COMMODITY MARKET REVIEW

2005–2006

Contents

Foreword

The purpose of the *Commodity Market Review* (CMR), a biennial publication of the FAO Commodities and Trade Division, is to analyse in depth a set of issues relating to agricultural commodity market developments that are deemed by FAO as current and crucial for FAO's member countries. There is little doubt that the major issues of importance and concern to all agricultural producing and trading countries in the past few years, have been related to the Doha Round negotiations in the World Trade Organization (WTO), and in particular to the issues concerning a new agreement on agricultural trade, following the Agreement on Agriculture (AOA) of the Uruguay Round (UR) of negotiations.

One of the major accomplishments of the UR was to bring agriculture into the international system of trade disciplines under the WTO. However, the AOA, while providing a valuable framework for classifying the types of support to agriculture under the so called three pillars (market access, domestic support, and export competition), led to little effective trade liberalization in agriculture. One of the main reasons for this lack of progress in the period following the UR, as well as the slow progress in the current Doha Round negotiations, can be attributed to the insistence of several producing and trading countries on exempting some so-called sensitive and special agricultural products from whatever disciplines are agreed upon in the Doha Round. These products are usually very important for the economies of these countries, and hence considerable non-economic concerns are involved in the argumentation for exemptions. There are difficulties, however, in classification of these products, as well as estimating the appropriate type of protection or exemption from liberalization, given the various non-economic arguments. It is for this reason that this biennial CMR is devoted to exploring in depth a variety of issues relevant to such agricultural products, from the viewpoints of both the developed, as well as the developing countries. The articles that are included deal with both cross-commodity issues, such as criteria for special products and appropriate rules for special safeguards, as well as particularities of individual commodities, such as rice, sugar, dairy and others that are regarded as sensitive or special for several countries.

The selection of articles included in this CMR are all written by staff and collaborators of the FAO Commodities and Trade Division, and have undergone both internal, and external review. They are published as a contribution of FAO to the ongoing Doha Round negotiations, as well to promote awareness among the wider international community of issues that at times are technical and difficult to comprehend.

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Rome, December 2005

Introduction

The potential benefits of agricultural trade liberalization have been broadly recognized by developing as well as developed countries. However, there remains disappointment on the part of developing countries with the results of the Uruguay Round and a concern that the Doha Round should include due allowance for their special circumstances and needs. From the 2001 Doha Ministerial Declaration onwards it has been stressed that special and differential treatment for developing countries should be mainstreamed in the negotiations to provide for operationally effective recognition of their development needs including food security and rural development. The papers in this issue of the *Commodity Market Review* broadly relate to this theme. While special and differential treatment is an integral aspect of all three pillars of market access, domestic support and export competition, the papers here focus mainly on aspects of special and differential treatment under the market access pillar highlighted in the July 2004 Framework Agreement. They deal with a number of key issues - designation of Special Products, designation of Sensitive Products, establishment of a Special Safeguard Mechanism and the implications of preferences erosion. While the first two papers are cross-cutting in scope, the other four papers are commodity specific, focusing on particular commodities – rice, dairy products, sugar and bananas - which have proved problematic in international trade policy negotiations and debate.

The first paper, by Ford *et al*, deals with the designation of Special Products to provide increased flexibility to developing countries in applying agreed trade rules in consideration of their longer run economic and social development. WTO members accepted the importance of different treatment for some products and agreed that based on three criteria of food security, livelihood security and rural development needs developing country members should have the flexibility to designate an appropriate number of products as "Special Products". While it is clear that the broad criteria for designating products as "special" will relate to food security, livelihood security and rural development concerns, the precise operational definition and criteria for determining Special Products is problematic. The paper explores the meaning of Special Products and develops and demonstrates an approach and methodology for identifying them. Various indicators that can be used to measure each of the three criteria are calculated. Factor analysis of the interrelationships between them shows that several indicators are explaining the same criteria and hence only a subset is needed to identify special products. It is shown that products need only meet one criterion to qualify for Special Product status.

Current safeguard measures in place are generally either not available to all developing countries or are regarded as too complex to be effective. The July 2004 Framework Agreement proposed that a Special Safeguard Mechanism should be available to all developing countries to counter depressed import prices and import surges. It has been further suggested that this should be simpler in operation in the sense of incorporating simple price and volume trigger mechanisms without the need for extensive proof of damage suffered. The paper by Sharma contributes to one key building-block of such a Special Safeguard Mechanism - the trigger which elicits a safeguard response. Two alternative trigger schemes are evaluated – the Agreement on Agriculture's Special Safeguard (SSG) formula and one based on moving averages of prices or imports.

The paper by Calpe and Prakash examines the prospect of rice being designated as a Special or Sensitive Product and looks at the possible implications this could have

under liberalisation of the international rice market. More generally, they extend the discussion of the preceding papers to consider the nature of Sensitive Products. These raise similar issues to Special Products, but the right to designate Sensitive Products is not confined to developing countries. Designation of Sensitive Products would also be open to developed countries. Unlike for special products the criteria for designating sensitive products remain vague and subjective according to a country's special interests so as with the special products, some limit on the number of products to be so designated is necessary. The paper discusses the criteria that could serve to guide the selection of rice products as Sensitive or Special, and using an Armington-type model, explores the implications of doing so. It shows that the effects of reform are considerably diminished as a result.

Cluff and Vanzetti look at the relevance of the categories of Special Products and Sensitive Products to the prospects for liberalization of dairy trade. Using the FAO-UNCTAD Agricultural Trade Policy Simulation Model, the paper assesses the possible impact on the prospects for market access liberalization in the dairy sector, using relevant aspects of the EU's 28 October 2005 proposal as an example. It concludes that, as expected, Special Product exemption has limited impact on market outcomes, while that of Sensitive Product treatment could have significant implications. The mapping of tariff deviation from the general tariff formula to proposed scheduled tariff rate quota increases is seen as a critical issue.

The last two papers deal with commodities which share some of the characteristics and concerns of Special and Sensitive products but for which the key issue has been the erosion of preferences as a result of general progress towards liberalisation, and complaints in the WTO against the regimes supplying or implying them. Preferences raise certain particular complications given that while developing countries may benefit from preferences they are offered by developed countries and may be an adjunct to support and protection to the agricultural sectors of the developed countries that offer them. For countries holding preferences, the losses from preferences erosion are likely to be greater than the gains from liberalisation.

Conforti and Rapsomanikis analyse the potential impact of the EU sugar policy reform and the Everything But Arms initiative on the African, Caribbean and Pacific countries, the Least Developed Countries and the European Union. Radical changes in the Common Market Organization for sugar have recently been agreed by the EU agricultural ministers. These will interact with preferential trade initiatives and with the need to comply with the outcome of the trade dispute on export subsidies. Apart from EU sugar producers, the reform will affect developing countries and Least Developed Countries that depend on the preferential treatment they enjoy for sugar exports to the EU. The analysis is based on a partial equilibrium model for the sugar market and a gravity model to replicate Least Developed Countries' bilateral trade with Europe. Domestic support and other policy instruments are included in the partial equilibrium model, whilst gravity is used to model the abolition of import tariffs for sugar originating in least developed countries subject to trade costs. The analysis indicates a significant decrease in unsubsidised exports from the European Union as sugar production contracts, and a significant reduction in the export revenues of African, Caribbean and Pacific countries.

The final paper by Arias *et al.* considers the case of bananas and specifically the impact of substitution of the current EU tariff rate quota banana import system by a tariff-only system in 2006 in response to a series of WTO rulings. It is shown that the concept of an "equivalent tariff is problematic where the different stakeholders – EU producers, ACP and Latin American exporters – have competing interests. A dynamic, non-spatial partial equilibrium model of the world banana economy is used to test various policy scenarios. The paper argues that the various policy objectives pursued

under the current import system could not be simultaneously achieved under a tariff-only system, but would require additional policy instruments.

The need to address the particular concerns and development needs of developing countries has been highlighted in the Doha Round of trade negotiations, and it is generally recognised that this implies a need to strengthen provisions for special and differential treatment. The papers in this issue of the FAO *Commodity Market Review* are intended to contribute to this discussion by presenting relevant analyses of some of the issues involved, exploring aspects of the design and implementation of operationally effective mechanisms and illustrating the implications of particular reform scenarios for developing countries.

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Identifying "Special Products" – Developing country flexibility in the Doha Round

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Developing countries recognize the potential benefits of more liberalized agricultural trade and are committed to this objective in the context of the WTO. However, many of them still seek increased flexibility in applying the agreed rules on some products in the name of advancing their longer run economic and social development. WTO members accepted the importance of different treatment for some products and agreed that based on three criteria of food security, livelihood security and rural development needs Developing Country Members will have the flexibility to designate an appropriate number of products as "Special Products". The paper seeks to advance the understanding of "Special Products" and more specifically develop and demonstrate an approach and methodology for identifying "Special Products". The paper examines indicators that can be used to measure each of the three criteria and then assesses the importance or contribution of agricultural commodities in terms of selected indicators. Factor analysis is used to evaluate the interrelationship and robustness of the indicators. The results show that several indicators are explaining the same criteria and that it is possible select a few indicators to identify special products. They show further that products need only meet one criterion to qualify for "Special Product" status.

1. INTRODUCTION

The November 2001 Doha Ministerial Declaration committed to development as an integral part of its mandate and further that this would be achieved through accommodation of sufficient flexibility for developing countries in the eventual Doha Round final agreement. These commitments are reiterated in the Doha Work Programme July 2004 document.[2]

One central dimension to promoting development and providing flexibility in the Round is the concept, identification and treatment of "Special Products". "Special Products" is an option only for developing countries and the flexibility provided is mainly through exempting certain products or reducing the level at which its tariff is cut.

The primary purpose of this paper is to advance the understanding of "Special Products" and more specifically develop and demonstrate an approach and methodology for identifying "Special Products". It is not to identify or suggest "Special Products" for any particular country. Only the country itself in the context of the comprehensive final Doha agreement can do that.

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[2] WTO, WT/L/579. Doha Work Programme, Decision adopted by the General Council on 1 August, 2004.

The concept of "Special Products" is not new in multilateral negotiations. The identification of particular products, staple products and strategic products, linked to the economic growth of developing countries has been a part of multilateral trade negotiations at least since the 1950s. Similarly, the attention in the current negotiations (July Framework document) to tropical products, preferential products and sensitive products, are also all related to achieving development goals and increasing flexibility for developing countries.[3]

Despite the commitment in the July Framework by WTO members to "Special Products" it is important at the outset to recognize that flexibility and "Special Products" remain controversial topics and members have different views about their purpose in the negotiations. On one hand, a large group of developing country members with defensive interests in mind see the purpose of "Special Products" as providing the policy space and flexibility mainly to promote development goals. On the other hand, some developing and developed countries with offensive interests see the purpose of "Special Products" as mainly a means of providing limited flexibility for some products to achieve greater ambition on all products. Thus, the challenge from a strict multilateral negotiations standpoint, is to identify products that qualify as "Special Products" for flexible treatment to advance development concerns without undermining the level of commitment considered necessary for improved market access.

Given that it is hardly likely that there will be agreement for unlimited self-selection of "Special Products", it is essential that on the basis of the criteria agreed in the July Framework a comprehensive approach to identifying "Special Products" be developed.

The rest of this paper is separated into five sections as follows. The second section of the paper provides reasons why developing countries argue for "Special Products" in the negotiations.

The third section seeks to advance the understanding of the concept of "Special Products", providing a brief background and history of the concept of "Special Products" and linking it to the related concepts of Sensitive Products and a Special Safeguard Mechanism.

Section four provides a conceptual approach for identifying "Special Products" and describes the indicator and factor analysis used to evaluate the criteria set out for identifying "Special Products".

Section five presents results from four case studies and section six draws lessons from the analysis with regard to the identification of "Special Products".

2. WHY "SPECIAL PRODUCTS"?

While developing countries recognize the importance and potential benefits of more liberalized agricultural trade and support the achievement of this in the current negotiations, the majority of them still seek accommodation through increased flexibility in applying the agreed rules in the name of advancing their development, specifically their food security, livelihood security and rural development.

Three fundamental reasons are offered here as the basis for "Special Products". First and foremost, that developing countries view this option as essential to the success of their rural area development strategies, including the stability and sustainability of their national food and livelihood security. Secondly, that based on the Uruguay Round experience they are skeptical about the gains from liberalization and their own individual capacities to reap the benefits from increased liberalization. Thirdly, that the

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[3] Although there is no officially agreed definition of these types of products Annex 1 provides a description of context and conditions including what products have been referred to when these terms have been used in different multilateral trading frameworks.

gains that need to be made in the current negotiations for effective liberalization will most likely not be achieved given the national interests of WTO member countries.

Rural area development strategies

Domestic markets in developing countries are critical initial outlets for poor, small agricultural producers. These producers are not operating in an environment that enables them to currently compete on export markets or against imported products given that the public investment in communication, education, rural roads, and technology development that has generally been afforded the competing products has not yet been available to them. The dynamic between returns to rural area public investment and agricultural commodity markets needs careful analysis. While it is recognized that rural area public investment with liberalization has the potential to increase returns more than without liberalization, it is also believed that this can be better achieved with a phased rural development strategy that allows time to increase agricultural sector production capacity and competitiveness.

WTO Uruguay Round experience

The existing differences between countries in terms of goals, endowments, and capacities have led to winners and losers as a result of Uruguay Round liberalization. Over the past decade numerous countries have seen their export market opportunities decrease (through WTO dispute panel rulings, unilateral reform, bilateral agreements) and their food imports increase (through the removal of restrictions and their lower applied tariff levels). Their agricultural trade surpluses have been shrinking and there has been a rapid rise in imports of cereals and livestock products. The current model results based on increased liberalization again reflect aggregate gains in welfare but these are clearly skewed towards developed countries and developing countries that have the greatest domestic supply response capacity. Therefore, countries have sought accommodation through Special Products to mitigate some of the negative impacts of liberalization on their economies, especially as this might be related to import surges that could undermine some livelihood systems.

Low levels of liberalization on key products

The levels of liberalization that might lead to the gains suggested have not been achieved and are unlikely to be achieved given the goals of both developed and developing countries. Critical products for both export and domestic consumption of developing countries are products subject to the most distortions in the international trading environment, among them rice, sugar, milk, and maize. It is not anticipated that the high levels of subsidies and tariff protection provided to these and other products, especially in developed countries, will decline considerably. Very simply, almost all of the countries have national goals that require the maintenance of some level of agricultural production for food security and rural area activity for what has been long referred to as non-trade concerns. Thus, where full liberalization would undermine these national goals they will not be agreed to. The ability to identify and designate "Special Products" is an accommodation that would allow developing countries to pursue their own development objectives, especially as they might relate to key products for food security.

In conclusion, in an effort to develop their supply response capacity, identify the markets and commodities in which they will participate, and share in the benefits from trade, countries seek accommodation through "Special Products". Thus, identification of "Special Products" for lighter treatment under the market access pillar should not be seen only as introducing protection but rather as creating an enabling environment for longer run development. It is important to underscore that infant industry or import substitution considerations which were negative processes during a 1970's political

climate that turned away from liberalization can be positive processes in an era that embraces increased liberalization.

3. "SPECIAL PRODUCTS" AND THE RELATIONSHIP TO SENSITIVE PRODUCTS AND A SPECIAL SAFEGUARD MECHANISM

This section provides a brief background to the concept of a "Special Product" and makes the link to two other very related concepts in the current Doha Round, Sensitive Products and a Special Safeguard Mechanism. This paper seeks to contribute only in the area of "Special Products" identification and treatment and to serve this purpose accepts the proposal by Hoda (2005) that "it would appear to be a good strategy for developing countries to keep 'Sensitive Products' and "Special Products" quite apart during the negotiations".[4]

"Special Products"

From the earliest days of the GATT there has been concern about how international trade was affecting "primary products" in view of their importance for the trade and development of a number of exporting developing countries. Some of these "primary products" began to be referred to around 1957 in GATT documents as "tropical products" (WTO, 2005). Over time as trade and development goals became more balanced in terms of the focus on imports as opposed to exports, products labelled "sensitive" and "special" have gained more prominence in the discussions.

When agriculture became a formal part of multilateral trade negotiations under the Uruguay Round (UR), what is today "Special Products" under the Doha Round was clearly foreshadowed. That is, through "special and differential treatment" (SDT) under the UR and other exemption measures, the link between particular products, flexibility in applying trade policy and food security is established. For instance, in the context of market access, Annex 5 (URAoA) allows special treatment to accommodate food security and environment concerns. This clause, also known as the 'rice clause' allows for the postponement of tariffication and was included on the insistence of Japan and Korea for some level of protection of their staple product. The very close overlap/relationship between sensitive and special products can immediately be identified as some of the most frequently selected products as "sensitive", by both developed and developing countries (sugar, rice, dairy products, meat) are undoubtedly linked to the criteria for "Special Products".

Further, under the domestic support exemptions in Annex 2 (URAoA), there are references implying different treatment for some products linked to benefits to the rural community, products which form an integral part of a food security programme, criteria related to nutritional objectives, issues related to food aid, and income protection or income safety net programmes (WTO,1994).

As developing countries considered the experience and results of the Uruguay Round and perhaps especially in anticipation of the continuation of the reform process as mandated by Article 20, countries made submissions that called for increasing flexibility in their agricultural policies and specifically as these measures were needed to address food security, livelihood security and rural development. One submission (WTO, 2000)) stands out in this regard and called for policy instrument flexibility that would, among other goals[5]:

  (i) protect and enhance developing countries' domestic food production capacity particularly in key staples
  (ii) increase food security and food accessibility for especially the poorest

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[4] FAO has independent ongoing work on all three of these concepts as a part of its support to the agriculture negotiations.
[5] Underlines by authors for emphasis.

>   (iv) protect farmers which are already producing an adequate supply of key
>   agricultural products from the onslaught of cheap imports

The same submission called for the ability of countries to declare products that they felt served these goals and thereby products that would not be subject to commitments.

The link between "Special Products" and a Special Safeguard Mechanism is made in a December 2002 Overview paper (WTO, 2002) submitted by the Chairman of the Committee on Agriculture. Under a section entitled "Special Safeguard Mechanisms" questions are raised about a new safeguard mechanism for all agricultural products or for a limited number of products such as strategic/food security/or livelihood products.

In the March 2003 "First Draft of Modalities for the Further Commitments"(WTO, 2003), the concept of "Special Products" is explicitly introduced in considerable detail, indicating that agricultural products would be declared at either the six or four digit level and identified as "SP" in their schedules. In the July Framework agreement of 2004 WTO members agreed on Special Products in paragraph 41:

> *"Developing Country Members will have the flexibility to designate an appropriate number of products as Special Products, based on criteria of food security, livelihood security and rural development needs. These products will be eligible for more flexible treatment. The criteria and treatment of these products will be further specified during the negotiation phase and will recognize the fundamental importance of Special Products to developing countries."*

This paragraph in the July Framework of 2004 document is the point of departure for the identification of "Special Products" in this paper.

"Sensitive Products"

The declaration of a product as Sensitive is not required to be linked to any of the three development related criteria to which "Special Products" by agreement must be linked. However, when one considers lists of Sensitive Products declared by both developed and developing countries in the past, it is clear that criteria related to rural development, food security, and livelihood security influence the choice of Sensitive Products. Yet, Sensitive Products in the current framework are simply considered as products for which an appropriate number of tariff lines can be negotiated for more favourable treatment, meaning lower tariff reductions associated with tariff rate quota commitments. There is no stated link to any political or economic objective and as a result it is difficult to speculate what tariff lines might be chosen as sensitive. However, experience suggests that the lines likely to be chosen are those that are potentially the most negatively affected by imports, that have the highest degree of market regulation (have high tariffs, designated for Special Safeguard, have a tariff rate quota), that would likely suffer the greatest reductions in tariff revenues, and those where proportional reductions in domestic prices would be very large (Jean *et al.*, 2005).

"Sensitive Products" are open to both developed and developing countries and the July Framework agreement (WTO, 2004) states that there will also be SDT in relation to sensitive products. Thus, developing countries not only have access to "Special Products" but they are also allowed to negotiate more favorable conditions (than developed countries) for the products they identify as Sensitive Products.

Yet, the overlapping dimensions have to be recognized between the two concepts of "Sensitive Products" and "Special Products". This is very much so given that "Sensitive Products" are generally considered to relate to non-trade concerns, and certainly the criteria for "Special Products" can be similarly classified. In the case studies analysed in this document there is a clear overlap between products formerly classified as sensitive that could under the Doha Round be classified as a "Special Product". However, one distinction between developing and developed countries from a sensitive product perspective was the increasing frequency with which tobacco and alcohol showed up as a sensitive product in developing as opposed to developed countries. In the case of Belize analysed below the only agriculture HS Chapter that has applied tariff lines

greater than 45 percent is HS22 for which many of the tariff lines for alcohol and spirits is 91 percent. Under certain conditions tariff revenue could be considered one of the objectives distinguishing sensitive and "Special Products".

Special Safeguard Mechanism

The establishment of a Special Safeguard Mechanism (SSM) has been agreed in the August 2004 Framework Agreement of the WTO. In one sense it simply extends the option of an agricultural Special Safeguard (SSG) that was limited under the Uruguay Round to 39 WTO members to a larger number of countries. From the point of view of this paper the concept is linked directly to "Special Products" because one of the main interests by countries in naming "Special Products" is to provide protection for these products from disruption and displacement by imported products, thereby undermining food security, livelihood systems and rural development. The SSM would provide this protection by preventing surges of imports into the domestic market, often reducing prices and displacing domestic production. When products are identified as "Special Products" one of the main expected treatments is that their tariff levels will not be lowered at the same rate as other products. However, any lowering of the tariff might expose the producers to import shocks and as such interest in a further line of protection that could come from an SSM is not surprising. The two shocks that an SSM would be designed to protect against is a volume shock (import surges of the product entering the country) and a price shock (import prices depressing the domestic market price). The SSM is a formula that is characterized by a volume and price trigger which signals the need for protective action for the domestically produced product in the domestic market. In the negotiations those countries advocating identification of "Special Products" have suggested that all "Special Products" should be allowed use of an SSM.[6]

4. "SPECIAL PRODUCTS" – IDENTIFICATION

This section presents a conceptual approach and an analytical framework for identifying "Special Products".

4.1 Conceptual approach

This first sub-section outlines an applied approach to identifying "Special Products". The point of departure is to present an identification process that results in the designation of "Special Products" that will increase the chances of achieving the development goals embedded in the concept of "Special Products". Satisfactory progress on the designation of "Special Products" in that context means that countries will be better prepared to contribute to a successful outcome in the Doha Round.

The three criteria for identifying "Special Products" represent a fundamental link between trade negotiation outcomes and development goals. As a result, the importance of understanding the role of the country's goals and strategies to designation of "Special Products" is recognized as being a critical point of departure for the analysis.

The following questions elaborate steps presented schematically in Figure 1 as a process designed to facilitate the identification of "Special Products".

1. What are the *country's goals and strategies*, including relative priorities and weights, for achieving food security, livelihood security and rural development?
2. What *definition/indicators* of food security, livelihood security and rural development match best with the national goals and policy commitments related to the criteria for choosing "Special Products"?
3. What *products are the main contributors* to the achievement of these goals and strategies? How are these products ranked in terms of the criteria indicators and goals?

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[6] For technical details on the design and application of a possible SSM see Sharma and Morrison(2005).

4. What national and international *policies exist and are needed* (related to the principal products) to promote achievement of the goals related to the three criteria? What is the *status (do they conform/violate)* of these current and needed policies in relation to WTO regulations(market access)?

5. Which of the *products most need "flexibility"* and why do they need the "flexibility"? At this point the list of principal products is reduced to those needing flexibility?

6. What are the policy/product combinations that do not conform to WTO regulations and what *policy flexibility* is needed (also related to substitutes). At this point *possible treatment* of "Special Products" is addressed.

7. What are the current levels of disciplines in the WTO and *ambition* in the Doha Negotiations and how can the needed "flexibility" for possible "Special Products" be *accommodated* in the modalities to be negotiated? At this point probable "Special Products" and Flexibility are identified.

8. What adjustments can be made in the probable list of "Special Products" in order to *negotiate a multilateral agreement* that is beneficial to all the participating countries and their needs? At this point, one establishes the probable "Special Products" and associated flexibility for negotiation.

The above approach is laid out as a series of steps but it should also be perceived as an iterative and dynamic process as countries will change goals and policies as national and international conditions change and are better understood.

The agreed framework for analysis on "Special Products" is underpinned by the criteria set as the basis for identifying the "Special Products". In a trade context the next sub-section addresses definitional and measurement issues related to the three specific criteria agreed for designating "Special Products".

4.2 "Special Products" identification: development criteria linked indicators

A major challenge facing developing countries in the establishment of an effective 'Special Products' mechanism rests on the perceived misunderstanding of its policy basis by some WTO Members that view the 'Special Products' initiative as motivated by simple protectionism or opposition to liberalization. It is therefore necessary to emphasize that the 'Special Products' modality should be seen as providing developing countries with policy flexibility to address crucial non-trade concerns (food security, livelihood security and rural development) that might not be achieved through trade liberalization, in addition to coping with the unstable nature of agricultural markets, and negative impacts from trade liberalization (which can produce damaging shocks, especially to poor and vulnerable developing economies).

How then can developing countries select products based on the three criteria agreed in the WTO negotiations as the basis for designating "Special Products"? Further, can the criteria be viewed as independent or mutually exclusive? Does a product need to satisfy all three criteria to qualify for special treatment under the 'Special Products' initiative or need it satisfy only one of the criteria? In answering these questions we first examine the indicators that can be used to measure each of the three criteria and then assess the importance or contribution of each agricultural commodity and indicator towards achieving the objectives implied by the criteria. The evaluation of the interrelationship and robustness of the indicators themselves is the focus of the factor analysis in the next section. Box 1 provides working definitions of the criteria.[7]

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[7] There are various definitions for these concepts but they generally embody the critical elements mentioned in these three definitions.

FIGURE 1
Conceptual approach to identification of special products

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
EVALUATION	Identify country goals based on national, agric., and trade policy documents, budgetary commitments and national stakeholder-analysis	Match relevant goals with generic criteria for SP selection	Identify products linked to relevant SP indicators	Detail current national and international policy and trade policy treatment on principal products	Evaluate likely /perceivable treatment and impact of international negotiations on possible "Special Products"	Consult and negotiate multilaterally to establish probable list of "Special Products"
OUTCOME	Prioritization of relevant national goals	Choice of relevant indicators	Choice of principal products relevant to criteria/national goals	Selection of products for consideration as possible "Special Products" – 1st cut	Reduced list of Possible "Special Products" – 2nd cut	Negotiated List of "Special Products"

BOX 1
Working definitions

Food Security: According to FAO, "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".

Livelihood Security: The adequate and sustainable access to income and other resources to enable households to meet basic needs. This includes adequate access to food, potable water, health facilities, educational opportunities, housing, and time for community participation and social integration.

Rural Development: is a process which affects the well-being of rural populations, including the provision of basic needs and services, i.e. access to food, health services, water supply, basic infrastructure (roads, etc.) and the development of human capital through education. It also refers to activities that reduces the vulnerability of the agricultural sector to adverse natural and socio-economic factors and other risks, and strengthens self-reliance.

4.2.1 Food security indicators[8]
In evaluating and monitoring food security four dimensions are considered critical:
- availability (production and supply side issues related to physical access and sufficient food)
- accessibility (market demand, income, and trade issues related to economic access),
- stability (including vulnerability both in terms of vulnerable groups and situations)
- use (food safety, nutrition and food choice issues).

The indicators used below are a few indicators considered most relevant in the context of the linking products to food security dimensions:

(a) Contribution of product to nutrition
This indicator measures the share of calories per capita from the product. The ratio used can be:
- *Calories per capita per day derived from the Product / Calories per capita per day derived from all products*

The degree of undernourishment is based on the calculation of three key parameters for each country: the average amount of food available per person, the level of inequality in access to that food and the minimum number of calories required for an average person. In measuring the average food availability the contribution of each food commodity is tallied based on what a country produces, imports and withdraws from stocks, subtracting the amounts that were exported, wasted, fed to livestock or used for other non-food purposes, and dividing the caloric equivalent of all the food available for human consumption by the total population to come up with an average daily food intake or dietary energy supply (DES). This indicator will be examined over time to see what products are important in reducing undernourishment in selected countries.

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[8] Data for most of the indictors described below are generally available from FAOSTAT and the WTO.

(b) Self sufficiency or import dependency in the product[9]

These indicators measure the share of domestic consumption in domestic production or the proportion of consumption of the product that is imported. The ratios used can be:

 - *Total of product (X) consumed/ total of product (X) produced*
 - *Total of product (X) imported / total of product (X) consumed*

The Self-sufficiency indicator tells us the extent to which domestic production exceeds or falls short of domestic consumption. As this ratio exceeds unity, the less will the product be affected by market access provisions. Import dependency, especially if the imported products are highly subsidized can displace local production and change consumption patterns and incentives (negatively affecting rural livelihoods). Although it has been argued that lower priced imported food is essential in alleviating hunger in developing countries, subsidized food imports in some parts of the world has produced results contrary to this observation.

(c) Stability in access of the product

This indicator reflects the production and/or price variability of the main consumed products. The production variability is focused on products mainly produced within the country. The price variability measure covers all important food products, both domestically supplied and imported. The measure used can be:

 - *standard deviation/coefficient of variation of production and price of product*
 - *degree of price transmission (international vs. domestic) of product*
 - *variability in revenue (export) generated by product activity*
 - *share of (household) total income derived from product activity(ies)*

Measuring production and price variability can indicate the adverse impacts on food security in terms of the physical access and economic access dimensions. Thus, a product which is characterised by high production variability can significantly affect the food security situations of the poor who depend on its production. Further, a sudden increase in price would often compel consumers either to spend more of their income to purchase the same quantity or to reduce the intake of the commodity. High variability in the domestic price could imply the need for domestic stabilization policies, while in the case of the international price it could imply a change in border policies.

