



FAO TRADE POLICY TECHNICAL NOTES

on issues related to the WTO negotiations on agriculture

No. 3. BANANAS: is there a tariff-only equivalent to the EU tariff rate quota regime? Insights from economic analysis

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1 Introduction

Following its enlargement to include ten new countries, from Eastern and Central Europe, Cyprus and Malta, in May 2004, the European Union (EU) has now become the largest banana market in the world. It is forecast to import some 3.8 million tonnes of bananas in 2005, which would account for almost a third of world banana imports. As bananas enter freely into United States territory, and Japanese banana imports originate mainly in Asia, the rapidly approaching change in the EU banana import regime has raised considerable interest and debate amongst ACP¹ and Latin American countries.

The European Commission agreed in April 2001 to change its import regime from the current tariff rate quota (TRQ) system to a tariff-only system no later than 1 January 2006. Because the EU accounts for substantial shares of world banana trade and of the revenues of exporters, this reform may have impacts on traded volumes and prices, not only in the EU itself but also in other markets. For example, if the new regime is more restrictive than the current one, exporters may re-direct their shipments towards non-restricted markets, which would likely result in a price decrease in these markets. Conversely, if the reform leads to a more open regime, some banana shipments may be diverted away from these markets towards the EU with the corresponding effects on prices. In addition, the countries that currently enjoy preferential access to the EU banana market fear that the reform may

lead to an erosion of their trade preference. Not surprisingly, the potential effects of these changes on the world banana market and on the interests of the different groups of stakeholders (producers, exporters, importers and consumers) have led to extensive political and economic debate and controversy.

This technical note² is intended as a guide to assist in the interpretation of existing analytical studies on the likely impact of this import policy change on developing countries. Various analytical studies are compared, some of which assess the potential effects of tariffs, others which attempt to estimate tariff equivalents to the current TRQ system, and still others that explore the validity of some key assumptions underlying these models, such as that of a perfectly competitive market. The extent of agreement between the different models on the likely impact of the proposed policy changes and the reasons why estimates of these impacts vary across the studies are explored in detail.

¹ These are the former colonies of EU countries in Africa, the Caribbean and the Pacific that have signed the Cotonou Agreement with the EU.

² The preparation of this technical note was assisted by an informal consultation of experts involved in the analysis of banana trade, held on 28 and 29 October 2004 at FAO, Rome. This is the third of a series of notes, that is part of a new FAO work programme to promote a more informed use of analytical studies related to agricultural trade policy debates and the WTO negotiations. The series examines current research on a range of commodities and cross-cutting themes.

A key objective of this technical note is to shift the focus of policy dialogue away from the debate on “which results are correct?” to that of improving our understanding of why the findings diverge. A more informed debate is thereby promoted, grounded in a better appreciation of what the results actually do and do not tell us. Another objective is to identify further research needs, distinguishing those approaches to the analyses and underlying assumptions that require more attention from those that are generally deemed satisfactory and would not benefit significantly from further refinement.

The main findings suggest the following:

- There is no single tariff that would maintain the *status quo* for the major players in banana production and trade;
- A high tariff would give a competitive edge to ACP suppliers, whilst a low tariff would favour dollar banana suppliers;
- An intermediate tariff level may result in an expansion of exports from Latin American countries and some ACP countries to the EU, and a decrease in EU domestic prices;
- Economic estimates of tariff-equivalents diverge because of differences in assumptions, data sets and conceptual frameworks.

2 World banana trade and the EU import regime

Bananas are grown in all tropical regions and play a key role in the economies of many developing countries. In terms of gross value of production, bananas are the world’s fourth most important food crop after rice, wheat and maize. They are a staple food and an export commodity. Bananas are the world’s most exported fresh fruit in terms of volume and value.

Latin American countries account for the bulk of world banana exports (some 80 percent in 2002). However, some countries of Africa (Cameroon, Côte d’Ivoire), the Caribbean (the Dominican Republic, the Windward Islands) and Asia (the Philippines) also export significant quantities (Table 1). Developed countries accounted for approximately 85 percent of world banana imports in 2002. Until recently, the United States was the leading importing country, followed by the EU and Japan (Table 2). Following its enlargement to include ten more countries in May 2004, the EU has now become the largest banana market in the world.

