



# Barriers to Agricultural Exports from Developing Countries: The Role of Sanitary and Phytosanitary Requirements

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**Summary.** — This paper explores the impact of sanitary and phytosanitary (SPS) measures in developed countries on developing country exports of agricultural and food products. It identifies the problems that developing countries face in meeting SPS requirements and how these relate to the nature of SPS measures and the compliance resources available to government and the supply chain. The paper examines the impact of the WTO's SPS Agreement on the extent to which SPS measures impede exports from developing countries. It identifies the problems that limit the participation of developing countries in the SPS Agreement and their concerns about the way in which it currently operates. © 2000 Elsevier Science Ltd. All rights reserved.

*Key words* — trade, agricultural, food, nontariff barriers, sanitary and phytosanitary measures

## 1. INTRODUCTION

One of the most important manifestations of economic globalization is the expansion of international trade. While some developing countries have performed well in world markets, many have struggled to become fully integrated in the world trading system. The progressive liberalization of world trade through, for example, successive rounds of General Agreement on Tariffs and Trade (GATT) negotiations and the establishment of the World Trade Organization (WTO), however, has created opportunities for developing countries to access developed country markets more easily. In particular, recent efforts to reduce barriers to trade in agricultural and food products, including tariffs, quantitative restrictions and other trade barriers, through the Uruguay Round, provide opportunities for enhanced export performance for both traditional and nontraditional products.

Concurrent with the liberalization of tariff and quantitative restrictions, however, there has been increased concern about the impact of other measures, many of which are not explicitly trade-related, on agricultural and food exports. In particular, it is now widely acknowledged that technical measures such as food quality and sanitary and phytosanitary (SPS) requirements can impede trade, particu-

larly in the case of developing countries. The Uruguay Round addressed the impact of these requirements on trade through the Technical Barriers to Trade (TBT) and SPS Agreements. Concerns have been expressed, however, that developing countries lack the resources to participate effectively in the institutions of the WTO, and thus may be unable to exploit the opportunities provided by these agreements (Michalopoulos, 1999).

The aim of this paper is to assess the impact of SPS measures on the ability of developing countries to access markets in developed countries for agricultural and food products, in particular the European Union (EU). It attempts to identify the specific problems that developing countries experience in meeting SPS requirements and the degree to which these relate to their level of development and the specific requirements of developed country markets. The degree to which the SPS Agreement has assisted developing countries in overcoming these barriers is explored, with particular emphasis on the constraints that might limit the effective participation of developing countries in the institutions of the WTO.

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## 2. DEVELOPING COUNTRY PARTICIPATION IN THE WORLD TRADING SYSTEM

In recent years, much attention has been paid to the liberalization and expansion of world trade and its contribution to economic growth. Thus, for example, during 1987–97, world trade nearly doubled and the ratio of trade to GDP (in purchasing power parity dollars) increased from 20.6% to 29.6% (World Bank, 1999a). While the concept of “outward-oriented” or “export-oriented” development remains controversial (see, for example, Milner, 1990), there is evidence of a positive relationship between productivity enhancement and economic growth and export performance (Edwards, 1998; Rodrick, 1999). For example, the rate of growth in GDP of those developing countries with positive GDP, trade and agricultural growth rates throughout the period 1980–90 to 1990–95, was almost 300% greater than that of developing countries as a whole (Bathrick, 1998).

Over 1980–96, low and middle-income countries (as classified by the World Bank) increased their share of trade in GDP from 30% to 42% and from 43% to 52%, respectively (World Bank, 1999a). These broad figures, however, mask important differences in the export performance of individual developing countries. On the one hand, growth in real volumes of trade amongst 44 of 93 developing countries in 1985–94, including many of the poorest, was below growth in GDP. On the other hand, there are significant differences in

the trade performance of developing countries by region (Table 1). While, for example, the trade share of GDP increased in East Asia and the Pacific and South Asia, it declined in the Middle East and North Africa and sub-Saharan Africa.

Agricultural and food exports are of particular importance for many developing countries. For example, over 1980–97, agricultural and food products typically accounted for over 25% of total merchandise exports from sub-Saharan Africa (Figure 1). Further, agriculture is of great economic importance, both macroeconomically and in terms of the livelihoods of the

Table 1. Trade share of GDP by income level, 1980 and 1996<sup>a</sup>

Income level	Trade share of GDP (%)	
	1980	1996
Low income	30	42
Middle income	43	52
Lower-middle income	–	55
Upper-middle income	46	47
Low and middle income	40	52
East Asia and Pacific	32	58
Europe and Central Asia	–	64
Latin America and Caribbean	32	33
Middle East and North Africa	63	54
South Asia	21	30
Sub-Saharan Africa	59	56
High income	38	40

<sup>a</sup> Source: World Bank (1999a).

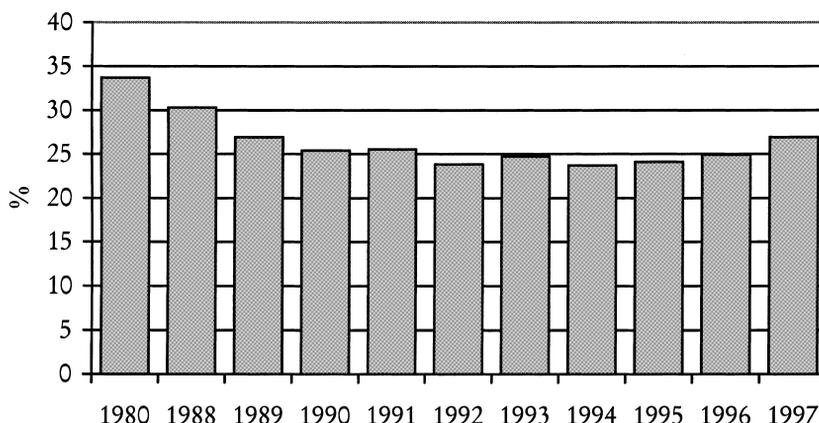


Figure 1. Value of agricultural exports as a proportion of total merchandise exports in sub-Saharan Africa, 1980–97 (excluding South Africa and Nigeria). (Source: World Bank, 1999a).

rural population. Agriculture accounts for 61% of employment and 14% of GDP in developing countries, and 85% of employment and 36% of GDP in least developed countries (World Bank, 1999b).

Major agricultural products exported from developing countries include fruit and vegetables, oilseeds, coffee and cocoa. It is only in coffee, however, that developing countries have a dominant position on the world market, accounting for around 80% of total exports (Diaz-Bonilla & Reca, 1999). Indeed, in the case of products for which exports were traditionally dominated by developing countries, for example cocoa and sugar, their share in world trade has declined. There have been significant differences, however, in the export performance of developing countries by region, with Latin America and the Caribbean and Asia expanding exports of many of their key agricultural commodities, and Africa losing export share in all products.