(d) Product consumption expenditure

This indicator reflects the share of expenditure incurred on the purchase of a product in the total expenditure on the purchase of all products. The ratios used can be:

 - *Expenditure on the individual food basket item/Total expenditure on food basket*

An increasing percentage can point to increasing food insecurity and the need to evaluate both food import and domestic food production and marketing policies. The importance of the different products in the food basket, in terms of income expenditure on them, provides another dimension in the process of identifying products as special. Information on this indicator can usually be found at the national level through household expenditure or living standard surveys. A critical aspect of this indicator is to differentiate between high-priced products and products consumed in large quantities, when they are not the same.

4.2.2 Livelihood security indicators

Livelihood security is an even broader concept than food security and includes several of the dimensions of food security. The aspects stressed in the indicators used here are employment and household income derived from the product.

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[9] These indicators can be used inter-changeably, since a low share of production in consumption could also imply a high share of imports in consumption.

(a) Level of employment in product/sector

This indicator reflects the product's share of employment in total employment in a specific area and/or industry, including vulnerable aspects of the labour force linked to the project. Some measures are:

- *Share of employment of the product in total agricultural labour force or in total rural employment*
- *Share of labour force employed in product industry in total labour force*
- *Gender/Age distribution of labour force employed by the product*

These indicators are best disaggregated by product and geographical area. While a particular industry may influence national employment data in some commodity dependent countries, it is also common for a very different and not as important a commodity, in those same countries, to be the livelihood opportunity for a specific rural area. If a certain commodity sector employs a large proportion of farmers and workers, this commodity is considered important in the livelihood context. Measuring employment among small farmers growing basic food crops is especially difficult. One method of computing product-based employment could be by dividing the national average farmer-days per hectare for individual crops by 225 (available working days per year). This would provide an indication of employment (in person years) generated per hectare for that crop.

Gender and age distribution are important for a proper assessment of the product profile. For most developing countries, crops in which more women are engaged in production and marketing are those closely linked to livelihood security. The age distribution of the agricultural sector is also a critical indicator of livelihood sustainability in rural areas.

(b) Income from product

This indicator reflects the product share of income in household income. This can be measured as:

- *Income from product industry/ total household income*

This indicator, linked to the first livelihood security indicator, is based on the premise that the product is a significant employer in the rural area and thus a major contributor to household income. It measures product specific income relative to total household income. Ideally, this indicator shows how much income is earned from growing a particular commodity or working in the commodity industry in the total household income. The higher the number is, the more important the particular commodity is in terms of the product specific contribution to the livelihood system and or rural development objectives. When compared with the products contribution to undernourishment, together, they will provide useful insights on the interrelationship among the criteria.

(c) Agricultural land/assets product share

This indicator reflects the product share of the agricultural land/holdings/assets under cultivation in the country or rural area. This can be measured as:

- *Land acreage planted with product/total land under cultivation*
- *Farm holdings growing the products/total number of land holdings*

This indicator shows the product specific share of land to the total land under cultivation. These land assets can be measured in terms of the growth rate in the value of farm assets related to the product. Changes in this indicator over time could be used as an indicator of a product's contribution to livelihood security and also to rural development.

(d) Incidence of surge/displacement by imports

This indicator is a more defensive and dynamic indicator, measuring the extent to which some livelihood systems may be under threat by imports coming to the country.

   - Correlation between imports and domestic production of product
   - Growth rate of import substitutes/growth rate of competing domestic product
   The indicator focuses on the extent to which lower priced imported products are displacing domestically produced products. It is therefore important to monitor the relationship between the growth rate of these imports and the growth rates of the domestically produced products in order to design appropriate policies to safeguard the local industry. This product specific information is available in both value and volume terms. This indicator directly raises the link between Special Products and access to a possible Special Safeguard Mechanism (SSM) in the negotiations.

4.2.3 Rural development indicators

The linkages between rural area agricultural development and increased levels of overall economic development are well documented. Thus, the key phrases for selecting "Special Products" related to rural development criteria are 'potential growth' and 'economic linkages and development', which evaluate products in terms of their potential as growth and development poles.

(a) Importance of product in rural agricultural economy

This indicator measures the share of the product in total rural agricultural production.
   - Product economic activity share in total rural agricultural output
   Disaggregated data measured in the most food insecure areas is essential to identifying the products for Special Product consideration, including the shares of particular vulnerable groups, small farmers, women and youth in the product share. Market access tariff reduction flexibility may not be sufficient and for some production activities "Special Products" flexibility may be needed under both the Market Access and the Domestic Support pillar.

(b) Product and rural area growth

This indicator seeks to capture the importance of a particular product to the growth taking place in a particular rural area.
   - Product growth rates relative to rural area growth rates
   This indicator selects commodities based on their contribution to rural area income and compares actual and/or potential growth rates of production and/or exports with growth rates of economic activity in the area. It would pay particular attention to products that represent diversification, value added and new market opportunities. Growth rates may be assessed both in value and volume terms.

(c) Domestic value-added potential of product

This indicator focuses on the value linkages of the product as a catalyst and contributor to rural development.
   - Degree to which the product can be transformed into other products/uses
   This indicator should be evaluated in national level analysis to capture the products that are potentially high-valued and have multiple uses and linkages along the production and marketing chain. These products are often important for diversification and for attracting those leaving the agricultural sector because of the labour demands of traditional cropping systems and the low and limited income earning opportunities.

(d) Tariff revenue from product import/export

This indicator recognizes the role of some products as critical suppliers of revenue for rural development investment in areas such as infrastructure, utility services and social services.
   - Tariff revenue generated by the product

The products under this criteria display certain characteristics, for instance, high import values, high current applied tariffs, and sources of its imports being mostly extra-regional. In most cases however, it may be difficult to establish a *direct/clear* link between revenue generated from a particular product and its use for rural development objectives. However, high tariff rates on these products do not necessarily imply a revenue objective (cultural influences can often be the motivating factor).

4.2.4 Issues related to implementation of the indicator analysis

The indicators above facilitate the identification of Special Products based on the criteria of food security, livelihood security and rural development. One of the main considerations in presenting them is to have quantifiable measures on which to base consideration of "Special Products". This facilitates comparison across commodities and countries, but most importantly, in the context of the on-going WTO negotiations, ensures objectivity. However, possible shortcomings of this process may emanate from several standpoints:

– the indicators may not capture all the products, especially small and remote area products
– not all important dimensions of the three criteria can be easily quantified
– data for all the indicators may not be easily obtainable from both national and international sources
– there is a strong level of inter-dependency amongst the indicators both within the same criteria and between different criteria. .
– accurately identifying substitute products and the degree of value addition for a product may prove difficult in some circumstances.

Despite the several challenges related to measuring the indicators, they provide a sound basis for identifying special products and data available in the public domain for four countries is used to present results in section four of this paper.

4.3 Statistical analysis of the indicator outcomes

In the preceding section, Special Products have been identified by linking products to indicators based on the criteria of food security, livelihood security and rural development as reflected in the July Framework Agreement. In this section, the statistical technique of Factor Analysis is used to evaluate the relationship between the products and the indicators and the indicators themselves in order to understand their interrelated nature.

As definitions of food/livelihood security and rural development vary amongst developing countries based on their specific national goals and objectives, the menu of indicators that are likely to emerge in the negotiations will be numerous and overlapping. Thus, the methodological approach of Factor Analysis is used to evaluate the pattern and structure of the indicators, the specific contribution of each product to specific indicators, and the relationship between the product scores and the indicator. Importantly, to evaluate the specific contribution of each indicator to a factor that may converge around more than one indicator. Results for such analysis can be used to draw conclusions on two very important aspects in the debate relating to SPs in the ongoing negotiations:

(i) whether the dimensionality of indicators/products can be reduced (i.e. can a country use just a few indicators for designating products as Special Products). This will be based on the relationship amongst the indicators and the factor scores.
(ii) can a product that meets only one of the criteria (food security, livelihood security and rural development) qualify for Special Product status. This will be based on the interrelationship amongst the indicators, the factor loadings and factor scores.

Factor analysis[10] thus refers to a family of statistical techniques concerned with the reduction of a set of observable variables in terms of a small number of latent factors. The underlying assumption of factor analysis is that there exists a number of unobserved latent variables (or "factors") that account for the correlations among observed variables, such that if the latent variables are distributed out or held constant, the partial correlations among observed variables all become zero. In other words, the latent factors determine the values of the observed variables.

Each observed variable (y) can be expressed as a weighted composite of a set of latent variables (f's) such that

$$y = a_i\, f_{i1} + a_{i2}\, f_2 + ... + a_{ik}\, f_k + e_i$$

where y_i is the *i*th observed variable on the factors, and e_i is the residual of y_i on the factors. Given the assumption that the residuals are uncorrelated across the observed variables, the correlations among the observed variables are accounted for by the factors.

The following is an example of a simple path diagram for a factor analysis model. This diagram is a schematic representation of the above formula.
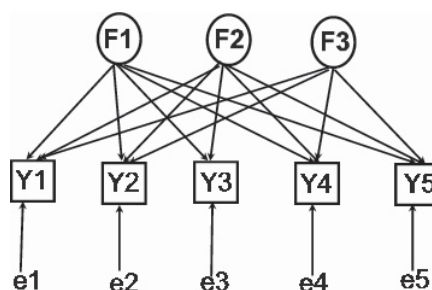
F1 and F2 are two common factors. Y1, Y2, Y3, Y4, and Y5 are indicators or measures of food security, livelihood security and rural development. e1, e2, e3, e4, and e5 represent residuals or unique factors, which are assumed to be uncorrelated with each other. Any correlation between a pair of the observed variables can be explained in terms of their relationships with the latent variables. Further explanation and interpretation of this method accompanies the presentation of the results of the application to two countries in section four.

4.4   Special Products – Trade policy context

The current policy treatment of the product, including the trade policy measures, and their relationship to the current and potential trade regime commitments are clearly factors that will determine the final selection of "Special Products". This applies to both the country's own treatment of the products and the treatment of the product by its trading partners and others in the multilateral trading system.

The July Framework document is silent on treatment of "Special Products" stating that this "*will be further specified during the negotiation phase*". Some WTO Members have called for self-designation and that the numbers of "Special Products" be limited. If this is the option, then one might assume that the treatment will be very liberal and "Special Products" will not face reduction commitments and countries will not have to compensate in other areas.

If the number of "Special Products" is more flexible and allowed to correspond to the needs according to the three specified criteria as presented by countries, one would

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[10] Factor Analysis and Principal Component Analysis though similar in methodology are often used for different purposes. More detailed discussions about the two techniques and the conditions under which one might be suitable to the other can be found in Tucker and MacCallum, 1997.

assume that "Special Products" will have a cost and countries will have to compensate with greater tariff reductions in some areas, possibly the opening of tariff rate quotas on "Special Products". In these cases, the tariff reduction and the tariff rate quota would probably be less than on normal and "Sensitive Products" while similarly the level of in quota tariffs would be relatively higher.

There is also the issue of the level at which tariff lines should be designated - broader or narrower. This too is related to what is allowed in terms of numbers and categories of products to be classified as "Special Products". Protection of the domestic market from alternative related crops that displace local crops may require identification of tariff lines in different HS Chapters to protect the same product. Thus, it may be more than the issue of designation at an HS 8 digit level as opposed to at the HS 6 (or HS4 level).

Treatment could also be linked to perceived vulnerability of the different "Special Products" as reflected through the current tariff profile of the country. In some cases, countries may have to explore renegotiation of tariff levels if in the light of the flexibility needed for "Special Products" the current tariff profile does not already provide sufficient protection.

The nature of the Special Safeguard Mechanism, its availability and what it offers in terms of flexibility is also important to "Special Products" and will undoubtedly influence both the choice and treatment of "Special Products". The same applies to the determination on Sensitive Products. Given that Sensitive Products are also open to developed countries and the principle of "substantial improvement" will apply to each product chosen, it may be possible for developing countries to negotiate that in this Doha Round "Special Products" should be exempted from any commitments. This would essentially be treating "Special Products" for all developing countries the same as all products for least developed countries. Unfortunately, the controversial problem of the developing country category being too wide could again be a stumbling block.

4.5 Summary

In summary, using the criteria identified in the Doha negotiations for selecting "Special Products" raises several challenges.

– First, the concepts themselves are very broad and extremely complex to define and measure. They are to be applied to a range of very different countries and conditions within those countries. The conditions differ both in terms of levels of development but also capacities and needs.

– Secondly, given the numerous variables affecting outcomes in the criteria to be used for selection of "Special Products", it could be difficult to make definitive trade and trade policy linkages between specific products and the criteria outcomes.

– Thirdly, there is the issue of data availability, at the national level and moreso at the rural level where the importance of the criteria are relatively more concentrated.

– Fourthly, while criteria for choice of "Special Products" have been specified, it is unclear what the treatment of "Special Products" will be. This treatment would clearly influence the choice of products to be classified as special.

– Fifthly, managing the large number of possible indicators and linking them to the criteria.

The next section of this paper provides results for some countries after applying the approach detailed above using secondary information. It is intended to complement further application of the above approach at the country level by the country itself. This process is underway in several countries, including some of the countries used here only for examples. As indicated above, the main objective of this paper is to lay out the methodological approach and demonstrate it through examples so that countries can advance their own processes of selecting "Special Products" and improve their participation in the ongoing negotiations.

5. "SPECIAL PRODUCTS": APPLICATION OF THE METHODOLOGY – CASE STUDY RESULTS

This section presents results in two frames. First, analysis in the context of the criteria as evaluated through product, indicators and their trade policy regimes. Secondly, an evaluation of the indicators themselves, using factor analysis to test for interrelationships and possible reduction of the indicators into principal factors.

5.1 Indicator analysis results

The indicator analysis is based on secondary data available in the public domain for four countries – Belize, Egypt, Nigeria and Thailand. The national, agricultural and trade policy goals as presented in the WTO Trade Policy Review, National Development Plans and Agricultural Sector Plans and Policy Statements provided the background and context to the analysis.

Table 1 provides a summary of the nine indicators across which data were collected for each country. Four, three and two indicators were used for food security, livelihood security and rural development, respectively. The choice was driven by data availability.

Each agricultural product for the country in the FAOSTAT database was evaluated against the nine indicators above. Table 2 shows the number of products for each country evaluated in the context of the indicators and the number of products that qualified in the top thirty in at least one of the indicator categories. It also shows the number of products in terms of the number of indicators under which they qualified.

The total products produced (and exported) and imported for each country indicates the total number of products evaluated. Obviously, some indicators evaluated only imports or production (exports) and depending on data availability the numbers of products evaluated under each indicator varied. For each base variable/indicator the top thirty products generally accounted for more than 75 percent of the total activity reflected by the indicator. For example, the top thirty products under total calorie consumption or land harvested accounted for greater than 75 percent of calories consumed or land harvested. The top thirty products for each variable was considered the base set of possible products, and products that made that cut and identified with at least three indicators were chosen as the list for further analysis. Table 3 shows the

TABLE 1
Criteria and indicators against which products evaluated

Criteria	Indicator name	Measure
Food security	11. Product share in calorie consumprion	Daily per capita calorie intake from product/Daily per capita calorie intake from all products
	12. Product import as a share of domestic consumption	Volume of product imported/Volume of product consumption (%)
	13. Ratio of domestic consumption of product in domestic production of product	Volume of product consumed/Volume of produce produced (%)
	14. Coefficient of variation of domestic production	Coefficient of variation of domestic production of product[1]
Livelihood security	15. Import growth rate	Exponential growth rate of product import volume[1]
	16. Share in area harvested	Land area utilized for cultivation of crop/ Total land area under cultivation for all crops (%)
	17. Coefficient of correlation (production and import)	Coefficient of correlation between product production and product import volumes[1]
Rural development	18. Share in production (volume)	Volume of product produced/Total volume of all products produced (%)
	19. Production (volume) growth rate	Exponential growth rate of product production volume[1] (%)

[1] For the period 1985–2002.

TABLE 2
Number of products evaluated by country and number of products meeting 1 to >=3 indicators

Country	No. of products considered		No. of products with no. of indicators			Total products
	Produced	Imported	>=3	2	1	>=1one indicator
Belize	99	248	20	38	90	148
Egypt	225	366	21	36	117	174
Nigeria	147	261	23	34	124	181
Thailand	252	392	18	40	128	186

TABLE 3
Products and their respective at least three related indicators

Thailand		Belize		Egypt		Nigeria	
Product	Indicators	Product	Indicators	Product	Indicators	Product	Indicators
Sugar Cane	I 1, I 3, I 6, I 8, I 9	Chicken Meat	I 1, I 5, I 7, I 8, I 9	Oil of Soya Beans	I 1, I 2, I 4, I 7, I 9	Sweet Potatoes	I 1, I 4, I 6, I1 7, I 8
Barley	I 2, I 3, I 4, I 7	Potatoes	I 1, I 2, I 3, I 4, I 7	Sugar Beets	I 3, I 4, I 6, I 7, I 8	Tomatoes	I 3, I 4, I 6, I 7, I 8
Maize	I 1, I 6, I 7, I 8	Sorghum	I 1, I 3, I 7, I 8, I 9	Oranges	I 1, I 3, I 6, I 7, I 8	Flour of Wheat	I 1, I 4, I 8, I 9
Bananas	I 1, I 6, I 8	Beef and Veal	I 1, I 5, I 7, I 9	Potatoes	I 1, I 3, I 6, I 7, I 8	Taro (Coco Yam)	I 1, I 4, I 6, I 8
Cassava	I 1, I 6, I 8	Beer of Barley	I 1, I 5, I 7, I 8, I 9	Sugar Cane	I 1, I 3, I 6, I 7, I 8	Vegetables Fresh nes	I 1, I 4, I 6, I 8
Chicken Meat	I 1, I 5, I 8	Cassava	I 1, I 3, I 4, I 9	Maize	I 1, I 6, I 7, I 8	Sugar Refined	I 1, I 4, I 9
Cocoa Beans	I 2, I 3, I 7	Plantains	I 1, I 3, I 4, I 8	Sesame Seed	I 1, I 2, I 6, I 7	Wheat	I 2, I 3, I 4
Coconuts	I 1, I 6, I 8	Beans, Dry	I 1, I 5, I 8	Dates	I 1, I 3, I 6, I 8	Cocoa Beans	I 6, I 7, I 9
Fruit Tropical Fresh nes	I 1, I 6, I 8	Cantaloupes & oth Melons	I 4, I 8, I 9	Grapes	I 1, I 6, I 7, I 8	Maize	I 5, I 6, I 8
Jute-Like Fibres	I 3, I 6, I 9	Cashew Nuts	I 1, I 4, I 9	Olives	I 1, I 3, I 4, I 6	Cashew Nuts	I 1, I 4, I 6
Mangoes	I 1, I 6, I 8	Cocoa Beans	I 2, I 3, I 4	Onions, Dry	I 3, I 5, I 6, I 8	Cassava	I 1, I 6, I 8
Milled Paddy Rice	I 1, I 7, I 8	Grape fruit juice Sing-Str	I 5, I 7, I 8	Tomatoes	I 1, I 3, I 6, I 8	Citrus Fruit nes	I 1, I 6, I 8
Potatoes	I 2, I 3, I 7	Maize	I 3, I 7, I 8	Cocoa Butter	I 4, I 5, I 9	Cow Peas, Dry	I 1, I 6, I 8
Rice, Paddy	I 6, I 7, I 8	Milled Paddy Rice	I 1, I 5, I 8	Oil of Groundnuts	I 3, I 4, I 7	Fruit Fresh nes	I 1, I 6, I 8
Soyabean Cake	I 2, I 3, I 7	Onions+ Shallots, Green	I 4, I 7, I 9	Rice, Paddy	I 3, I 6, I 8	Groundnuts Shelled	I 1, I 4, I 8
Sugar Refined	I 1, I 7, I 8	Orangejuice Concentrated	I 1, I 7, I 8	Seed Cotton	I 6, I 8, I 9	Plantains	I 1, I 6, I 8
Sweet Corn Prep. or Pres	I 4, I 5, I 9	Papayas	I 7, I 8, I 9	Silk, Raw and Waste	I 4, I 5, I 9	Soybeans	I 1, I 4, I 6
Wheat	I 2, I 3, I 7	Pigmeat	I 1, I 5, I 7	Sorghum	I 3, I 6, I 8	Yams	I 1, I 6, I 8
		Soybeans	I 4, I 5, I 9	Sunflower Seed	I 3, I 7, I 8	Flour of Maize	I 1, I 5, I 8
		Yams	I 3, I 4, I 9	Flour/Meal of Oilseeds	I 4, I 5, I 9	Groundnuts in Shell	I 4, I 6, I 8
				Sweet Potatoes	I 3, I 4, I 9	Sorghum	I 3, I 6, I 8
						Pigmeat	I 1, I 5, I 9
						Potatoes	I 3, I 4, I 7

products and the indictors for each country that were in the top thirty on at least three of the indicators. Annex 2 presents the country tables with the indicator values for the products qualifying with three indicators.

The FAOSTAT product descriptions were then mapped with the equivalent HS codes for the products qualifying against three indicators. This allowed evaluation of the trade characteristics of the product. Tables 4 and 5 show these results for Belize and Thailand given that only for these countries the information on the trade policy affecting the products were relatively more complete and available.

The trade policy information from Belize is particularly reinforcing of the indicator analysis approach adopted as 75 percent of the products (fifteen out of twenty) that

TABLE 4
Belize High Indicator Count Products and Trade Policy dimensions

Product	HS Number	Bound Tariff	Applied Tariff	Tariff overhang	Trade policy remarks
Chicken Meat	0207.11,12,13,14	110	40	70	Exception to Annex 1A of AoA (X)
Potatoes	0701	100	40	60	
Sorghum	1007	100	20	80	
Beef and Veal	0201.10,20,30 / 0202.10,20,30	110	40	70	X
Beer of Barley	2203	100	$ 12 per Imp. gallon		X
Cassava	0714.10	110	40	70	X
Plantains	0803	110	40	70	X
Beans, Dry	0713.31,32,33,39	110	9	101	X
Cantaloupes & oth Melons				0	
Cashew Nuts	0801.31,32	110	40	70	X
Cocoa Beans	1801	100	5	95	
Grapefruitjuice Sing-Str	200921	110	30	80	X
Maize	1005	105	20	85	X
Milled Paddy Rice	1006.10	110	13	98	X
Onions+Shallots, Green	070310	100	30	70	
Orangejuice Concentrated	2009.11, 19	110	30	80	X
Papayas	0807.20	110	40	70	X
Pigmeat	0203.11, 12, 19, 21, 22, 29	110	40	70	X
Soybeans	1201	105	5	100	X
Yams	0714.90	110	40	70	X

Note: For products with multiple HS Numbers, tariffs presented in the table are average tariffs of those HS Numbers
Sources: WITS, World Bank; WTO

TABLE 5
Thailand High Indicator Count Products and Trade Policy dimensions

Product	HS Number	Bound Tariff	Applied Tariff	Tariff overhang	Trade policy remarks
Sugar Cane					
Barley	1003	27	0	27	
Maize	1005	47	0	47	SSG/TRQ
Bananas	0803	33.5 B/kg	0	0	
Cassava	070990	40	48	-8	
Chicken Meat	0207.11,12,13,14	32	60	-28	SSG
Cocoa Beans	1801	27	28	-1	
Coconuts	080110	54	55	-1	TRQ
Fruit Tropical Fresh nes	0809	114	42	72	
Jute-Like Fibres	0	0	0	0	
Mangoes	080450	105	42	63	
Milled Paddy Rice	100630	52	0	52	SSG/TRQ
Potatoes	0710	1125	60	65	SSG/TRQ
Rice, Paddy	100610	52	30	22	SSG/TRQ
Soyabean Cake	230400	119	6	113	SSG/TRQ
Sugar Refined	170191,99	94	94	0	TRQ
Sweet Corn Prep. or Pres		0	0	0	
Wheat	1001	27	51	-24	

Note: i) For products with multiple HS Numbers, tariffs presented in the table are average tariffs of those HS Numbers
ii) Since data on bound and applied tariffs are for different years, for some products applied tariffs may be higher than bound tariffs.
Sources: WITS, World Bank; WTO

arise from the indicator analysis are products that are exceptions (above) to Belize's ceiling binding of 100 percent, products with a bound tariff of 105 or 110 percent. Further, all but one of the products has a tariff overhang of greater than 60 percent, the difference between Belize's Common External Tariff and its ceiling binding. The twenty products translate into thirty-seven tariff lines, sixteen of which appear on the Schedule C (thirty-eight tariff lines) of exceptions. Most of the products that do not

TABLE 6
Egypt High Indicator Count Products and Trade Policy dimensions

Product	HS Number	Bound Tariff	Applied Tariff	Tariff overhang
Oil of Soya Beans	1507	15	9	6
Sugar Beets	121291	30	20	10
Oranges	080510	60	40	20
Potatoes	0701	40	30	10
Sugar Cane				
Maize	1005	5	1	4
Sesame Seed	120740	10	1	9
Dates	080410	40	30	10
Grapes	080610	60	40	20
Olives	070990	40	25	15
Onions, Dry	070310	20	20	0
Tomatoes	0702	20	20	0
Cocoa Butter	1804	30	30	0
Oil of Groundnuts	1508	20	12.5	7.5
Rice, Paddy	100610	20	20	0
Seed Cotton	120720	10	1	9
Silk, Raw and Waste	5002			
Sorghum	1007	10	5	5
Sunflower Seed	1206	5	1	4
Flour/Meal of Oilseeds				
Sweet Potatoes	071420	30	30	0

Note: For products with multiple HS Numbers, tariffs presented in the table are average tariffs of those HS Numbers

appear on the selected indicator list of three or greater appear on the list of products qualifying with one or two indicators for Belize. Thus, in the case of Belize a largely overlapping set of products are possible for Special Product identification. In the categories of the framework agreement perhaps as follows: food security (rice, maize, poultry, dried beans), livelihood security (sugar, citrus, bananas), rural development (pig meat, fruits, potatoes).

In the case of Thailand eight of the sixteen products that arise out of the indicator analysis have either been designated for use of the SSG or have a TRQ or both (Table 5). The food security crops (rice, sugar, cassava, maize and chicken meat) are on the indicator list, with maize, chicken meat and rice all also having an SSG designation. These are also the crops that are prominent among the indicators under livelihood security and rural development and reinforce the expectation of overlapping product influence across the indicators and criteria. Some products that were also important under the two other criteria were coconuts and pineapples (livelihood security) and milk, cotton and groundnuts (rural development).

Table 6 and 7 show the high indicator count products and trade policy information for Nigeria and Egypt. For these two countries the trade policy information included is limited to tariff levels for the products.

In the case of Egypt, maize and rice are critical food security crops and show up among the high indicator count. The low bound and applied rates for maize is consistent with the fact more than 40 percent of total domestic consumption of maize, like wheat, is met from imports.

In terms of livelihood security, the indicator analysis points to sugar, potatoes, oranges, grapes and sesame seed in addition to cereals and fruits and vegetables as accounting for the majority of the area harvested. The link with employment for these crops is implicit.

For Nigeria the main products affecting food security are in the list of high indicator count products, particularly millet, cassava, maize, yams, sorghum, and cowpea. All of these products have the highest applied (100 percent) and bound (150 percent) rates, except maize which has a high applied rate of 70 percent. These products are among

TABLE 7
Nigeria High Indicator Count Products and Trade Policy dimensions

Product	HS Number	Bound Tariff	Applied Tariff	Tariff overhang
Sweet Potatoes	071420	150	100	50
Tomatoes	0702	150	100	50
Flour of Wheat	110100; 110311 / 110321	150	43	107
Taro (Coco Yam)	071490	150	100	50
Vegetables Fresh nes	070610 /070690 / 070940 / 070990	150	100	50
Sugar Refined	170191 / 170199	150	15	135
Wheat	1001	150	5	145
Cocoa Beans	1801	150	25	125
Maize	1005	150	70	80
Cashew Nuts	080130	150	100	50
Cassava	'070990	150	100	50
Citrus Fruit nes	080590	150	100	50
Cow Peas, Dry	071339	150	100	50
Fruit Fresh nes	081090	150	100	50
Groundnuts Shelled	120220	150	25	125
Plantains	080300	150	100	50
Soybeans	120100	150	25	125
Yams	071490	150	100	50
Flour of Maize	110220 / 110313 / 110329	150	40	110
Groundnuts in Shell	120210	150	25	125
Sorghum	1007	150	100	50
Pigmeat	020311 / 12 / 21 / 22	150	25	125
Potatoes	0710	150	100	50

Note: For products with multiple HS Numbers, tariffs presented in the table are average tariffs of those HS Numbers

TABLE 8
Low estimate of Tariff Lines for SP Exemption

Country	Total commodities evaluated	# of products/tariff lines in top 75% on > = 3 indicators		% of tariff lines at HS 6 level
		Products	HS lines	
Belize	148	20	37	5.7
Egypt	174	21	28	4.3
Nigeria	181	23	39	6.0
Thailand	186	18	26	4.0

the major products contributing to calorie availability. In terms of livelihood security, the main products identified by the indicators are cotton, cocoa beans and groundnuts. These crops are particularly important for employment in rural areas as indicated by the share of land harvested. For Nigeria there is a considerable overlap between the criteria hence most of the food security and livelihood security crops contribute to rural development.

An important result in the context of the negotiations for "Special Products" is also the number of tariff lines that might be potentially claimed for exemption. If all of the products classified with more than three indicator categories were evaluated by their equivalent tariff lines it is seen in Table 8 that based on the assumptions underlying the analysis here this could be as much as six percent of tariff lines. This is considered a low estimate as the analysis here is based mainly on national level aggregated data. When the product diversity across poorer regions of countries is considered it is expected that this number could be more than doubled.