With 25 member states and a population of 450 million consumers, most of whom have a high purchasing power, the EU market is important to banana exporting countries both for the large quantities it imports and for its high prices. The EU limits banana imports through a system of tariff-quotas, and banana prices have been

substantially higher than in other major developed markets which do not have such quantitative restrictions such as the United States. World banana prices have been on a downward trend since 1999 due to oversupply and EU prices have followed a similar trend, but they have remained comparatively higher. Currently, it is one of the most profitable banana markets in the world, and one on which a number of developing countries rely for a significant share of their export revenues.

The EU imports over 80 percent of all the bananas it consumes. Its imports averaged 3.3 million tonnes annually between 2000 and 2002 and they are forecast to reach some 3.8 million tonnes in 2005, reflecting its latest enlargement. The EU banana market is supplied by fruits produced in the overseas territories of some EU member states (Spain, France, Portugal and Greece), which accounted for some 18 percent of EU banana consumption in 2000-2002, bananas imported from ACP countries (about 19 percent) and bananas imported from Latin America (approximately 63 percent). The shares of “dollar” and ACP bananas in the EU market have remained relatively stable in the last 10 years (see Figure 1).

Table 1: Banana exports

	2000	2001	2002	2003
	thousand tonnes			
WORLD	11 932.4	11 157.6	12 255.9	12 866.7
Ecuador	3 939.5	3 526.2	4 199.2	4 642.5
Philippines	1 599.4	1 600.7	1 685.0	1 828.2
Costa Rica	1 883.3	1 739.3	1 612.0	1 723.0
Colombia	1 680.2	1 516.3	1 570.4	1 543.1
Guatemala	801.3	873.8	980.3	936.1
Honduras	375.3	431.8	441.4	443.8
Panama	489.3	321.1	405.9	386.5
Cameroon	238.2	254.1	258.8	313.7
Côte d'Ivoire	217.3	224.4	226.1	242.7
Brazil	71.8	105.1	241.0	220.8
Dominican Republic	80.2	130.2	112.7	122.0

Table 2: Banana imports (net)

	2000	2001	2002	2003
	thousand tonnes			
WORLD	12 197.0	11 505.5	11 439.5	12 095.5
United States	3 630.4	3 433.6	3 490.4	3 443.0
EU (15) ¹	3 248.0	3 169.1	3 252.1	3 362.4
Japan	1 078.7	990.6	936.3	986.6
Former USSR	667.1	740.8	792.1	964.6
Russian Federation	499.5	606.7	640.8	787.0
Canada	398.4	404.9	417.0	423.6
China	593.5	414.0	347.8	421.2
Argentina	340.0	330.1	229.5	286.4
Iran	200.0	75.6	150.7	271.0
Poland	275.4	261.6	232.1	251.8
Republic of Korea	184.2	194.5	187.2	220.0

¹ EU, not including domestic shipments from overseas provinces.