The progressive liberalization of world trade has created opportunities for developing countries to become better integrated into the global trading system and to exploit their national and regional comparative advantages (Bathrick, 1998). Evidence suggests that developing countries have a potential comparative advantage over developed countries in the production of agricultural and food products (Murphy & Shleifer, 1997; Edwards, 1992; Milner, 1990). This applies to traditional, mainly tropical, products such as spices, groundnuts, fruits and coffee, as well as nontraditional products such as vegetables, cut flowers and fish (Marsden, 1990; Biggs, Miller, Otto, & Tyler, 1996; Jaffee, 1999). But the ability of developing countries to maintain and/or expand their world market share will depend on their ability to meet the demands of the world trading system, not only in terms of competitive prices but also, for example, quality and safety standards. The latter of these is the subject of this paper.

### 3. LIBERALIZATION OF TRADE IN AGRICULTURAL AND FOOD PRODUCTS

Since the first round of trade negotiations under the General Agreement on Tariffs and Trade (GATT) in 1947, there has been significant progress in the multilateral liberalization of trade. It was not until the Uruguay Round,

which concluded in 1993, however, that significant commitments were made to liberalize trade in agricultural and food products. The Uruguay Round Agreement on Agriculture fosters greater discipline in a number of areas including market access, export subsidies, export restrictions and internal support (Hathaway & Ingco, 1996). In particular, the Agreement provides for the tariffication of nontariff measures affecting agricultural trade and the reduction of these and prevailing tariffs over a period of six years from January 1995.

In 1994, developed countries collectively accounted for 72.5% of total world imports of agricultural products (UNCTAD, 1998). Table 2 details the reduction in tariffs on agricultural products by developed countries under the Agreement on Agriculture. The average reduction in tariffs ranges from 26% in the case of "dairy products" to 48% for "cut flowers, plants and vegetable materials" and "other agricultural products." Overall, the average reduction in tariffs on agricultural products is 37%. Of particular interest to developing countries are reductions in tariffs on tropical products. These range from 37% in the case of "tropical nuts and fruits" to 52% for "spices, flowers and plants." Overall, the average reduction in tariffs for tropical products is 43%. These reductions suggest that the Agreement on Agriculture achieved a significant improvement in the developing country access to developed country markets. Because of the bifurcated nature of these reductions, however, these figures overstate the extent to which trade has been liberalized. Indeed, it has been suggested that the real benefits of the Agreement on Agriculture is the groundwork it lays down for serious trade liberalization in future rounds of negotiations (Hathaway & Ingco, 1996).<sup>1</sup>

As the liberalization of tariff and quantitative restrictions on trade in agricultural and food products has progressed attention has increasingly focused on technical measures such as food safety regulations, labeling requirements, and quality and compositional standards. On the one hand this reflects the global proliferation of technical measures, particularly in developed countries. This is illustrated, for example, by the rate of notifications of technical measures to GATT/WTO over 1981–98 (Figure 2). On the other hand, it reflects wider recognition that technical measures can act, either explicitly or implicitly, as a barrier to trade in a similar manner to tariffs and quan-

Table 2. *Developed country imports and tariff reductions on agricultural products<sup>a</sup>*

Product	Value of imports over Uruguay Round base period		Reduction in tariffs (%)
	All sources	Developing countries	
All agricultural products	84,240	38,030	37
Coffee, tea, cocoa, Maté	9,136	8,116	35
Fruits and vegetables	14,575	8,887	36
Oilseeds, fats and oils	12,584	6,833	40
Other agricultural products	15,585	4,233	48
Animals and products	9,596	2,690	32
Beverages and spirits	6,608	2,012	38
Flowers, plants and vegetable materials	1,945	1,187	48
Tobacco	3,086	1,135	36
Spices and cereal preparations	2,767	1,134	35
Sugar	1,730	1,030	30
Grains	5,310	725	39
Dairy products	1,317	48	26
Tropical products	24,022	18,744	43
Tropical beverages	8,655	8,041	46
Tropical fruits and nuts	4,340	3,672	37
Certain oilseeds and oils	3,443	2,546	40
Roots, rice and tobacco	4,591	2,497	40
Spices, flowers and plants	2,992	1,987	52

<sup>a</sup> Source: UNCTAD/Commonwealth Secretariat (1996).

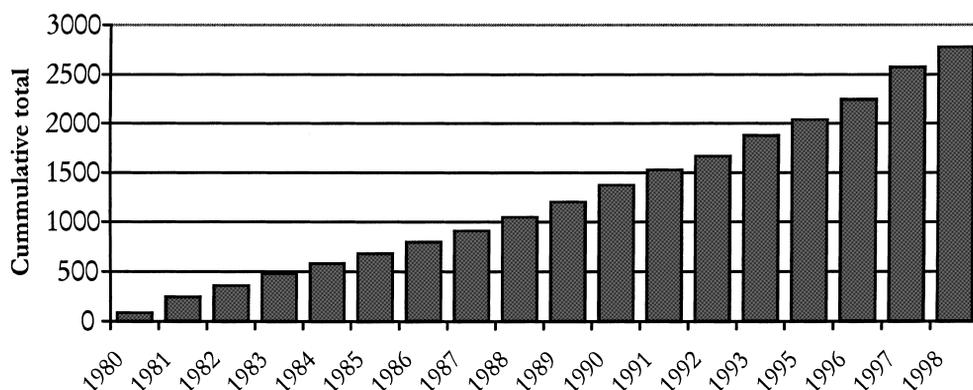


Figure 2. *Notifications of technical measures to GATT/WTO, 1981-98.* (Source: OECD, 1997; updated based on published World Trade Organization documentation.)

titative restrictions (Laird & Yeats, 1990; Vogel, 1995; Sykes, 1995; Messerlin & Zarrouck, 1999). For example, the costs associated with technical requirements and customs procedures in the EU has been estimated to be equivalent to a tax of 2% on the value of goods shipped and in a developing country environment can be a number of times greater (Hoekman, 1998). In the case of agricultural and food exports in particular, compliance with technical requirements is a prerequisite of successful export trade (Horton, 1998).

Technical measures can be defined as (Roberts & DeKremer, 1997):

Standards governing the sale of products in national markets which have as their *prima facie* objective the correction of market inefficiencies stemming from externalities associated with the production, distribution and consumption of these products.