5.2 Factor Analysis Results

Two of the four case studies were analysed using the factor analysis approach.[11] Although the factor analysis and not the correlation matrix is the aim, it is nevertheless

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[11] Additional country case studies (10) are underway. On the basis of which more generalized results will be provided

TABLE 9
Correlation Matrix for Indicators for Egypt and Belize *

(a) Egypt								
	Share in Production	Share in Calorie	Area Harvested	Import Dependency	Self-Sufficiency	Growth rate in Production	Growth rate in Imports	Production Variability	Production Displacement
Share in Production	0.454								
Share in Calorie	0.412	0.312							
Area Harvested	0.468	-0.034	0.361						
Import Dependency	-0.075	-0.028	0.151	0.517					
Self-Sufficiency	-0.084	-0.048	-0.003	0.659	0.564				
Growth rate in Production	-0.174	-0.088	-0.116	-0.084	-0.093	0.791			
Growth rate in Imports	-0.159	-0.135	-0.072	-0.127	-0.111	0.873	0.772		
Production Variability	-0.087	-0.227	-0.172	-0.079	0.141	0.509	0.448	0.448	
Production Displacement	0.022	-0.048	-0.057	-0.094	-0.256	-0.031	-0.072	0.152	0.177

(b) Belize								
	Share in Calorie	Import Dependency	Self-Sufficiency	Production Variability	Growth rate in Imports	Area Harvested	Production Displacement	Share in Production	Growth rate in Production
Share in Calorie	0.64								
Import Dependency	-0.16	0.96							
Self-Sufficiency	-0.15	0.95	0.98						
Production Variability	-0.43	0.05	0.09	0.30					
Growth rate in Imports	0.28	-0.14	-0.20	-0.30	0.33				
Area Harvested	-0.03	-0.09	-0.13	-0.12	-0.08	0.49			
Production Displacement	-0.34	-0.09	-0.11	-0.08	0.22	0.48	0.71		
Share in Production	0.43	-0.24	-0.11	-0.33	0.08	0.43	0.18	0.81	
Growth rate in Production	-0.16	-0.33	-0.23	0.20	0.03	-0.22	0.26	-028	0.71

* Elements in the principal diagonal are the squared multiple correlation coefficents (smc).

useful to firstly consider the correlation matrices reflecting the relationships between pairs of variables. Table 9 presents the correlation matrix for Egypt and Belize.

The coefficients of correlation express the degree of linear relationship between the row and column variables of the matrix (indicators of food security, livelihood security, and rural development). The closer to zero the coefficient, the less the relationship; the closer to one, the greater the relationship. A negative sign indicates that the variables are inversely related.

To interpret the coefficient, it is squared and multiplied by 100. This will give the *percent variation in common* for the data on the two indicators that the coefficient represents. Thus, in Table 9, for Egypt the correlation of .509 between growth rate in production and production variability means that 26 percent (.509^2 X 100) of the variation in the total number of commodity values used to evaluate these two indicators are in common. In other words, if one knows the commodity values used to construct one of the two indicators one can produce (predict, account for, generate, or explain) 26 percent of the values on the other indicator.

Consider the correlation of .873 between growth rate in production and growth rate in imports as another example. Within the given framework this correlation implies that

TABLE 10
Factor Matrices - Egypt and Belize

| | **(i) Egypt – Rotated Factors** | | | |
	F1	F2	F3	Communality
Share in production	-0.09	-0.04	0.72	0.53
Share in calorie	-0.12	-0.06	0.41	0.19
Area harvested	-0.05	0.15	0.53	0.31
Import dependency	-0.09	0.74	-0.02	0.56
Self-sufficiency	-0.04	0.79	-0.12	0.64
Growth rate in production	0.91	-0.15	-0.19	0.84
Growth rate in imports	0.89	-0.07	-0.07	0.80
Production variability	0.55	0.04	-0.21	0.35
Production displacement	-0.03	-0.25	-0.06	0.07
Percent of total variance	*21.73*	*14.18*	*11.69*	*47.6*
Percent of common variance	*45.29*	*29.64*	*12.25*	
	(ii) Belize – Rotated Factors			
	F1	F2	F3	Communality
Share in calorie	0.80	0.13	-0.31	0.76
Import dependency	-0.13	-0.95	.07	0.93
Self-sufficiency	-0.11	-0.94	-0.08	0.89
Production variability	-0.75	0.09	-0.12	0.59
Growth rate in imports	0.44	0.23	0.01	0.25
Area harvested	0.19	-0.02	0.83	0.73
Production displacement	-0.12	0.13	0.84	0.75
Share in production	0.67	0.05	0.42	0.64
Growth rate in production	-0.56	0.54	-0.07	0.60
Percent of total variance	*25.0*	*24.1*	*19.1*	*68.2*
Percent of common variance	*37.3*	*50.1*	*37.6*	

70 percent ($.873^2$ X 100) of the growth in imports of the commodities can be predicted from their production growth rates. Thus, assuming that the sample of commodities is random, if an additional commodity were randomly added to the sample and only its growth rate in production were known, then its variability could be predicted with 26 percent certainty and its import growth within 70 percent of its true value. For Belize (Table 9b), the correlation between import dependency and self-sufficiency is .95 indicating that 90 percent of the degree of self-sufficiency can be predicted from information on import dependency.

The principal diagonal of the correlation matrix is indicated in italics. The principal diagonal usually contains the correlation of a variable within itself, which is always 1. Often, however, when the correlation matrix is to be factored (using the common factor analysis model), the principal diagonal will contain *communality estimates* instead. In this context the communality estimates are across indicators/variables. In the reference to communality estimates below based on the rotated factors (Table 10) the interpretation is across factors/criteria. These measure the variation of a variable in common with all the others together. For example, the values in the principal diagonal for import growth of .564 (Egypt) means that 56 percent of the growth in imports can be predicted from (and is dependent upon) data on the remaining eight indicators. By using commodity data on the eight indicators we could determine the degree of import growth for a commodity within 61 percent of the true value, on the average.

The factor matrices generated are presented in Table 10. The number of factors (columns) is the number of substantively meaningful independent (uncorrelated) patterns of relationships among the variables. The factors may be thought of as providing evidence for three different kinds of influence (causes) on the data, as presenting three categories by which these data may be classified, or as illuminating three empirically different concepts for describing the country's commodity characteristics.

The loadings, coefficients (*x*), measure which indicators are involved in which factor pattern and to what degree. They can be interpreted like correlation coefficients, i.e.

the square of the loading multiplied by 100 equals the percent variation that a variable has in common with a rotated pattern.

From the Table 10(i), if the pattern is limited to those indicators with at least 25 percent of their variation involved in a pattern (loading of .50, squared and multiplied by 100); then the first pattern of interrelationships (Factor I or F1) involves high growth in production (.91), growth in imports (.89), and moderate/low – production variability (.55). Similarly for Belize this would involve share in calories (.80), production variability (.75) and growth in Production (.56).

The column headed *communality* is the proportion of an indicator's total variation that is involved in the factor patterns. The coefficient (communality) shown in this column, multiplied by 100, gives the percent of variation of a variable in common with each pattern. Communality is also a measure of *uniqueness.* By subtracting the percent of variation in common with the patterns from 100, the uniqueness of an indicator is determined. This indicates to what degree an indicator is unrelated to the others or to what degree the data on an indicator cannot be derived from (predicted from) the data on the other indicators. For example, self-sufficiency has a communality of .64 for Egypt (.89 for Belize). This implies that 64 percent (89 for Belize) of the self-sufficiency rate for commodities in Egypt (Belize) can be predicted from knowledge of commodity values on the three factors; and that 36 percent (11 for Belize) of it is unrelated to the other eight indicators.

The ratio of the sum of the values in the communality column to the number of variables, multiplied by 100, equals the percent of total variation in the data that is patterned. Thus it measures the order, uniformity, or regularity in the data. As can be seen from Table 10, for the nine indicators, the three patterns involve 47.6 (68.2 for Belize) percent of the variation in the data. That is, one can reproduce about 48 (68 for Belize) percent of the relative variation among the commodities in Egypt on these nine indicators using the commodity scores on the three factors.

The *percent of total variance* shows the percent of total variation among the indicators that is related to a factor pattern. This figure thus measures the relative variation among the commodities in the original data matrix that can be reproduced by a factor or pattern - it measures a factor's comprehensiveness and strength. The *percent of common variance* indicates how regularity in the data is divided among the factor patterns.

The upper part of Table 10 (above the thick line) displays the factor pattern matrix and provides an interpretation of the factors. The values in this matrix are standardized regression coefficients, which are functionally related to the partial or semipartial correlation between an indicator and the factor when other factors are held constant. Therefore, a value in this matrix represents the individual and non-redundant contribution that each factor is making to predict a subset of indicators. The coefficients greater then .30 are used in the interpretation of the factors.

Thus from Table 10(i) for Egypt, we observe that the indicators significantly loaded on the first factor are: growth rate in production; growth rate in imports; and production variability. This indicates that commodities (see respective commodities in factor score table below) that have high growth in production are also those with high import growth rates and high to moderate production variability. The second factor is significantly loaded with the following indicators: import dependency and self-sufficiency. This implies that commodities on which Egypt relies for self-sufficiency are mostly imported. The third factor is loaded with indicators of share in production; share in calories; and area harvested implying that commodities that are produced domestically contribute significantly to calorie intake in Egypt. A similar interpretation can be arrived at for the Belize results. Here factors loaded significantly on the first factor indicate that commodities that contribute significantly to calories are those with high variability in production (negatively), with a high to modest share in total agricultural production;

TABLE 11 (i)
Egypt – Commodities with positive scores on each of the factors

Indicators (Factor 1): *Growth rate in Production; Growth rate in Imports; Production Variability*		Indicators (Factor 2): *Import Dependency; Self-Sufficiency*		Indicators (Factor 3): *Share in Calorie; Share in Production; Production Displacement; Area Harvested*	
	F1		F2		F3
Flour/Meal of Oilseeds	6.081	Oil of Sunflower Seed	5.066	Sugar Cane	4.833
Cocoa Butter	1.060	Soybeans	4.124	Flour/Meal of Oilseeds	2.760
Silk, Raw and Waste	0.754	Oil of Soya Beans	1.164	Oil of Sunflower Seed	1.709
Cake of Soya Beans	0.747	Sesame Seed	0.624	Tomatoes	1.568
Mango Juice	0.740	Sunflower Seed	0.303	Maize	1.428
Onions, Dry	0.631	Apples	0.256	Flour of Wheat	1.308
Oil of Soya Beans	0.386	Oranges	0.211	Wheat	1.246
Beans, Dry	0.308	Bananas	0.167	Soybeans	1.168
Seed Cotton	0.269	Cotton Lint	0.157	Rice, Paddy	1.092
Sweet Potatoes	0.256	Sweet Potatoes	0.149	Bagasse	0.509
Broad Beans, Dry	0.234	Oil of Groundnuts	0.144	Oil of Soya Beans	0.313
Groundnuts Shelled	0.217	Groundnuts in Shell	0.135	Flour of Maize	0.217
Offals of Camel, Edible	0.215	Sugar Refined	0.129	Potatoes	0.161
Cotton Lint	0.187	Sorghum	0.124	Oranges	0.149
Cheese (Whole Cow Milk)	0.155	Molasses	0.110	Onions, Dry	0.129
Groundnuts in Shell	0.149	Potatoes	0.106	Bran of Wheat	0.068
Grapes	0.141	Onions, Dry	0.100	Buffalo Milk	0.014
Eggplants	0.140	Groundnuts Shelled	0.081	Cow Milk, Whole, Fresh	0.009
Oil of Groundnuts	0.084	Sugar (Centrifugal, Raw)	0.048		
Bananas	0.069	Seed Cotton	0.018		
Apples	0.067	Maize	0.007		
Cow Milk, Whole, Fresh	0.057				
Lentils	0.035				
Olives	0.028				
Dates	0.002				

TABLE 11 (ii)
Egypt – Commodities with positive scores on each of the factors

Indicators (Factor 1): *Growth rate in Production; Growth rate in Imports; Share in Production; Share in calories*		Indicators (Factor 2): *Import Dependency; Self-Sufficiency*		Indicators (Factor 3): *Share in Calorie; Share in Production; Production Displacement; Area Harvested*	
	F1		F2		F3
Maize	3.020	Chicken Meat	1.359	Orangejuice Concentrated	4.759
Mill Paddy Rice	2.634	OnionsShallotsGreen	1.184	Papayas	1.168
Chicken Meat	2.146	Cassava	0.920	Soybeans	0.761
Beans Dry	1.531	Cashew Nuts	0.911	Sorghum	0.587
Plantains	0.891	Soybeans	0.860	Maize	0.452
Orangejuice Concentrated	0.875	Papayas	0.794	Chicken Meat	0.289
Beer of Barley	0.816	Milled Paddy Rice	0.668		
Grapefruitjuice Sing-Str	0.240	Beef and Veal	0.607		
Pigmeat	0.076	Cantaloupes&other Melons	0.487		
Beaf and Veal	0.033	Yams	0.342		
		Pigmeat	0.342		
		Sorghum	0.277		
		Beer of Barley	0.131		
		Beans Dry	0.098		

growth in production and growth rate in imports. Factor 3 here also includes share in calories as having significant loading as was found for factor 1, although the interpretation is different. Here, it indicates that products which contribute negatively to calories are those that have large area harvested but very prone to production displacement by cheap imports and with moderate-low share in total agricultural production. Given that in just these two country case studies, the second factor (loaded on import dependency and self-sufficiency ratio) for both countries and with a significantly high degree of correlation amongst them, either one can be used as an

indicator of the other without any loss of information. Thus, our factors here can be classified as follows: Factor 1 – rural development; Factor 2 – livelihood Security; and Factor 3 – food security. Further, as indicators are loaded across each of the factors, and given the fact that the criteria/indicators are interlinked, our hypothesis that a commodity needs to satisfy only one criteria seems to be supported by these initial results. More case study results, coupled with a comprehensive framework for reducing the dimensionality of the indicators, are being developed to further investigate possible generalization.

Table 11 presents the products with positive contribution (scores) for each of the factors. A considerable degree of overlap could be observed among the product scores that are making a relevant contribution across each of the factors. This further supports the view that a product needs only satisfy one criterion to qualify for Special Product status. Ranking of the products based on only positive factor scores also provides a mechanism to reduce the number of products.

In summary, Tables 10 and 11 together support the notion that a commodity needs to satisfy only one criterion for "Special Products" status. For example, Table 10 shows that there are no non-zero elements verifying that the indicators are related to all the criteria. Further, Table 10 supports this point by indicating that the majority of the commodities contribute to each factor (criteria). Moreover, given the distribution of the indicators by factors one can conclude that the factor, F1, F2 and F3 represent rural development, livelihood security and food security respectively. The same outcome is found for Egypt and Belize. The critical conclusion from this analysis of the indicators based on products of two countries is that it is possible for countries to select only a few (reduced number of) indicators based on their specific national situation to link products effectively to the criteria designated for "Special Products" selection; and that for products to qualify for Special Product status, they only need to fit at least one of the indicator/criteria.

6. CONCLUSIONS

On the basis of the criteria specified in the July Framework Agreement, four countries are evaluated in a trade and development context to draw conclusions related to designating "Special Products" in the WTO multilateral negotiations.

a) Number of indicators. Based on the factor analysis it appears several indicators are explaining the same criteria. Thus, it is possible that from the menu of indicators, countries can select a few indicators to identify special products.

b) Number of criteria to be satisfied. Based on the fact that indicators have loadings across all the three criteria (factors) and that the factor scores indicate that the commodities have significant scores across the criteria, it suggests that products need only meet one criteria to qualify for Special product status.

c) Number/ Percentage of products and tariff lines. Based on the indicator and factor analysis, the number of products or tariff lines identified is not necessarily related to the number of indicators. Further, the results suggest that there is a possibility of specifying a relatively small number of tariff lines, less than 10 percent, as "Special Products". Given some of the current proposals in the negotiations this would increase the flexibility for developing countries without sacrificing their ability to call for ambition in the negotiations.

d) Product Categories as grouped tariff lines. The indicator analysis suggests that given the broad substitutability of products, including across HS Chapters, the indicator analysis suggests that there should be consideration for "Special Products" to be product categories, allowing a series or package of different HS codes and lines to define a particular "Special Product" for treatment. Substitution between some cereals and root crops are obvious in this regard as are products at different levels of processing.

e) Tariff overhang is limited in assisting "Special Products" designation. The uniform manner in which bound rates were set by countries implies that the protection needs of individual products were not evaluated when they were set during the Uruguay Round. Further, applied tariff rates were set and in many cases restrictions imposed on their level in other multilateral frameworks, often as loan conditionalities.

f) Information development linked to additional product identification. Given the data shortages, especially at a disaggregated level, there could be consideration for linking data development processes and the identification of "Special Products" in a framework that allows products to be exchanged and identified in the future. Rural development, food systems and associated livelihood systems are dynamic processes and different products can be identified in the future as needing flexibility.

g) A comprehensive approach to "Products". Given that "Special Products" (paragraph 41), identified on the basis of the criteria in the Framework Agreement, addresses similar development goals to Tropical Products (paragraph 42) and Preferential Products (paragraph 43), and in each case many of the products are the same, it might advance negotiations to address their treatment under "Special Products" rather than keeping these closely related concepts separate. Regional and international agreements between countries could identify products and agree on their treatment under this scenario.

h) LDC treatment. Given the possibility that designating "Special Products" does in fact lead to greater ambition that could result in bound rates falling below currently applied rates, the flexibility for all products now given to LDCs, should perhaps be considered for "Special Products" for all developing countries. Thus, for a specified period there could be no commitments, no tariff reductions and no TRQs on products designated "Special Products". However, the impact of this consideration on LDC exports should also be assessed.

i) SSM. Given the levels of ambition being pursued in the negotiations and the possible resulting narrowness of the gap between the bound and applied rates that might result for some products, "Special Products" should possibly have access to the SSM.

j) Flexibility for "Special Products" beyond the market access pillar. Given the criteria for "Special Products" and the concentration by many developing on a few exports that are also important food commodities domestically there should be flexibility for "Special Products" that enables diversification and trade expansion. Thus, consideration should be given for flexibility under the domestic support and export competition pillar that facilitates improved supply side capacity and market development. Market protection without incentives for increased productivity and competitiveness is meaningless. In this regard, the negotiated wording on modalities under areas such as "*de minimis*" and state trading enterprises could make reference to flexibility for the treatment needs of "Special Products".

k) Countries with a Common External tariff (CET) and Free Trade Areas. These countries generally have applied tariffs up to a shared level. For instance, in the CARICOM region for agriculture, all the products to be most protected are set at the 40 percent and we see the majority of applied tariff lines set at this level. There may be the need to give consideration to designating regional "Special Products" that have levels of protection above the CET in order to effectively serve the purposes of both "Special Products" and regional economic community.

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ANNEX 1

Preferential Products – has generally referred to products that have been granted market entry conditions more favourable than the "most favoured nation (MFN)" status offers. In other words, these products when exported by particular countries enter the markets of their trading partners at rates of duty lower than the same product from other countries competing for the same market. Bananas exported by ACP countries to the EU market is one example of a preferential product.

Sensitive Products – these are products for which countries seek to apply lower disciplines than agreed on in the negotiations. The specific purpose or conditions for seeking or being granted this allowance are not generally articulated. However, 'non-trade' concerns (for environmental protection, food safety) are often cited by developed countries as the basis for sensitive products. Basic food products(rice and meat) and tariff revenue products (tobacco and alcohol) are generally listed as sensitive products. "Special Products" are not an option for developed countries and as a result where the objectives with "Special Products" coincide the products are expected to be similar. Both "Sensitive" and "Special Products" are options for developing countries.

"Special Products" – based on an interpretation of the July Framework Agreement, would be products for which countries feel application of the general disciplines agreed in the Doha Round negotiations to these products would undermine achievement of their goals related to ensuring food security, improving livelihood security and advancing rural development. Thus, cereals, sugar, milk and root crops have been identified as "Special Products".

Staple Products – has generally referred to those products that characterise food consumption in a particular country. In the Special Treatment clause at the end of the Uruguay Round some countries were permitted treat products specially (delay tariffication) if the products met certain conditions. One of these conditions for products qualifying for special treatment was that "the commodity concerned must be the predominant staple in the traditional diet". For most of the countries using this option the product was rice, the most important food product in their diet.

Strategic Products – has generally referred to products which countries feel the need to manage for purposed related to national development. They may be both food products and developed products. In the Mauritius TPR , 2001 the report indicates that " several parastatal bodies, including the State Trading Corporation and the Agricultural Marketing Board, purchase, import, and store "strategic" products (including flour, ration rice, petroleum products, cement, table potatoes, onions, and garlic). Price controls, consisting of a fixed maximum price system (on imports and locally produced goods) and a maximum percentage mark-up system (only on imports), are also maintained on some of the strategic products".

Tropical Products – has generally referred to the main agricultural exports from tropical zone countries, historically to products such as coffee, cocoa and tea. In several different Multilateral Negotiation Rounds there have been efforts to define what tropical products are but there has been no consensus. Participants in the Uruguay Round agreed to engage in negotiations seven products groups with the understanding that it was not to be considered a definition of tropical products. The seven products groups were: i) tropical beverages(cocoa, coffee, tea); ii) spices, flowers and plants;

iii) certain oilseeds, vegetable oil and oil cakes(e.g. palm and coconut oil); iv) tobacco, rice and tropical roots; v) tropical fruits and nuts (e.g. bananas, pineapples and peanuts); vi) tropical wood and rubber; vii) jute and hard fibres.

ANNEX 2

Country tables with the indicator values for the products qualifying with three or more indicators.

Belize

Product	Food Security				Livelihood Security			Rural Development	
	Share in calorie consumption (%)	Volume Imported/ Volume consumed (%)	Volume consumed /Volume produced (%)	Coefficient of variation of domestic production	Import growth rated (`%)	Share in area harvested (%)	Coefficient of correlation (prodn & import)	Share in production (vol) %	Production (vol) growth rate %
Potatoes	0.93	72.20	420.52	0.77	-44.69	0.05	0.14	0.04	-28.55
Sorghum	0.98	0.00	100.36	0.31	-31.29	1.59	0.40	0.35	38.61
Chicken Meat	4.05	0.02	1.02	0.23	855.37	0.00	0.55	0.41	23.12
Cassava	0.65	0.00	99.87	0.75	0.00	0.03	0.00	0.03	87.24
Plantains	1.82	0.00	100.00	0.85	0.00	0.56	0.00	0.86	-13.69
Beef and Veal	1.09	0.01	1.01	0.12	48.12	0.00	0.21	0.06	27.60
Beer of Barley	0.94	0.18	1.28	0.27	128.55	0.00	-0.07	0.22	-14.35
Beans, Dry	3.64	0.06	0.66	0.27	41.85	4.07	-0.48	0.20	-15.42
Cantaloupes&oth Melons	0.02	0.38	1.62	0.99	-100.00	0.02	0.10	0.01	22.00
Cashew Nuts	0.73	0.00	1.00	1.76	0.00	0.25	0.00	0.03	37.94
Maize	5.96	0.02	103.44	0.21	19.02	7.88	0.10	1.54	2.70
Milled Paddy Rice	9.84	0.11	1.18	0.38	62.00	2.98	0.32	0.26	5.96
Onions+Shallots, Green	0.05	1.00	0.00	2.02	-84.30	0.04	0.02	0.01	66.01
Papayas	0.03	0.01	0.09	0.70	0.00	0.02	0.71	0.25	37.27
Soybeans	0.37	0.05	1.32	0.85	53.48	0.69	0.61	0.03	37.51
Yams	0.01	0.00	100.00	1.62	0.00	0.06	0.00	0.00	31.43
Cocoa Beans	0.39	89.16	538.03	0.69	0.00	0.05	0.00	0.00	-6.91
Grapefruitjuice Sing-Str	0.35	0.00	0.25	0.95	58.74	0.00	-0.10	0.25	-36.32
Orangejuice Concentrated	0.96	0.01	0.07	0.51	0.00	33.31	0.84	0.86	-14.00
Pigmeat	0.81	0.07	1.07	0.28	27.49	0.00	0.08	0.04	7.78
Sugar, raw	18	0	100	0.08	0	0	-0.27	48.3	-1.5

Egypt

Product	Count	Food Security				Livelihood Security			Rural Development	
		Share in calorie consumption (%)	Volume Imported/ Volume consumed (%)	Volume consumed /Volume produced (%)	Coefficient of variation of domestic production	Import growth rated (%)	Share in area harvested (%)	Coefficient of correlation (prodn & import)	Share in production (vol) %	Production (vol) growth rate %
Oil of Soya Beans	5	1.03	79.71	480.00	0.45	-2.79	0.00	0.70	0.03	19.81
Sugar Beets	5	0.00	0.00	100.00	0.59	0.00	0.96	0.60	1.70	0.23
Oranges	5	0.47	0.08	90.00	0.05	-31.34	1.54	0.70	1.05	1.89
Potatoes	5	1.17	3.46	90.00	0.12	-9.99	1.40	0.07	1.20	2.01
Maize	4	4.83	41.45	160.00	0.13	0.20	14.91	0.90	4.17	1.41
Sesame Seed	4	0.63	64.82	270.00	0.13	-5.62	0.49	0.70	0.02	-0.21
Dates	4	1.70	0.03	100.00	0.24	30.23	0.51	-0.69	0.64	5.10
Grapes	4	0.77	1.83	100.00	0.80	20.17	1.04	0.84	0.67	1.73
Olives	4	0.44	0.20	100.00	0.49	0.00	0.74	-0.45	0.18	3.17
Onions, Dry	4	0.25	0.20	90.00	0.19	157.63	0.47	0.14	0.46	11.22
Tomatoes	4	1.23	0.10	100.00	0.16	-49.62	3.24	-0.78	4.08	-0.96
Wheat	3	33.12	44.00	180.00	0.15	5.15	17.8	-0.82	4.1	-1.34
Cocoa Butter	3	0.00	0.00	0.00	0.57	53.43	0.00	0.00	0.00	24.96
Oil of Groundnuts	3	0.25	0.25	100.00	0.70	-21.35	0.00	0.90	0.01	0.19
Rice, Paddy	3	0.25	0.78	80.00	0.18	25.20	10.70	0.30	3.55	-2.39
Seed Cotton	3	0.00	0.00	0.00	0.12	0.00	5.05	0.00	0.46	11.22
Silk, Raw and Waste	3	0.00	0.00	0.00	0.39	123.96	0.00	0.00	0.00	13.39
Sorghum	3	1.30	0.01	100.00	0.13	0.00	2.78	-0.11	0.57	-6.35
Sunflower Seed	3	0.00	10.32	100.00	0.18	2.29	0.29	0.70	0.03	-1.25
Flour/Meal of Oilseeds	3	0.00	0.00	0.00	0.98	471.30	0.00	0.00	0.00	131.84
Sweet Potatoes	3	0.27	0.00	100.00	0.39	0.00	0.18	0.30	0.17	7.93
Sugar Refined	1	4.0	35.4	160.0	0.2	-12.5	0.0	0.1	0.4	-2.2

Nigeria

Product	Food Security				Livelihood Security			Rural Development	
	Share in calorie consumption (%)	Volume Imported/ Volume consumed (%)	Volume consumed /Volume produced (%)	Coefficient of variation of domestic production	Import growth rated (%)	Share in area harvested (%)	Coefficient of correlation (prodn & import)	Share in production (vol) %	Production (vol) growth rate %
Tomatoes	0.00	0.01	106.23	0.32	19.31	0.28	0.80	050	0.28
Sweet Potatoes	1.35	0.00	100.00	0.72	72.67	0.88	0.67	1.34	0.49
Cashew Nuts	0.36	0.00	90.60	0.48	0.00	0.65	0.00	1.05	1.05
Cassava	3.19	0.00	100.00	0.12	-96.94	7.29	0.27	19.18	1.68
Cocoa Beans	0.00	0.00	49.26	0.09	0.00	2.02	0.42	6.28	6.28
Flour of Wheat	4.48	2.31	102.00	0.65	-67.03	0.00	-0.49	0.81	7.63
Groundnuts in Shell	0.00	0.00	100.00	0.33	0.00	6.12	-0.20	1.60	-2.42
Maize	7.29	0.20	100.00	0.13	1912.90	9.27	-0.73	2.84	0.45
Potatoes	0.18	0.00	100.73	0.95	34.63	0.26	0.98	1.98	1.98
Sorghum	13.37	0.00	100.12	0.14	-99.59	15.56	-0.41	4.37	-0.30
Taro (Coco Yam)	0.59	0.00	100.00	0.62	0.00	1.39	0.00	2.19	0.55
Vegetables Fresh nes	0.66	0.00	99.99	0.27	-85.20	1.45	0.48	2.32	2.51
Wheat	4.50	96.90	2753.05	0.31	8.15	0.12	0.16	-7.62	-7.62
Citrus Fruit nes	0.64	0.00	100.00	0.11	0.00	1.65	0.00	1.88	0.05
Cow Peas, Dry	3.29	0.00	100.00	0.18	0.00	11.51	0.00	1.24	0.69
Flour of Maize	7.33	0.00	100.01	0.13	79.06	0.00	-0.11	1.48	0.54
Fruit Fresh nes	0.47	0.00	100.00	0.02	53.09	0.50	0.38	0.82	0.00
Groundnuts Shelled	1.55	0.31	100.24	0.33	16.77	0.00	-0.28	0.99	-2.69
Pigmeat	0.46	0.00	100.01	0.19	81.39	0.00	0.00	6.91	6.91
Plantains	1.53	0.00	100.00	0.14	0.00	0.64	0.00	1.14	1.82
Soybeans	1.08	0.64	98.84	0.37	-98.94	1.33	-0.27	1.34	1.34
Sugar Refined	3.40	82.32	558.16	0.75	11.55	.00	0.62	36.80	36.80
Yams	7.95	0.00	100.00	0.18	0.00	6.37	0.00	15.18	0.88

Thailand

Product	Food Security				Livelihood Security			Rural Development	
	Share in calorie consumption (%)	Volume Imported/ Volume consumed (%)	Volume consumed /Volume produced (%)	Coefficient of variation of domestic production	Import growth rated (%)	Share in area harvested (%)	Coefficient of correlation (prodn & import)	Share in production (vol) %	Production (vol) growth rate %
Barley	0.00	90.92	1736.33	0.72	-0.10	0.04	0.85	0.01	4.82
Maize	2.14	3.33	99.40	0.10	-63.90	7.01	0.10	2.18	-1.91
Bananas	1.45	0.00	99.70	0.03	0.00	0.77	-034	0.87	0.94
Cassava	1.45	0.00	88.90	0.09	0.00	6.03	-0.30	8.56	-4.00
Chicken Meat	1.69	0.02	77.50	0.20	149.33	0.00	0.60	0.58	6.56
Cocoa Beans	0.00	209.10	3025.20	0.00	4.30	0.00	0.55	0.00	0.00
Coconuts	2.68	0.09	98.90	0.02	-19.80	1.87	0.02	0.69	0.43
Fruit Tropical Fresh nes	0.39*	0.00	95.80	0.02	0.00	1.01	0.00	0.35	0.70
Jute-Like Fibres	0.00	0.00	100.00	0.47	0.00	0.14	0.00	0.02	24.48
Mangoes	0.51	0.00	99.40	0.23	0.00	1.50	0.00	0.76	2.32
Milled Paddy Rice	39.68	0.03	53.80	0.13	18.40	0.00	0.68	7.19	-0.40
Potatoes	0.12	65.01	269.52	0.40	-10.10	0.04	0.91	0.05	2.11
Rice, Paddy	0.00	0.00	100.00	0.13	0.00	56.54	0.68	12.44	-0.30
Soyabean Cake	0.00	64.03	282.21	0.39	10.50	0.00	0.90	0.38	3.23
Sugar Refined	12.45	0.00	56.10	0.28	35.70	0.00	0.71	1.54	-1.99
SweetCorn Prep. or Pres	0000	5.60	1.50	1.01	76.52	0.00	0.00	0.02	29.35
Wheat	0.03	118.01	91180.03	0.18	8.60	0.01	0.91	0.00	0.00

An analysis of triggers for the Special Safeguard Mechanism

Ramesh Sharma[1]

That a Special Safeguard Mechanism (SSM) would be established for developing countries was agreed in the 2004 Framework Agreement of the WTO, as well as in other key framework texts. This was a response to many negotiating proposals put forward by these countries that brought to light the problems posed by import surges and depressed import prices and the need for a simpler-to-use safeguard until capability is developed for general trade remedy measures. This paper contributes to one key building-block of such a SSM – the mechanism for triggering a safeguard response. Two alternative trigger schemes are evaluated – the Agreement on Agriculture's Special Safeguard (SSG) formula and one based on moving averages of prices and imports. There are advantages and disadvantages with both schemes. The three-year moving average reference price does a good job most of the time in triggering a safeguard when prices are depressed, but misses depressed prices in about 20 percent of the cases. On the other hand, a five-year moving average reference price triggers safeguard even in these cases, although the latter triggers safeguards too frequently overall.

