent tetracycline MRL standard [imposed by the EU] is adopted by the studied importing countries.” Ibid., at p. 23.

⁵³ Ibid., at p. 1. “The EU is the largest importing partner of bovine meat for South Africa and several Latin American countries such as Argentina, Brazil and Uruguay. The EU remains the major destination for the exports of most of the developing exporters in the sample, in large part because of geographical proximity and because of the remaining influence of the colonial tie with the European countries such as common language and favorable trade arrangements. The EU is also a major export destination for the Mercosur member countries... As of 2001, Australia was the world's largest beef exporter, followed by the U.S. ... Brazil became the world's third largest beef (fresh chilled or frozen) exporter in 2001, surpassing the EU and Canada.” Ibid., at p. 10. The four largest developing country beef exporters studied were Argentina, Brazil, South Africa and Uruguay. See: Table 2, at p. 29.

⁵⁴ Consequently, “the trade-off between export expansion and risk [based on] the results presented... indicate that not following international standards does have a significant impact on beef exports, including those from developing countries.” Ibid., at p. 24.

⁵⁵ John S. Wilson, Tsunehiro Otsuki, Baishali Majumdar, World Bank Development Research Group, (2002) at pp. 2-3.

⁵⁶ Ibid., at p. 2.

⁵⁷ John S. Wilson and Tsunehiro Otsuki, “To Spray or Not to Spray? – Pesticides, Banana Exports and Food Safety”, World Bank Development Research Group - Trade, Policy Research Working Paper 2805 (March 2002).

⁵⁸ The Rotterdam Convention on Prior Informed Consent (PIC) entered into force in September 1998. It “identified twenty-two harmful pesticides and five industrial chemicals that have been banned or severely restricted in a number of countries and required that these pesticides cannot be exported unless agreed by the importing country.” Ibid., at p. 7 and fn 2. “Pesticides such as DDT, chlordane, lindane aldrin have been completely banned or severely restricted in North

standards imposing maximum pesticide residue levels in food far in excess of those recommended by Codex⁵⁹ impact developing country banana exports. Once again, the Bank found that “how governments regulate food safety and environmental protection” can adversely affect the ability of developing country agricultural producers to effectively participate in the global trading system.

It first acknowledged that,

“Setting a balance between risk and methods to increase agricultural productivity is particularly important for developing countries. Many developing countries depend on food exports for exchange earning, particularly in cash crops. Bananas provide governments of exporting countries in Latin America...exchange earnings with which to undertake important development plans and programs. They are also the world’s fourth most important export commodity and food crop...The developing countries’ share of...the world banana trade is 68 percent...bananas [represent] 14 percent of the total...fruits and vegetables exports...of developing countries... [Also however,] developing countries constituted 20 percent of the total world demand for pesticides in 1995. The World Bank estimates that demand will grow to 40 percent over the period 1995-2000...Chlorpyrifos is one of the most commonly used pesticides in worldwide banana production...”⁶⁰

The Bank then performed an economic cost/benefit analysis, recognizing that aside from the health and environmental risks associated with pesticide use, there are certain valuable social, economic and environmental benefits that must be considered.

“Pesticides⁶¹ clearly have assisted in controlling pests and maintaining the availability of a low cost and high quality food...Pesticides also allow for improved storage and distribution of crops, fruits and grains...Crop and livestock production in the U.S. would drop by 25-30 percent, and prices of agricultural products would increase by 50-75 percent if pesticides were completely withdrawn from use...There are also health risks associated with pesticides. These risks include on-farm ingestion by workers, discharge of toxic chemicals into the air and water, and consumption of foods that contain pesticide residues by consumers. Setting a balance between risk and methods to increase agricultural productivity is particularly important for developing countries.”⁶²

America and Europe because of their acute toxicity.” Ibid., at p. 8. The PIC Convention, along with the Stockholm Convention on Persistent Organic Pollutants (‘POPs’) and the 1998 POPs Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution (‘LRTAP’) is currently being reviewed by the U.S. Senate for ratification. Legislative amendments have been made to two U.S. federal statutes, TOSCA and FIFRA to further this process, and they are currently being reviewed by the Senate Foreign Relations and Environment and Public Works Committees. These amendments are intended to facilitate the implementation of U.S. international obligations that will be assumed under the PIC and LRTAP upon ratification and under the POPs when it ultimately enters into force.

⁵⁹ The recommended Codex maximum residue level (MRL) standard for chlorpyrifos residues in food is 2.0 ppm. The standard for the U.S., Canada and Switzerland was 0.1 ppm, while the EU standard was 0.05 ppm. Ibid., at pp. 19, 22 and 23. The Codex Committee on Pesticide Residues (CCPR) a subsidiary body of the Codex Alimentarius Commission (Codex) develops MRL based on food consumption data in order to ensure that it stays within the limits of ADI.” Ibid., at p. 13. “The Acceptable Daily Intake (ADI) of the pesticide residue is established ‘on the basis of a complete review of the available information, including data on the biochemical, metabolic, pharmacological and toxicological properties of the pesticide [and] is derived from studies of experimental animals and observations in humans’. The total dietary intake of a particular pesticide residue in a food product is calculated by summing over consumption of all food containing the residue, weighted by the maximum residue level (MRL) of a particular pesticide in each food...The MRL is an index that represents the maximum concentration of a pesticide residue legally permitted in food commodities and animal feeds...“MRLs on food imports [are] generally set individually by each country, and they have been referred to as regulatory standards at the border.” Ibid., at p. 11.

⁶⁰ Ibid., at pp. 6 and 14.