Technical measures can take a variety of forms and be directed at both risk-related and nonrisk-related externalities associated with

agricultural and food markets (Roberts, Josling, & Orden, 1999a; Roberts, Orden, & Josling, 1999b). A large range of policy instruments is available to governments to correct perceived market failures (Caswell & Henson, 1997). On the one hand, they can rely on *ex post* liability rules that permit redress should the interests of the buyer be violated. On the other, they can adopt *ex ante* technical measures such as bans, technical standards or information requirements to remedy failures in the market. In the case of risk-related externalities, the incentives associated with *ex post* liability are generally regarded as insufficient to provide the required level of protection and so controls generally take the form of *ex ante* technical measures (Caswell & Henson, 1997).

Figure 3 details the goals of technical measures in terms of the societal interests to which they are directed and whether they are related to the reduction of physical risk. The area on which the remainder of this paper will concentrate is risk-reducing measures aimed at the protection of food safety, plant and animal health, and the natural environment, the so-called sanitary and phytosanitary (SPS) measures. Many of the issues highlighted in this paper are also equally applicable to nonrisk-reducing measures, and indeed the TBT Agreement under which these are regulated under the WTO.

It is widely acknowledged that SPS measures can act to impede trade in agricultural and food products (Petrey & Johnson, 1993; Ndayisenga & Kinsey, 1994; Thilmany & Barrett, 1997; Hillman, 1997; Sykes, 1995; National Research Council, 1995; Unnevehr, 1999; Jaffee, 1999; Digges, Gordon, & Marter, 1997). The trade impacts of SPS measures can be conveniently grouped into three categories. First, they can prohibit trade by imposing an import ban or by prohibitively increasing production and marketing costs. Second, they can divert trade

from one trading partner to another by laying down regulations that discriminate across potential supplies. Third, they can reduce overall trade flows by increasing costs or raising barriers for all potential suppliers. In certain cases, stricter SPS measures are applied to imports than domestic supplies, for example, where higher risks are associated with supplies from other countries. But, even where comparable SPS measures are applied to both imported and domestic supplies, they can act to impede trade by, for example, imposing higher costs of compliance on importers than domestic suppliers.

To date, the trade impacts of SPS measures have been most widely acknowledged in a developed country context, for example, through the high-profile dispute between the European Union and the United States over hormone use in meat production. It is suggested, however, that SPS measures are a particularly prominent issue for developing countries (see for example UNCTAD, 1997; Singh, 1994; FAO, 1999; UNCTAD/Commonwealth Secretariat, 1996; UNCTAD, 1998; Zarrilli, 1999; Finger & Schuler, 1999; Hirschorn & Unnevehr, 1999). This reflects the predominance of agricultural and food products in total exports and the technical capability of developing countries to comply with SPS requirements. But, most of the studies that have been undertaken, in particular the more rigorous, focus on the United States. For example, Thornsbury, Roberts, DeRemer, and Orden (1997) estimate the total impact of technical barriers on US exports of agricultural products in 1996 was \$ 4,907 million. Of this, 90% was due to measures covered by the SPS Agreement. The impact of food safety standards in particular was estimated to have been around \$ 2,288 million.

Various studies have addressed the issue of SPS measures and developing country exports directly, although in most cases the related

Societal Interests	Risk-Reducing Measures	Non-Risk-Reducing Measures
Producers/Processors	Commercial animal/plant health protection	Compatibility
Consumers	Food safety	Quality attributes
Natural environment	Protection of natural environment from harmful non-indigenous species	Conservation

Figure 3. Classification of technical trade barriers by regulatory goal. (Source: Roberts et al., 1999.)

costs of compliance and impact on trade flows is not quantified. SPS measures are claimed to be an impediment to exports of, for example: fish (ESCAP, 1996; Josupeit, 1997; Cato, 1998); spices (UNCTAD/Commonwealth Secretariat, 1996); oilseeds, oils and fats (FAO, 1998); livestock products (FAO, 1994; Colby, 1997; Petrey & Johnson, 1993; Johnson, 1997); and horticultural products (Giles, 1997; Gilmour & Oxley, 1998; Kortbech-Olesen, 1997; Sullivan, Sanchez, Weller, & Edwards, 1999). More theoretical work has demonstrated that developing countries find it difficult to trade with developed countries due to differences in quality requirements, which in turn reflect prevailing consumer demand or the nature of government regulation (Murphy & Shleifer, 1997).

One study that attempts to quantify the costs of compliance with SPS measures by developing countries is Cato (1998). This study assesses the costs of upgrading sanitary conditions in the Bangladesh frozen shrimp industry to satisfy EU and US hygiene requirements. It is estimated that \$ 17.6 million was spent to upgrade plants over 1997–98. This gives an average expenditure per plant of \$ 239,630. The total industry cost required to maintain HACCP is estimated to be \$ 2.2 million per annum. Further, the Government of Bangladesh is estimated to have spent \$ 283,000 over this period and predicts an expenditure of \$ 225,000 per annum to maintain a HACCP monitoring program.

Finger and Schuler (1999) examine the costs of SPS-related projects supported by the World

Bank as an indicator of the resources required for the development of SPS controls, both domestically and related to trade, in developing countries. For example, the cost of achieving disease- and pest-free status to enable Argentina to export meat, fruit and vegetables is reported to have been \$ 82.7 million over the period 1991–96. Similarly, the cost of upgrading hygiene standards in slaughterhouses in Hungary over 1985–91 is estimated as \$ 41.2 million.

Mutasa and Nyamandi (1998) assess the degree to which SPS requirements impede exports of agricultural and food products from African countries through a survey of Codex Alimentarius contact points. Of the countries that responded, 57% indicated that exported products had been rejected within the previous two years following border inspection. The main reasons were microbiological/spoilage or contamination. Although all of these countries inspected food products prior to export, most considered that financial constraints limited the effectiveness of these procedures and that, in particular, testing and inspection facilities were inadequate.