1. INTRODUCTION

Agricultural markets are by nature cyclical and subject to wide fluctuations due, among other things, to weather variability. Other sources of instability include the subsidization of production (such as with counter-cyclical programmes) and exports, as well as anti-competitive behaviour of trading firms (both state-owned and private). All these affect the orderly development and flow of trade. As countries reduce tariffs and bind them at lower levels, they become increasingly vulnerable to external agricultural market instability and to import surges that could wipe out viable, well-established or nascent, agricultural production activities. Vulnerability to such external shocks is of particular concern to developing countries that are endeavouring to develop their agricultural potential and diversify production.

That import surges and depressed import prices pose threats to domestic market stability is no longer contested. There have been many reports of developing countries, particularly lower-income food-deficit countries, experiencing increasing numbers of import surges of various food products, notably since the mid-1990s. Often, these reports associate the surge with negative effects on local production and economy. Sharma (2005) documents 30 such reports and studies, all for the late 1990s and early 2000. Examples include the experience of Jamaica with respect to chicken, Kenya with respect to dairy products, Senegal with respect to tomato paste, and rice in Haiti. This review draws on several sources, notably various studies by FAO (FAO 2000; FAO 2003a; FAO 2003b; and Sharma *et al.*, 2005) and national and international civil society organizations (e.g. Action Aid, 2002; APRODEV, 2004; Ceesay *et al.*, 2005, Christian Aid, 2005; OXFAM, 2002, 2003 and 2004). There is widespread concern that

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these problems are likely to intensify in coming years as tariffs are lowered further, and before alternative forms of safeguards can be put in place. In several of these cases reported, imports increased by as much as 10-20 fold within a short period of 4-5 years with marked negative impact on domestic production, industry and employment. The phenomenon has been found to be relatively frequent for certain product groups, notably dairy products, poultry and some other meats, rice, sugar and vegetable oils.

Because of the negotiating history of the Uruguay Round (UR), the recourse to the Special Safeguard (SSG) of the Agreement on Agriculture (AoA) was limited to those countries undertaking tariffication. As a result, there is now the anomaly that some have the right to use the SSG to deal with import surges, whereas others, including many vulnerable developing countries, do not, despite the fact that all countries have embraced the tariff-only trade regime and are equally vulnerable to external shocks. In view of the above, a consensus has been reached in the WTO that there should be a simple to use special safeguard instrument accessible to the developing countries. This instrument is the Special Safeguard Mechanism or SSM.

The five key issues in the design of a SSM are: country eligibility; product eligibility; triggers; remedy; and duration. These are discussed at length in FAO (2005) and Sharma and Morrison (2005). Of these five, the trigger mechanism is of a relatively technical nature and is the subject of this paper.

2. DESIGNING EFFECTIVE TRIGGERS FOR THE SPECIAL SAFEGUARD MECHANISM

While almost all WTO negotiating proposals have viewed positively the idea of a special agricultural safeguard for use by the developing countries, hardly any concrete proposal was made on the form of that safeguard until recently. It was only in October 2005 that G-33 - the negotiating group that has been the main demander of such an instrument, the SSM – made a concrete proposal. Until then, most technical discussions had revolved around the mechanisms and formulas of the SSG of the AoA. In the meantime, various negotiating proposals and statements had stressed some or all of the following basic features as being desirable for the SSM, notably in relation to the triggers:

- Simple and transparent
- Relatively easy to invoke - not burdensome administratively
- Triggered in reaction to exceptional market conditions
- Remedy measures to be temporary in nature
- No requirement for proof of injury
- Should not lead to misuse - too frequent triggers, for example

As the SSM is expected to be similar to the SSG in terms of simplicity and effectiveness – and without the need for an injury proof – it was also generally expected that the SSM trigger mechanism would be similar to the SSG triggers: namely, automatic triggers for both depressed prices and import surges. With the new G-33 proposal, there are now two concrete schemes on the table and which are analysed here. The two trigger mechanisms are explained below, and evaluated primarily against the criterion of frequency of triggers.

2.1 The price trigger

As a safeguard, it is desirable that the SSM should be effective in responding to sharp, short-term price depressions. The key parameter that ensures this is the reference price used for triggering the safeguard. In addition to the two trigger mechanisms considered here, namely the SSG formula based on a fixed reference price and the one proposed by G-33 based on moving averages, other mechanisms have been tried by different countries as well as proposed in the literature. For example, alternative mechanisms have been used by some countries in Latin America for their price band schemes.

In some cases, the triggers were based on moving average world market prices (as in Chile) while in others these were based on domestic prices.

Other possibilities have been discussed in the literature. For example, Valdes and Foster (2004) discuss the use of price trends, moving averages of various lengths, preceding year's price and also minimum average cost of production of the world's most efficient exporter as potential reference prices. The main concern and consideration here is with avoiding excessive or too fewer triggers which result when current import prices bear no relationship to the trigger prices.

2.1.1 The SSG price trigger of the Uruguay Round
The formula for the price trigger of the SSG is shown in Box 1. In this formula, a safeguard is triggered when the current import price exceeds the trigger or reference price, which is fixed as the average import price for 1986 to 1988. Figure 1 illustrates how the formula works. Essentially, once the safeguard is triggered, the additional duty levied varies depending on the depth of the price depression. The figure also shows that the additional duty does not completely offset the fall in the import price. For example, additional duties would amount to 4 percent , 28 percent and 170 percent when the import price falls below the trigger price by 20 percent, 50 percent and 80 percent respectively.

2.1.2 Trigger based on moving-average reference price – the G-33 proposal
In contrast to the fixed reference price scheme of the SSG, the G-33 in its October 2005 proposal suggested the use of three-year moving average prices as the reference price. The price trigger will be equal to the average monthly price for the most recent three-year period, preceding the year when a safeguard is triggered, and for which data are available. A safeguard is triggered when the current import price exceeds the trigger price.

2.1.3 Assessing the alternative proposals
The two important criteria for assessing the desirability of a reference price for the purpose of the safeguard would be simplicity and effectiveness. The instrument should be effective in the sense that it triggers the safeguard when needed, but at the same time it is also important that safeguards are not triggered too frequently.

BOX 1

The agricultural Special Safeguard: price trigger formula

Notations:

P = current import price; T_p = fixed trigger price; D_i = additional or SSG duty (i=1 to 5)

If $(T_p - P) < T_p$ x 10%, then $D_1 = 0$ (i.e. *de minimis*)

If $(T_p - P) > (T_p$ x 10%) and $(T_p - P) < (T_p$ x 40%),
then $D_2 = 30\%$ x $[(T_p - P) - (T_p$ x 10%)]

If $(T_p - P) > (T_p$ x 40%) and $(T_p - P) < (T_p$ x 60%),
then $D_3 = 50\%$ x $[(T_p - P) - (T_p$ x 40%)] $+ D_2$

If $(T_p - P) > (T_p$ x 60%) and $(T_p - P) < (T_p$ x 75%),
then $D_4 = 70\%$ x $[(T_p - P) - (T_p$ x 60%)] $+ D_2 + D_3$

If $(T_p - P) > (T_p$ x 75%)
then $D_5 = 90\%$ x $[(T_p - P) - (T_p$ x 75%)] $+ D_2 + D_3 + D_4$

Source: Based on Paragraph 5 of Article 5 of the Agreement on Agriculture.

FIGURE 1

Illustration of the operation of the price SSG – additional SSG duties for various levels of price depressions
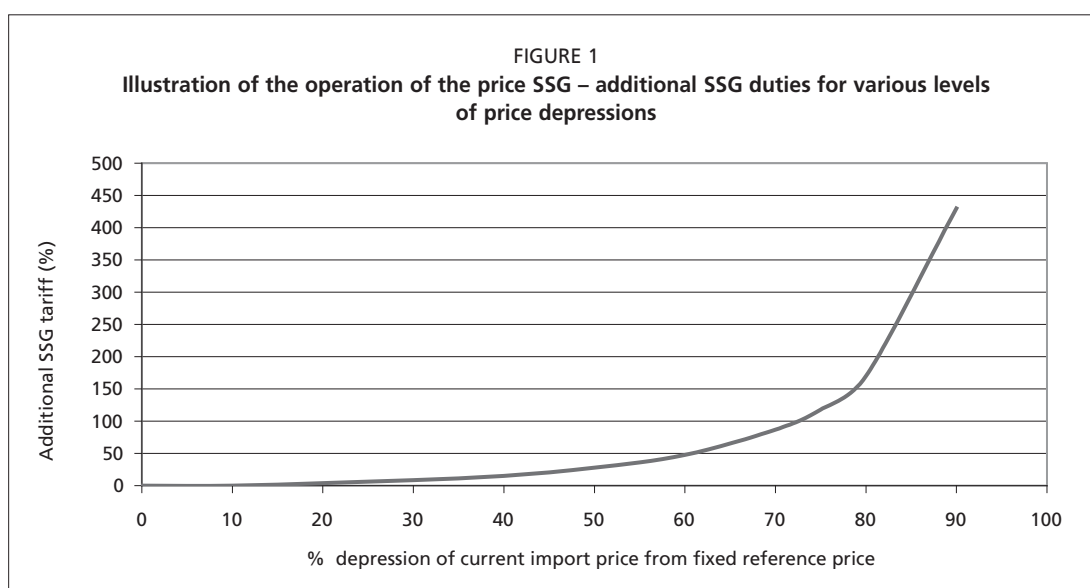
From the standpoint of simplicity, a fixed reference price has a distinct advantage over the moving-average (MA) price in that once fixed for the implementation period, the trigger price is known in advance. Moreover, the SSM will require a substantial amount of data where the instrument is being extended to all tariff lines. In addition to assembling the price statistics for so many tariff lines, countries will need to update these on a continuous basis for computing the MA prices. The fixed reference price, on the other hand, does not require updating.

The main disadvantage of a fixed reference price is that it does not incorporate information on price trends, unless updated periodically. As a result, when current prices deviate significantly from longer-term trends, safeguards may be triggered inappropriately. The base period chosen also becomes very important. For example, if this happens to correspond to a cyclical high in world markets, the SSM will be triggered more frequently than is desirable, while if it corresponds to a cyclical low, SSMs will be triggered too infrequently.

By contrast, reference prices based on MAs, or other similar trend-based references, incorporate information on the long-term movement of commodity prices. Where the length of the MA is chosen appropriately, the reference prices may reflect more accurately the opportunity costs of domestic production. The shorter the memory, the more sensitive is the trend to sharp but short deviations in prices which may not be representative of the long-run opportunity costs.

One potential flaw with MAs, despite their attractiveness as a means of smoothing price fluctuations, is that the reference price based on MAs can produce outcomes that are inconsistent with the objective of protecting against exceptionally low prices. In the case of a downturn in import prices, the moving average price follows the actual price gradually and after a delay depending upon the number of periods in the moving average. As a result, the moving average price may fail to trigger a safeguard in the face of a persistent fall in import prices. When import prices are rising, the reference prices remain below the rising actual prices and so do not trigger a safeguard – which is a desirable property.

In order to illustrate these points, world market prices (unit import prices) for 10 primary and processed agricultural products over 21 years were analysed. Figure 2 plots actual prices against two reference prices – a three-year moving average (MA-3) price as in the G-33 proposal, and 1986-88 average price (the SSG reference price).

FIGURE 2
**Plots of current import prices (bold lines), 3-year moving average prices (thin lines) and
1986-88 fixed import price (horizontal dashed lines)**
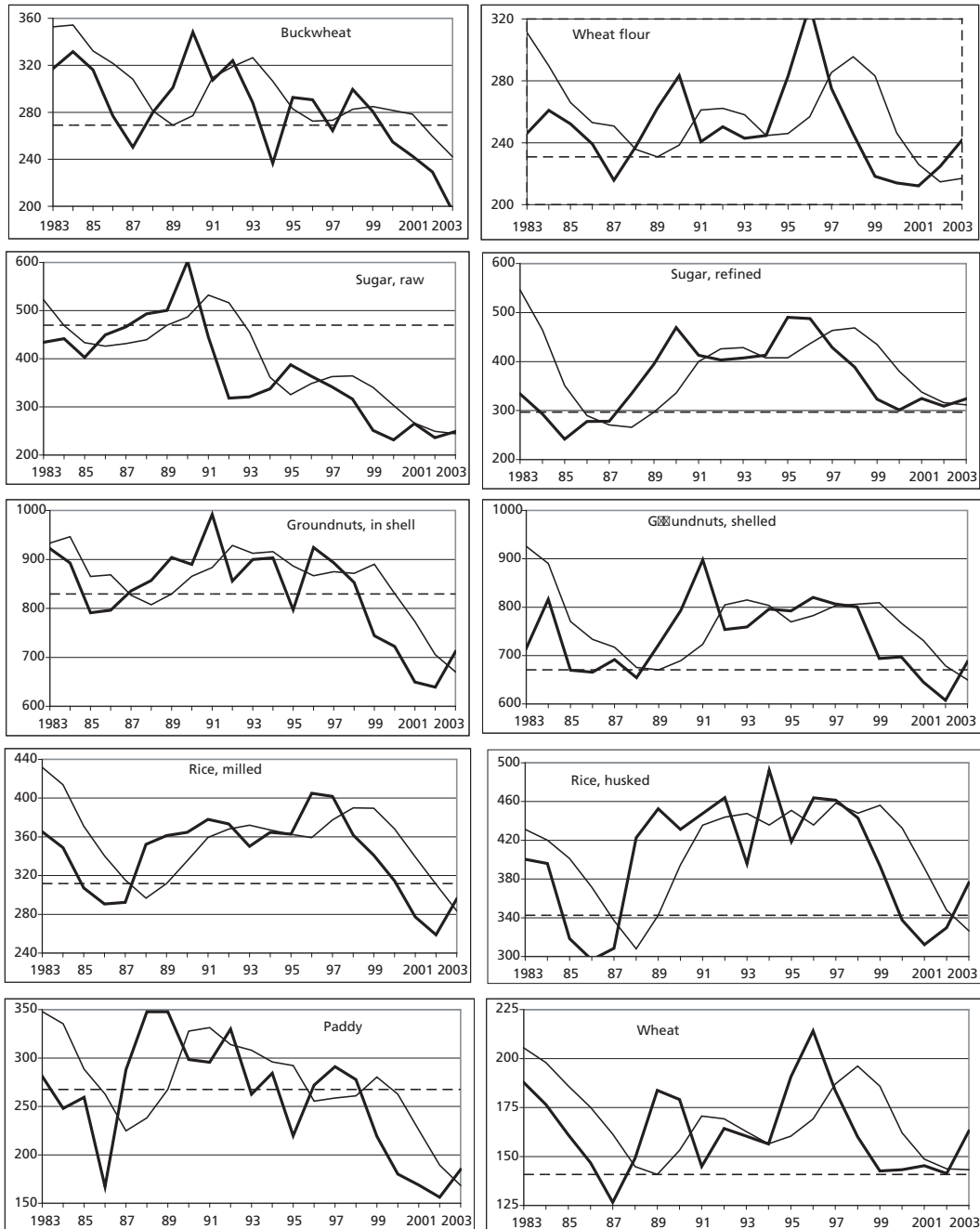
Note: Δ safeguard is triggered when: i) current price is below the Δ-3 price in the case of the Δ-3 scheme, and when ii) below the fixed, reference price in the case of the G formula.
Source: Δuthor. Δll prices are in US$/tonne and are unit import values from FΔOTΔT.

TABLE 1
Total number and percent of safeguard triggers during 1983-2003 for various reference prices

Products	Total number of triggers (reference price)			Percent of triggers (%) (reference price)		
	1986-88 average	MA-3	MA-5	1986-88 average	MA-3	MA-5
Buckwheat	3	8	7	14	38	33
Wheat flour	0	5	8	0	24	38
Sugar, raw	13	7	9	62	33	43
Sugar, refined	1	6	10	5	29	48
Groundnuts in shell	5	4	7	24	19	33
Groundnuts shelled	0	5	7	0	24	33
Rice, milled	2	8	9	10	38	43
Rice, husked	1	6	8	5	29	38
Rice, paddy	7	11	10	33	52	48
Wheat	1	8	8	5	38	38
All products	**33**	**68**	**83**	**16**	**32**	**40**

Note: Total number of potential triggers for a product is 21 (i.e. 21 years covered). The percent of triggers on the right side of the table is potential percent of triggers, the potential number of triggers being 21 (21 years), and for the "all products" total, potential number of triggers is 210 (21 years times 10 products). A safeguard is triggered when current prices are below 90 percent of the reference price (i.e. 10 percent *de minimis* level is assumed).
Source: Author.

The problem with the MA-3 formula is apparent from the graphs. Taking raw sugar as an example, the MA-3 does not trigger a safeguard in 1985, a depressed year, nor in 2001 and 2003.[2] This is because current prices in 1999 and 2000 were already very depressed and as a result the MA-3 prices for the next two years were too low to trigger a safeguard. For wheat, the same thing happens in 2001 and 2002. Many cases like this can be found for the 10 commodities. The case of refined sugar is similar for the three years, 2001 to 2003, when the MA-3 does not trigger a safeguard despite these being years of depressed prices. Overall the MA-3 did not trigger a safeguard in about 20 percent of the cases when prices were depressed. This is the main limitation of the MA-3 reference price.

Additional investigation was made with a five year moving average (MA-5). The longer the period of the MA, the smoother the reference price is and so the less likely it is that years of depressed prices will fail to trigger a safeguard. Table 1 compares the number of triggers with MA-3 and MA-5. It shows that in the 21 years covered, taking into account all 10 products, the MA-5 triggers the most, 40 percent of the time, followed by MA-3 (32 percent) and SSG trigger (16 percent). Not only is the number of triggers more with MA-5, it was also found that the MA-5 reference price triggers safeguards in periods of depressed prices that the MA-3 missed, as noted above. This is the major advantage of the MA-5 over MA-3. On the other hand, it appears that the MA-5 seems to trigger safeguards too frequently, which may not be a desirable property.

A scheme based on a fixed reference price obviously triggers safeguard in periods of depressed prices where the reference price (i.e. the base period) is carefully chosen. A reference price fixed for a high-price cycle in world markets will trigger the safeguard too frequently while one based on a low-price cycle may not be effective. Figure 2 shows several cases where the fixed reference prices are relatively high (e.g. paddy, raw sugar) as well as relatively low (e.g. wheat, husked rice and shelled groundnuts). The choice of base period is crucial. This is illustrated in Figure 3. It shows the frequency of the SSG triggers for various reference prices, based on three-year averages since 1995.[3] For almost all the 16 products analysed, world market prices were high initially

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[2] It is assumed that a safeguard is triggered when current prices are below the MA-3 prices by more than 10 percent, i.e. a 10 percent *de minimis* is allowed.

[3] For this exercise, yearly world market prices of the following 16 products were used: three cereals, raw sugar, four dairy products, four types of meats and four prominent vegetable oils. Calculations were done separately for each product and the results averaged (or counted) for all 16 products and ten years (1995-2004), as relevant.

FIGURE 3
Simulated number of SSG price triggers for various base periods assumed for reference prices
(maximum possible triggers = 160)[1]

[1] The total number of potential triggers is 160 (16 products covered times 10 years, 1995 to 2004).
Note: The X-axis indicates the three years for which world market prices were averaged for deriving the fixed reference prices. Thus, for example, the left-most data point in the figure shows that if the reference price is based on 1995-97, there were a total of 83 triggers during 1995-2004 for all 16 agricultural products taken together. This represents 52 percent of the potential triggers (83/160).

(i.e. during 1995-97), depressed during 1999-2001 and higher again during the last 2-3 years. As a result, the number of the SSG triggers was large with the reference price for 1995-97 (a total of 83 triggers out of the 160 potential triggers (16 products times 10 years covered), but very low (only 17 triggers) when 1999-01 was used for the reference price.

The challenge obviously lies in deciding on a particular period that is appropriate for a safeguard. Based on Figure 3, if the SSM is to cover exceptional cases only, then reference periods such as 1998-2000 or 2001-03 would appear appropriate because these reference prices cover the "exceptionally" depressed years observed around 1999-2001. On the other hand, while the reference periods of 1999-2001 and 2000-02 provide very little safeguard for the low years, reference periods such as 1995-97 or 1996-98 would trigger the SMM too frequently.

2.3 The volume trigger
As with the price trigger, this sub-section assesses the two prominent triggers – the SSG formula and the MA-3 formula proposed in the latest G-33 proposal.

2.3.1 The SSG volume trigger
The trigger volume in this case is derived from: i) actual imports averaged over the preceding three years; ii) the share of imports in domestic consumption over the same period; and iii) the absolute volume change in consumption over the most recent year for which data are available (Box 2). The trigger level is higher (and the probability of using the trigger less), the greater the three-year average level of imports, the lower the share of imports in domestic consumption, and the faster the growth in domestic consumption. Additionally, the relevant AoA provision states that the maximum extra duty may not exceed 30 percent of the ordinary level of duty in effect during the year in which the SSG is invoked; it may not be levied beyond the end of the year in which it has been imposed; and it cannot be applied to imports taking place within tariff quotas.

B X 2
The agricultural Special Safeguard: volume trigger formula

According to Article 5 (para 4) of the AoA, an additional duty may be imposed in any year where the absolute volume of imports in the current period exceeds the sum of the average quantity of imports during the three preceding years for which data are available (M_{avg}) times a scaling factor (x) plus the absolute volume change in domestic consumption (ΔC) of the product concerned in the most recent year for which data are available compared to the preceding year. There is a *de minimis* requirement here that says that the safeguard is only triggered provided that the trigger level is not less than 105% of the average quantity of imports.

In algebraic terms this is expressed as:
$$M_{trigr} = M_{avg} * x + \Delta C$$

where, M_{trigr} is the trigger level of imports and x (the scaling factor) is defined as per the share of imports in domestic consumption (S) during the three preceding years, as follows:

$$\begin{aligned} &= 125\% \text{ if } S \leq 10\% \\ x \quad &= 110\% \text{ if } 10\% < S \leq 30\% \\ &= 105\% \text{ if } S > 30\% \end{aligned}$$

For example, if the share of imports in domestic consumption (S) during the preceding three years is 7%, then x will be equal to 1.25.

Source: Based on the provisions in Article 5 of the Agreement on Agriculture.

2.3.2 Trigger volume based on moving averages of imports
The October 2005 G-33 text proposed, similar to that for the price trigger, a reference or trigger import level based on a moving average of imports. It is proposed that the trigger level of import should be equal to the average annual volume of imports for the most recent three-year period preceding the year of importation for which data are available. A safeguard is triggered when current import volume exceeds the trigger level, subject to some additional provisions - no trigger for a *de minimis* level of import, for example.

2.3.3 Assessing the volume triggers
The key issue in assessing the two alternative volume triggers is their relative effectiveness in responding to import surges. Figure 4 compares the performance of the SSG formula and the MA-3 formula by simulating the triggers for rice for four sample countries selected randomly.

The figures show that the SSG formula would have triggered much less frequently than the MA-3 formula. For the four countries and 10 years (40 observations in all), the SSG formula would have triggered a safeguard only five times (13 percent of cases) while the MA-3 formula would have triggered a safeguard 17 times (43 percent of cases). Arguments can be made in favour of both formulae. Since a SSM is part of the Special and Differential Treatment meant to be for use by the developing countries, with more vulnerable agriculture, more frequent triggers might be considered desirable. On the other hand, too frequent triggers might be regarded as undesirably disruptive of trade.

A alternative way to assess the two formula could be to determine whether or not they would trigger a safeguard when there is an import surge. In the WTO trade

FIGURE 4

Illustrations of the operation of volume triggers – left-hand figures for the SSG formula and the right-hand figures for the moving-average formula

Note: The year when the volume safeguard is triggered is indicated by the notation V-SSG.
Source: Author, based on FAOSTAT data
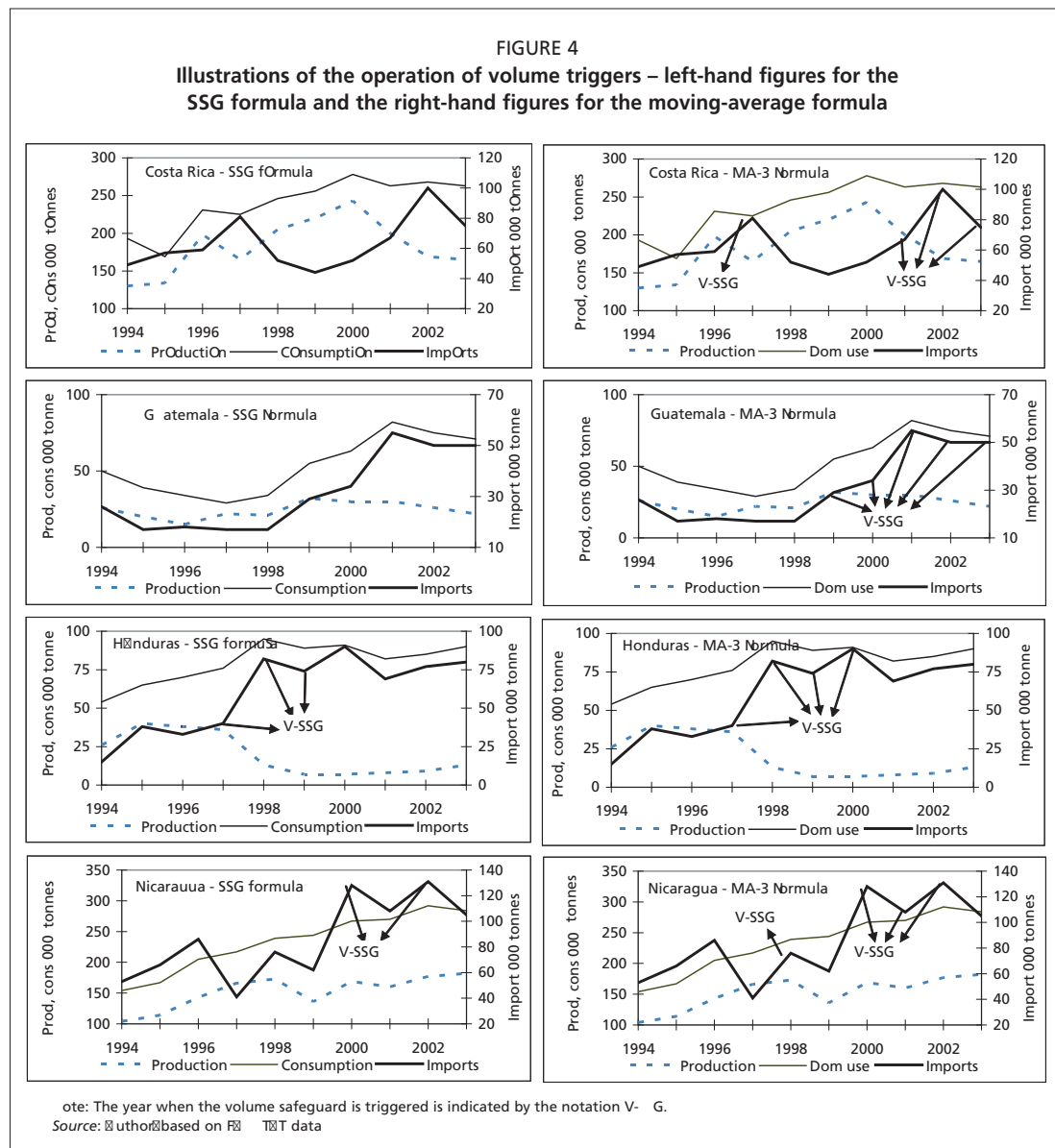
remedy measures, import surges are defined generally: there is no objective measure of a surge as there is in the SSG.[4]

In disputes involving the Safeguards Agreement, panels have generally decided whether a surge exists or not by first looking at the data on import trends. For example, the 56 000 tonnes increase in imports in Costa Rica between 1999 and 2002 would probably have been regarded as a surge by the dispute panel. Similarly for Guatemala between 1998 to 2001. Yet, in both cases, the SSG formula did not trigger a safeguard because the trigger import volume exceeded the current import volume.[5]

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[4] For example, Article 2.1 of the Safeguards Agreement defines this phenomenon in the following manner: "A Member may apply a safeguard measure to a product only if that Member has determined … that such product is being imported into its territory in such increased quantities, absolute or relative to domestic production, and under such conditions as to cause or threaten to cause serious injury to the domestic industry that produces the like or directly competitive products."