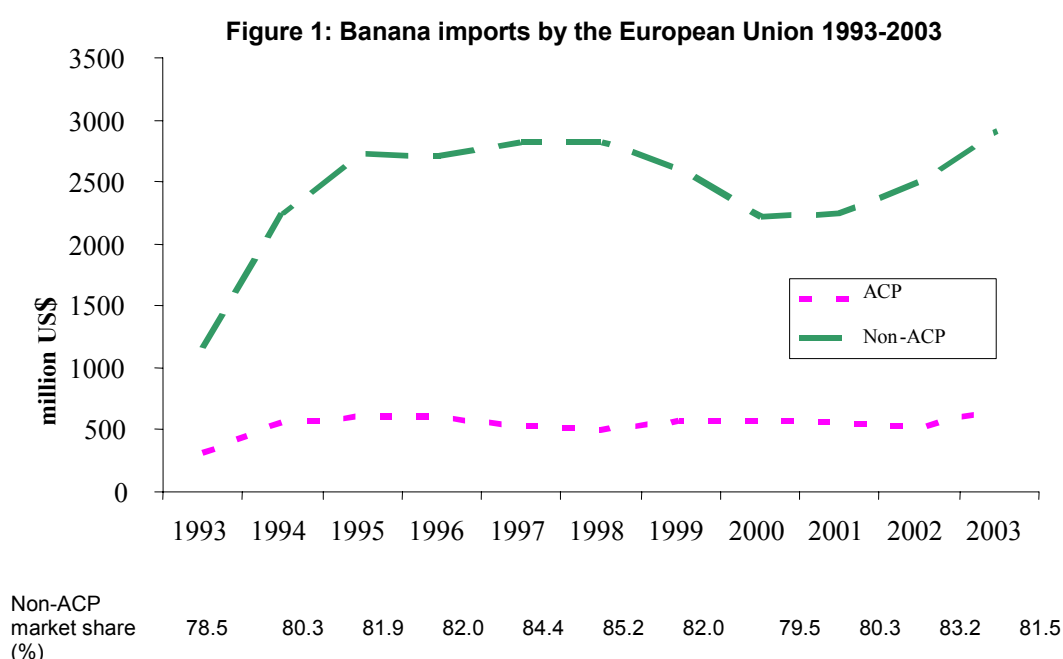


Table 3: EU banana supply by origin (tonnes)

	1999-2000	2002-2003	2002	2003	2002-2003/ 1999-2000
	average	average	'000 tonnes		percentage change
EU production	755.7	772.4	790.6	754.2	2.2
ACP countries	715.9	756.6	726.7	786.6	5.7
ex-traditional ACP	662.0	650.4	625.9	674.8	-1.8
Cameroon/Côte d'Ivoire	379.2	467.8	440.7	494.9	23.4
Caribbean ¹ (a)	282.8	182.6	185.2	179.9	-35.4
Dominican Republic ²	59.8	103.4	97.3	109.4	72.9
Dollar zone	2 532.5	2 568.5	2 561.3	2 575.8	1.4
Ecuador	693.8	813.6	828.8	798.5	17.3
Costa Rica	659.2	704.7	686.8	722.6	6.9
Colombia	586.1	668.7	665.7	671.6	14.1
Panama	405.7	305.3	307.0	303.5	-24.8
ACP + dollar zone	3 248.4	3 325.2	3 287.9	3 362.4	2.4
ACP + dollar zone + EU	4 004.1	4 097.6	4 078.6	4 116.6	2.3

Source: Calculated from European Commission DG AGRI 2003.

¹ Windward Islands, Jamaica, Belize and Suriname.

² Year 1999 excluded from average 1999-2000, as plantations had been destroyed by a hurricane in late 1998.

- *The import system*

Since the formation of the Single European Market (SEM) in 1993, EU imports of bananas have been governed by the Common Market Organization for Bananas (CMOB) as defined by Council Regulation (EEC) Nr. 404/93 of 13 February 1993. The CMOB regulates banana importation through a system of tariff-rate quotas (TRQ). There are four quotas: A, B, C and the Additional Quantity (see Table 4). Bananas from ACP countries can be imported duty free under any of the above quotas. Bananas from other countries can only be imported under quotas A, B and the Additional Quantity, and in addition, need to pay a tariff of €75 per tonne. Although ACP bananas can enter duty free to the EU territory through any quota, they mostly do so under quota C because they usually cannot out-compete Latin American bananas in the other quotas.

Quotas A and B are managed as if they formed a single quota³, and are often referred to as "quota A/B". Virtually all the bananas imported under quota A/B originate from Latin American countries. Latin American bananas are often referred to as "dollar bananas" because they are traded in US dollars. The Additional Quantity (AQ), created following the EU enlargement of May 2004 to allow for the importation of bananas into the new member states, is also dominated by dollar bananas. Banana imports beyond quotas A,

B and AQ have to pay an out-of-quota tariff of €680 per tonne, with a preferential tariff of €380 per tonne for ACP bananas.