A broader indication of the impact of SPS requirements on developing country exports of agricultural and food products is provided by data on rejections following border inspection in developed countries. At the current time, these data are only systematically collected and publicly available for the United States (Table 3).<sup>2</sup> Over the period June 1996 to June 1997, there were significant rejections of imports from Africa, Asia and Latin America and the

Table 3. *Number of contraventions cited for US Food and Drug Administration import detentions, June 1996–June 1997<sup>a</sup>*

Reason for contravention	Africa	Latin America and the Caribbean	Europe	Asia	Total
Food additives	2 (0.7%)	57 (1.5%)	69 (5.8%)	426 (7.4%)	554 (5.0%)
Pesticide residues	0 (0.0%)	821 (21.1%)	20 (1.7%)	23 (0.4%)	864 (7.7%)
Heavy metals	1 (0.3%)	426 (10.9%)	26 (2.2%)	84 (1.5%)	537 (4.8%)
Mould	19 (6.3%)	475 (12.2%)	27 (2.3%)	49 (0.8%)	570 (5.1%)
Microbiological contamination	125 (41.3%)	246 (6.3%)	159 (13.4%)	895 (15.5%)	1,425 (12.8%)
Decomposition	9 (3.0%)	206 (5.3%)	7 (0.6%)	668 (11.5%)	890 (8.0%)
Filth	54 (17.8%)	1,253 (32.2%)	175 (14.8%)	2,037 (35.2%)	3,519 (31.5%)
Low acid canned foods	4 (1.3%)	142 (3.6%)	425 (35.9%)	829 (14.3%)	1,400 (12.5%)
Labeling	38 (12.5%)	201 (5.2%)	237 (20.0%)	622 (10.8%)	1,098 (9.8%)
Other	51 (16.8%)	68 (1.7%)	39 (3.3%)	151 (2.6%)	309 (2.8%)
Total	303 (100%)	3,895 (100%)	1,184 (100%)	5,784 (100%)	11,166 (100%)

<sup>a</sup> Source: FAO (1999).

Caribbean due to microbiological contamination, filth and decomposition.<sup>3</sup> This indicates the considerable problems that developing countries have in meeting basic food hygiene requirements (FAO, 1999), let alone requirements for which more sophisticated monitoring and testing, and therefore more costly, procedures are required, for example limits on pesticide residues and heavy metals. The cost of rejection at the border can be considerable, including loss of product value, transport and other export costs, and product re-export or destruction.

#### 4. SURVEY OF SPS-RELATED PROBLEMS ASSOCIATED WITH DEVELOPING COUNTRY EXPORTS

The foregoing discussion suggests that SPS measures are potentially a significant barrier to exports of agricultural and food products from developing to developed countries. The remainder of this paper draws heavily on a study that aims to assess the problems that developing countries have complying with SPS requirements in developed country export markets. Further, it explores the potential benefits of the SPS Agreements and the ability of developing countries to participate effectively in the Agreement. The particular focus of the study is exports to the EU, although the results are generally applicable to exports to most developed countries. This study comprised two main stages as described below.

To understand better the problems faced by developing countries, a series of 10 country in-depth case studies was undertaken over the period October 1998 to March 1999 (these are described in Henson, Loader, Swinbank, Bredahl, & Lux, 2000).<sup>4</sup> These involved interviews with government personnel with responsibility for SPS and WTO issues, exporters of agricultural and food products, nongovernmental organizations (NGOs) etc. On the basis of these case studies, key issues affecting the ability of developing countries to comply with SPS requirements in the EU were identified.

To obtain quantitative information on the relative importance of the issues identified through the country case studies, a survey was undertaken of all low and middle-income countries as classified by the World Bank (1998), which were members of the WTO and/or Codex Alimentarius in March 1999. In each case, a questionnaire was sent by fax to a

named contact at the WTO delegation in Geneva or, in cases where the country concerned was not a member of the WTO, the Codex Alimentarius contact point.<sup>5</sup> A total of 92 questionnaires were successfully sent by fax during April 1999. Any country that could not be contacted by fax after five attempts was excluded from the sample. This applied to a total of 44 countries. A total of 65 fully completed questionnaires were returned by fax, giving an overall valid response rate of 72%.

#### 5. PROBLEMS EXPERIENCED BY DEVELOPING COUNTRIES DUE TO SPS MEASURES

Survey respondents were asked to consider a range of factors that might impede their country's ability to export agricultural and food products to the EU and indicate the significance of each on a five-point Likert scale from "very significant" (1) at one extreme to "very insignificant" (5) at the other. Overall, the factor considered the most significant impediment to exports to the European Union was SPS requirements (Table 4). Other technical requirements, for example labeling regulations or compositional standards, and transport and other direct export costs were also considered important impediments to trade. Tariffs and quantitative restrictions were considered relatively less important impediments to trade in agricultural and food products. To a certain extent, however, this reflects the fact that many of the countries that responded to the survey were subject to lower tariff rates, for example, under the Lomé convention.

Respondents were also asked to indicate the significance of SPS requirements as an impediment to agricultural and food exports to a number of developed country markets. The market for which SPS requirements were considered to be the most significant impedi-

Table 4. Mean significance scores for factors influencing ability to export agricultural and food products to the EU<sup>a</sup>

Factor	Mean score
SPS requirements	2.1
Other technical requirements	2.8 <sup>a</sup>
Transport and other direct export costs	2.8 <sup>a</sup>
Tariffs	3.3
Quantitative restrictions	3.8

<sup>a</sup> Scores are not significantly different at the 5% level.

Table 5. Mean significance scores for problems due to SPS requirements when exporting agricultural and food products to various developed countries<sup>a</sup>

Country	Mean score
European Union	2.1
Australia	2.7 <sup>a</sup>
USA	2.8 <sup>a</sup>
Japan	3.3 <sup>b</sup>
Canada	3.4 <sup>b</sup>

<sup>a</sup> Scores for Australia and USA are not significantly different at the 5% level.

<sup>b</sup> Scores for Japan and Canada are not significantly different at the 5% level.

ment to trade was the European Union, followed by Australia and the United States (Table 5). To a certain extent these results will reflect the importance of individual developed country markets for products that are generally subject to extensive SPS controls, for example, meat and other animal products and unprocessed fruit and vegetables. They will also reflect the level and types of SPS controls applied. For example, the EU has progressively shifted to process-based controls enforced by a “competent authority” in exporting countries rather than border inspection. Many developing countries regard these process-based controls as more onerous. Although the United

States is shifting to similar forms of SPS controls on imports, at the current time these are less developed.

Figure 4 reports the proportion of countries that responded to the survey that had been prevented from exporting agricultural and food products to the European Union in the last three years due to SPS requirements. The products for which SPS requirements had been a particular problem were meat/meat products, fish/fish products and fruit and vegetables/fruit and vegetable products. To a large extent these results reflect the fact that these products are typically subject to extensive SPS controls. For example, strict microbiological and animal health requirements are generally applied to meat and meat products. Similarly, fruit and vegetables are typically subject to strict controls against pests and plant diseases. At the other extreme, exports of dairy products from developing countries to the European Union are largely insignificant due to the impact of other trade measures.