⁶¹ “Pesticides are diverse and omnipresent. Approximately 1,400 pesticides are being used worldwide. Commonly used pesticides include herbicides (destroys unwanted weeds and plants), insecticides (kills insects and other arthropods), rodenticides (controls mice and other rodents) and fungicides (kills fungi). All pesticides are toxic by their nature, and hence, they cause human and animal health hazards through exposure or dietary intake.” Ibid., at p. 7.

⁶² John S. Wilson and Tsunehiro Otsuki, World Bank Development Research Group, Trade (March 2002), at p. 5.

The study found that “a 10 percent increase in regulatory stringency in the form of tighter restrictions on the pesticide chlorpyrifos,⁶³ leads to a decrease in banana imports by 14.8 percent.”⁶⁴ It found that this represents a significant impact on trade and affects prospects of developing countries which continue to rely on exports of agricultural commodities such as bananas. The study estimates that “U.S. \$ 5.3 billion in lost exports [would] occur per year if an international standard were set at higher EU levels of regulatory stringency, in contrast to a less stringent world standard set by Codex at the initially recommended level.”⁶⁵ This study found, based on 1998 data, that six of the ten top banana exporting countries were developing countries: In order of highest to lowest: Ecuador, Costa Rica, Colombia, Philippines, Panama and Guatemala.⁶⁶ Consequently, the study’s findings emphasize how “a change in food safety standards of [only] one importing country [can adversely] affect a broad range of exporting countries”, especially where the importing country’s market size and influence is considerable.⁶⁷

It is noteworthy, furthermore, that despite the risks associated with pesticide use and pesticide residues in food products generally, the EU was unable to show that a reduced health risk associated with a tighter pesticide residue standard for chlorpyrifos would offset the direct losses in productivity from reduced pesticides applications.⁶⁸ Also, the study suggests that the EU failed to present data establishing scientific justification for the generally higher MRLs that are imposed on foreign exports at the EU’s borders.

“Between 1993 and July 2000, the EU established MRLs for specific crop and pesticide combinations for 102 active pesticide ingredients. For several crop and pesticide combinations, however, acceptable *data to establish MRLs were not available*. In July 2000, the position for 102 pesticides or active ingredients were closed off. *Data were not available* for some crop/active ingredient combinations, and *the MRL was set at the analytical Limit of Determination (LOD) i.e., analytical zero for that combination*” (emphasis added).⁶⁹

Lastly, the World Bank study findings allude to an issue that is sensitive to many developing countries, namely their general sovereign right to exploit their natural resources as they deem necessary. Implicit in this right is their ability to decide for themselves what is the appropriate balance between promoting economic growth through trade and managing risks through exercise of

⁶³ “Chlorpyrifos...is one of the more widely used organophosphates [which] account for about 50% of the insecticides used in the U.S...[It] is categorized as a Class II pesticide by the WHO indicating a moderately high level of toxicity. According to the U.S. EPA, chlorpyrifos is mainly used on agricultural farms, and in nonagricultural settings such as homes, office buildings, schools and warehouses. It is used as a perimeter treatment that is sprayed to kill ants, mice, cockroaches, crickets, grasshoppers, millipedes, etc. Chlorpyrifos is commonly used to repel rust thrips in banana production.” *Ibid.*, at p. 10. “This pesticide can overstimulate the nervous system causing nausea, lung congestion, chest pains and dizziness. At high exposure levels it can cause respiratory paralysis and death. It is highly toxic to fish, crabs, shrimp, birds and other wildlife. Risk mitigation acts by the EPA currently include the gradual elimination in the use of chlorpyrifos by homeowners, and limited use in agriculture and in other professions.” *Ibid.*, at p. 11.

⁶⁴ *Ibid.*, at pp. 2 and 25. One of the co-authors of this report recently noted that the 14.8% figure was an error. The actual correct figure is 14.1%.

⁶⁵ *Ibid.*, at p. 25.

⁶⁶ *Ibid.*, at Table 1, p. 26.

⁶⁷ *Ibid.*, at p. 6.

⁶⁸ “A comparable estimate of the effect of a tighter pesticide residue standard on the health of consumers who benefit from a decreased level of pesticide use in imported food is not available...a reduced health risk associated with a tighter pesticide residue standard *may* offset the direct losses in productivity from reduced pesticide applications...” *Ibid.*, at p. 25.

⁶⁹ *Ibid.*, at p. 12. “Another set of MRLs for 585 pesticides were closed off in December 2000 with the legislation intended to be implemented in December 2001.” *Ibid.*

precaution. This is especially important where the potential risks of pesticide use fall primarily upon local farmers and people residing close to farmland and upon the local environment.⁷⁰

The study also alludes to the need of all countries, including those least developed, to consider viable substitutes to contemporary farming that may result in a reduction of potentially harmful pesticide use. It cites two examples, namely, genetically modified foods (GMOs) and organic foods. The problem is that this is likely to entail and political, social and/or moral choice or preference. “Balancing risk, health and trade is further complicated when considering alternatives to pesticide use, such as introduction of GMOs to control pests or investment in organic foods.”⁷¹

VI. Study Evaluating Impact of Trade on Air Pollution Standards in Developing Countries⁷²

One study examined the validity of fears expressed by environmentalists that free trade will precipitate a collapse in environmental standards, such that polluters would threaten to relocate to pollution havens in the developing world in the face of stringent national environmental regulations. The study acknowledged that proponents of this view advocate the need for high globally uniform standards enforced by punitive measures that neutralize the cost advantage of would-be pollution havens. Examining recent air quality trends in Mexico, China and Brazil, the study found that the most dangerous form of air pollution (suspended particulate matter OR dust)⁷³ has actually declined in major cities of all three countries⁷⁴, thereby confirming that the ‘race-to-the-bottom’ scenario of environmental regulation is flawed. It found that such model’s basic assumption misrepresents the political economy of pollution control in developing countries.⁷⁵

⁷⁰ The EU has argued that the risks of local pesticide use are not limited to local citizens and the local environment, but are rather global in nature because of their transboundary impacts. Pesticides such as DDT, Chlordane, Lindane and Aldrin, for example, have been characterized also as persistent organic pollutants within the meaning set forth in the Stockholm Convention on Persistent Organic Pollutants (‘POPs’) and the 1998 POPs Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution (‘LRTAP’).