[5] See Box 2 for the formula and how it works.

There are many such cases where the SSG formula would not have triggered safeguard in the face of apparent import surges. In some cases, the reason why the trigger import volume exceeded the current import level (and hence a safeguard was not triggered) was because the change in consumption in the previous years was negative. This in turn was the result of increased production in those years that pushed higher the (apparent) consumption. For example, a much higher apparent consumption in the previous year due to a good harvest prevented a trigger later in 2001 for Guatemala. However, based on the import trends (Figure 4), 2001 should have qualified as a surge year, as any WTO Panel in a Safeguards dispute would probably have concluded.

A key problem with the SSG formula is that the current conditions for trigger are influenced by past events – up to three years previously and which have little to do with any current surges a country may be experiencing. It is for this reason that a SSG is inappropriately triggered for rice in Honduras in 1999 when imports were actually lower than in 1998. This is an awkward outcome and should not have happened.

Comparing the left and right-side graphs in Figure 4, it is possible to assess some other features of the two formula. One was noted earlier – that the MA-3 formula leads to more frequent triggers than the SSG formula. Other than that, some of the problems noted above with respect to the SSG formula are also found with the MA formula. This follows because both the formulae rely to a large extent on moving averages for trigger volumes. As a result, one finds that the MA-3 formula would trigger a safeguard in 2003 for Costa Rica when rice imports actually declined. This is also the case for Guatemala in 2002 and 2003, for Honduras in 1999 and for Nicaragua in 2001. At the same time, it might be questioned whether some of the occasions when the SSM was triggered could actually be characterized as surge years.

In summary, as was also noted in the discussion on price safeguard above, a major source of anomalies in outcomes are historical imports that are embedded in the MA approach, and so applied to both the SSG and MA-3 cases. In the case of the SSG formula, past consumption and production also play a role. It is difficult to understand why these past events – some of them taking place three years back - should influence the decision on a trigger now. The WTO general trade remedy measures do not assign such weights to historical parameters.

There is a considerable room for simplifying the SSG volume trigger by assigning little or no weights to the past events and basing the decision about the trigger on the most recent developments in imports (over the past 4-6 months, for example), in relation to some benchmark of what constitutes excessive imports that disrupt, or threat to disrupt, domestic markets to the extent that producers are injured. One such benchmark would be the gap between normal import needs and actual imports. The former would be determined by trend consumption and current production while the latter would be actual imports in the most recent months. A safeguard would be triggered when actual imports exceed that benchmark level. Such a formula would not only be very simple but would also have much more intuitive appeal than the current SSG formula.

Further to the discussion above, previous papers on this subject (FAO 2005; Sharma and Morrison 2005) discuss other features of the SSG volume trigger that need to be revisited for the purpose of the SSM. Those papers argue that the SSG formula may have some built-in biases against agricultural economies as exist in the least-developed and other lower-income developing countries, for the following reasons:
- the formula is biased against countries with lower degrees of openness (i.e. lower import to production or consumption ratios, which is more common for poorer countries);
- the formula is biased where consumption is rising (biased in the sense that the chance of a trigger is reduced and food consumption growth is typically higher or stronger in lower-income countries);

- the formula raises the level of the trigger imports where consumption statistics are missing, and this reduces the probability of triggering a safeguard (consumption statistics are generally lacking in lower-income countries).

3. CONCLUSIONS

That import surges and periods of prolonged depressed world market prices can be significantly disruptive to agricultural development and livelihoods in the developing countries is hardly questioned. There is also a consensus that these countries will require a simple-to-use safeguard until such time as they develop their capability for alternative forms of safeguards, including the use of general WTO trade remedy measures. Moreover, it is recognised that because of the negotiating history of the UR, there is now the anomaly that some countries have the right to use the SSG while others – notably many vulnerable developing countries – do not. The response to these concerns has been the agreement that a SSM will be established for the developing countries.

Various negotiating proposals and texts have commented on the desirable features of such a safeguard. These included simplicity, transparency, administratively straightforward to invoke, and effective in responding to exceptional market conditions. Yet, with the exception of the G-33 proposal of late October 2005, none of the proposals including the 2004 Framework Agreement has been specific on the technical "design" elements of the SSM. It was generally held that the SSM would be technically similar to the SSG.

As a contribution to the discussion of the technical aspects of the SSM, this paper evaluated two formulae for price and import volume triggers – the SSG formula and one based on three year moving averages (MA) as proposed by G-33. There are advantages and disadvantages with both schemes.

The three-year moving average reference price does a good job most of the time in triggering a safeguard when prices are depressed, but misses out depressed prices in about 20 percent of the cases. Specifically, it misses out in those periods when depressed prices are persistent. Several such cases were noted in Section 2. This happens because where current prices are depressed in the previous 2-3 years, the MA-3 prices for the next two years become correspondingly depressed and thus fail to trigger a safeguard. On the other hand, a five-year moving average reference price triggers safeguard even in these cases, although it might be considered to trigger safeguards too frequently overall.

In the case of the volume trigger, it was shown that the current SSG formula also suffers from some of the problems as above, notably that it does not always trigger a safeguard when the data on import trends clearly indicate that a surge – generally defined as in the WTO Safeguard Agreement – is actually occurring. The problem was traced to the weight that some of the developments that take place in the past, namely changes in production and consumption levels two or three years back, carry in the current decision on whether or not to trigger a safeguard. As a result, in a number of cases a safeguard is not triggered when it should have been. It was also noted that the MA-3 formula triggers safeguards more frequently than the SSG formula. While this may or may not be taken as a desirable feature, the MA-3 formula also suffers to some extent from the same problems as was noted in the case of the MA-3 price trigger: because of the weight given to past developments, a safeguard is triggered even when imports are actually falling. Thus, there are problems with both formula and so more experiments with alternative formulae are needed before a decision is made on the SSM triggers.

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Sensitive and Special Products – a rice perspective

Concepción Calpe and Adam Prakash[1]

This article examines the prospect of rice being designated as a special or sensitive product and looks at the possible implications this could have under liberalisation of the international rice market. Using an Armington-type model, it was found that the designation of rice as special or sensitive by key countries considerably diminishes the effects of reform, particularly when no concessions are required to be made upon designating rice so. The paper also discusses the criteria that could serve to guide the selection of rice products as sensitive or special.

1. INTRODUCTION

The July 2004 agreed Framework for Establishing Modalities in Agriculture (hereafter referred to as the "July Package") introduces three novel elements to the Market Access pillar aimed at mitigating the impacts of mandatory tariff cuts: (i) "Sensitive Product" (SSP) and (ii) "Special Product" (SPP) exceptions and (iii) a new Special Safeguard Mechanism (SSM). The SPP and SSM pertain to the Special and Differential Treatment provisions for use by developing countries only, while both developed and developing countries can resort to the SSP provision. While the SSM envisages equipping developing countries with a set of new rules to protect themselves against commodity import surges, designating a product as "sensitive" or "special" would provide exemption from the full application of the agreed upon tariff rate cutting formula, thereby facilitating the adoption of more ambitious market access provisions for the rest of agriculture.

This article looks at rice as a potential candidate for designation as an SPP or an SSP and examines the possible implications this could have for reform of the international rice market. In the absence of a final agreement on the modalities that will drive the liberalization process under the WTO Doha Round and on the rules that would govern SPPs and SSPs, crude assumptions had to be made in carrying out the analysis.

2. RICE AND SENSITIVE PRODUCTS

The July Package leaves the market access provisions on SPPs and the SSM largely for subsequent negotiation. It is somewhat more explicit on the broad lines that will guide the selection (para.31) and treatment (Para. 32 to 34) of the SSPs.

2.1 Selecting rice as a sensitive product

Surprisingly, the text fails to state the criteria regarding the nature or characteristics of the products that should guide their selection as sensitive. The lack of such criteria could mean that countries will be free to designate the commodities based on their own set of priorities and without further justification. As a result, the ability of governments to resort to the SSP exception will be constrained by the imposition of a ceiling on

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the number rather than by the nature of the commodities that can be included in the sensitive list.

The bulk of trade in rice is conducted in the form of products listed under the 1006 chapter heading of the Harmonized System Code of Commodity Classification, with a few other rice products classified under other chapters:

1006　Rice
100610　Rice in the husk (paddy or rough)
100620　Husked (brown) rice
100630　Semi-milled or wholly milled rice, whether or not polished or glazed: Parboiled:
100640　Broken rice

110230　Rice Flour
110314　Groats and Meal of Rice

230220　Bran, Sharps, Other Residues of Rice

In certain countries, rice also appears as a component of preparations classified under 190190 (preparations of cereals, flour, starch or milk).

Thus, a country wishing to exempt all forms of rice[2] from the agreed tariff cut formula would have to designate not only those listed under the 1006 heading, but also those classified in the 110230, 110314 , 190190 and 230220 tariff lines.

The July package gives an indication on how "a sensitive product" would be selected, by stipulating that a country "may designate an appropriate number, to be negotiated, of *tariff lines* to be treated as sensitive". It does not specify whether the tariff lines would be defined at the six-digit code (the highest level of product specification common to all countries in the HS international commodity classification developed under the auspices of the Customs Cooperation Council), or would correspond to the individual country tariff lines. The second interpretation would arguably place countries in unequal positions, as their tariff structures may contain tariff lines with 10 or more digit codes. For illustration, the number of tariff lines falling under the 1006 heading, for example, varies from just four in the case of Egypt, to 39 in the European Union.[3] For reference, during the Uruguay Round Negotiations, countries that had carried out tariffication were allowed to identify products that would be subject to the Special Safeguard at the six-digit tariff line level. On the other hand, the calculation of tariff equivalents was made at the four-digit level of the HS, or at the six-digit level, if necessary.

2.2 Treatment of rice as a sensitive product

The July package provides some broad guidelines on the treatment of SSPs, stipulating, in particular, that the designation of a commodity as sensitive would not exempt a country from the obligation to improve "substantially" the market access for that particular commodity. Improvement ought to be through a combination of reduced tariffs and expansion of tariff rates quotas.

Indications are given on how the size of the compensatory MFN based tariff quota expansion will be determined, which should take into consideration the market access forfeited from the non-application of tariff cutting formulae. This could be a non-trivial exercise, especially if the product is defined at the six-digit code level or more, as quotas have to be established for all such products. At the same time, paragraph 33

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[2]　This is often a case to prevent products entering under tariff "loopholes"
[3]　Under the current European tariff structure. The 1006 heading in the WTO tariff schedules of the EU were composed of 5 tariff lines only.

also states that "balance will be found only if the final negotiated result also reflects the sensitivity of the product", meaning that market access requirements should eventually be less stringent for SSPs than for normal products. As a result, it is likely that countries would *not* be asked to increase their MFN tariff rate quota so as to fully compensate partners for not applying the general provisions on market access.

The SSP approach resembles the Special Treatment Clause (ST) of Annex 5 of the Uruguay Round Agreement on Agriculture (URAA), which enabled countries to maintain non-tariff barriers on specific products subject to well defined conditions. One requirement was to open and progressively increase minimum import quotas to an equivalent 8 percent and 4 percent, respectively for developed and developing countries, of base-period consumption by the end of the implementation period. The clause was mostly used to exempt rice from the general market access provisions, as five countries opted for "ST Annex 5" in their rice tariff schedules, namely Japan, the Republic of Korea, the Philippines and Taiwan Province of China. Only one, Israel, resorted to the Clause for other products, i.e. whole milk powder, cheese and sheepmeat. Before the end of the implementation, however, Japan and Israel ceased to apply the Clause and tariffied. In doing so, Japan replaced the "minimum access quota" associated with the Special Treatment Clause with an ordinary "tariff rate quota" in April 1999.[4] Japan's decision to forego the ST Clause on rice can be possibly explained by the high level of tariffs on rice that resulted from applying the Uruguay Round Agreement on Agriculture (URAA) "tariffication" procedures and on retention by the Food Agency of its exclusive rights over rice imported through the tariff rate quota. Thus, as of 2004, only the Republic of Korea, the Philippines and Taiwan Province of China[5] still resorted to the ST Clause and only with respect to rice.

As the grace period for keeping the ST under the URAA expired in 2004, both the Republic of Korea and the Philippines have engaged in negotiations to extend its application. In 2004, the Republic of Korea reached an agreement with other WTO countries allowing it to maintain the rice exemption for another 10 years, till 2014. The Agreement commits the Republic of Korea to a progressive increase[6] in the minimum import quota to an equivalent of 7.9 percent of domestic consumption by 2014, or 409 000 tonnes in milled rice equivalent. This would imply an almost doubling of the minimum access volume of 205 228 tonnes in 2004.[7] Likewise, the Philippines has engaged in negotiations to extend its ST on rice beyond 2004. Under the URAA, the country had agreed to a quota of 240 000 tonnes by 2004, subject to an in-quota tariff of 50 percent.[8] As of October 2005, no agreement had yet been achieved that would enable the Philippines to keep rice under the ST exception.

2.3 What would happen to the Special Treatment Clause under the Doha Round Negotiations?

Annex 5 of the URAA allows countries to negotiate an extension of the ST Clause on expiration. According to paragraph 31 of the July Package, the selection of tariff lines to be treated as sensitive should "take account of existing commitments for these

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[4]   Tariffication allowed Japan to reduce the rate of expansion of the rice quota from 0.8 to 0.4 percent per year. As a result, by 2000 Japan's tariff rate quota amounted to 682 000 tonnes , in milled rice equivalent, or 7.2 percent of the base national rice consumption. The public Food Agency maintained monopoly rights on imports conducted within the quota. In-quota rice imports were subject to a 0 *ad-valorem* duty, but the Agency retained the right to add a mark-up of up to yen 292 per kilo (US$250 per tonne) on those imports. Out-of-quota tariffs were bound at a specific rate of up to Yen 375 per kilo (equivalent to some US$ 3 300 per tonne in 2005).

[5]   Taiwan Province of China has proposed to "tariffy" rice non-tariff barriers in 2003, but the move has not formally been endorsed by the other WTO member countries

[6]   The quota is to be raised by 20 347 tonnes per year

[7]   The Republic of Korea also agreed to let a larger share of rice imports to be sold in retail outlets.

[8]   Out-of-quota tariffs were set at 100 percent.

products". Thus, it could be expected that the agreement reached by the Republic of Korea for a ten-year extension would become an integral part of the Doha Round. If the terms of the agreement with the Republic of Korea are rolled into the Sensitive Products exception, they could even serve as the basis for the future treatment of Sensitive Products in the current negotiations. This could imply an expansion of SSP tariff rate quota to close to 8 percent of base consumption over the implementation period, for developing countries.

For the purpose of this analysis, it could be assumed that the number of SSPs allowed will be large enough to let countries wishing to exempt all forms of rice from the market access provisions to do so. Regarding the future treatment that will be given to the SSPs, the expansion of the minimum access quota to an equivalent of 8 percent of consumption that has been elicited from the Republic of Korea for the continuation of the Special Treatment on Rice could provide a plausible scenario. According to paragraphs 39 and 40 of the July Package, Special and Differential Treatment (SDT) will also be an integral part of the SSPs, implying that developing countries would be eligible to designate a larger number of SSPs and to make fewer concessions on their treatment. Taking this into consideration and using the same approach as in the URAA,[9] it could be taken that developed countries would be required to open a tariff quota equivalent to 12 percent of base domestic consumption.

3. RICE AS A SPECIAL PRODUCT

Alongside sensitive products, the July Package introduces the concept of "Special Product" (SPP) as a supplementary element of flexibility offered to developing countries (and only to them) in the implementation of the modalities on market access. Unlike for SSPs, the text provides some indication on the considerations that should guide the selection of products as "Special", but virtually none on the treatment they will receive.

Regarding the criteria, their selection should be based on "food security, livelihood security and rural developments needs", which will be "further specified during the negotiation phase". Although countries would have the possibility to choose an "appropriate" number of SPPs, unlike for sensitive products, it is not stated that this number will be a matter for negotiation. This could mean that a developing country could designate as many SPPs as it wishes as long as they meet the selection criteria. Limits to the use of the SPP exception would therefore spring from the stringency of the criteria that will be imposed on their selection. So far, however, little is known on how the importance of products for food security, livelihood security and rural development will be assessed.

The contribution by a commodity to total calorie intake could be taken as one of the possible indicators of its importance for food security. According to FAO's estimates, about 20 percent of apparent calorie intake, on average, was contributed by rice in 2000-2002. Rice contribution was higher than average in 33 countries and, in 27 of them, rice contributed more than one fourth, or 25 percent, of total calorie intake, with peaks of over 70 percent for Bangladesh, Cambodia and Myanmar (Table 1). The importance of the crop for food security is evidenced by the development status of the countries listed, as 15 of them are classified as least developed (LDC) and 17 as developing countries.[10]

Rice is also an important source of cash for farmers, contributing to rural livelihoods. This role can be assessed by calculating the contribution of rice to total agricultural output value, which was estimated to exceed 10 percent in 29 countries. This indicator

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[9] Concessions required from developing countries were often set to be equivalent to 2/3 of those asked from developed countries.

[10] For the purpose of the analysis, no distinction is made between WTO and non-WTO countries.

TABLE 1
Apparent calorie intake and contribution from rice, 2000-2002 average

Countries where rice exceeds 20 percent of calorie intake	Country Development Status	Grand Total	Rice (Milled Equivalent)	Rice Share
		Cal/capita/day	Cal/capita/day	percent
World		**2795**	**567**	**20.3**
Bangladesh	DC	2189	1577	72.0
Cambodia	DC	2059	1445	70.2
yanmar	DC	2880	2002	69.5
Viet am	Developing	2534	1662	65.6
ao DR	DC	2285	1493	65.3
Indonesia	Developing	2912	1469	50.4
adagascar	DC	2061	985	47.8
ierra eone	DC	1926	816	42.4
Thailand	Developing	2453	1038	42.3
hilippines	Developing	2375	1004	42.3
Guinea-Bissau	DC	2101	874	41.6
epal	DC	2443	940	38.5
ri anka	Developing	2388	900	37.7
Timor- este	DC	2812	965	34.3
Comoros	DC	1748	585	33.5
Guinea	DC	2382	769	32.3
enegal	DC	2280	731	32.1
India	Developing	2420	766	31.7
orea D R	Developing	2137	676	31.6
orea Rep. of	Developing	3059	927	30.3
China	Developing	2956	873	29.5
Guyana	Developing	2709	786	29.0
iberia	DC	1997	569	28.5
alaysia	Developing	2891	800	27.7
olomon Islands	DC	2238	615	27.5
Brunei Darussalam	Developing	2855	749	26.2
uriname	Developing	2628	685	26.1
Côte d Ivoire	Developing	2620	597	22.8
Vanuatu	DC	2572	586	22.8
apan	Developed	2783	628	22.5
China acao R	Developing	2498	563	22.5
auritius	Developing	2955	623	21.1
Cuba	Developing	2998	624	20.8

Source: F

tends to overestimate the role of rice in generating cash income, as a large part of output is for self-consumption. On the other hand, it underestimates the importance of rice in the overall economy, as it ignores activities related to rice milling and marketing and other multiplier effects.

It is also relatively easy to assess the importance of rice as a source of export earnings for individual countries. On average, rice is responsible for only a very low share of agricultural export value - less than two percent - mainly because of the small volume of rice exchanged internationally compared with trade in other agricultural products and relative to rice production itself. For a number of countries, however, rice is a major source of foreign exchange (Table 3).

Many other nutritional or economic indicators can be used to assess the eligibility of commodities for their designation as a special product. The ones presented illustrate the strategic role rice plays in many countries. However, it is noteworthy that a number of those identified are LDCs, which will not be required to make tariff reduction commitments.

But the importance governments attribute to a particular commodity and their readiness to benefit from flexibility on market access can also be gauged from the WTO commitments they made with respect to tariffs in the URAA. In particular, products

T⊠B E 2
Value of agricultural output and contribution from rice, 2000-2002 average[1]

Countries where rice exceeds 10 percent of Agricultural output value	Country Development status	Gross agricultural output value	Gross rice output value	Rice share
		US$ Million	US$ Million	%
World		**1 497 383**	**126 030**	**8.4**
Bangladesh	DC	12 112	7 916	65.4
Cambodia	DC	1 432	848	59.2
yanmar	DC	8 915	4 618	51.8
uriname	Developing	71	36	51.4
ao DR	DC	967	494	51.1
Viet am	Developing	14 936	7 035	47.1
Guyana	Developing	234	99	42.2
Indonesia	Developing	28 871	10 924	37.8
Thailand	Developing	16 432	5 568	33.9
ri anka	Developing	1 934	597	30.9
French Guiana	Developing	17	5	30.3
adagascar	DC	1 936	550	28.4
epal	DC	3 131	889	28.4
hilippines	Developing	11 052	2 742	24.8
India	Developing	145 140	27 251	18.8
ierra eone	DC	273	49	18.0
orea⊠Republic of	Developing	8 517	1 512	17.7
Guinea	DC	976	168	17.2
Timor- este	DC	67	11	16.7
apan	Developed	15 737	2 435	15.5
orea⊠D R	Developing	2 805	421	15.0
iberia	DC	235	31	13.3
Guinea-Bissau	DC	160	20	12.3
China	Developing	324 977	38 344	11.8
ali	DC	1 524	170	11.2
Bhutan	DC	79	9	11.0
Uruguay	Developing	2 083	226	10.8
Dominican Republic	Developing	1 402	144	10.3

[1] Valued at 1999-2001 constant prices.
Source: F⊠

T⊠B E 3
Export earnings and contribution from rice, 2000-2002 average

Countries where rice exceeds 15 percent of agricultural export earnings	Agricultural Products, Total	Rice	Share
	US$ Million	US$ Million	Percent
World	**422 836**	**6 775**	**1.6**
uriname	62	36	58.6
akistan	1 026	505	49.2
etherlands ⊠ntilles	9	3	35.0
Viet am	2 146	672	31.3
Guyana	164	42	25.6
Thailand	7 622	1 616	21.2
yanmar	440	84	19.0
Egypt	638	117	18.4
t Vincent /Grenadines	32	5	17.1
Uruguay	947	158	16.7
India	5 235	858	16.4

Source: F⊠

that have been earmarked for Special Treatment (ST) or the Special Safeguard (SSG) in the tariff schedules could be considered of special concern to a country. Based on the WTO schedules, 29 countries used the ST or the SSG provisions on rice (Table 4). It is remarkable, however, that many of those that did so hardly produce any rice, a possible

T☐B☐E 4

Countries with URAA tariff schedules designating rice as subject to the ST or SSG and/or with rice tariff bound of at least 50 percent

	Ad-valorem Bound rate and SSG/ST status		Ad-valorem Bound rate and SSG/ST status
☐ngola	55☐	☐acedonia	G
☐ntigua and Barbuda	100☐	☐alawi	125☐
Bangladesh	50☐	☐ali	60☐
Barbados	100☐	☐auritania	75☐
Belize	110☐	☐exico	G
Benin	60☐	☐oldova	G
Brazil	55☐	☐orocco	162☐ ☐ G
Brunei	50☐	☐ozambique	100☐
Bulgaria	G	☐amibia	G
Burkina Faso	100☐	☐icaragua	60☐ ☐ G
Burundi	100☐	☐iger	50☐
Cameroon	80☐	☐igeria	150☐
Chad	80☐	☐akistan	100☐
China	65☐☐ G	☐anama	90☐
Colombia	189☐☐ G	☐eru	68☐
Congo	55☐	☐hilippines	T
Costa Rica	G	Romania	120☐ ☐ G
Dominica	150☐	Rwanda	80☐
Ecuador	57☐	☐eychelles	80☐
El ☐alvador	G	☐ierra ☐eone	50☐
European Union	G	☐outh ☐frica	G
Gabon	60☐	☐ri ☐anka	50☐
Georgia	G	☐t. ☐itts and ☐evis	95☐
Ghana	99☐	☐t. ☐ucia	130☐
Grenada	100☐	☐t. Vincent and the Grenadines	130☐
Guatemala	90☐☐ G	☐waziland	G
Guyana	100☐	☐witzerland	G
Haiti	66☐	Taiwan ☐rov. of China	T
Hungary	57☐☐ G	Tanzania	120☐
India	80☐	Thailand	52☐ ☐ G
Indonesia	160☐	Togo	80☐
☐amaica	100☐	Trinidad and Tobago	100☐
☐apan	G	Tunisia	60☐ ☐ G
☐enya	100☐	Uganda	80☐
☐orea, Rep. of	T	United ☐tates	G
☐uwait	100☐	Uruguay	55☐ ☐ G
☐yrgyz Republic	G	Venezuela	122☐ ☐ G
☐esotho	200☐	Zambia	125☐

indication they view rice imports as a possible, indirect, source of market disruption for substitutable locally-grown cereals or starchy crops. However, because only countries that had tariffied their trade barriers could mark tariff lines with SSG, the latter cannot be taken as the sole indicator of the importance of a product for a particular country. It was therefore taken that products assigned levels of bound tariffs above 50 percent could also be tagged as SPPs or SSPs. Based on the ST or SSG indication and/or the high tariff rate criteria, where "high" is defined as exceeding 50 percent, 76 countries resulted as likely contenders for choosing rice as either sensitive or special.

The above discussion brings to the fore another issue of relevance to the SSP and SPP that developing countries will have to confront if they wish to exempt a product from the general provision on market access. Indeed, as it appears unlikely that they would be allowed to label a commodity both as special <u>and</u> sensitive, they may have to choose which of the two designations to give. The choice will depend on the relative treatment each set of products will have to comply with and on the maximum number of SSPs or SPPs countries will be allowed to designate. For the purpose of this paper, SSPs and

SPPs were assumed to face similar treatment, but developed countries were granted smaller concessions than developing countries on the opening of SSPs markets.

4. QUANTIFYING THE IMPACTS OF DESIGNATING RICE AS A SPECIAL/ SENSITIVE PRODUCT IN GLOBAL TRADE LIBERALIZATION

The impact of designating rice as a special or sensitive product under global trade reform is assessed using the Global Simulation Model (GSIM).[11] GSIM provides a modelling strategy for the partial equilibrium analysis of global trade policy changes. GSIM is a static, deterministic, single commodity bilateral trade model driven by export supply and bilateral import demand equations. Imports and exports are assumed to be a function of the world price after taking into account relevant bilateral trade taxes or subsidies. Since tariffs are bilateral and differ from country to country, changes in tariffs lead to changes in relative prices that drive differential changes in imports from various sources. Elasticities of substitution (the so-called Armington elasticities) determine the extent to which changes in relative prices lead to switches in the source of imports. The model solves numerically to find market clearing prices such that global imports equate to global exports. A fuller explanation of the model structure is provided in the annex to this paper.

Because the partial equilibrium approach ignores other products that may be substitutes in consumption or production, losses and gains are potentially overestimated, as transfers of resources to or from other sectors are ignored. However, the approach has the useful advantage of allowing for a relatively rapid and transparent analysis of a wide range of trade policy issues with a minimum of data and computational requirements.

4.1 Modelling rice in the GSIM framework

Data and key assumptions are as follows:
- Geographical Coverage: The model pre-selected 40 countries and regions, listed in Table 5, on the basis of their importance for the international rice economy.
- Trade Data: Bilateral trade flow data are derived from the exports-by-source-and-destination database maintained by FAO and refer to the period average 2002-2004. Values are obtained by multiplying trade quantities by the world prices of indica (Thai 100%B) and japonica (USA No.2 Medium Grain) respectively. Countries with no bilateral exports cannot become exporters. For example, Egypt cannot start exporting to Japan no matter how relative prices change. Nor can exports from an initial exporting country be totally eliminated.
- Elasticities: Rice exports from each country are treated as a distinct product. Consequently, the elasticities are in a bilateral 'Armington' form, which determine the extent to which changes in relative prices lead to a switch in the source of imports. The greater the elasticity, the greater is the switch from one source to the other, implying greater product homogeneity. The bilateral specification allows a distinction between: (i) domestic and imported rice; (ii) imported rice from different sources; and (iii) rice of different varieties. It is customary that the elasticity of imports from one source vis-à-vis another source has twice the value of that between domestic and imported rice (these elasticities are assumed to be 10 and 5, respectively). This reflects the notion that imported rice is seen as quite distinct from domestically produced rice but imports from different sources are much more substitutable. In addition, a relatively low substitutability (a value of 1) between the different varieties of rice, namely indica and japonica is assumed.

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[11] GSIM was developed by Joseph Francois of the Tinbergen Institute and CEPR and H. Keith Hall of the US International Trade Commission. A complete description of the model (version 3.0) employed in this paper can be found in Francois and Hall (2003).

T⬚B E 5
Countries/Regions specified in the model

Bangladesh	yanmar	igeria	Uruguay*
Cambodia	akistan*	enegal	ther at. ⬚mer.& Caribb.
China*	hilippines	outh ⬚frica	United tates*
Taiwan rov. of China	audi ⬚rabia	ther ub- aharan. ⬚frica	ther . ⬚merica
India*	Thailand*	exico	EU⬚25)
Indonesia	Viet am*	Cuba	ther Europe
Iran, Islamic Rep.	ther ⬚sia	⬚rgentina*	⬚ustralia*
apan	Egypt*	Brazil	ther ceania
orea Rep. of	ther . ⬚frica	Colombia	Russian Federation
alaysia	Côte d⬚voire	Guyana*	ther CI

* et exporter

The composite elasticities of demand and supply are taken from Agricultural Trade Policy Simulation Model (ATPSM).

Policies included are as follows:

- Tariffs: Bilateral bound and applied tariff rates are employed in the model with binding 'overhang' captured through differentials in the two rates. Applied tariffs are taken from the GTAP database version 6.5, while bound tariffs are taken from ATPSM, which in turn draws on the WTO IDB database. Tables 6 and 7 show the bound and applied rates used in the model, respectively. Upon comparing both tables, it should be noted at this early stage that substantial binding overhang exists in several key importing countries, which could limit the impacts of reform.