The country case studies identified a number of potential problems associated with SPS requirements in the European Union that could act to impede exports of agricultural and food products. To a large extent these related to compliance resources, including access to information on SPS requirements, availability

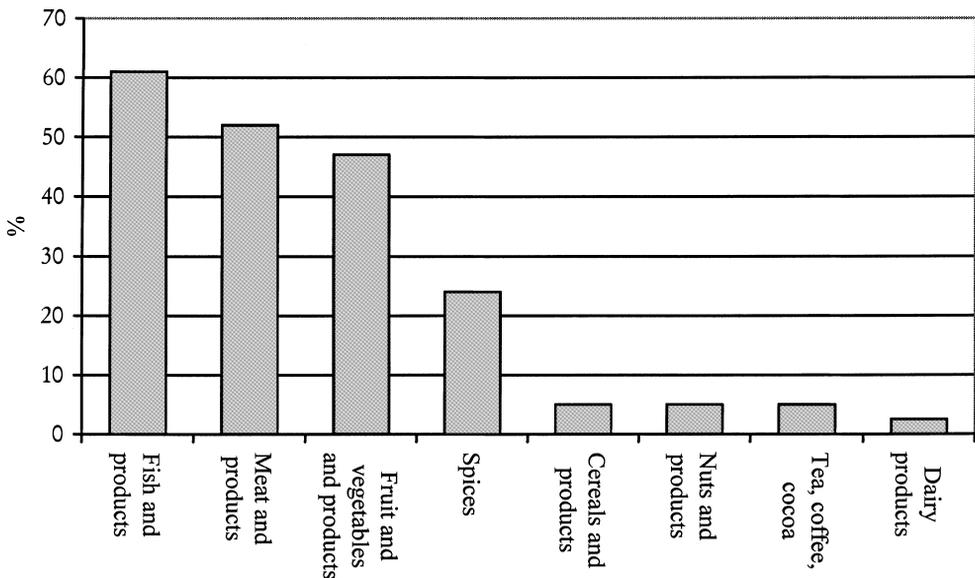


Figure 4. Number of developing countries for which exports of agricultural and food products to the EU have been prevented as a direct result of SPS requirements.

of technical and/or scientific expertise and financial constraints. Further issues related to awareness of SPS issues among government officials and within agriculture and the food industry, and limitations in administrative arrangements for SPS controls in developing countries. In turn, these constraints meant that, in certain cases, countries were unable to comply with SPS requirements in the time permitted and/or the cost of doing so was perceived to be prohibitively high.

In certain circumstances, SPS requirements applied by developed countries (which are generally developed with a view to the structure and *modus operandi* of their own domestic industries) may conflict with prevailing production and/or marketing methods in developing countries. In this case large-scale investment may be required over extended periods of time in order to comply, unless developed countries are willing to accept different procedures as "equivalent" in terms of the level of SPS protection afforded. In turn, suppliers that strive to meet these requirements may become dependent on higher value exports to developed country markets. One example, is the Nile Perch processing sector in Kenya, Tanzania and Uganda, which has invested heavily at landing sites on Lake Victoria and in processing facilities to satisfy the European Union's hygiene requirements. As a result, the sector has become reliant on exports of fresh fillets to the European Union, which provide a higher return than both local markets and exports of frozen fish to other developed countries, for example, Japan or the United States. Indeed, a number of processors have ceased operating as a direct result of a ban on exports to the European Union imposed in April 1999.

Respondents were asked to indicate the significance of each of these problems in terms

of their country's ability to satisfy SPS requirements when exporting agricultural and food products to the European Union. The factors judged to be most significant were "insufficient access to scientific/technical expertise" and "incompatibility of SPS requirements with domestic production/marketing methods" (Table 6). Problems judged to be less significant were "poor awareness of SPS requirements within agriculture and the food industry" and "poor access to information on SPS requirements." These results suggest that developing countries are broadly aware of the SPS requirements they face in exporting to the European Union, but may lack the resources required to comply. This situation is exacerbated where SPS requirements conflict with domestic production/marketing methods and/or the period of time permitted for compliance is relatively short.

## 6. SPS AGREEMENT

The international community has addressed the impact of SPS standards on trade in agricultural and food products through the WTO's SPS Agreement. The Agreement grew out of several trade disputes, most notably between developed countries, which could not be resolved under the existing GATT "Standards Code" or through prevailing GATT dispute settlement procedures. It is widely accepted, however, that these arrangements were ineffective in, and indeed were not applied to, preventing the use of technical measures as barriers to trade (Victor, 1999).

The key objectives of the SPS Agreement are to:

- Protect and improve the current human health, animal health, and phytosanitary situation of all Member countries.

Table 6. Mean significance scores for problems in meeting SPS requirements in exporting agricultural and food products to the EU<sup>a</sup>

Factor	Mean score
Insufficient access to scientific/technical expertise	1.6
Incompatibility of SPS requirements with domestic production/marketing methods	2.1
Poor access to financial resources	2.6
Insufficient time permitted for compliance	3.0 <sup>a</sup>
Limitations in own country's administrative arrangements for SPS requirements	3.1 <sup>a</sup>
Poor awareness of SPS requirements amongst government officials	3.1 <sup>a</sup>
Poor awareness of SPS requirements within agriculture and food industry	3.5
Poor access to information on SPS requirements	3.9

<sup>a</sup>Scores for these factors are not significantly different at the 5% level.

—Protect Members from arbitrary or unjustifiable discrimination due to different sanitary and phytosanitary standards.

The Agreement permits individual nation states to take legitimate measures to protect the life and health of plants, animals and consumers given the level of risk that they deem to be “appropriate,” provided such measures can be justified scientifically and do not unnecessarily impede trade. They are required, however, to recognize that measures adopted by other countries, although different, can provide equivalent levels of protection. The key elements of the Agreement are detailed below (WTO, 1994, 1995, 1996; Roberts, 1997):

—*Harmonization*: In many circumstances the harmonization of SPS standards can act to reduce regulatory trade barriers. Therefore, Members are encouraged to participate in a number of international standards-setting organizations, most notably Codex Alimentarius, the International Office of Epizootics (OIE) and the International Plant Protection Convention (IPPC). Members are expected to base their SPS measures on the standards, guidelines, or recommendations set by these organizations, where they exist. They are, however, entitled to adopt measures that achieve a higher level of protection, provided this can be justified scientifically.

—*Equivalence*: Members are required to accept the SPS measures of other members where they can be demonstrated to be equivalent; they offer the same level of protection. This protects exporting countries from unjustified trade restrictions, even when these products are produced under qualitatively different SPS requirements. In practice, however, the right of the importing country to test imported products limits the right of equal treatment.

—*Assessment of risk and determination of the appropriate level of sanitary or phytosanitary protection*: Members are required to provide scientific evidence when applying SPS measures that differ from international standards. This evidence should be based on a risk assessment, taking into account, when possible and appropriate, risk assessment methodologies developed by the international standards organizations. Further, Members are obliged to avoid arbitrary or unjustifiable distinctions in the levels of protection it considers to be appropriate if the distinctions would act to distort trade.