⁷¹ Ibid., at p. 25.

⁷² David Wheeler, “Racing to the Bottom? Foreign Investment and Air Pollution in Developing Countries”, World Bank Development Research Group, (2000).

⁷³ This study notes that, “Among widely-measured air pollutants, the international health community currently believes the most damaging to be suspended particulate matter (dust). Numerous health studies in low- and high-income countries have associated high concentrations of suspended particulates with higher-than-normal rates of death and illness from cardio-pulmonary problems. Over time, health research has narrowed its focus from all suspended particulate matter (SPM) to particles less than 10 microns in diameter (PM-10) and, most recently, to particles whose diameters are less than 2.5 microns (PM-2.5).” Id., at p. 5.

⁷⁴ “The foreign investment data in Figures 1-4 provide a compelling picture of expansion in China, Mexico and Brazil during the past two decades. However, Figures 2-5 show no sign of a race to the bottom; trends in particulate pollution are downward in all [three] countries. Despite China’s poverty and rapid industrialization, its major urban areas have experienced a significant decline in SPM. During the period 1987 - 1995, the average concentration fell from nearly 500 micrograms per cubic meter (ug/m³) to somewhat over 300. After rising in the early 1990’s, Mexico City’s percentage of SPM during the era of globalization readings above standards fell to historical lows in the latter part of the decade (the period during which NAFTA was implemented). In Cubatao, Brazil, the average PM-10 concentration fell from 180 ug/m³ in 1984 to around 80 in 1998.” Ibid., at pp. 6-7.

⁷⁵ Empirical research has shown the model to be flawed for several reasons. First, “pollution control costs do not provide OECD firms with strong incentives to move offshore.” Ibid., at p. 8. Second, “where regulators are absent or ineffective...Factories negotiate directly with local actors in response to threats of social, political or physical sanctions if they fail to compensate the community or reduce emissions.” Ibid., at p. 9. Third, “countries regulate pollution more strictly as they get wealthier.” Ibid., at p. 10. Fourth, “regulatory and market forces induce managers to reduce costs by controlling pollution...[and] innovations induced by stricter regulation have

The Bank study found, to the contrary, that “an environmental ‘race to the bottom’ appears extremely unlikely. In fact, the converse appears to occur as ‘the bottom’ rises with economic growth. The poorest societies persistently improve their environmental quality as investment increases employment and income. Mutually-reinforcing feedback mechanisms at the local, national and international levels produce increasing pressures for pollution control as societies develop.”⁷⁶

This finding is critical to understanding the different stages through which developing country economic growth and environmental performance must progress before reaching the level of the OECD countries. At certain early points and during rapid industrialization environmental pollution is likely to be generated, while at later points technological advancement and increased wealth will likely trigger the use of pollution abatement measures (end-of-pipe solutions) and eventually the proactive employment (design) of cleaner technologies.

“While the evidence suggests that globalization has been generally compatible with pollution reduction, several caveats are in order. First, to invert Keynes' maxim, ‘in the short run a lot of us might be dead.’ Under rapid liberalization, a sudden increase of industrial investment could create pockets of severe pollution before national governments or local communities could respond effectively. This could occur even if ‘clean’ multinationals expanded locally, since domestic firms would also be attracted by increased production and export opportunities. Second, communities' capacity to control pollution formally or informally depends on the quality of available information about emissions sources and damages. Some dangerous pollutants can be seen or smelled, but others cannot be detected without specialized equipment. So, information gaps may well lead to much higher levels of contamination than local communities would tolerate if they were better-informed. Third, globalization is almost certain to produce an increase in average pollution intensity (emissions/output) as developing countries increase their share of world industrial production. High-income countries have stricter formal and informal regulation than low-income countries, so production in the latter has higher pollution intensity (on average).”⁷⁷

Notwithstanding that the global environment will be protected over the longer term, the time needed to transition to a cleaner world may not be short enough and trouble-free enough for certain interest groups. Such groups, which seek to employ protectionist measures for other reasons, are likely to continue promoting harmonized environmental standards in all countries in order to compensate for the apparent regulatory gap that is deemed to exist between developed and developing countries. And, to the extent they are unable to establish such a regime, they may seek trade protections and aid cutbacks until the regulatory gap between OECD and developing countries is closed.⁷⁸

generated significantly cleaner technologies that are available at incremental cost to producers in developing countries.” Ibid., at pp. 10-11. Fifth, “investors also play an important role in encouraging clean production. Heavy emissions may signal to investors that a firm’s production techniques are inefficient. Investors also weigh potential financial losses from regulatory penalties and liability settlements. Several studies have confirmed that the US and Canadian stock markets react significantly to environmental news, generating gains from good news and losses from bad news in the range of 1-2%.” Ibid., at pp. 11-12.