- TRQs: Import quotas are modelled by keeping them fixed. This is done, for example, by setting the elasticity of import demand to zero. If the quota allocation between exporters is not fixed – first come first served or licenses on demand, for example – changes in tariffs may lead to a change in the mix of export shares. The model allows for this if the Armington elasticities are positive. If the quota is allocated historically, this is modelled by setting the relevant Armington elasticities to zero. If the quota is increased but the exporters' shares are maintained, the elasticity of demand is non-zero while the Armington elasticities remain at zero. All importers are assumed to capture the import quota rents and these accrue to government revenue. Furthermore, there is no switching between in-quota and out-quota tariffs.

- Export Subsidies: EU rice export subsidy expenditure amounts to € 36.8 million, equivalent to US$50.86 million. This is divided over the value of EU exports of US$74.47 million to give an export subsidy equivalent of 60 percent. This ignores the reality that subsidies are applied to a WTO maximum volume of subsidized exports of 133 400 tonnes. Likewise, export subsidy expenditure by the United States, of US$2.4 million, is allocated across the country's total exports of US$18 million, giving an average subsidy of 0.26 percent.

- SSP/SPP: The importance placed by a single country on rice and the likelihood that it designates rice as an SSP or SPP was gauged through the following rule: *countries with bound tariffs equal to at least 50 percent and/or countries having already assigned a SSG or ST clause to rice in their current WTO schedules.* Table 8 provides a list of potential rice SSP/SPP designating countries, assumed in the model. Note that Bangladesh and Cambodia would have been candidates to designate rice so, but were not included in the list because of their "Least developed country" status, which will exempt them from undertaking tariff reduction commitments.

4.2 Scenarios

To assess the impact of trade reforms in the context of SSP/SPP, six hypothetical scenarios are analysed, including three derived from the Harbinson proposal, which

TABLE 6
Initial Bilateral Bound Tariffs (%)

Exporting country (down) \ Importing country (right)	Bangladesh	Cambodia	China	Taiwan Prov. of China	India	Indonesia	Iran, Islamic Rep. of	Japan	Korea Rep. of	Malaysia	Myanmar	Pakistan	Philippines	Saudi Arabia	Thailand	Viet Nam	Other Asia	Egypt	Other N. Africa	Côte d'Ivoire	Nigeria	Senegal	South Africa	Other Sub-Saharan. Africa	Mexico	Cuba	Argentina	Brazil	Colombia	Guyana	Uruguay	Other Lat. Amer. & Caribb.	United States	Other N. America	EU(25)	Other Europe	Australia	Other Oceania	Russian Federation	Other CIS
Bangladesh																																								
Cambodia																																								
China				561		160		645	1000	38			50		30	15	25		94	15	60	30		10	15							6	6		42	12			10	19
Taiwan Prov. of China																																								
India	163					160				38		14									60			7								13	3		14	15			10	13
Indonesia																																			54					
Iran, Islamic Rep. of																								13																
Japan	5					160												2															4		91	33				
Korea Rep. of	2					160																					10					8	10		89					20
Malaysia						160		645																																
Myanmar																																								
Pakistan	163		59		78	160				38	10				52		14	20	94	15	60	30		7	36			55					6		38	8			10	15
Philippines																				15	60	30														20				
Saudi Arabia																																								
Thailand	163		59	561	78	160		645	1000	38	10	100	50					20	94	15	60	30			36	40	35	55				22	6		93	15			10	15
Viet Nam	2		59			160		645		38		14							94	15		30		6	20			55					5		21	17				10
Other Asia	2		4																					2	1								5		65	13				
Egypt										38									94	11						40									9	7			10	13
Other N. Africa																						11													54					
Côte d'Ivoire																																								
Nigeria																																								
Senegal																																								
South Africa																																								
Other Sub-Saharan. Africa					60																60				9								10							
Mexico																																36			96					
Cuba																												55				21			25	14				
Argentina																										40		55				24	35		13					
Brazil																										40			189		8									
Colombia																																			13					
Guyana																																								
Uruguay																									36	40	35	55				22	55		54					
Other Lat. Amer. & Caribb.																																			30					
United States	163		59	561	80	160		645									5	20	94	15	60	30		10	36	40	35	55	189	100	55	18			73	4			10	10
Other N. America																		21						8	3							17			78	7				
EU(25)	2		4		14	160		645				9	50				7	3							36	40	35	13	189		10	92	4			44			10	10
Other Europe						160		645					50					63						10											19				10	6
Australia																	19	6						15											66	28		78	10	
Other Oceania																																								
Russian Federation																		25																	91	13				9
Other CIS																		7																						

TABLE 7
Initial Bilateral Applied Tariffs (%)

Importing country (right)
Exporting country (down)

Exporting \ Importing	Bangladesh	Cambodia	China	Taiwan Prov. of China	India	Indonesia	Iran, Islamic Rep. of	Japan	Korea Rep. of	Malaysia	Myanmar	Pakistan	Philippines	Saudi Arabia	Thailand	Viet Nam	Other Asia	Egypt	Other N. Africa	Côte d'Ivoire	Nigeria	Senegal	South Africa	Other Sub-Saharan. Africa	Mexico	Cuba	Argentina	Brazil	Colombia	Guyana	Uruguay	Other Lat. Amer.& Caribb.	United States	Other N. America	EU(25)	Other Europe	Australia	Other Oceania	Russian Federation	Other CIS
Other CIS	0	0	19	0	13	0	0	0	20	0	15	0	15	10	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10	10	10	6	0	0	0	9
Russian Federation	0	0	10	0	10	0	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	10	0
Other Oceania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	0	0
Australia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Europe	0	0	12	0	15	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	33	0	0	0	0
EU(25)	0	0	42	0	0	54	0	0	89	0	0	0	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Other N. America	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	13	0	0	0	0	0	0	0	8	10	0	0	0	0	0	0	0
United States	0	0	0	0	0	0	0	645	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	20	13	10	0	0	0	0	8	0	0	0	0	0	0	0	20
Other Lat. Amer.& Caribb.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	1	13	0	0	0	0	0	8	0	0	0	0	0	0	0	0
Uruguay	0	0	0	0	0	0	0	645	0	0	0	0	0	0	0	0	14	0	94	11	60	11	0	0	0	0	10	0	0	0	0	10	3	0	38	8	0	0	0	15
Guyana	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	4	94	11	0	11	0	7	0	0	0	0	0	0	0	10	0	0	20	20	0	0	0	0
Colombia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	561	0	5	0	0	0	0	0	0	0	0	0	0	0	0	94	11	60	11	0	11	0	13	0	0	0	0	0	22	6	0	93	15	0	0	10	15
Argentina	0	0	0	0	0	5	0	645	0	0	0	0	0	0	0	0	0	0	94	11	0	11	0	6	20	13	0	0	189	0	0	0	6	0	21	17	0	0	0	10
Cuba	0	0	0	561	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	5	0	65	13	0	0	0	0
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	0	0	0	0	0	0	13	0	0	0	0	13	0	4	0	9	7	0	0	0	13
Other Sub-Saharan. Africa	0	0	0	0	0	0	0	645	0	0	0	0	0	0	0	0	0	1	0	11	0	11	0	0	0	0	0	0	0	0	0	54	4	0	54	7	0	0	0	13
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nigeria	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	94	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	13	0	6	0	0	0	0	0	0	0	0	0	0	0	0
Other N. Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13	0	0	8	0	0	0	0	0	0	0	0	0
Egypt	0	0	0	0	0	0	0	645	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	15	0	13	0	24	0	0	22	2	0	0	96	14	0	0	0	0
Other Asia	0	0	0	0	14	0	0	0	0	0	0	0	0	25	30	0	0	63	94	0	0	0	0	10	3	0	0	13	189	0	10	12	4	0	78	44	0	0	10	10
Viet Nam	2	0	15	0	0	5	0	645	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	13	0	0	0	92	0	0	19	20	0	0	0	6
Thailand	2	0	0	561	0	5	0	0	1000	0	0	0	0	0	0	0	0	0	94	11	60	11	0	11	0	13	0	14	0	0	0	24	6	0	93	15	0	0	10	15
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myanmar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	0	0	0	0	0	5	0	645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Korea Rep. of	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	13	0	0	10	0	0	0	0	8	4	0	91	33	0	0	0	20
Japan	0	0	645	0	0	0	0	0	0	0	0	0	0	0	0	645	0	0	0	0	0	0	0	13	0	13	0	0	0	0	0	0	4	0	54	17	0	0	0	10
Iran, Islamic Rep. of	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	5	0	5	0	0	0	5	0	5	0	5	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0
India	5	0	0	0	0	0	0	0	0	0	0	14	50	0	30	0	25	0	0	0	60	0	0	7	0	13	0	14	0	0	0	13	3	0	54	15	0	0	10	13
Taiwan Prov. of China	0	0	0	0	0	0	0	645	1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	6	0	42	12	0	0	0	19
China	0	0	0	561	0	0	0	645	0	0	0	0	0	0	0	561	0	0	94	11	60	11	0	13	15	13	10	0	0	0	0	6	6	0	54	33	0	0	10	19
Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bangladesh	0	0	0	0	5	0	0	0	5	0	2	0	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

T B E 8
Countries assumed to designate rice as sensitive or special product

Brazil	Indonesia	akistan
Taiwan rov. of China	apan	hilippines
China	orea Rep. of	outh frica
Colombia	exico	Thailand
Cuba	igeria	United tates
EU(25⊠	ther sia	Uruguay
Guyana	ther at. mer. & Caribb.	Viet am
India	ther ub- aharan frica	

deals with cuts in tariffs based on tiered approach, with differential treatment for developing countries.[12]

The six different scenarios are:

(i) Free Trade: zero tariffs, zero export subsidies, no LDC or SSP/SPP exemptions

(ii) Free Trade with SSP/SPP subject to partial reform: as under scenario (i) but developed countries that designate rice as SSP are required to reduce tariffs by 50 percent, while developing countries that designate rice as SSP/SPP are required to reduce them by 33 percent (in the spirit of the "two-thirds of developed country commitments' rule negotiated under the URAA). LDCs are exempted from any trade reform

(iii) Free Trade with SSP/SPP excluded from trade reform: as under scenario (i) but LDCs and countries that designate rice as SSP/SPP are exempted from any trade reform.

(iv) Harbinson: Harbinson-type tariff cuts, zero export subsidies, no LDC or SSP/SPP exemptions

(v) Harbinson with SSP/SPP subject to partial reform: as under scenario (iv) but countries that designate rice as SSP/SPP are required to make 50 percent of their Harbinson commitments. LDCs are exempted from any trade reform.

(vi) Harbinson with SSP/SPP excluded from trade reform: as under scenario (iv) but LDCs and countries that designate rice as SSP/SPP are exempted from any trade reform.

Consensus in the current negotiations may converge towards the scenario (v) type of reform, the other scenarios therefore serve to establish the limits of the impacts of trade liberalisation. A shortcoming of the model concerning "concessions on minimum access" is that simulating TRQ expansion (an explicit provision in the July package pertaining to the treatment of SSP/SPP) is not straightforward. To circumvent this shortcoming, an approximation to raising TRQs is assumed to be captured by deepening the tariff rate cuts (namely, 50 percent of the Harbinson commitments).

4.3 Results

A summary of the results at the global level is provided in Table 9 and impacts at the national level are detailed in Tables 10 to 15.

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[12] Developed countries 3 band reduction formula:
- if tariff greater than 90 percent: reduction of 60 percent with a minimum 45 percent
- if tariff greater than 15 percent and less than or equal to 90 percent:: reduction of 50 percent with a minimum 35 percent
- if tariff less or equal to 15 percent: reduction of 40 percent with a minimum 25 percent

Developing countries 4 band reduction formula
- if tariff greater than 120 percent: reduction of 40 percent with a minimum 30 percent
- if tariff greater than 60 percent and less than or equal to 120 percent: reduction of 35 percent with a minimum 25 percent
- if tariff greater than 20 percent and less than or equal to 60 percent: reduction of 30 percent with a minimum 20 percent
- if tariff less than 20 percent: reduction of 25 percent with a minimum 15 percent

T B E 9
Summary of results (scenarios ordered by degree of market opening)

	FREE TRADE	FREE TRADE	FREE TRADE
		concessionary SSP/SPP	no concessionary SSP/SPP
	(i)	(ii)	(iii)
	<-----------------------US$ million (change)--------------->		
roducer urplus	159	33	8
Consumer urplus	3708	1422	25
Tariff Revenue	-3073	-846	-146
ubsidy ayments	50	9	26
Net Welfare Effect	**842**	**618**	**-86**
	<---------------------------% (change)------------------------->		
Import Prices	-10.86	-3.51	-0.82
Export Prices	2.78	0.38	0.15
Output	-0.95	-0.46	0.11
Trade	11.82	3.87	-0.27
	HARBINSON	HARBINSON	HARBINSON
		concessionary SSP/SPP	no concessionary SSP/SPP
	(iv)	(v)	(vi)
	<-----------------------US$ million (change)--------------->		
roducer urplus	37	17	5
Consumer urplus	1524	763	-36
Tariff Revenue	-881	-390	-51
ubsidy ayments	7	16	27
Net Welfare Effect	**687**	**405**	**-56**
	<---------------------------% (change)------------------------->		
Import Prices	-3.05	-1.43	-0.03
Export Prices	0.37	0.23	0.10
Output	-0.48	-0.25	0.08
Trade	3.94	1.80	-0.53

As expected, the largest impacts are observed under the free trade scenario, where trade expands markedly and global consumers on average benefit from a near 11 percent fall in import prices. The increase in trade would be filled mostly by traditional rice exporting countries, but their export prices would rise only marginally. The fall in import prices boosts consumer surplus, more than compensating for the decline in tariff revenue and leading to an accumulated global welfare gain of US$842 million. On the other hand, 20 out of the 40 countries/regions included in the analysis lose in terms of welfare under free trade, mainly reflecting losses in consumer surplus arising from higher prices. Examples of countries facing large losses include India and China, even if they face marginal price increases, as the price effects are magnified by the large consumption in those countries. Consumers in those countries in which initial protection was the highest, e.g. Japan, Taiwan Province of China, the EU(25) and Nigeria are the major beneficiaries of trade liberalization and are responsible for fuelling much of the trade expansion.

Moving along the reform spectrum, the pure Harbinson scenario yields smaller gains. Consumer prices fall more moderately and exporting nations have only marginal benefits to reap. In all scenarios, producers are little affected by reform. Despite minor changes in output, which are mostly negative, producer prices rise slightly, leading to very small gains in producer surpluses.

The impact of SSP/SPP on global trade liberalisation is noteworthy. If the set of countries in Table 8 were indeed to designate rice for differentiated treatment, it is evident that the benefits of trade reform would be severely undermined. Under the free trade or Harbinson scenarios, changes in the global market are insignificant even if these countries were to make concessions to improve market access on SSP/SPP. At the extreme, if such countries were permitted to exclude rice from any trade reform, i.e. no concessions, simulations reveal that net global welfare would actually decline.

T B E 10
Summary of Effects: Free Trade Scenario with no SSP/SPP or LDC Exemptions

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices percent	Change in Overall Export Prices percent	Change in Output percent	Change in Imports percent	Change in Exports percent
	A	*B*	*C*	*D*	*E= A+B+C+D*	*percent*	*percent*	*percent*	*percent*	*percent*
Bangladesh	0	102	-11	0	91	-2⊠	-2⊠	0⊠	19⊠	
Cambodia	0	1	0	0	0	0⊠	0⊠	0⊠	-28⊠	-24⊠
China	1	-208	0	0	-206	1⊠	0⊠	0⊠	-23⊠	32⊠
Taiwan rov. of China	-15	801	-286	0	500	-94⊠	-102⊠	-25⊠	179⊠	-121⊠
India	18	-481	0	0	-463	2⊠	2⊠	1⊠		31⊠
Indonesia	0	100	-9	0	92	-1⊠	-1⊠	0⊠	28⊠	
Iran⊠Islamic Rep. of	0	-19	0	0	-19	3⊠	3⊠	2⊠	-6⊠	
apan	-4	1248	-1016	0	228	-30⊠	-6⊠	-2⊠	39⊠	-24⊠
orea Rep. of	5	508	-570	0	-56	-21⊠	5⊠	-1⊠	35⊠	-76⊠
alaysia	0	-11	0	0	-11	2⊠	2⊠	1⊠	-3⊠	
yanmar	0	-27	0	0	-27	1⊠	1⊠	0⊠		33⊠
akistan	15	-36	0	0	-21	3⊠	1⊠	1⊠		11⊠
hilippines	0	181	-31	0	150	-7⊠	-7⊠	-2⊠	11⊠	
audi rabia	0	-6	0	0	-6	3⊠	0⊠	0⊠	1⊠	
Thailand	65	-120	0	0	-55	3⊠	0⊠	1⊠		8⊠
Viet am	1	-6	0	0	-5	0⊠	-1⊠	0⊠		0⊠
ther sia	0	151	-49	0	102	-4⊠	-5⊠	-1⊠	-13⊠	
Egypt	-8	42	0	0	34	-3⊠	-4⊠	-1⊠		-14⊠
ther . frica	0	61	-53	0	8	-52⊠	-90⊠	-30⊠	9⊠	
Côte d⊠voire	0	43	-39	0	4	-11⊠	-14⊠	-1⊠	9⊠	
igeria	0	747	-521	0	226	-48⊠	-56⊠	-7⊠	78⊠	
enegal	0	20	-23	0	-2	-9⊠	-14⊠	-2⊠	7⊠	
outh frica	0	-6	0	0	-6	3⊠	5⊠	2⊠	2⊠	
ther ub- aharan. frica	0	193	-193	0	-1	-8⊠	-10⊠	-1⊠	8⊠	
exico	0	-15	-1	0	-16	8⊠	11⊠	7⊠	1⊠	
Cuba	0	42	-37	0	5	-13⊠	-18⊠	-3⊠	7⊠	
rgentina	1	-8	0	0	-6	3⊠	-1⊠	1⊠	-19⊠	-19⊠
Brazil	0	-20	-8	0	-28	1⊠	1⊠	0⊠	0⊠	83⊠
Colombia	0	5	-1	0	4	-1⊠	-1⊠	-1⊠	-7⊠	
Guyana	-4	6	0	0	3	-8⊠	-8⊠	-4⊠		-19⊠
Uruguay	13	-8	0	0	4	4⊠	1⊠	1⊠		7⊠
ther at. mer.& Caribb.	-1	169	-76	0	92	-11⊠	-11⊠	-4⊠	44⊠	102⊠
United tates	75	-164	-5	7	-87	7⊠	-1⊠	7⊠	17⊠	46⊠
ther . merica	0	-5	0	0	-5	7⊠	0⊠	0⊠	5⊠	
EU(25⊠	-23	409	-103	43	325	-34⊠	-32⊠	-21⊠	69⊠	-36⊠
ther Europe	0	8	-12	0	-4	-7⊠	-12⊠	1⊠	-1⊠	
ustralia	2	-11	0	0	-9	9⊠	-7⊠	5⊠	9⊠	69⊠
ther ceania	16	-2	0	0	13	3⊠	3⊠	1⊠	1⊠	
Russian Federation	0	9	-4	0	4	-3⊠	-3⊠	-2⊠	2⊠	5⊠
ther CI	0	12	-23	0	-11	-4⊠	-4⊠	1⊠	-10⊠	
Global	**159**	**3708**	**-3073**	**50**	**842.5**	**-10.86%**	**2.78%**	**-0.95%**	**11.82%**	**11.82%**

TABLE 11
Summary of Effects: Free Trade Scenario with SSP/SPP and LDC Exemptions

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices	Change in Overall Export Prices	Change in Output	Change in Imports	Change in Exports
	A	B	C	D	E= A+B+C+D	percent	percent	percent	percent	percent
Bangladesh	0	-1	0	0	-1	0⊠	0⊠	0⊠	0⊠	0⊠
Cambodia	0	-1	0	0	-1	0⊠	0⊠	0⊠	-2⊠	0⊠
China	0	-49	0	0	-49	0⊠	0⊠	0⊠	-2⊠	10⊠
Taiwan rov. of China	0	-4	-2	0	-5	1⊠	1⊠	0⊠	-1⊠	-4⊠
India	0	-4	0	0	-4	0⊠	0⊠	0⊠		0⊠
Indonesia	0	-6	0	0	-7	0⊠	0⊠	0⊠	-2⊠	
Iran⊠Islamic Rep. of	0	-2	0	0	-2	0⊠	0⊠	0⊠	0⊠	
apan	0	-6	0	0	-5	0⊠	0⊠	0⊠	0⊠	1⊠
orea Rep. of	0	-3	2	0	-1	0⊠	0⊠	0⊠	0⊠	1⊠
alaysia	0	-1	0	0	-1	0⊠	0⊠	0⊠		
yanmar	0	-3	0	0	-3	0⊠	0⊠	0⊠		4⊠
akistan	0	-1	0	0	-1	0⊠	0⊠	0⊠	-1⊠	0⊠
hilippines	0	-8	-1	0	-9	0⊠	0⊠	0⊠	0⊠	
audi rabia	0	0	0	0	0	0⊠	0⊠	0⊠		
Thailand	7	-14	0	0	-6	0⊠	0⊠	0⊠	0⊠	1⊠
Viet am	1	-8	0	0	-6	0⊠	0⊠	0⊠		1⊠
ther sia	0	-7	0	0	-6	0⊠	0⊠	0⊠	0⊠	
Egypt	-2	11	0	0	9	-1⊠	-1⊠	0⊠		-4⊠
ther . frica	0	60	-53	0	7	-51⊠	-88⊠	-29⊠	16⊠	
Côte d⊠voire	0	52	-39	0	13	-13⊠	-17⊠	-2⊠	8⊠	
igeria	0	-3	1	0	-3	0⊠	0⊠	0⊠	0⊠	
enegal	0	-1	0	0	-1	0⊠	0⊠	0⊠	0⊠	
outh frica	0	-1	0	0	-1	0⊠	0⊠	0⊠	0⊠	
ther ub- aharan. frica	0	-1	0	0	-2	0⊠	0⊠	0⊠	0⊠	
exico	0	-1	0	0	-1	1⊠	1⊠	0⊠	0⊠	
Cuba	0	-1	0	0	-1	1⊠	1⊠	0⊠	0⊠	
rgentina	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	1⊠
Brazil	0	-2	0	0	-2	0⊠	0⊠	0⊠	0⊠	1⊠
Colombia	0	0	0	0	0	0⊠	0⊠	0⊠	-1⊠	
Guyana	0	0	0	0	0	-1⊠	-1⊠	0⊠		-1⊠
Uruguay	0	0	0	0	0	0⊠	0⊠	0⊠		0⊠
ther at. mer.& Caribb.	0	-4	0	0	-4	0⊠	0⊠	0⊠	-1⊠	-1⊠
United tates	2	-10	0	7	-1	0⊠	0⊠	0⊠	0⊠	-1⊠
ther . merica	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	1⊠
EU(25⊠)	-2	27	-14	19	29	-2⊠	-1⊠	-2⊠	-13⊠	-94⊠
ther Europe	0	4	-12	0	-8	-3⊠	-6⊠	2⊠	-3⊠	
ustralia	0	0	0	0	0	0⊠	0⊠	0⊠	-1⊠	0⊠
ther ceania	1	0	0	0	1	0⊠	0⊠	0⊠	0⊠	0⊠
Russian Federation	0	9	-4	0	4	-4⊠	-4⊠	-2⊠	1⊠	
ther CI	0	4	-23	0	-19	-1⊠	-6⊠	1⊠	-4⊠	
Global	**8**	**25**	**-146**	**26**	**-86.1**	**0.82%**	**-0.15%**	**-0.11%**	**-0.27%**	**-0.27%**

TABLE 12
Summary of Effects: Free Trade Scenario with LDC exempted and concessions on SSP/SPP

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices	Change in Overall Export Prices	Change in Output	Change in Imports	Change in Exports
						percent	percent	percent	percent	percent
	A	B	C	D	E= A+B+C+D	percent	percent	percent	percent	percent
Bangladesh	0	-20	0	0	-20	0%	0%	0%	-3%	-9%
Cambodia	0	2	0	0	2	0%	0%	0%	-9%	15%
China	1	-84	0	0	-83	0%	0%	0%	-6%	178%
Taiwan Prov. of China	-5	226	6	0	227	-29%	-32%	-8%	53%	6%
India	4	-97	0	0	-93	0%	0%	0%	-2%	
Indonesia	0	-10	0	0	-11	0%	0%	0%	-1%	
Iran Islamic Rep. of	0	-4	0	0	-4	1%	1%	0%	18%	-11%
Japan	-2	588	-357	0	229	-15%	-3%	-1%	0%	-8%
Korea Rep. of	0	188	-188	0	-1	-8%	0%	0%	-1%	
Malaysia	0	-2	0	0	-2	0%	0%	0%		
Myanmar	0	-10	0	0	-10	0%	0%	0%		12%
Pakistan	2	-6	0	0	-3	0%	0%	0%	3%	2%
Philippines	0	59	6	0	65	-2%	-2%	-1%	0%	
Saudi Arabia	0	-1	0	0	-1	1%	0%	0%		
Thailand	18	-33	0	0	-15	1%	0%	0%		2%
Viet Nam	-2	11	0	0	9	0%	0%	0%	-1%	-1%
Other Asia	0	67	-6	0	62	-2%	-2%	0%		
Egypt	-5	23	0	0	18	-2%	-2%	-1%		-8%
Other Africa	0	61	-53	0	7	-51%	-89%	-30%	14%	
Côte d'Ivoire	0	50	-39	0	12	-13%	-17%	-1%	9%	
Nigeria	0	232	-156	0	75	-16%	-19%	-2%	25%	
Senegal	0	-2	0	0	-2	1%	1%	1%	0%	
South Africa	0	-2	0	0	-2	1%	1%	0%	0%	
Other Sub-Saharan Africa	0	4	-2	0	3	0%	1%	0%	-1%	
Mexico	0	-6	0	0	-6	3%	5%	3%	0%	
Cuba	0	-2	-4	0	-6	1%	0%	2%	-1%	
Argentina	0	-3	0	0	-2	1%	0%	0%	-6%	-6%
Brazil	0	-18	0	0	-18	1%	1%	0%	-5%	23%
Colombia	0	2	1	0	3	0%	0%	0%	-2%	
Guyana	-1	2	0	0	1	-2%	-3%	-1%		-6%
Uruguay	4	-3	0	0	1	1%	0%	0%		2%
Other Lat. Amer.& Caribb.	0	52	-20	0	31	-3%	-3%	-1%	13%	34%
United States	24	-56	-2	7	-27	2%	-1%	2%	7%	16%
Other N. America	0	-2	0	0	-2	2%	0%	0%	1%	
EU(25)	-12	198	9	2	197	-17%	-16%	-11%	35%	-12%
Other Europe	0	7	-12	0	-6	-5%	-9%	2%	3%	
Australia	1	-4	0	0	-4	4%	-4%	2%	7%	31%
Other Oceania	5	-1	-4	0	5	1%	1%	0%	0%	2%
Russian Federation	0	9	-23	0	5	-4%	-4%	-2%	1%	
Other CIS	0	9		0	-14	-3%	-6%	1%	-4%	
Global	**33**	**1422**	**-846**	**9**	**617.6**	**-3.51%**	**0.38%**	**-0.46%**	**3.87%**	**3.87%**

TABLE 13
Summary of Effects: Harbinson Proposal Scenario with no SSP/SPP or LDC exemptions

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices	Change in Overall Export Prices	Change in Output	Change in Imports	Change in Exports
	A	B	C	D	E= A+B+C+D	percent	percent	percent	percent	percent
Bangladesh	0	-19	0	0	-19	0	0	0	-3	-8
Cambodia	0	1	0	0	1	0	0	0	-8	-8
China	0	-65	0	0	-64	0	0	0	-7	10
Taiwan Prov. of China	-6	277	-4	0	268	-36	-39	-10	65	193
India	3	-91	0	0	-87	0	0	0	-3	6
Indonesia	0	-11	0	0	-11	0	0	0	-3	
Iran Islamic Rep. of	0	-4	0	0	-4	1	1	0	-1	
Japan	-2	715	-464	0	249	-18	-3	-1	22	-10
Korea Rep. of	2	191	-182	0	11	-8	2	0	13	-28
Malaysia	0	-2	0	0	-2	0	0	0	-1	
Myanmar	0	-9	0	0	-9	0	0	0		10
Pakistan	1	-3	0	0	-2	0	0	0	3	1
Philippines	0	48	5	0	53	-2	-2	-1	3	
Saudi Arabia	0	-1	0	0	-1	1	0	0	0	
Thailand	18	-33	0	0	-15	1	0	0		2
Viet Nam	-2	9	0	0	8	0	0	0	-2	-1
Other Asia	0	58	-4	0	54	-2	-2	0		
Egypt	-3	14	0	0	11	-1	-1	0	2	-5
Other Africa	0	21	-18	0	3	-19	-33	-8	2	
Côte d'Ivoire	0	-3	-3	0	-6	1	1	1	0	
Nigeria	0	245	-165	0	80	-17	-20	-2	26	
Senegal	0	-2	0	0	-2	1	1	1	0	
South Africa	0	-2	0	0	-2	1	1	0	0	
Other Sub-Saharan Africa	0	6	-2	0	4	0	0	0	-1	
Mexico	0	-7	0	0	-7	4	5	3	0	
Cuba	0	-2	-4	0	-6	1	1	2	-1	
Argentina	1	-3	0	0	-2	1	0	1	-7	-7
Brazil	0	-20	0	0	-20	1	1	0	-5	25
Colombia	0	2	1	0	3	0	0	0	-2	
Guyana	-1	1	0	0	1	-2	-2	-1		-4
Uruguay	5	-3	0	0	2	2	0	0		3
Other Lat. Amer.& Caribb.	0	53	-21	0	31	-3	-3	-1	14	37
United States	28	-64	-1	7	-31	3	-1	3	7	17
Other N. America	0	-2	0	0	-2	3	0	0	2	
EU(25)	-14	233	-2	0	216	-20	-18	-12	46	8
Other Europe	0	0	-5	0	-4	0	-1	2	2	
Australia	1	-5	0	0	-4	4	-5	3	9	38
Other Oceania	6	-1	0	0	5	1	1	1	0	2
Russian Federation	0	3	-1	0	2	-1	-1	-1	1	
Other CIS	0	-3	-11	0	-14	1	-1	1	-8	
Global	**37**	**1524**	**-881**	**7**	**687.1**	**-3.05%**	**0.37%**	**-0.48%**	**3.94%**	**3.94%**