—*Adaptation to regional conditions, including pest- or disease-free areas and areas of low pest or disease prevalence*: The Agreement recognizes that SPS risks do not correspond to national boundaries; there may be areas within a particular country that have a lower risk than others. The Agreement, therefore, recognizes that pest- or disease-free areas may exist, determined by factors such as geography, ecosystems, epidemiological surveillance, and the effectiveness of SPS controls. A good example in this respect is Foot and Mouth Disease (FMD)-free areas within countries that do not have an FMD-free status overall.

—*Transparency*: The Agreement establishes procedures for enhanced transparency in the setting of SPS standards amongst Members. Members are obliged to publish and notify the SPS Secretariat of all proposed and implemented SPS measures. This information is relayed via the “Notification Authority” within each Member Government. Moreover, Members are required to establish an “Enquiry Point,” which is the direct point of contact for any other Member regarding any questions about SPS measures or relevant documents.

—*Consultation and dispute settlement*: The WTO Agreement establishes detailed and structured procedures for the settlement of disputes between Members regarding the legitimacy of SPS measures that distort trade. This takes the form of a dispute settlement body consisting of Member representatives.

Given that developing countries typically implement qualitatively or quantitatively lower SPS standards than developed countries, in principle the SPS Agreement should help to facilitate trade from developing to developed countries by improving transparency, promoting harmonization and preventing the implementation of SPS measures that cannot be justified scientifically. Much of this is dependent, however, on the ability of developing countries to participate effectively in the Agreement. The Agreement itself tries to facilitate this by acknowledging the special problems that developing countries can face in complying with SPS measures and allowing for special and differential treatment:

—Members are instructed to take account of the special needs of developing countries, and in particular least-developed countries, in the development of SPS measures.

—To maintain opportunities for exports from developing countries, where the appropriate level of protection permits scope for the phased introduction of new SPS measures, longer periods should be given for products that are of special interest to developing countries.

—The SPS Committee is permitted to grant developing countries time-limited exemptions from obligations under the Agreement, taking into account their financial, trade and development needs.

—Members should encourage and facilitate the active participation of developing countries in international organizations such as Codex Alimentarius, OIE and IPPC.

—Members are encouraged to provide technical assistance to other Members, in particular developing countries, for the purpose of allowing such countries to meet the level of SPS protection required in their export markets.

Further, the Agreement permits additional time to developing countries to implement all or some of its provisions. Developing countries were permitted an additional two years (until 1997) to comply with all the provisions except those associated with transparency. The least developed countries were permitted an additional five years (until 2000) to comply with the Agreement in its entirety.

## 7. PROBLEMS WITH THE SPS AGREEMENT

Developing countries will only actualize the potential benefits of the SPS Agreement if they are willing and able to participate fully in the institutions and practices that it establishes (Henson & Loader, 1999; Michalopoulos, 1999; Zarrilli, 1999; Finger & Schuler, 1999). There

are three key issues relating to this (Michalopoulos, 1999). First is the degree to which developing countries are represented in WTO and related institutions, for example, the SPS Committee and international standards organizations. This includes, for example, membership of the WTO and international standards organizations as well as the ability to operate missions that can adequately deal with SPS matters. Second is the effective participation of developing countries in activities associated with the SPS Agreement. A key issue in this respect is the ability to establish and operate effectively the institutions defined by the Agreement. Third is the institutional capacity at home to implement effective SPS controls and to comply with commitments under the SPS Agreement. This section aims to assess the degree to which developing countries have participated in the SPS Agreement to date and discusses the concerns that developing countries have about the manner in which the Agreement has operated since its inception.

### (a) *Participation in the SPS Agreement*

Although the majority of low and lower-middle income countries are members of the WTO, the rate of membership (62%) is significantly lower than among upper middle or high-income countries (83% and 92% respectively) (Table 7). Indeed, a number of notable low and lower-middle income countries, for example, China, Nepal, Ethiopia, and Sudan, are currently not WTO Members. Although, many of these are Observers to the WTO and have indicated their intention to join, at the current time they are not able to participate fully in institutions such as the SPS Agreement.

The ability of Members to participate effectively in the institutions of the WTO is dependent on having an adequately resourced

Table 7. *Membership of WTO and international standards organizations by income group, June 1999<sup>a,b</sup>*

Income group	Total countries <sup>c</sup>	WTO	OIE	IPPC	Codex Alimentarius	All
Low	60	40	52	26	51	19
Lower middle	60	34	40	35	49	20
Upper middle	29	24	25	23	31	17
High	38	35	33	25	32	26
Total	187	133	150	109	163	75
Least developed	29	29	21	11	25	9

<sup>a</sup> Based on published World Trade Organization documentation.

<sup>b</sup> Income groups defined by World Bank.

<sup>c</sup> Excluding European Communities.

mission in Geneva (Michalopoulos, 1999). But, while 65 low and middle-income members currently maintain WTO Missions in Geneva, the remaining deal with WTO matters from embassies in other European capitals, in particular Brussels, or ministries in their own capitals. Further, the WTO missions of many low and middle-income countries are poorly staffed; in many cases there is only one individual to deal with all WTO matters, of which the SPS Agreement is generally a minor part. Even in better resourced missions, as is typical of larger countries such as India and Brazil, staff may lack expertise in SPS issues and have to relay matters associated with the SPS Agreement to experts in their capital for guidance. Indeed, given the complexity of SPS issues, many developing countries consider lack of technical expertise to be the major constraint limiting their effective participation in the SPS Agreement.

Membership of the international standards organizations is encouraged by the SPS Agreement, indeed this is crucial if developing countries are to benefit fully from the Agreement. For example, active participation in the setting of international standards is critical if developing countries are to ensure that adequate account is taken of their needs and special circumstances. Although the majority of low and lower-middle income countries are members of the international standards organizations, in particular the OIE and Codex Alimentarius (Table 7), the rate of membership is significantly lower than among upper-middle and high-income countries. Further, only 33% of low and lower-middle income countries are members of all three international standards organizations, compared to 64% of upper-middle and high-income countries.

The participation of low and middle-income WTO Members in the SPS Agreement can be assessed by reference to the institutions and procedures laid down by the Agreement itself.

The discussion below focuses on three of these: implementation of transparency institutions; attendance at SPS Committee meetings; and notifications of SPS measures.

The SPS Agreement lays down certain requirements that aim to ensure transparency in the implementation of SPS measures in Member countries. Members are required to establish specific contact points to facilitate communication regarding SPS measures: (i) a single national 'enquiry point', which is responsible for responding to queries from other Members and providing documents on the application of SPS measures; (ii) a single national notification agency, which is responsible for all procedures associated with notification of new or amended SPS measures. Table 8 details the number of members with defined enquiry points and notification agencies. As of June 1999, only 65% of low and lower-middle income countries had specified an enquiry point and only 59% had specified a national notification agency (including the 29 least developed countries that are not required to comply until 2000). Given the fundamental importance of the transparency mechanisms to the working of the SPS Agreement, this indicates a critical weakness in the participation of developing countries.