⁷⁶ Ibid., at p. 13.

⁷⁷ Ibid., at pp. 13-14.

⁷⁸ “[Although] this news is good for the global commons in the long run, adjustment to a cleaner world is not likely to be smooth. Countries whose economic policies induce a rapid expansion of income and employment may also experience severe environmental damage unless direct measures are taken to accelerate regulation's positive long-run response to income growth.” To the extent there remains a regulatory gap between rich and poor countries...controversy over trade policy and international assistance strategy [may continue]. OECD interest groups that support protectionist measures for other reasons may continue to invoke the race-to-the-bottom model, relying on a common misperception that the regulatory gap automatically implies a race to the bottom. Despite clear evidence to the contrary, they may continue to argue that a

VII. Study Evaluating How Environmental Standards Affect Export Competition ⁷⁹

A second study investigated how environmental regulations affect export competition. The study focused on five pollution-intensive dirty goods in twenty-four countries (6 OECD and 18 non-OECD /developing countries⁸⁰) between the years 1994-1998. These goods included mining, primary non-ferrous metals, pulp and paper, primary iron and steel, and chemicals, including organic and inorganic plastics. Pollution-intensive industries are defined as those having direct and indirect abatement costs in the U.S. equal to or greater than 1.85% of total costs.⁸¹

The study found that “more stringent environmental standards and environmental enforcement imply less net exports of pollution-intensive industries generally”.⁸² The reduction of these exports is more pronounced in [the larger exporting] OECD countries where environmental legislation is more stringent, than in developing countries “that do not place an emphasis on environmental quality”, and hence “are reluctant to tighten environmental standards”.⁸³

The study found that “if [however] developed countries seek to harmonize environmental standards globally at high levels through trade agreements, then a developing country may suffer from a greater loss in exports of the pollution-intensive products than a developed country.”⁸⁴

*“These findings suggest that tighten[ing] environmental standards in developing countries gradually with transitional periods could avoid rapid decline in net exports of pollution-intensive products. It is also necessary to raise environmental awareness in developing countries so that the loss of export competitiveness in these products are placed within the context of improved environmental benefits” (emphasis added).*⁸⁵

The study also indicated that “developed countries are motivated to set a high global environmental standard in multilateral environmental agreements [because] they tend to benefit more from reductions in trans-boundary pollution produced outside their borders, and that some of the pollution generated by

race to the bottom can only be avoided through enforcement of uniform environmental standards in all countries. Lacking any direct means of creating such a regime, they may argue for trade restrictions and aid cutbacks until poor countries close the gap. The available evidence suggests that such measures will retard, not advance, the day when the gap actually disappears.” Ibid., at pp. 15-16.

⁷⁹ John S. Wilson, Tsunehiro Otsuki, and Mirvat Sewadeh, “Dirty Exports & Environmental Regulation: Do Standards Matter to Trade”, World Bank Development Research Group, Trade (March 2002).

⁸⁰ The eighteen developing countries studied, broken down by region, were: South Asia – Bangladesh, India; East Asia – China, Philippines, Thailand; Sub-Saharan Africa – Kenya, Malawi, Mozambique, South Africa, Zambia; Latin America/Caribbean – Brazil, Jamaica, Paraguay, Trinidad/Tobago; Middle East/North Africa – Egypt, Jordan, Tunisia. See: Table 1, at p. 28.

⁸¹ Ibid., at pp. 1 and 7.

⁸² Ibid., at p. 21. *The study suggested that “the negative relationship between the stringency of environmental standards and exports in the majority of industries examined may imply a possible trade-off between...trade expansion and encouraging improvements in environmental standards” (emphasis added).* Ibid at p. 1.

⁸³ Ibid., at p. 22

⁸⁴ Ibid., at p. 22. If “all of the countries in [the] sample [OECD and non-OECD] harmonize environmental standards at the most stringent level (e.g., Germany, Ireland, the Netherlands and Switzerland)...a non-OECD country will, on average, reduce exports of the five pollution-intensive products by U.S.\$ 2.6 million each year, or 0.37% of the average GNP of the non-OECD countries. This represents 11 percent of annual exports of these products from [all] twenty-four countries. In contrast, an OECD country, on average, will reduce annual exports by U.S. \$0.62 million or 0.019% of annual exports of these products from the twenty-four countries.” Ibid.

⁸⁵ Ibid., at pp. 22-23.

the industries studied...does cross national borders. International coordination to offset loss in export competitiveness...should be part of the discussion at the WTO.”⁸⁶

In the context of domestic regulations, one recent OECD study concluded that, “countries with high levels of product and labor market regulations have had lower shares of investment in information and communications technology in recent years than countries where the regulatory environment is lighter.”⁸⁷ The study “notes that productivity growth in countries such as the U.S., Australia and Canada with a record of strong investment in information and communications technologies (ICT) has remained robust despite the recent economic slowdown. By contrast, productivity growth in some other countries (e.g., the United Kingdom, Denmark, Finland, France, Germany) has weakened, in spite of investment in ICT...To make effective use of ICT investment, the report observes, companies need to be able to innovate and adjust their organizational structures and work forces to new working methods.”⁸⁸

VIII. Quantifying the Trade Impact of SPS Standards – Sub-Saharan Africa⁸⁹

One African study focuses on how agriculture contributes to the economic and social wellbeing of Sub-Saharan Africa.