T B E 14

Summary of Effects: Harbinson Proposal Scenario with SSP/SPP and LDC Exemptions

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices	Change in Overall Export Prices	Change in Output	Change in Imports	Change in Exports
	A	B	C	D	E= A+B+C+D	percent	percent	percent	percent	percent
Bangladesh	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	0⊠
Cambodia	0	-1	0	0	-1	0⊠	0⊠	0⊠	-1⊠	0⊠
China	0	-18	0	0	-18	0⊠	0⊠	0⊠	-1⊠	3⊠
Taiwan rov. of China	0	-3	-2	0	-4	0⊠	0⊠	0⊠	-1⊠	-3⊠
India	0	-1	0	0	-1	0⊠	0⊠	0⊠		0⊠
Indonesia	0	-4	0	0	-4	0⊠	0⊠	0⊠	-1⊠	
Iran Islamic Rep. of	0	-1	0	0	-1	0⊠	0⊠	0⊠	0⊠	
apan	0	-4	0	0	-5	0⊠	0⊠	0⊠	0⊠	1⊠
orea Rep. of	0	-2	1	0	-1	0⊠	0⊠	0⊠	0⊠	1⊠
alaysia	0	-1	0	0	-1	0⊠	0⊠	0⊠		
yanmar	0	-1	0	0	-1	0⊠	0⊠	0⊠		1⊠
akistan	0	0	0	0	0	0⊠	0⊠	0⊠		0⊠
hilippines	0	-6	-1	0	-6	0⊠	0⊠	0⊠	0⊠	
audi rabia	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
Thailand	4	-8	0	0	-4	0⊠	0⊠	0⊠		1⊠
Viet am	1	-5	0	0	-4	0⊠	0⊠	0⊠		0⊠
ther sia	0	-4	0	0	-4	0⊠	0⊠	0⊠	0⊠	
Egypt	-1	4	0	0	3	0⊠	-1⊠	0⊠		-1⊠
ther . frica	0	20	-17	0	3	-18⊠	-32⊠	-7⊠	5⊠	
Côte d Ivoire	0	0	-3	0	-4	0⊠	0⊠	0⊠	0⊠	
igeria	0	-2	0	0	-1	0⊠	0⊠	0⊠	0⊠	
enegal	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
outh frica	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
ther ub- aharan. frica	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
exico	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
ther . merica	0	0	0	0	-1	0⊠	0⊠	0⊠	0⊠	
Cuba	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
rgentina	0	-1	0	0	-1	0⊠	0⊠	0⊠	0⊠	0⊠
Brazil	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	1⊠
Colombia	0	0	0	0	0	0⊠	0⊠	0⊠	-1⊠	
Guyana	0	0	0	0	0	0⊠	0⊠	0⊠		1⊠
Uruguay	0	0	0	0	0	0⊠	0⊠	0⊠		0⊠
ther at. mer.& Caribb.	0	-3	0	0	-4	0⊠	0⊠	0⊠	-1⊠	0⊠
United tates	1	-8	0	7	0	0⊠	0⊠	0⊠	0⊠	1⊠
ther . merica	0	0	0	0	0	0⊠	0⊠	0⊠	0⊠	
EU(25⊠)	-2	26	-13	20	30	-2⊠	-1⊠	-2⊠	-12⊠	-89⊠
ther Europe	0	-3	-4	0	-7	2⊠	4⊠	3⊠	-3⊠	1⊠
ustralia	0	0	0	0	0	0⊠	0⊠	0⊠	-1⊠	0⊠
ther ceania	1	0	0	0	1	0⊠	0⊠	0⊠	0⊠	0⊠
Russian Federation	0	3	-1	0	2	-1⊠	-2⊠	-1⊠	1⊠	1⊠
ther CI	0	-9	-11	0	-20	3⊠	-2⊠	1⊠	-6⊠	
Global	**5**	**-36**	**-51**	**27**	**-55.5**	**-0.03%**	**0.10%**	**0.08%**	**-0.53%**	**-0.53%**

TABLE 15
Summary of Effects: Harbinson Proposal Scenario with LDC exempted and concessions on SSP/SPP

	WELFARE ($US million)					OTHER				
	Producer surplus	Consumer surplus	Tariff revenue	Change in subsidy payments	Net welfare effect	Change in Overall Consumer Prices	Change in Overall Export Prices	Change in Output	Change in Imports	Change in Exports
	A	*B*	*C*	*D*	*E= A+B+C+D*	*percent*	*percent*	*percent*	*percent*	*percent*
Bangladesh	0	-9	0	0	-9	0	0	0	-1	
Cambodia	0	1	0	0	1	0	0	0	-5	-5
China	0	-38	0	0	-38	0	0	0	-4	6
Taiwan rov. of China	-3	131	14	0	142	-17	-19	-5	31	130
India	2	-44	0	0	-42	0	0	0		3
Indonesia	0	-6	0	0	-7	0	0	0	-2	
Iran Islamic Rep. of	0	-2	0	0	-2	0	0	0	-1	
apan	-1	344	-181	0	162	-9	-2	0	10	-5
orea Rep. of	0	111	-113	0	-1	-5	0	0	0	-4
alaysia	0	-1	0	0	-1	0	0	0	0	
yanmar	0	-4	0	0	-4	0	0	0		5
akistan	0	-1	0	0	0	0	0	0		0
hilippines	0	22	4	0	25	-1	-1	0	1	
audi rabia	0	-1	0	0	-1	0	0	0	0	
Thailand	10	-19	0	0	-9	0	0	0		1
Viet am	-1	4	0	0	3	0	0	0		0
ther sia	0	33	-1	0	32	-1	-1	0	0	0
Egypt	-2	10	0	0	8	-1	-1	0	0	-3
ther . frica	0	21	-17	0	3	-18	-33	-7	4	
Côte d'voire	0	-2	-3	0	-5	0	0	0	0	
igeria	0	119	-80	0	40	-8	-10	-1	13	
enegal	0	-1	0	0	-1	0	1	0	0	
outh frica	0	-1	0	0	-1	0	1	0	0	
ther ub- aharan. frica	0	4	-1	0	3	0	3	2	0	
exico	0	-4	0	0	-4	2	3	2	0	
Cuba	0	-1	-2	0	-3	0	0	1	0	
rgentina	0	-2	0	0	-1	1	0	0	-3	-3
Brazil	0	-10	0	0	-10	0	0	0	-3	13
Colombia	0	1	1	0	2	0	0	0	-2	
Guyana	0	1	0	0	0	-1	-1	0		-2
Uruguay	2	-2	0	0	1	0	0	0		1
ther at. mer.& Caribb.	0	25	-10	0	15	-2	-2	-1	6	18
United tates	14	-35	0	7	-14	1	0	1	4	9
ther . merica	0	-1	0	0	-1	1	0	0	1	
EU(25)	-8	127	16	8	144	-11	-9	-7	17	-36
ther Europe	0	-1	-4	0	-5	1	2	2	1	
ustralia	1	-3	0	0	-2	2	-2	1	4	18
ther ceania	3	0	0	0	3	1	1	0	0	1
Russian Federation	0	3	-1	0	2	-1	-1	-1	1	
ther CI	0	-6	-11	0	-17	2	-2	1	-6	
Global	**17**	**763**	**-390**	**16**	**404.8**	**-1.43%**	**0.23%**	**-0.25%**	**1.80%**	**1.80%**

5. CONCLUSIONS

Rice has been a major source of contention in the past round of multilateral trade negotiations, as several countries objected to the opening of their rice market because of its possible negative consequences on food security, livelihood of farmers and the environment. A way out of the ensuing stalemate was found with the incorporation into the final URAA of the Special Treatment Clause, often referred as the "Rice Clause", which allowed countries to maintain non-tariff barriers on products subject to well defined conditions.

Since 1994, many countries have reformed their rice policy regimes. Nonetheless, rice is still considered by many as a strategic product that cannot be treated as other agricultural commodities, reviving the notion that some form of "Special Treatment" for rice is needed also in the current Round of MTN if more ambitious market opening objectives are to be achieved for agriculture in general.

The draft "July package" responded by introducing the Sensitive Product (SSP) and Special Product (SPP) concepts, but gave little indication on their number, conditions for selection and treatment. Nonetheless, assuming that the two product exceptions will be retained in the final agreement on agriculture, they are expected to be used extensively for rice. However, much will depend on the degree of the dispensation and on the compensatory provisions that will have to be fulfilled when designating SPPs or SSPs.

Ultimately, only few countries may eventually resort to the two product exceptions, because many of the most important rice players are classified as least developed countries and therefore, exempted from tariff cut obligations. Moreover, several developed and developing countries for which rice is important already apply tariff rates well below the WTO MFN bound levels, a signal that they may not fiercely oppose cuts to their bound rates. Indeed, because of large differentials between bound and applied tariffs (the so-called "binding overhang") in major importing countries, little effect would be observed under trade liberalization unless the reduction in bound rates is deep enough to eliminate the gap between bound and applied tariff rates.

On the other hand, even minor players in the rice economy may be tempted to designate rice as SSP or SPP, along with wheat, maize and other grains, to limit concessions on market access for the whole cereal sector. This was the case in the URAA, where rice was made eligible for the SSG even by countries where it did not appear to be a strategic crop. As far as SSPs and SPPs are concerned, the risk of abuse of the two exceptions is expected to be reduced through the imposition of limits to their number or through the stringency of the criteria that the products will have to meet.

As for the analysis of trade liberalization in rice, involving SSPs and SPPs, gross assumptions had to be made in the absence of precise information regarding the modalities that will govern the selection and treatment (extent of the cuts and duration of the implementation) of SSPs and SPPs in the market access pillar. Both were handled in a similar fashion for modelling purposes, but a more demanding treatment by developed than by developing countries was assumed. The model ignores reforms falling under the domestic support pillar.

The impacts of the various trade reform scenarios vary directly according to the degree of market opening. Under free trade, with no LDC, SSP or SPP exceptions, trade expands substantially, driven by a marked fall in duty-paid import prices. Welfare gains mainly accrue to consumers and compensate for losses of government revenue, while gains to producers are relatively modest. The designation of rice as special or sensitive by key countries diminishes the size of those effects, with virtually all impacts vanishing when no market opening at all is required for such products. A similar pattern holds true under the Harbinson scenarios, although the effects are much weaker, as could be expected, than under free trade.

Beyond the indications of the model, which are subject to many qualifications, there are other important considerations that should guide the selection of products as sensitive or special, including individual countries' overall development and income distribution objectives. For instance, the likelihood that consumers rather than producers will be the major beneficiaries of reform could run counter to the attempts of many developing countries to enhance rural livelihoods and to reduce the gap between urban and rural incomes. The loss in tariff revenue arising from trade liberalization could also become a major constraint in several developing countries, further jeopardizing the pursuit of their development goals.

REFERENCES

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ANNEX

MODEL STRUCTURE

A basic assumption is product heterogeneity, which is consistent with the Armington (1969) approach to product differentiation at the national level. Because policies are often imposed bilaterally, and possibly differ from country to country, changes in policies lead to changes in relative prices that drive differential changes in imports from various sources. As developed in the GSIM framework, this means that imports are imperfect substitutes for each other.

To begin, the demand for imports, M, of commodity i in country v from country r is a function of the internal price of the commodity from country r within country v, $P_{(i,v),r}$; the external price of the commodity from other sources, $P_{(i,v)s,r}$; and the aggregate expenditure on imports of commodity i in country v, $y_{i,v}$:

$$(1) \qquad M_{(i,v),v} = f\left(P_{(i,v),v}, P_{(i,v)s,v}, y_{i,v}\right)$$

Differentiating (1) and making use of relationships from demand theory, the cross-price elasticity of demand $\eta_{(i,v),(r,s)}$ can be derived:

$$(2) \qquad \eta_{(i,v),(r,s)} = \theta_{(i,v),s}\left(\varepsilon_m + \varepsilon_s\right)$$

and also the own-price elasticity of demand, $\eta_{(i,v),(r,r)}$:

$$(3) \qquad \eta_{(i,v),(r,r)} = \theta_{(i,v),r}\varepsilon_m - \sum_{s,r}\theta_{(i,v),s}\varepsilon_s = \theta_{(i,v),r}\varepsilon_m - \left(0 - \theta_{(i,v),r}\right)\varepsilon$$

where $\theta_{(i,v),r}$ and $\theta_{(i,v),s}$ are expenditure shares on imports, ε_m is the composite elasticity of demand and ε_s is the elasticity of substitution within other sources.

Price linkage equations relate the internal price $P_{(i,v),r}$ to world price $P^{*}_{i,r}$, by way of an import tariff, $t^{m}_{(i,v),r}$, and any export subsidy, $s^{x}_{i,r}$:

$$(4) \qquad P_{(i,v),r} = \left(+ t^{m}_{(i,v),r} - x^{x}_{i,r}\right)P^{*}_{i1}$$

Export supply $X_{i,r}$ is defined as a function of the world price and any production subsidy $s^{q}_{i,r}$:

$$(5) \qquad X_{i,r} = f\left(P^{*}_{i,r}, s^{q}_{i,r}\right) \qquad .$$

By differentiating (1), (4) and (5), it is possible to obtain expressions for the response by imports, exports and internal prices to changes in tariffs and world prices:

$$(6) \qquad \begin{aligned} M'_{(i\ )} &= \eta_{(i\ )(\ )}P'_{(i\ )} + \sum\eta_{(i\ )(\ )}P'_{(i\ )} \\ X'_{i} &= \varepsilon_{(i\ )}\left(P''_{i} + {}'_{i}\right) \\ P'_{(i\ )} &= \left(+ P''_{i}\right)\cdot\left(\left(T_{(i\ )}\right)\ \left(T_{(i\ )}\right)\right)\left(\left(S_{(i\ )}\right)\ \left(S_{(i\ )}\right)\right)- \end{aligned}$$

where $T_{(i,v),r} = \left(\hat{ } + x^{S}_{(i,v),T} \right)$ and $\left(S_{(i,v),r} \right)_j = \left(\hat{ } + x_{(i,v),r} \right)_j$, $j = 0,1$ is time period.

Global market clearing assumes:

$$M'_{i\,r} = X'_{i\,r} \Rightarrow$$

$$\varepsilon_{(i\,r)}\left(P'^{/}_{i\,r} + s'^{q}_{i\,r} \right) = \sum M'_{(i\ )} = \sum \eta_{(i\ )(\ )} P'_{(i\ )} + \sum\sum_s \eta_{(i\ )(\ )} P'_{(i\ )}$$

$$= \sum \eta_{(i\ )(\ )}\left(+ P'^{/} \right) \cdot \left((T_{(i\ )}\ ) / (T_{(i\ )}^{\ \ }\ ) \right) \cdot \left((S_{(i\ )}\ ) / (S_{(i\ )}\ ) \right) -$$

(7) $$+ \sum\sum_s \eta_{(i\ )(\ )}\left(+ P'^{/} \right) \cdot \left((T_{(i\ )}\ ) / (T_{(i\ )}\ ) \right) \cdot \left((S_{(i\ )}\ ) / (S_{(i\ )}\ ) \right) -$$

The reduced-form system in (7), which only includes as many equations as there are exporters, is then numerically solved for the set of world (exporter) prices. On obtaining a global set of equilibrium prices, national results can be back-solved for along with the calculation of welfare measures.

Sensitive and Special Products: the case of dairy products

Merritt Cluff and David Vanzetti[1]

This paper addresses the question "What do the categories of Special Products and Sensitive Products mean for the prospects of liberalization of dairy trade?" It proceeds by examining characteristics of market access in the global dairy sector, and by looking at aspects and implications of the appropriate clauses of the WTO July 2004 Framework Agreement dealing with Special Products and Sensitive Products. Using the FAO-UNCTAD Agricultural Trade Policy Simulation Model, the paper assesses the possible impact of these clauses on the prospects for market access liberalization in the dairy sector, using relevant aspects of the EU's 28 October 2005 proposal as an example. It concludes that, as expected, Special Product exemption has limited impact on market outcomes, while that of Sensitive Product treatment could have significant implications. The critical issue, in this case, is the mapping of tariff deviation from the general tariff formula to proposed scheduled tariff rate quota increases. The empirical analysis should be considered illustrative of impacts, not definitive, as more research is necessary to examine individual country cases in more detail.

1. INTRODUCTION

As identified in the recent OECD-FAO *Agricultural Outlook: 2005 to 2014*, the dairy sector is among the fastest growing agricultural sub-sectors.[2] Still, dairy product trade remains highly constrained, and without increases in market access, it will remain a low proportion of global output.

The dairy sector has proven to be a difficult sector to reform.[3] In the Uruguay Round, the tariffication exercise resulted in dairy products having among the highest tariffs in the agricultural sector, with a large number of tariff rate quotas. While some expansion in minimum access did occur with TRQs, additional growth in world markets has largely been accomplished by increased imports by developing and transitional countries. In general, significantly increased market access for dairy products in developed and certain developing countries awaits more significant negotiation at the multilateral level. Even some regional trade agreements have excluded dairy products.[4]

In this context, there has been little movement in policy-related dairy support in many countries. An exception is the reform of dairy policy in the EU, in which intervention prices are being lowered and support re-oriented to a single farm payment approach. However, in important developed countries, high (often "mega") tariffs remain that are prohibitive to trade. Bound tariffs also may be much greater than necessary to shield domestic policy instruments, and even considerable cuts in these

[2] See OECD-FAO World Agricultural Outlook: 2005-2014
[3] See FAO Brief 11, "Dairy and Dairy Products: Why is reform so difficult?"
[4] For example, the NAFTA (1994) deferred dairy tariffs to the WTO level for negotiation.

tariffs may not affect market access. In such a situation, only very deep tariff cuts have the potential to bite into domestic policy instruments, and thereby increase market access. This could be true for both developed countries where considerable water exists in tariffs, and in developing countries where applied tariffs are far below bound commitments.[5]

In this context, the July 2004 Framework Agreement (JFA), which included clauses defining Special Products and Sensitive Products, may affect both the potential for and the nature of future dairy reform. The Special Products (SSP) clause may enable developing countries to exempt dairy products from tariff reduction, where the dairy sector may be considered of fundamental importance to "food security, livelihood security and rural development needs". The Sensitive Product (SPP) clause would enable all countries to deviate from formula tariff reductions for a limited (negotiated) number of tariff lines. The clause achieves "substantial improvement" in market access through tariff rate quota expansion that takes "into account deviations from the tariff formula". For example, for those countries that may choose dairy product tariff lines as sensitive, a key question is how might the opening of, or increase in, tariff rate quotas be negotiated, and what would be the potential impact on markets compared to a tariff reduction required by the tariff formula.

This paper explores the liberalization of the dairy product sector from the perspective of how the concepts of Special Products and Sensitive Products may affect dairy markets. It does so first by exploring various aspects of dairy market access by country. It then looks at issues from a Special Products perspective and then for those relevant to Sensitive Products. Finally, several simulations are performed with the FAO-UNCTAD Agricultural Trade Policy Simulation Model (ATPSM), in order to gauge the range of potential impact. The market access aspects of the EU proposal to WTO of 28 October 2005, are used as an example of how implementation of both Special Products and Sensitive Products could affect market outcomes.[6] This proposal is used as it contains both a significant tiered tariff reduction formula, with caps, and moreover, the first full treatment of how to adjust TRQs, given tariff deviations from tariff formula commitments. Results of this analysis are tentative, and are meant to be illustrative rather than definitive. Finally some conclusions are provided that identify key issues for dairy products, and also areas for further research.

2. MARKET ACCESS PROFILES IN DAIRY MARKETS

The purpose of this section is to identify some critical aspects of existing market access profiles for the dairy sector. These aspects include, the relative importance of dairy tariff lines and tariff rate quotas, particularly in developed countries, the high incidence of tariff overhang in many developing countries, and finally the presence of "tariff water" in developed country over-quota tariffs.

Dairy products are included in chapter 4 of the Harmonized System. At a four digit level, the key components are milk and cream, not concentrated nor sweetened (0401); milk and cream concentrated, or sweetened (0402); fermented or acidified milk and cream products (0403); whey products (0404); butter and other fats and oils derived from milk (0405); and, cheese and curd (0406). At the six digit level, there are 20 lines covering dairy. By country, the number of disaggregated tariff lines varies considerably. For example, in the EU, 175 tariff lines cover dairy; this is 8 percent of their total for agriculture. For the United States the corresponding number is 244 tariff lines or 14

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[5]   This paper will make regular reference to terms "tariff water", and "tariff overhang". Tariff water is
      defined as the difference between the applied tariff rate, and the tariff equivalence of market price
      support. Tariff overhang is defined as the difference between WTO scheduled bound tariffs and current
      applied tariffs.
[6]   "Making Hong Kong a Success: Europe's Contribution", Brussels, 28 October, 2005.

FIGURE 1
Tariff profile for butter: average over-quota tariffs, selected countries

ource   T   database.
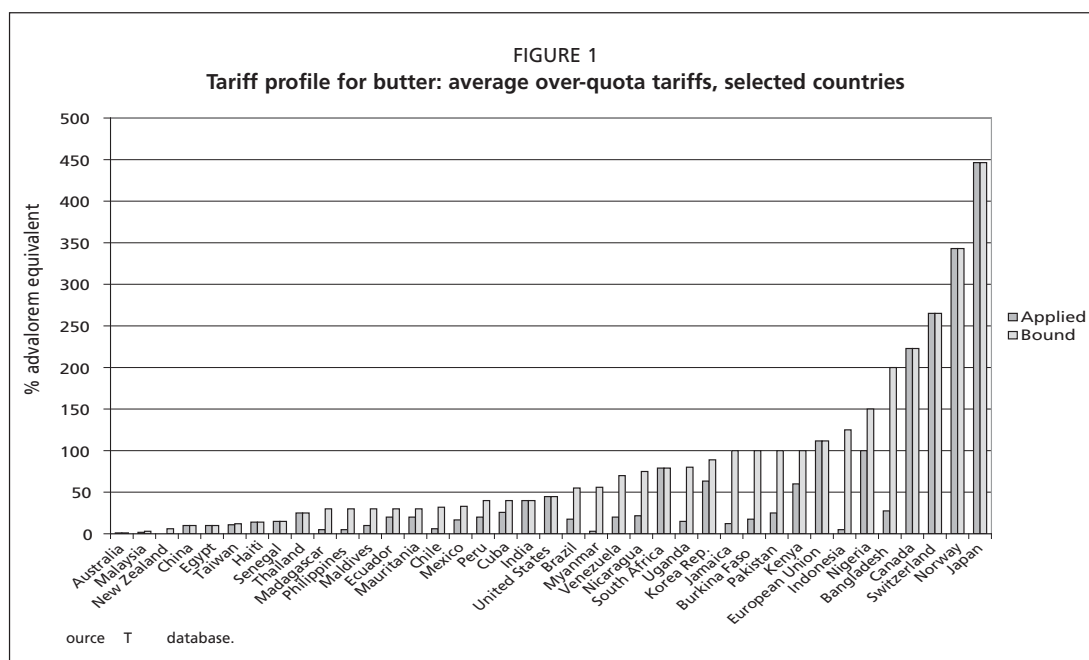
T B E 1
Dairy tariff statistics: over-quota and single tariffs

	Bound					Applied					Difference
	Mean	**Min**	**Max**	**Stdev**	**C.V.**	**Mean**	**Min**	**Max**	**Stdev**	**C.V**	**Mean**
Butter	57	0	573	78	138%	28	0	447	56	204%	29
Cheese	50	0	494	63	128%	23	0	265	38	162	26
Concentrated products	54	0	496	71	132%	24	0	303	46	188	29

Source: T   database

percent of their total. On the other hand, tariff detail for many developing countries is more aggregated into fewer lines.

Tariff rate quotas for dairy products are about 13 percent (184) of the total number notified. These include 18 in the United States schedule, 12 in the EU, 12 in Japan, and 11 in Canada. Eighteen developing countries also have dairy product TRQs, including India, some countries in East Asia and in Latin America. While average fill rates of dairy product TRQs have been in the range of 65 percent, many TRQs of developed countries are 100 percent filled; very often some important TRQs are overfilled, such as butter in the EU or Canada, or cheese in the United States and Canada. In these cases, however, it is likely that product is imported at the lower in-quota tariff rate.

A typical view of both bound and applied over-quota tariffs is illustrated in Figure 1 which shows butter for selected countries; other dairy products show similar patterns.[7] The ATPSM database includes calculated average tariffs (averaged to four digit level) for 161 countries. Over 25 percent of countries have zero or near zero tariffs for dairy products. These countries are primarily located in East Asia, North Africa and the Middle East. As seen from the figure and from Table 1, for butter and for concentrated milk products tariff overhang is very significant in developing countries, particularly those which have initially notified large bound tariffs. For cheese, this tendency may be rather less, but developing countries account for a small proportion of cheese imports.

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[7] The tariff data used are from the Agricultural Trade Policy Simulation Model database, and refer to the average out-of -quota , or average single MFN tariff for each country as appropriate where there is no quota, for these aggregated products. Single tariff line data can be expected to show higher variation.

FIGURE 3
Tariff water for butter, selected countries

ource: Calculations from   ECD-F   gricultural   utlook: 2005-2014
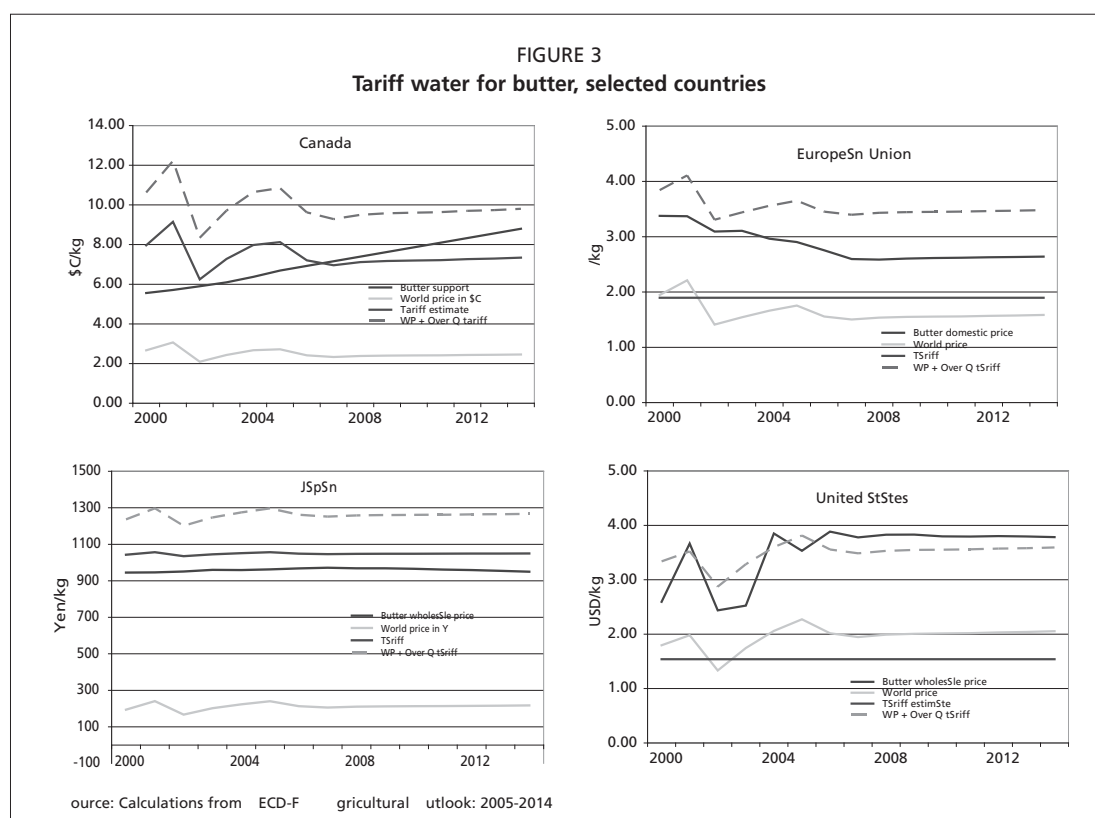
The mean bound tariffs across dairy products are quite similar – between 50 and 67 percent – as are the mean applied tariffs at between 26 and 29 percent. Importantly, the bound and applied tariffs are highly correlated across dairy products, indicating the importance of maintaining a similar tariff/support structure among products which may be complementary or substitutable in product processing. The data show that the correlation of country bound tariffs among the products range between 82 percent and 88 percent, while those for applied tariffs are somewhat less at 65 percent (butter-cheese) to 84 percent (butter-concentrated milk products).

Tariff water
While tariff overhang in developed countries is less prevalent than in the developing countries, many developed countries, and particularly those with complex support programs, have bound and applied tariffs which exceed the tariff equivalence of their market support regimes. Figure 3 provides a graphical view of tariff water in four major dairy producing countries where market price support is also high. The figures provide a forward looking perspective on tariff water assuming a continuing policy environment in which only announced policy changes are included. Figure 3 illustrates for Canada that while considerable tariff water has existed in the past, trend increases in its dairy support prices would continue to erode it. As calculated, estimated tariff water averaged about 45 percent in 2003-2004, but this may reduce over the next ten years if projections are realized.[8] In an opposite situation, tariff water for the EU will increase under its recent CAP reform, in which dairy product intervention prices have

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[8]   Data and projections are drawn from the *OECD-FAO Agricultural Outlook: 2005-2014*. Calculations presented for tariff water are approximate, and are based on a common world market reference price, and internal wholesale product prices in each country. Tariffs used are from the AMAD database, found at www.AMAD.org.

been reduced. Japan's situation is expected to remain stable, while in the United States, little tariff water exists for butter, and internal prices have recently followed its world price plus tariff counterpart.

The issue of tariff water is an important one for highly supported countries, as is the issue of tariff overhang for developing countries. Both provide some indicator of room for reduction in bound rates that would not necessarily affect applied rates or possibly existing policy. The size of tariff "room" may also affect whether and how countries use either the Special or Sensitive product clauses.