A further measure of the participation of developing countries in the SPS Agreement is attendance at meetings of the SPS Committee in Geneva. Attendance lists have been published for 10 of the 12 SPS Committee meetings held November 1995 to September 1998. Over this period, almost 50% of low and lower-middle income Members attended no meetings of the SPS Committee and less than 20% attended five or more meetings. Further evidence of the limited use of the SPS Committee by low and middle-income Members is provided by the tally of cross notifications (Roberts *et al.*, 1999a,b)<sup>6</sup>—of the 83 cross-notifications to September 1999, only

Table 8. *Implementation of transparency obligations by WTO member states by income group, June 1999<sup>a</sup>*

Income group	Number of members <sup>b</sup>	Enquiry point	National notification authority	Both
Low	40	18	15	13
Lower middle	34	30	29	29
Upper middle	24	21	20	20
High	35	33	32	32
Total	133	102	96	94
Least developed	29	8	6	4

<sup>a</sup> Based on published World Trade Organization documentation. Income groups defined by World Bank.

<sup>b</sup> Individual country members, excluding the European Communities.

23 (28%) were filed by low and middle-income Members. But while developing countries may be unable to represent themselves at the SPS Committee on a routine basis, there is evidence that when an issue arises that threatens their economic interests, they are able to make their voice heard. For example, of the 15 written representations to the SPS Committee against the European Union's proposals for restrictions on aflatoxins in various foods in early 1998, 12 were from low and middle-income members (Henson *et al.*, 2000).

When Members plan to implement SPS measures where an international standard does not exist, or where the content of the proposed measure is not the same as an international standard, they are required to notify other Members through the SPS Committee Secretariat. Table 9 details the number of notifications made by Members as of August 1999. Over this period, only 34% of low and low-middle income countries (including least developed countries) had issued any notifications, while the notifications by these countries accounted for only 10% of the total. While it is undoubtedly the case that developing countries typically promulgate fewer SPS measures than developed countries, there is evidence that, to date, many developing countries have not notified the SPS Committee on a routine basis of new measures that do not conform to international standards (Henson *et al.*, 2000).

The foregoing discussion suggests that, to date, developing countries as a whole have not actively participated in the SPS Agreement. While there are exceptions to this general conclusion, in particular Chile, Brazil and Thailand, it raises concerns about the ability of developing countries to benefit from the Agreement. Indeed, the failure of developing countries to participate even in SPS Committee meetings suggests that the workings of the

Agreement will tend to be driven by the priorities of developed countries.

The case studies suggested that developing countries face a number of constraints that limit their ability to participate effectively in the SPS Agreement. These related to the ability to implement and/or respond to key elements of the SPS Agreement including notification of new SPS measures, risk assessment, development and implementation of international standards, demonstrating equivalency and dispute settlement.

The most significant constraint to effective participation in the SPS Agreement was judged to be insufficient ability to assess the implications of developed country SPS requirements following notification. Insufficient ability to participate effectively in the dispute settlement procedures and to demonstrate that domestic SPS measures are equivalent to developed country requirements were also considered major constraints. These constraints in turn reflect the relatively poor scientific and technical infrastructure in many developing countries. Further, they suggest that developing countries are less able than developed countries to exploit to their advantage the disciplines and procedures established by the SPS Agreement (see Table 10).

(b) *Concerns about the operation of the SPS Agreement*

Developing countries have a number of concerns about the manner in which the SPS Agreement has been implemented which, it is claimed, limits their ability to participate effectively and benefit from the Agreement (see for example Prasad, 1999). To a large extent these reflect perceptions of the degree to which developed country Members have complied with their commitments under the SPS Agree-

Table 9. *Notification of SPS measures by WTO member states, August 1999<sup>a</sup>*

Income group	Number of members <sup>b</sup>	Number of members notifying standards <sup>c</sup>	Number of measures notified
Low	40	9	19
Lower middle	34	16	201
Upper middle	24	14	374
High	35	28	1,708
Total	133	67	2,302
Least developed	29	4	8

<sup>a</sup> Based on World Trade Organization. Income groups defined by World Bank.

<sup>b</sup> Individual country members, excluding the European Communities.

<sup>c</sup> EU member states are counted as individual notifying members.

Table 10. *Mean significance scores for factors influencing ability to participate effectively in SPS agreement<sup>a</sup>*

Factor	Mean score
Insufficient ability to assess implications of developed country SPS requirements following notification	1.5
Insufficient ability to participate effectively in dispute settlement procedures	2.0
Insufficient ability to demonstrate that domestic SPS measures are equivalent to developed country requirements	2.6
Insufficient ability to undertake risk assessment of SPS requirements	3.0 <sup>a</sup>
Insufficient ability to attend SPS Committee and international standards organisation meetings	3.1 <sup>a</sup>
Insufficient ability to assess the scientific justification of developed country SPS requirements	3.7

<sup>a</sup> Scores for these factors are not significantly different at the 5% level.

ment, in particular relating to the needs and special circumstances of developing countries. They further reflect the fact that many low and middle-income members have no sense of “ownership” of the rules and procedures laid down by the WTO, rather they are considered to be “imposed” by the major developed countries that are perceived to have dominated the Uruguay Round negotiations (Finger & Schuler, 1999; Michalopoulos, 1999).

A number of developing countries are critical of the manner in which the transparency mechanisms established under the SPS Agreement have operated to date. While the notification system is supported in principle, it is suggested that current arrangements do not take adequate account of the circumstances of developing countries (see for example WTO, 1998b,d, 1999a). In particular, it is suggested that in many cases the length of time given between the notification of new SPS measures and their application is inadequate for developing countries to respond in an effective and appropriate manner.

The SPS Agreement commits all Members to take account of the special circumstances of developing countries when developing SPS measures and to permit time-limited exemptions where necessary. A number of developing countries have reported, however, that developed countries are unwilling to permit additional time for compliance and/or transitional arrangements. Further, it is claimed that there is a reluctance on the part of developed countries to accept SPS measures in developing countries as equivalent, rather they require strict compliance with the letter of their requirements (see for example WTO, 1998a,d, 1999a). As a consequence, SPS measures may be applied that are difficult to comply with given local circumstances in developing countries, for example climatic conditions and/or

prevailing systems of marketing and production, or for which the costs of compliance are prohibitive (Zarrilli, 1999).