“Africa’s economic growth and development is intrinsically linked to development of its agricultural sector, as the region is highly dependent on the sector for income, employment and export earnings. The sector contributes about 35 percent of the region’s gross national product (GNP), serves as the primary income for as much as two-thirds of the population, and accounts for up to 40 percent of total exports. The sector also supplies factor inputs to the regions’ fledgling manufacturing sector. In addition, export earnings from the sector finance importation of capital goods necessary for the socio-economic development of the region. Transformation of the sector will not only alleviate the high incidence of absolute poverty in the region, as the substantial proportion of farm workers are poor, but is also capable of leading to rural development as well as economic transformation in general” (emphasis added).⁹⁰

According to the authors of this study, although “nine commodities [have traditionally] contributed about 70 percent of total agricultural exports of the region”⁹¹...there is an emerging trend with respect to non-traditional African food trade...[and this relates to] the growing importance of global trade in processed food products.”⁹² The study notes that, there has been “a significant increase in the share of processed food in total...developing country...non-manufactured exports...from 30 percent in 1970 to 41 percent in 1994.”⁹³ The study also notes that, “the composition of...developing country...processed food exports has changed over the same period, from a more concentrated mix of products in 1970 (e.g., preserved vegetables, sugar and molasses, processed meat products, preserved animal feeds and vegetable oils, which accounted for close to 80 percent of the total value of

⁸⁶ Ibid., at p. 23.

⁸⁷ “ICT and Economic Growth: Evidence from OECD Countries, Industries and Firms”, cited in OECD Press Release, “New OECD Study Shows ICT’s Growth Potential Linked to Regulatory Environment” (Aug. 15, 2003).

⁸⁸ See: www.oecd.gov.

⁸⁹ T. Ademola-Oyejide, E. Olawale Ogunkola, s. Abiodun Bankole, “Quantifying the Trade Impact of Sanitary and Phytosanitary Standards: What is the Known and Issues of Importance”, University of Ibadan, Paper prepared for the Workshop on Quantifying the Trade Effects of Standards and Regulatory Barriers, Is it Possible?, Held at the Work Bank (April 27, 2000).

⁹⁰ Ibid., at pp. 6-7.

⁹¹ They include “cocoa, coffee, groundnuts, tobacco, tea, bananas, rubber, cotton and sugar.” Ibid., at p. 9.

⁹² Ibid., at p. 11.

⁹³ Ibid.

processed food exports) to a less concentrated mix of products in 1994 (except for, perhaps processed fish, which accounted for 28.4 percent in 1994).⁹⁴ Furthermore, the study emphasizes that “processed foods have shown greater dynamism...and a higher growth rate...than primary commodity exports during the 1970-1994 period...[This is attributable to] the learning effects associated with both the production and marketing of processed food products and their generally lower import content, which gives them an advantage over import-substitution manufactured products.”⁹⁵

The study, moreover, opines how the expansion of

“Africa’s intra-regional trade in processed food and feed products, which has exhibited annual average growth rates of between 32 and 79 percent between the 1980’s and 1990’s, has provided many African countries with a ‘comparative advantage’⁹⁶...[these] products include[e] fish products, vegetables, flours and cereals, fruits, animal and vegetable oils, beverages, meat and animal feeds.”⁹⁷

While the study recognizes that there are various reasons for the relatively poor performance of African agricultural and food exports from the mid-1970’s to the mid-1990’s, it has concluded, with a caveat, that market access constraints have been, for the most part, negligible. “It is worth noting, however, that most industrial country non-tariff barriers are applied to processed food products...[This means that] strict SPS requirements constitute a potential constraint to the expansion of African agricultural and food exports.”⁹⁸

The study’s authors point out that, “51 percent of all agricultural exports from Sub-Saharan African countries are directed towards the EU (compared to 22.1 percent directed towards the U.S.)” (emphasis added).⁹⁹ As between the EU, Japan and the U.S., the study notes that the U.S. has imposed the least amount of non-tariff barriers (NTBs) on Sub-Saharan African agricultural exports, whereas such exports face high NTBs in the EU and Japan.

“NTBs in Japan are explicit and easy to categorize according to purpose...lack of clear classification of NTBs according to purpose is an issue in quantifying the impact of SPS measures on trade in general...the EU’s NTBs lack transparency in terms of the purpose for which they were imposed...*In the EU market, thirteen types of NTBs are imposed on agricultural exports, including ‘product characteristic (health)’ code which is specifically a sanitary standards requirement*” (emphasis added).¹⁰⁰

⁹⁴ Ibid.

⁹⁵ Ibid., at p. 12.

⁹⁶ Simply stated, pursuant to David Ricardo’s theory of comparative advantage, an economy exports the things it produces best and buys the things other economies produce best. In such case, each economy is rendered better off through trade.” Hufbauer, Kotschner and Wilson, at p. 3. In other words, “a country should specialize in producing and exporting goods in which its comparative advantage is greatest, or comparative disadvantage is smallest, and should import goods in which its comparative disadvantage is greatest...This classical trade theory assumed that physical output from production was (subject to transportation costs) mobile across nations but that factors of production, while in most cases mobile within countries, were immobile across nations. While this obviously remains true of land, it has become dramatically less true of financial capital, technology, human capital and even people...” Michael J. Trebilcock and Robert Howse, “The Regulation of International Trade”, 2nd Edition, Routledge © 1995, 1999, at p. 5. “Today, the law of comparative advantage is working overtime, as modern technology enables firms to ‘chop up’ the valued added chain into small pieces. A complex product, like a computer or power plant, is assembled from components manufactured in many countries, each making what it does best.” Hufbauer, Kotschner and Wilson at p. 3.