3. THE JULY FRAMEWORK AGREEMENT: SPECIAL PRODUCTS AND SENSITIVE PRODUCTS

While it is true that the JFA contained the first text containing clauses recognizing Special Products and Sensitive Products, the basic concepts are not new, and have been in one way or the other included in most trade negotiations as a means of making deeper progress in liberalization in other areas.[9] Most countries have either particular concerns and/or they have sub-sectors that may render deep reform with general tariff reduction formulae difficult to negotiate. Worldwide, the dairy sector has often stood out being of critical interest in many countries, for reasons that have not always been fully understood.[10] This section attempts to examine issues raised in the JFA that illustrate how they might affect market access commitments in the dairy sector.

Special Products

The JFA text proposes that as part of Special and Differential Treatment, developing countries have the option of exempting products which are strategic to "food security, livelihood security, or rural development". Figures 4 and 5 illustrate two characteristics which may indicate such significance for countries where these appear most important. Figures for developed countries are also provided for comparison purposes.

The data in Figure 4 illustrate that the primary dairy sector is indeed significant for a number of developing countries. For example, dairy is a strong contributor to the rural economies of countries in South Asia (Pakistan, India, Nepal) as well as some countries in Latin America (Columbia, Ecuador, Nicaragua, Uruguay) and in Africa (Kenya, Botswana, Sudan). It should be noted that these estimates of value of production do not include revenues/income from sales of animals for trade or for slaughter, nor do they include production from further value added activities. Furthermore, it should be noted that the dairy sector in many developing countries is one of the fastest growing sectors, and many may want to provide "infant industry" protection to enable these sectors to mature. At the same time, there are also many developing countries for which dairy will remain less important. From a consumption perspective (Figure 5), currently very few developing countries depend on milk product calories to any significant degree for their daily energy requirements. However, sector income (milk revenues and draw down of livestock capital savings) from the dairy/livestock sector are often viewed as critical for household food security. In sum, a determination of which countries may declare dairy products as Special Products is difficult. However, for very many developing countries, dairy is neither large on the production or consumption sides, and whether or not they would declare their sectors as special to exempt them from market access commitments would not be likely to have a significant impact on global market outcomes.

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[9] For example, tariff rate quotas themselves illustrate special treatment. Most regional agreements also contain products or sectors that are exempt from action, or are treated differentially from other products.

[10] Reference has often referred to dairy as among the "white" commodities, such as rice, cotton, and (white) sugar for which globally higher protection/support has been observed than for other commodities.

FIGURE 4
Countries where dairy share of agricultural production exceeds 10 percent

FIGURE 5
Countries where dairy products share of calories exceeds 10 percent
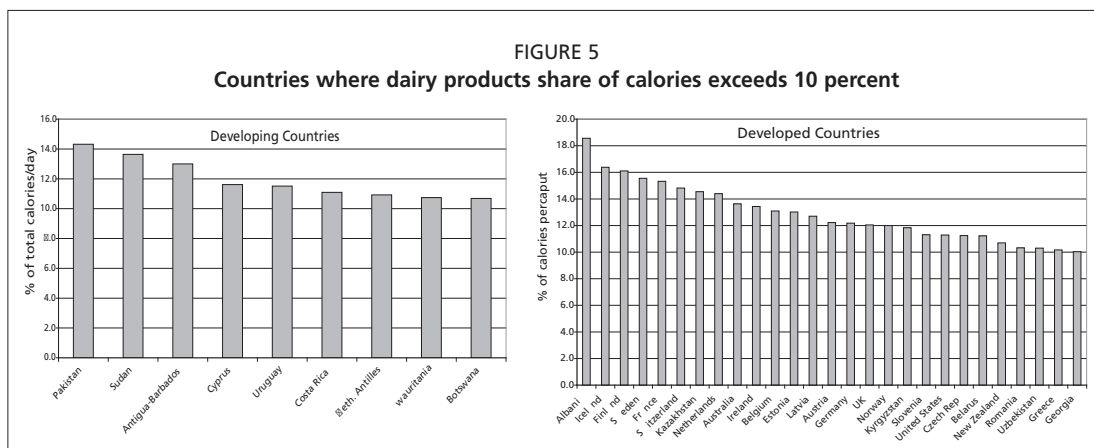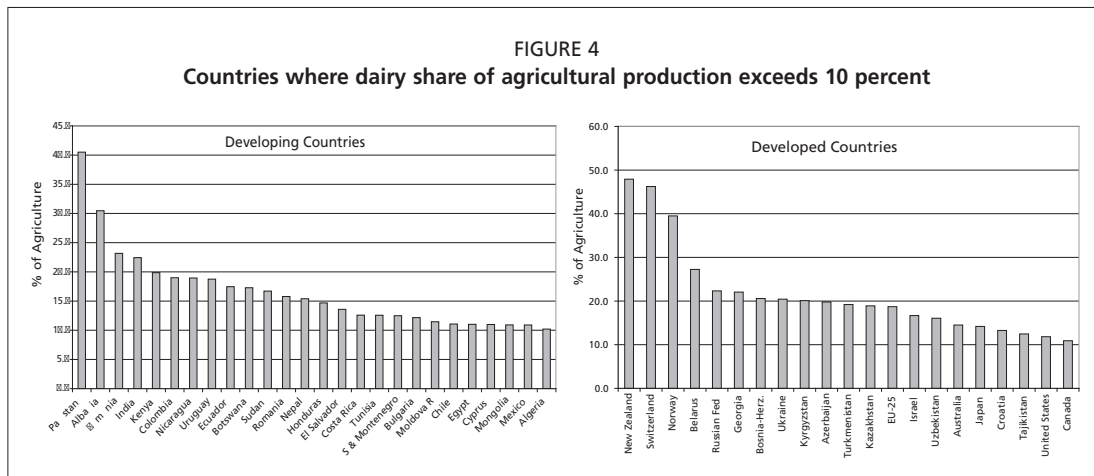
An important issue is that with the exception of a few developing countries, the dairy sector may be viewed as more significant for developed countries. Dairy is an important sector in most developed countries, but particularly so in New Zealand, in Europe, and in many former transition countries.

Sensitive Products

It was proposed in the JFA that WTO members could identify a negotiated number of tariff lines as Sensitive Products. With such designation, a substantive increase in market access would be achieved through tariff quota and tariff reductions, rather than through tariff reductions alone. Accordingly "coherent and equitable criteria" for TRQ expansion (or newly established TRQs) would be negotiated on the basis of rules that take account of deviations made from the negotiated general tariff formula. This Sensitive Products clause, so stated, essentially brings back the debate about how to proceed with trade liberalization, giving Members an alternative to tariff reductions alone. This option was essentially a major reason for the initial creation of TRQs under the Uruguay Round, which provided a two tiered approach with a low tariff quota for the first tier, and a higher tariff beyond the tariff quota amount. Members opting for such a process have been primarily concerned to limit the amount of trade, while maintaining high internal market price support to producers, along with any associated marketing options such as production quotas. The critical aspect of the Sensitive Product clause opens the issue of how to expand TRQs, or how to create new ones, on a variable basis, and in relation to tariff reductions not implemented. The question is how (or whether) it provides a relationship/trade-off between tariff reduction and TRQ expansion.

The Sensitive Product clause has three negotiable unknowns. One is simply negotiating the number of tariff lines eligible for Sensitive Product designation, and then, associated with this, choosing which tariff lines to designate under such limits. For dairy products, as for other products which may be substitutable in further product processing, a restriction on the number of lines eligible may create implementation difficulties if not all products can be designated. For example, in the EU, some eight percent of its agricultural tariff lines are dairy products. If the maximum proportion of tariff lines eligible for sensitive product treatment were say

FIGURE 6
Changing tariff rates and their impact on market access

five percent, some dairy product tariffs could be reduced considerably more than others. Given that some dairy products can be recombined to create other dairy products, non-aligned tariffs may undermine the dairy tariff structure.
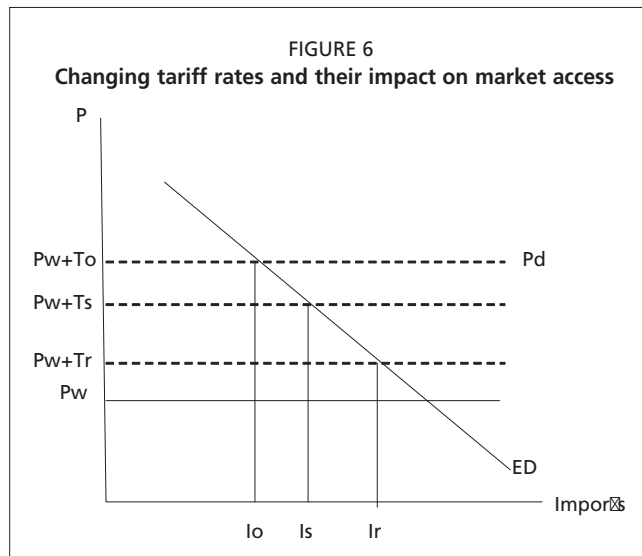
More fundamentally, a critical aspect of Sensitive Products is "equitable" criteria used to obtain an expansion in market access provided by a smaller tariff reduction and an increased TRQ, compared to market access provided by a larger tariff reduction alone, following the general tariff formula. The issue of what is equitable must also include some allowance for a reduced commitment that is connoted by the term Sensitive Product. In sum, the criteria should provide a mapping of the tariff "deviation" from the general formula, to an increase in TRQs, that provides somewhat less market access than a full tariff reduction following the tariff formula. The question is what should be the basis of such criteria?

Consider the simplest situation, as in Figure 6, where ED is the excess demand for the country.[11] The initial market situation has world price at Pw, with an original *ad valorem equivalent* (AVE) over quota bound tariff of To. At the initial TRQ at level Io, there is no in-quota tariff and no tariff overhang, nor tariff water. Domestic price is Pd, which is equal to the world price plus the overquota tariff. A tariff reduction to Tr, would open up access to this market at an import level of Ir, which would be larger than the existing access by Ir-Io. But with a tariff "deviation" from Tr undertaken, at a tariff of Ts, market access would be considerably less at Is. The difference between Ir and Is is critical to the sensitive product issue, as this represents the difference in access at the formula tariff compared to the sensitive tariff. The question is how to choose an import quota change that would compensate, at least partially, for the tariff deviation. In this simple diagram an import quota of Ir would provide the same quantitative level of market access. Define:

ED = g(P)= D(P)-S(P)   (1)

where D(P), and S(P) are the supply and demand functions respectively.

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[11] Refer to pp 79-81 in de Gorter *et al*. (2004), for a more complete discussion. In fact this treatment is grossly simplified for many reasons, including inter alia, how the analysis is affected by tariff water/ overhang, and additionally by production quotas and how they might be adjusted to changed market access.

From (1), it can be approximated that the elasticity of ED, θ with respect to changes in P is given by the formula,

$$\theta = (\eta - \varepsilon r)/(1-r) \quad (2)$$

where η is the demand elasticity, ε is the supply elasticity, and r is the self sufficiency ratio.

Note that for (2), the excess demand elasticity is infinite at $r = 1$, or where the country is self sufficient in the product.[12] Note also that for usual products with negative demand elasticity, and positive supply elasticity, θ will be negative for r<1, meaning that a decrease in price will increase excess demand.

The point of this simple discussion is that the excess demand elasticity may be used to approximate the import difference between Ts and Tr. If the demand elasticity were, say -0.4, and the supply elasticity were 0.6, then at say a self-sufficiency ratio of 0.9, the excess demand elasticity with respect to price would be about -9. In such a situation, this would indicate that if the current *ad valorem* tariff were say 90 percent, then a tariff reduction deviation of say 40 percent from a tariff formula would reduce market access implied by the tariff formula by about 170 percent of current imports.[13]

This discussion outlines a framework that may be used in rules to determine a reference for how much TRQ access should changed for a given tariff deviation. From Figure 6, an equivalence in market access for a tariff deviation from the general tariff formula might expand existing quota to Ir. If the Sensitive Product category is to imply somewhat less market expansion, then the quota would be less than Ir. Obviously, it should also be borne in mind that Figure 6 is a very simplified view of a country's trade position in dairy products. Two important aspects need to be considered. First, if water is present in existing tariffs, there will be no demand effect from that part of any tariff reduction. Secondly, the internal marketing situation of the country is critical: if domestic milk production quotas are in place, then as long as rent exists in the quota (ie. shadow price of quota is positive), the supply elasticity is zero if quotas are exogenously set, or negative, if production quota is set according to domestic demand. Some quota adjustment may be made to adjust supply to meet any domestic demand increase associated with falling internal prices. If production quotas are still binding, they need to be adjusted also to prevent excess export subsidy. While these are complicated reaction functions that are difficult to anticipate, both issues will be present in implementation in most developed countries.[14] However, it is clear that the mapping of tariff reduction deviations to meaningful TRQ expansion is critical to assessing how much the Sensitive Product clause would impact on increased market access.

4. QUANTITATIVE ASSESSMENT

At the time of writing, very little is known about how the JFA clauses on Special Products and on Sensitive Products will be negotiated and, most importantly, implemented. However, some research does provide certain general conclusions, about what the overall impacts on agriculture might be. For example, a study by the World

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[12] For large changes in price, the supply and demand elasticities may not be constant. The formula in that case is more complicated, and one would need to use the explicit supply and demand functions to derive the excess demand elasticity.

[13] This calculation assumes that domestic price is equal to 1.9*world price, so a 40 percent deviation in the tariff would be reduce domestic price 19 percent less than the full tariff reduction implied by the formula. Hence 1.19 times an excess demand elasticity of 0.9 is 171 percent.

[14] Refer to FAO Trade Brief "Dairy and dairy products: why is reform so difficult?", or its companion technical note "Dairy: Measuring the impact of reform". These sources outline other various factors, such as joint production of fats and protein products, various policy rents, diverse marketing systems etc., that render determination of economic criteria very difficult.

TABLE 2
Tariff reduction formula: EU Proposal

	Developed		Developing	
Number of bands	4		4	
Thresholds	Within AVEs	Linear cuts	Within AVEs	Linear cuts
	0< 30	35% (20-45%)	0< 30	25% (10-40%)
	30<=60	45%	>30<=60	30%
	<60<=90	50%	<60<=90	35%
	>90	60%	>90	40%
Caps	100%		150%	

Bank suggests that with a Sensitive Product clause permitting the exemption of two percent of tariff lines, the resulting market access gains would be small.[15] But this study was undertaken with an aggregate model, and the tariff reduction deviation mapping to a TRQ increase was not identified.

A detailed OECD study of agricultural tariffs and tariff rate quotas showed that a 50 percent tariff quota expansion had little effect on the market outcomes at an average tariff reduction of 36 percent.[16] The study found that expansion of the TRQ may have limited impact in many cases, because it was observed that TRQs were not binding (that is not filled). Even lowering in-quota tariffs in this case, while leading to some increased access and TRQ fill rates, has a minimal effect on global markets as TRQs are not generally large in relation to overall market size.

For this current study, quantitative work was undertaken to illustrate more completely the range of issues and possible impacts of the Special Products and Sensitive Products clauses on outcomes of market access negotiations. The Agricultural Trade Policy Simulation (ATPSM) model was used to analyse specific scenarios to get a clearer understanding of these potential impacts, compared to a base of no change to tariffs or TRQs. This model is described in the annex. The model's strengths are mainly its detailed coverage of countries and products, its calculations of welfare change, which includes TRQ rents and government revenues, and its overall simplicity. It also includes dairy production quotas where these are in effect. However, the model assumes the TRQs are always binding, and while this may be a limitation, it may be appropriate for small TRQ changes.

Three basic scenarios were analysed. In all scenarios, the market access elements of the EU's 28 October 2005 WTO proposal have been used, as this is one proposal that includes detail on the mapping of tariff reduction deviation to a required TRQ expansion. The scenarios undertaken are as follows:

Scenario 1: Tariff formula reduction as in Table 2 has been implemented without any exemption or tariff reduction deviation. Tariff reduction has been implemented for all commodities in the model, in order to take account of inter-relations with other commodities, and to provide a reference comparison for the importance of the dairy sector relative to other sectors.

Scenario 2: Tariff formula reduction as in Table 2 has been implemented except that all developing countries designate dairy products as Special Products and are exempted from reducing dairy product tariffs.

Scenario 3: Tariff formula reduction as in Table 2 has been implemented, but all dairy products are assumed to be designated as Sensitive Products for Canada, EU, Japan, United States, Norway and Switzerland. For these countries, following the EU proposal, required tariff reductions from base tariff rates (*ad valorem*), have been assumed to be one third of the reduction required by the tariff formula; the resulting

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[15] See J. Sebastien *et al.* (2005)

[16] OECD (2002) "Tariff rate quotas and tariffs in OECD agricultural markets: A forward looking analysis", Paris.

difference is the tariff deviation. Base TRQs for dairy products have been increased according to the formula proposed by the EU[17] (and following variable definitions discussed above):

$$I^* = [1+(TRD)/(1+To)*0.8]*Io \qquad (3)$$

In this formula, TRD is the difference between the reduction required by the formula and the reduction chosen for the sensitive product. I* is the prescribed TRQ for the TRD chosen. This formula is a critical one, and some explanation is in order, in the light of the discussion above on the economic relationships of tariff reduction to increases in excess demand. The logic of expression (3) is to use the tariff deviation in percent of the base original tariff, as the basis for expansion of current TRQ (or of imports). This logic would appear to suggest that an equitable increase in market access of a one percent change in import price (tariff included) would be a one percent change in the TRQ. The EU proposal suggests a 0.8 factor also be used in this formula to make TRQ expansion less aggressive in expanding market access than the tariff deviation would imply. As an example of this formula, assume that the existing TRQ is binding, with a tariff of, say 90 percent. Following the tariff reduction schedule in Table 2, the required tariff reduction is 60 percent. The maximum sensitive product deviation is 40 percent, implying a tariff reduction of only 20 percent. With the proposed formula in (3), the prescribed TRQ increase, for a tariff deviation of 40 percent would be 18 percent. Given the discussion of the previous section, this could be a conservative estimate of an "equitable" increase in market access for a tariff deviation of this size; that discussion indicated that full equivalence could suggest an increase in imports by about 170 percent.

The set of countries that are assumed to declare Sensitive Products, except the United States, have production quotas in place. For these countries, quota levels are exogenously adjusted downwards by the magnitude of the increase in the TRQ. If imports of butter are to increase by ten thousand tonnes, for example, production is reduced by a similar amount. In reality a production quota may be applied to milk rather than the processed product, but milk is not in the model as it is a non-traded good. In this sense we ignore possible substitution on the supply side between powder, butter and cheese.

Empirical results

Tables 3 to 5 provide an overview of the estimated world price, welfare and production effects of each scenario respectively.

The formula tariff reduction scenario, without exemptions, leads as expected to the largest price impacts and welfare gains, compared to a no tariff change situation. World market prices for dairy products rise from 8 percent to 12 percent with butter prices rising the most. Global welfare gains due to dairy products amount to US$855 million (2001 dollars) .[18] Developed countries gain as a group, largely due to increased consumer surplus for milk products which is larger than losses by producers. Many former transition countries which are net importers of milk products lose welfare in this

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[17] The EU proposal introduces ranges of expansion for TRQs, based on this formula. For purposes of undertaking the scenario, this formula was used. In the formula tariffs are expressed as fractions, so a 20 percent tariff is 0.2. Likewise, a cut in the specified tariff reduction from 60 to 20 per cent generates a tariff difference of 0.4, the numerator. For example, (0.8-0.4)/(1+0.9)*0.8=0.17, prescribing a 17 percent increase in TRQ.

[18] While not a focus of this paper, but noted for comparison purposes, the global welfare gain due to this market access proposal for all 35 commodities is $US 12.3 billion. The model excludes wool, silk, processed tobacco and several other commodities covered under the Agreement on Agriculture.

TⓍB E 3
Estimated world price impacts

	Scenario 1: Formula tariff reduction	Scenario 2: Special Products	Scenario 3: Special and Sensitive Products
	% change		
Butter	12.3	9.4	3.5
Cheese	7.2	6.7	5.6
Concentrated milk products	8.5	7.9	3.8

Source: ⓍT simulations

scenario. Developing countries and least developed countries which are net importers of dairy products, also lose welfare as a result of higher prices. The major beneficiaries in this scenario and in all scenarios are Australia, Canada, Japan, New Zealand and the European Union. For Canada, Japan and the EU, welfare gains are due to increased imports and lower prices. The United States, whose dairy tariffs are lowest, predominantly exports concentrated products and imports butter and cheese. However, it is also a significant exporter of cheese, and domestic producers and consumers are affected as much by the rising tide of world prices as by changes in tariffs. US cheese consumers are made worse off by marginally rising prices and the net welfare loss in this sector is US$21 million. However, the United States gains overall from dairy reform. This illustrates that with two way trade in dairy products, a detailed analysis is important.

For Scenario 2, the results demonstrate that even exempting all developing countries from tariff reduction has only a minimal effect. Welfare is reduced compared to Scenario 1, as those tariffs which remain support higher domestic prices in developing countries. This is due largely to high tariff overhang for dairy products in most of these countries, and to low or zero tariffs in others. It can broadly be concluded that Special Products designation, which may be of interest to some individual countries, would not have a significant impact on dairy markets. However, it should be clear that some major net exporters such as New Zealand, Australia and Argentina, lose welfare due to reduced access to developing country markets.

In Scenario 3, the triggered expansion of import quotas does not compensate for the trade off with tariff deviation from the formula. In this scenario, estimated world price changes are cut by more than half as are global welfare gains. The difference in effect is driven by the consumption effect of tariff reductions. Those countries that undertake the tariff deviation lose most compared with Scenario 2, largely because increased welfare due to increases in lower priced imports is forgone and replaced in Scenario 3 by much less of an increase in TRQ imports. Hence it can be concluded that in the case of dairy products, proposals which designate Sensitive Products may severely limit the gains to liberalization contained in a given tariff reduction formula. Of course, much depends on the trade-off mapping of tariff deviations from the formula to increases in TRQs.

TⓍB E 4
Estimated welfare impacts (change from base)

	Scenario 1: Full tariff reduction	Scenario 2: Special Products	Scenario 3: Special and Sensitive Products
	$US Million (2001 basis)		
World	855	846	446
Developed	1381	1390	642
Ⓧustralia	85	74	35
Canada	373	376	344
European Union	468	480	157
apan	372	381	118
ew Zealand	123	98	53
Russia	-46	-43	-22
United tates	1	-14	37
Ukraine	-38	-40	-17
Developing	-460	-482	-167
Ⓧlgeria	-43	-39	-18
Ⓧrgentina	28	26	11
Brazil	-25	-23	-11
India	0	8	14
alaysia	-26	-24	-11
exico	-54	-66	-15
igeria	-18	-17	-8
akistan	3	2	0
audi Ⓧrabia	-25	-23	-11
Least Developed	-66	-62	-29

Source: ⓍT simulations

TABLE 5
Estimated production impacts (% change from base)

	Scenario 1: Full tariff reduction	Scenario 2: Special Products	Scenario 3: Special and Sensitive Products
	% change from base		
World	0.6	0.5	0.1
Developed	0.2	0.0	0.0
Australia	5.3	4.2	2.1
Canada	0.0	0.0	-0.6
European Union	0.0	0.0	-0.4
Japan	-4.6	-3.9	-0.8
New Zealand	2.1	1.3	0.8
Russia	3.2	2.6	1.3
United States	0.0	-0.6	0.3
Ukraine	2.8	2.2	1.1
Developing	1.2	1.3	0.3
Algeria	1.9	1.6	0.7
Argentina	2.9	2.5	1.1
Brazil	2.9	2.3	1.3
India	0.2	0.4	-0.1
Malaysia	0.8	0.7	0.3
Mexico	0.1	1.3	-0.7
Nigeria	0.9	0.7	0.4
Pakistan	0.9	0.6	0.4
Saudi Arabia	0.9	0.6	0.4
Least Developed	1.0	0.8	0.4

Source: FAT simulations.

In this sense it would be useful to explore other mappings for which the trade off is more "equitable" than the one used in Scenario 3.

It is important to note that developing countries as a group are actually better off with the Sensitive Product clause for dairy products. For net importers, the smaller increase in import prices with the Sensitive Product clause means that while consumers lose less and producers gain less than reform without Sensitive Products, the net loss is lower. However, it is estimated that with the Sensitive Product clause producers remain better off in many key developing countries with reform.

Table 5 indicates the size of production gains in important dairy producing/consuming countries. The Sensitive Product clause substantially reduces production gains in low cost developed and developing exporting countries.

5. CONCLUSIONS

The global dairy sector is one of the fastest growing agricultural sectors. With growing populations, and incomes, and with large discrepancies in per caput consumption world wide, the prospects for increased trade are good. However, reform of domestic and trade policies has been difficult and slow. This has been particularly true in most developed countries. High tariffs negotiated during the Uruguay Round have enabled most policies to persist behind tariff walls. In negotiating general tariff formulae, high tariffs, such as those for dairy products, limit the depth of cut for all commodities. In this setting, the concepts of both Special Products and Sensitive Products offer alternative means for the liberalization process for these chosen products. In the case of Special Products, under which developing countries may exempt products for specific reasons, this study finds that whether dairy products are exempted or not would not have a large impact on markets. On the other hand, the Sensitive Products clause may considerably affect the degree of market access, depending on the size of tariff deviation permitted, and on the degree to which TRQ are increased to compensate.

As specified in the EU proposal, of 28 October 2005, the treatment of Special Products would indicate that required TRQ increases fall well short of compensating for deviation from the tariff formula. Combined with a maximum permitted tariff deviation of two thirds, this fact means that effective reform in dairy is severely limited. Finally for the case of the dairy sector, it is shown that developing countries as a group may be indifferent to Sensitive Products as they may appear to lose less welfare from such reform.

This empirical investigation of the implications of Special Products and Sensitive Products, as applied to the dairy sector, should be viewed as illustrative. More research would be useful. For example, alternative tariff reduction-TRQ mappings could be examined, as well as how these might be implemented. In the limit, it might be expected that market access liberalization via TRQ expansion should converge on similar market outcomes as tariff elimination, but the process of getting there may not be so clear. As

in the current analysis, if TRQs are over-filled, expanding the quota at the margin will merely induce rent shifting from domestic consumers to foreign exporters. However, as quota is expanded further, at some point it will no longer by binding, and domestic prices may fall to a level determined by the in-quota tariff.

Finally, research is necessary on an individual country basis to determine more precise implementation aspects and consequent impacts. Dairy policies are too varied, too pervasive, and with such aspects as production quotas, tariff water and domestic price determining policies, more in-depth examination by country would provide more refined implementation of the proposals, and precise estimation of impacts.

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THE ATPSM MODEL

The Agricultural Trade Policy Simulation Model (ATPSM) is a comparative static partial equilibrium global trade model with the following features:
1. A simultaneous equation system for all countries specifying production, consumption, exports and imports that respond to domestic price changes, given a policy changes, complete price transmission and perfectly competitive markets.
2. Tariff rate quotas and quota rents.
3. Distinction between bound and applied tariff rates.
4. Stocks remain unchanged.
   The standard equation system for all countries has four equations:

$$;) \quad D_{i,r} = \eta_{i,i,r}\left[P_{wi}\left(+ \hat{t}_{c\,i,r} \right) \right] + \sum_{\substack{j= \\ i \neq j}}^{J} \eta_{i,j,r}\left[P_{w\,j}\left(+ \hat{t}_{c\,j,r} \right) \right]$$

$$;2) \quad S_{i,r} = \varepsilon_{i,i,r}\left[P_{wi}\left(+ \hat{t}_{p\,i,r} \right) \right] + \sum_{\substack{j= \\ i \neq j}}^{J} \varepsilon_{i,j,r}\left[P_{w\,j}\left(+ \hat{t}_{p\,j,r} \right) \right]$$

$$(3) \quad \Delta X_{i,r} = \gamma_{i,r}\Delta S_{i,r}$$

$$(4) \quad \Delta M_{i,r} = D_{i,r}\hat{D}_{i,r} - S_{i,r}\hat{S}_{i,r} + \Delta X_{i,r};$$

where   *D, S, X,* and *M* denote demand, supply, exports and imports respectively;
   $\wedge$ denotes relative changes and Δ absolute changes;
   P_w denotes world price;
   t_c denotes the domestic consumption tariff and t_p denotes the domestic production tariff;
   ε denotes supply elasticity, η denotes demand elasticity, and γ denotes the initial ratio of exports to production;
   i and j are commodities indexes; and
   r is a country index.
   For this application the standard version of ATPSM has been modified to include the following features:
   (i) A land constraint that redistributes unused acreage. The production of wheat, barley, rice, maize and sorghum in each country is raised or lowered by the average change in production multiplied by the ratio of land to other primary factors. This assumes a tonne of each crop in a country uses the some amount of land. Total production of crop may fall or rise depending on the contribution of land compared with capital and labour.
   (ii) Production quotas and quota rents. Production quotas are specified for EU raw sugar and dairy products, United States tobacco, Canadian dairy and poultry and Japanese rice and dairy. These quotas are assumed to be binding unless the market price falls below the shadow price. Producers then respond according to the specified supply elasticity. Quota rent contributes to producer surplus.
   (iii) A producer response to changes in quota rents on exports. Here there is no shadow price specified. Producers respond immediately to any change in rent. This implies the supply curve goes through the point at which quantity and price are observed. This permits trade diversion when quota rents change as a result of MFN reductions.

(iv) An enlarged European Union with 25 members.
 (v) A revised determination of export or imports so that the largest trade flow is a residual. That is, for net exporters imports are a constant function of consumption and the change in exports is determined by changes in consumption, production and imports.
(vi) Revision of domestic support data to include amber box payments for the major users. The difficulty here is the extent to which amber box payments are conflated with border measures, implying that if tariffs are removed, the additional effect of reducing support is minimal.

ATPSM Commodities

ivestock	Cocoa beans
Bovine meat	Cocoa processed
heep meat	Tobacco leaves
igmeat	Tobacco proc.
oultry	ilseeds temp.
ilk concentrated	ilseeds trop.
Butter	Vegetable oils
Cheese	ulses
Hides & skins	Tomatoes
Wheat	Roots & tubers
Rice	pples
Barley	Citrus fruits
aize	Bananas
orghum	ther tropical fruits
ugar raw	Tea
ugar refined	Rubber
Coffee green	Cotton
Coffee processed	