Developing countries also have concerns about the level and types of technical assistance given to facilitate the implementation of the SPS Agreement and/or compliance with developed country SPS requirements (see for example WTO, 1998a, 1999a; Gonzalo Rios, 1999; Sinsakul, 1999). In particular, it is claimed that technical assistance often fails to address the fundamental day-to-day problems faced by developing countries, many of which relate to their overall level of economic development. Examples include the efficacy of prevailing systems of SPS controls, development of scientific and technical expertise and access to modern testing methods. Indeed, there is evidence that much technical assistance is reactionary—it is provided once problems with compliance to SPS requirements in developed country markets have been identified—rather than part of a strategy aimed at general capacity building (Horton, 1998).

Finally, developing countries have been critical of the procedures by which international standards are negotiated and agreed within Codex Alimentarius, OIE and IPPC. While developing countries have been successful in encouraging Codex Alimentarius, for example, to develop standards for products of export interest to them, such as fresh tropical fruit and vegetables, there are concerns that these institutions fail to take adequate account of their needs and special circumstances. It is claimed that, as a result, the form and level of certain international standards is inappropriate and/or unachievable for developing countries (see for example WTO, 1998c). Key issues include the nature of decision-making processes within the international standards organizations and the ability of developing countries to represent

themselves effectively given their limited financial, scientific and technical resources. Indeed, there are concerns about certain recent decisions, for example standards on maximum residue levels (MRLs) for growth hormones in beef (Zarrilli, 1999), that were adopted by a relatively small majority, while many developing country Members that were not present at the meeting, would have voted against.

Respondents to the survey were asked to indicate the significance of each of these problems in terms of the benefits their country has obtained from the SPS Agreement. Mean significance scores are reported in Table 11. The issue judged to be the most significant problem associated with the operation of the SPS Agreement was that developed countries take insufficient account of the needs of developing countries in setting SPS requirements. The length of time allowed between the notification and implementation of SPS requirements and the level of technical assistance provided by developed countries were also considered to be problems. This suggests that the concerns of developing countries about the operation of the SPS Agreement are closely related to the actions of developed countries in setting and managing SPS measures.

The SPS Committee has discussed a number of the concerns outlined above as part of the triennial review of the SPS Agreement (WTO, 1999b). In the case of transparency arrangements, it is considered that many of the concerns put forward by developing countries could be resolved if Members more comprehensively applied the recommended procedures laid down by the SPS Committee. Some revisions of these procedures have been agreed, for example, greater use of electronic means of communication, providing access to informal translations of documents where available, and extension of the period allowed for comments on notifications. Further, Members have been

encouraged to accord longer time frames for compliance with SPS requirements on products of interest to developing countries where appropriate. It is evident, however, that many developing countries have remaining concerns about the manner in which the Agreement operates and in particular the degree to which developed country members actually take their special needs into account.

## 8. CONCLUSIONS

The study detailed in this paper indicates that SPS measures are a major factor influencing the ability of developing countries to exploit export opportunities for agricultural and food products in developed country markets. Indeed, amongst the surveyed countries, SPS measures are considered the most important impediment to agricultural and food exports to the EU. To a large extent this reflects poor access to compliance resources, including scientific and technical expertise, information and finance. But, the incompatibility of SPS requirements and production and/or marketing methods in developing countries is also a major factor affecting access to developed country markets.

While the international community has attempted to overcome the trade distortive effects of SPS measures through the SPS Agreement, many developing countries lack the resources necessary to exploit the opportunities offered by the Agreement. Again this reflects the relatively poor scientific and technical infrastructure in many developing countries. Further, developing countries have concerns about the manner in which the SPS Agreement currently operates. In particular, they are concerned about the extent to which developed countries take account of the needs of developing countries in setting SPS requirements and the periods of time allowed between the

Table 11. Mean significance scores for problems associated with the manner in which the SPS agreement operates<sup>a</sup>

Factor	Mean score
Developed countries take insufficient account of the needs of developing countries in setting SPS requirements	1.8
Insufficient time allowed between notification and implementation of SPS requirements	2.3 <sup>a</sup>
Insufficient technical assistance given to developing countries	2.3 <sup>a</sup>
Developed countries unwilling to accept developing country SPS measures as equivalent	2.8
Harmonization process takes insufficient account of needs of developing countries	2.8
Insufficient information given with notifications of SPS requirements	3.2
Developed countries unwilling to engage in bilateral negotiations with developing countries	3.7

<sup>a</sup>Scores for these factors are not significantly different at the 5% level.

notification and implementation of SPS measures. Clearly, while the SPS Agreement provides for discipline in the use of SPS measures, ways need to be found to facilitate the better inclusion of developing countries in the operation of the Agreement. In so doing, a sense of "ownership" of the Agreement needs to be developed among low and middle-income Members of the WTO.

The issues highlighted in the paper need to be addressed at three levels, by international institutions such as the WTO and the international standards organizations, by developed countries that implement SPS requirements, and by developing countries themselves. The WTO and international standards organizations clearly need to consider means to facilitate the more effective participation of developing countries. This might involve, for example, changes to procedures and the provision of technical and other forms of assistance. In turn, this will require willingness on the part of Members to permit the necessary

institutional reforms. Second, developed countries need to be more aware of the needs and special circumstances of developing countries and to take these into account, whenever possible when promulgating SPS measures. This does not imply that developed countries should be expected to adopt lower requirements in terms of the level of protection to human, plant and animal health. Rather it suggests that SPS measures should minimize, wherever possible, incompatibilities with the systems of production and marketing applied in developing countries. Finally, developing countries themselves need to implement institutional structures and procedures that best enable agricultural producers and food processors to comply with the SPS requirements they face in developed country markets. It will take action at all three levels to overcome the barriers faced by developing countries as a result of SPS requirements and thus enable their better participation in the world trading system for agricultural and food products.

## NOTES

1. The Agreement calls for discussions at the end of five years on the need for further reform of trade in agricultural products.
2. These data are published by the US Food and Drugs Administration (FDA) and cover all food products except meat and poultry.
3. These data must be treated with care when comparing between regions and/or individual countries. Clearly, the level of rejections will reflect the overall volume of trade. Thus, for example, the total number of violations is greater for Latin America and the Caribbean than for Africa. Further, these data take no account of product that is eventually imported after further testing and/or following treatment to bring it into compliance with US SPS requirements.
4. Countries studied were: India, Zimbabwe, Egypt, Vietnam, Guatemala, Ghana, Kenya, Ethiopia, Gambia, Cameroon.
5. A copy of the questionnaire is available on request.
6. Cross-notifications occur when a Member questions the SPS measures applied by another Member in the SPS Committee, bilateral discussions between the two parties having reached an impasse.

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