⁹⁷ T. Ademola-Oyejide, E. Olawale Ogunkola, s. Abiodun Bankole, at p. 13.

⁹⁸ Ibid.

⁹⁹ Ibid., at p. 14.

¹⁰⁰ Ibid. According to the study, in each of the three markets, the incidence of SPS measures was higher for processed and semi-processed agricultural products than for those in raw form.” Ibid., at p. 16.

The study also focuses on several instances in which Sub-Saharan African processed food exports encountered non-tariff barriers.

“In January 1998, the EU barred the importation of fresh fish and fish products from Kenya, Uganda, Tanzania and Mozambique ostensibly to safeguard EU consumers from the risk of cholera based on the claim that these countries lacked a credible system to safeguard the products from possible contamination. Similarly, the EU recently introduced controls that subject imported fruits and vegetables to a 10 percent sampling for microbial controls” (emphasis added).¹⁰¹

“[A parallel example involved] Uganda claims that Uganda’s exporters, especially of food-related items, frequently have...difficulty in meeting technical regulations, product standards and SPS measures in the main export markets. A third in this series of examples argues that ‘in the US market, technical standards and health requirements enforced by the Food and Drug Administration act as a barrier to marine imports’. It notes, in particular, that the automatic (though temporary, pending tests) of Ghanaian exports of fresh and frozen fish and shrimps to the US ‘ha[d] influenced the decision of some fish exporters in Ghana not to supply that market’. The same incident concerned EU Directive 91/493, which requires that fish processing establishments and factory vessels must meet specific standards of hygiene. The enforcement of these standards has had at least two effects. First of the thirty-eight fishing and fish processing businesses which are registered for general export, only six were approved for export to the EU market. Second, it has imposed additional cost on some exporters, one of which indicated that facilities had to be upgraded at a cost of U.S. \$5,000 per unit.”¹⁰²

This study arrived at some insightful conclusions concerning increased production and processing standards incurred by foreign producers.

“SPS measures are often associated with an asymmetric cost increase for foreign producers...[for which]...[t]here are, at least, two sources. An importing country’s SPS measures may specify idiosyncratic production and processing standards that may place foreign firms at a competitive disadvantage in comparison with local producers. In addition, the certification process may be ‘captured’ by local producers imposing undue cost on foreign suppliers...When an SPS regulation asymmetrically increases the compliance costs of foreign producers, it will have a ‘tariffication effect (i.e., it will raise the equilibrium price, reduce total demand, reduce imports and increase domestic production, even though no tariff revenue is generated. The reduction in imports results directly from the increased cost of compliance imposed on foreign suppliers.”¹⁰³

IX. Study Evaluating the Use of Technical Regulations and Standards as Trade Barriers to Sub-Saharan African Exports¹⁰⁴

The following quotations were extracted from that study.

*“As African economies become more open and involved in international trade, compliance to foreign and international standards is also becoming more prominent an underlying factor driving export success...Economic development and trade expansion in Africa is also being shaped by policies external to African economies...Policy reforms that can and should be undertaken by high-income countries that will generate significant benefits for ordinary people in Africa and other developing countries...include...eliminating non-tariff measures that restrict trade, including restrictive standards and technical regulations...”*¹⁰⁵

¹⁰¹ Ibid.

¹⁰² Ibid., at p. 20.

¹⁰³ Ibid., at p. 22.

¹⁰⁴ Standards & Global Trade – A Voice for Africa, The International Bank for Reconstruction and Development, the World Bank, Edited by John S. Wilson and Victor Abiola (2003).

¹⁰⁵ Ibid., at p. xxvi.

“Standards designed to ensure food safety, animal, and plant health are critical. It is important to design standards and regulations, which consider risk, best practice international science, and trade. *The standards development process can result in excessively stringent levels of protection in favor of a dominant interest group where the participation of diverse other interest and commercial stakeholders is limited, or where a dominant group has initial bargaining strengths. This is because such a process may be shaped by protectionist intents of a dominant interest group such as a cartel or monopoly producer – which does not consider national welfare or consumer interests. When such standards form the basis for regulations, they may effectively block market entry, exclude competition, and consolidate and monopolize markets.* Greater market power, in turn, may be used to influence the allocation of the benefits that may accrue from the use of these standards. Interest groups with less bargaining strength, and who are unable to participate in the rule-making process, become standards-takers. In many cases, they become bearers of the compliance costs associated with these standards.

... Thus, when national government regulations and industry practices are designed to discriminate between sources of supply (e.g. through inefficient and duplicative national testing and certification requirements), they create secondary costs (or reduce gains from exchange) such that they may restrict trade significantly. Furthermore, *technical regulations that are not based on international norms (especially when they differ across countries) may limit trade by increasing costs of market entry. By extension, they can undermine global competition, shield local monopolies from foreign competition, divert trade, and impose severe costs on consumers*” (emphasis added).¹⁰⁶

“Technical regulations that are not based on international norms (especially when they differ across countries) may limit trade by increasing costs of market entry. By extension, they can undermine global competition, shield local monopolies from foreign competition, divert trade and impose severe costs on consumers. In addition, standards fragmentation may occur, where interest groups or countries tend to implement their own criteria even in the face of accepted international standards (e.g., Codex) further complicates compliance costs and procedures for standards-takers.”

... *In the case of sub-Saharan Africa, progress is undermined, in part, by...non-tariff barriers. These non-tariff barriers include...increasingly stringent technical requirements imposed on traditional products (e.g., beef, aquaculture, bananas, and peanuts) from developing countries including Africa. Some of these restrictions extend to manufacturers (e.g., European bans on the importation of electronically regulated earth leakage devices from countries like South Africa).* There is increasing empirical evidence of the negative impact of these technical regulations...especially in relation to phytosanitary and food safety rules” (emphasis added).¹⁰⁷

“Just as African firms often lack the resources, links and connections to effectively meet foreign and international product and process standards, so do African standards-setting organizations; monitoring agencies and business support associations often lack the capacity and breadth of networks and services necessary to mount high impact development programs that will create and sustain better market access for their member firms and farmers.”¹⁰⁸

“African countries participate less effectively in WTO and other foreign standards-making processes. They also have very limited capacity and means to gather, analyze, absorb and implement decisions that emanate from these processes...Africa’s capacity to challenge or defend positions on exports of fruits and vegetables (especially regarding issues like maximum residue levels and pest risk analysis) for example is very weak...*Serious concerns already permeate the fastgrowing horticulture and flower industry in Kenya and Uganda.* These concerns are based on threats arising from the industry’s capacity to comply with maximum residue levels, labor and environmental standards, and pest risk analysis required by its export markets. For example, *it is believed that the new EU requirement of inspections against nonindigenous harmful pests does not*

¹⁰⁶ Ibid., at pp. xxviii-xxix.

¹⁰⁷ Ibid., at p. xxix.

¹⁰⁸ Ibid., at p. xxxiv.

*accommodate unique climatic conditions of producing African countries.”*¹⁰⁹

“Lack of participation, coupled with limited capacity to provide credible information needed to articulate and defend their interests...has transformed many developing countries (African firms and farmers in particular) into ‘standards-takers’ – reactive, as opposed to proactive players in the international system. This position raises three main concerns for African firms and farmers, as standards-takers: a) they are vulnerable to sudden or frequent changes in foreign standards, especially when such changes are orchestrated with *protectionist intent*¹¹⁰...b) their situation is exacerbated by simultaneous exposure to *divergent, multiple standards imposed by various trading partners [and consequently subject to] increase[d] production costs...to service [those] markets.*¹¹¹ [For example,] *as in Kenya, South African citrus exporters* have to comply with two certification systems (EUREPGAP and HACCP) in order to export their produce, and do not have a say in the setting of these regulations...c) foreign standards may become moving targets...[as] local consumer and producer groups and their supporting agencies abroad [can ensure that]...standards and codes of practice [are made] more stringent once their competitors achieve compliance...”¹¹²

In *Germany*, local firms refuse to purchase foreign electrical components, as labor unions do not allow their members to install these products. Similarly, in *Kenya*...processed foods from Del Monte were restricted from *European markets because of worker safety and environmental standards*. Human rights associations were agitated that Del Monte did not provide adequate safety standards to its workers and that environmental health standards were not adhered to. *This led to a boycott of Del Monte’s products in most EU supermarkets*” (emphasis added).¹¹³

...This case reflects the “increasing demand among international customers for ‘social audits’. *Some customers require reports from inspection bodies that confirm that suppliers comply with local labor laws*...Processed food from Del Monte in Kenya were restricted from *European markets* in 2001 due to concerns over worker safety and environmental standards. Human rights associations argued that Del Monte did not provide adequate safety standards for workers and environmental health standards were not applied” (emphasis added).¹¹⁴

“Similarly, while many African countries like *Kenya and Uganda* struggle with the challenge of restructuring the fishing industry after several bans,¹¹⁵ some buyers in developed countries are already insisting on ‘eco-friendly’ *fish harvesting and processing on the part of suppliers.*”¹¹⁶

¹⁰⁹ Ibid., at p. xxxv and fn 10.

¹¹⁰ For example, “during the early 1994, **France** implemented...in the French market...**EU Council Directive 91/493/EEC**...the main **EU** legislation governing the health requirements of fishery products” to ban South African fish exports, even “though other EU member states had given third countries time to prove compliance with the requirements of the Directive...This step came as a shock to the South African Fishing Industry, which believed the French government was trying to appease fisherman who had protested in Brittany [about] the difficult economic conditions and cheaper imports.” Ibid., at fn 11.

¹¹¹ This occurs “when such markets demand compliance to process standards that may require different production processes for the same export product...For example, [m]embers of the South African Circuit Breakers Industry (CBI) have pointed out that while **Europeans** suggest that IEC is the basis of all CENELEC standards, CBI are obliged to test according to **EU** standards.”

¹¹² Ibid., at p. xxxvi.

¹¹³ Ibid., and fns 13 and 14.

¹¹⁴ Ibid., at p. xxxviii.

¹¹⁵ “In November 1996, *Spain and Italy* imposed a ban on Kenyan fish, claiming the presence of *Salmonellae* in Kenyan fish. The ban caused a reduction in Kenya’s foreign exchange earnings by 13.1 percent in value, with total exports to Spain decreasing by 86 percent. In December 1997, a ban restricted to fresh fish was imposed by the European Union [EU] on fish from East Africa because of a *Cholera* outbreak in those countries. The World Health Organization, subsequently, intervened and the ban was lifted in June 1998. The significant drop in production and export of fish

“Pesticide residue requirements in EUREGAP are also critical areas of concern. To comply with this requirement, pesticides that are used must be registered in the country of origin... Registration requires two to three years of costly trials. The costs associated with this process are so high that only those crops that are of high national economic importance are selected for plant protection and residue analysis. As a result, where the range of plant products of importance to South Africa differs from those of its trading partners in Europe, the latter may not support calls for maximum residue levels for certain pesticide and crop combinations that are of importance to South African industries. This may lead to the loss of use of certain pesticides and activities vital to the pest management strategy of many South African farmers. The South African deciduous fruit industry is particularly concerned about this problem” (emphasis added).¹¹⁷

“Standards impose different costs structures and investment requirements that can undermine the ability of small and medium-sized farmers in Africa to access developed country markets... [even though such] compliance costs do not seem to constrain multinationals and large local companies... For example... the costs [in Kenya] of *flowers* (e.g., *Roses and Carnations*) that are grown in high investment structures and green houses and are required to meet the stringent standards of the importers/consumers, are ten times higher on average than [the] costs of *flowers* (e.g., *Carthamus and Solidago*) grown under normal field conditions” (emphasis added).¹¹⁸

“Strict adherence to the ‘analytical zero’ pesticide residue requirement imposed by the EU may have serious cost implications for Kenyan and Ugandan firms, especially SMEs, if not backed by adequate technical and financial assistance to pursue compliance. If this results in another ban on Kenya’s or Uganda’s horticulture products, such a ban will have significant effects on the economy of these countries and greatly impact the livelihood of their citizens. Horticulture industry is the third most important source of foreign exchange US\$180 million yearly for Kenya, and a major source of employment. Flowers contributed 53% of the annual earnings from the horticulture industry” (emphasis added).¹¹⁹

In Kenya, “the horticulture industry (fruits, vegetables and flowers)... is the second most import export industry in the country after tea... *The major challenges in standards are the ability to meet the [the EU’s] minimum residue levels (MRLs) in the export markets, pest risk analysis, and continually changing consumer preferences (e.g., adherence to socially and environmentally sound production methods)*... At farm level, farmers are required to invest in capacity, to advise, and to inspect the produce for ‘good’ agricultural practices. This costs about US\$2,000 per month for a production capacity of five tons of fruits or vegetables or ten tons of flowers daily. Investment for quality controls from the farm to port-of-export for the same tonnage of fruits/vegetables or flowers, respectively costs about US\$123,000. This kind of investment is only affordable to large commercial farmers. Small growers [can only] achieve this through group investments or contracts with large-scale growers” (emphasis added).¹²⁰

negatively affected the fishing communities and the country. This ban had a catastrophic impact on Nile perch exports to the EU causing a drop of 66 percent and a 24 percent drop in total fish exports from Kenya with a corresponding 32 percent decrease in value... Nile perch contributes approximately 50 percent of the total [Kenyan] production” (emphasis added). See: David Ong’olo, “Environment at the WTO – Implications for Poor Countries”, Consumer Unity & Trust Society (CUTS), Africa Resource Center, No. 1/2002, at p. 3.

¹¹⁶ Ibid.

¹¹⁷ Ibid., at p. xxxvii.

¹¹⁸ Ibid., at p. xxxix.

¹¹⁹ Ibid.

¹²⁰ Ibid., at pp. xlv-xlv. “In a paper that assesses the impact on Kenya of SPS measures, Dr. Halima Noor finds that there were heavy costs in the horticultural and fish exports in terms of compliance cost and the impact of employment.” Ibid., citing “The Impact of SPS Measures on Kenya”, at: (http://cuts.org/sps-analysis-sps_case_kny.htm), at p. 4, fn 2.

The report also notes how African fish exporting countries are concerned that “the incidences of product rejections may increase as firms move up the production ladder into processed fish products.”¹²¹

“...[I]n the *fish and flower industry, in both Uganda and Kenya*, investments in quality appear to be compensated through higher market prices. In the fish industry, investments in compliance have resulted in increased exports from *Uganda to the EU*¹²² (*but not in the case of Kenya*¹²³). The market in this case appears to have rewarded compliance with higher market share. *It appears that these premiums, if any, accrue to producers of high-end value commodities or marketing agents closer to the retail end of the production process. (i.e., retailers and supermarkets in Europe)*” (emphasis added).¹²⁴

“*Fishing is an emerging export industry for Kenya. The industry has faced problems with standards compliance, however, and fish exports have been banned to the European Union markets in the past few years. This is because of weak hygiene and sanitary standards at fishing landing beaches and capacity (human and equipment) to examine and certify the quality of exported fish. However the government has developed a new institutional framework to overcome these constraints. At the beach levels, about US\$90,000 is required to develop the necessary infrastructure (clean water, drainage, insulated boxes, electricity and roads) per beach to maintain required health and sanitary standards. At the processing level, the costs of maintaining standards for management of Hazard Analysis Critical Control Point (HACCP) are estimated at about US \$19,200 per fish processing firm*” (emphasis added).¹²⁵

¹²¹ Ibid., at p. xl.

¹²² “Individual firms have to make continual investments to comply with quality requirements.” The costs of equipment, initial certification, and ongoing testing and certification are “borne by the firms themselves, apart from the training provided by development agencies such as UNIDO, USAID and the World Bank...[H]owever...these investments have been beneficial since they played an important role in getting the ban lifted and increasing fish exports. For example, fish exports increased from 14,075 tons before the ban to 28,119 tons after the ban. This increase is partially attributable to the compliance to standards that enabled Ugandan fish and fishery products being upgraded from List II to List I.” (Ibid., at p. xl).

¹²³ “Kenya’s fishing industry has also undergone similar changes, but has not been as successful as their Ugandan counterparts.” (Ibid).

¹²⁴ Ibid., at p. xlii.

¹²⁵ Ibid., at p. xlv. “Fish exports to the EU must comply with HACCP standards which are not required in the U.S. market. Ibid., at p. xxxv, at fn 12.