The quotas are administered by a complex system of import licenses. Banana import licences for specific quantities within quotas A, B, C and AQ are allocated by the European Commission to market operators established in the EU. These operators include specialized importers, multinational banana companies or subsidiaries of banana producing or/and exporting companies of supplying countries. Most of the licences are reserved for companies that are involved in the production or shipping of bananas in the producing countries (so-called "traditional operators"), with volumes based on their shares of past imports (system of historical reference). Smaller quantities of the quota are also open to newcomers, namely other banana importers that do not qualify as traditional operators ("non-traditional operators", see EC 2004).

There are virtually no imports of bananas outside the quotas due to the very high level of the out-of-quota tariff. In practice, the CMOB has limited total banana supply into the EU by putting a cap on the imports of dollar bananas, which tend to be more competitive than most ACP bananas, even with the €75 per tonne tariff. By limiting supply to a level lower than what would exist under free market access, the CMOB has created a quota rent. As a result, banana prices in the EU have been much higher than in most other markets of the world, since they reflect the quota rent and the tariff (for dollar bananas).

³ Quota B was created to reflect the enlargement of the EU to include Austria, Finland and Sweden in 1995. It can be viewed as an extension of quota A.

Table 4: Tariff quotas and importation of bananas into the EU

	Quota A/B	Quota C	Additional Quantity
Quantity (tonnes)	2 653 000	750 000	460 000 ¹
Countries of origin	All countries	ACP countries only	All countries
Tariff (€ per tonne)	ACP countries: 0 Other countries: 75	0	ACP countries: 0 Other countries: 75
Percentage of licences for traditional operators	83	89	83
Area where bananas may be imported	EU-25	EU-25	New EU member states

¹ in 2005

- *The WTO banana trade dispute*

Latin American supplying countries have challenged the CMOB several times at the World Trade Organization (WTO) because it limits their exports of bananas to the EU. In many cases they were supported by the United States, whose banana marketing companies saw their access to the EU market curtailed by the CMOB in 1993. After the WTO's 1997 ruling that the CMOB was incompatible with several articles of the General Agreement on Tariffs and Trade (GATT) and the General Agreement on Trade in Services (GATS)⁴, the EU implemented a new version of CMOB in January 1999. However, the second version was challenged and again found incompatible with WTO rules. Following this WTO ruling, the EU undertook negotiations with the main parties in the trade dispute to find an agreement on reform of the CMOB (FAO 2001). In April 2001, the EU reached two separate agreements with the United States and with Ecuador, which led to the third version of the CMOB. Finally, in 2004 the EU had to further amend the CMOB to reflect its enlargement to include ten new member states of Central and Eastern Europe.

A fundamental aspect of the 2001 agreement with the United States is that the European Commission has committed to changing its import regime from the current tariff rate quota (TRQ) to a tariff-only system no later than 1 January 2006. This means that from 2006 banana imports will no longer be bound by quotas whatever their origin. A single tariff will apply to all banana imports. However, in order to maintain its commitment to ACP countries, the EU intends to give them a tariff preference such that ACP bananas would pay a lower or no tariff. Currently, a waiver obtained at

the WTO Ministerial Conference of 14 November 2001 in Doha allows ACP bananas to be imported into the EU duty free until 31 December 2007 (WTO 2001).

The transformation of a TRQ system into a tariff-only system ("tariffication") is governed by Article XXVIII of GATT. The article stipulates that the country that undertakes tariffication should consult with the supplying countries. If no agreement can be found, the latter may seek arbitration at the WTO. The text of the waiver adopted at the Doha Conference states that should the negotiation go to arbitration: "If the arbitrator determines that the rebinding would not result in at least maintaining total market access for MFN suppliers, the EC shall rectify the matter... If the EC has failed to rectify the matter, this waiver shall cease to apply to bananas upon entry into force of the new EC tariff regime." (WTO 2001).

3 What is the policy question being addressed?

The principal concern of current debates on world banana trade is therefore the quantification of a tariff equivalent to the current TRQ system of the EU. The debates assume that a tariff exists that could reproduce the *status quo*, meaning the same prices and flows of trade as those of the system it replaces. Thus, it is assumed that an explicit tariff exists that is equivalent to the implicit tariff generated by the quota. Theoretically, the only difference between the two systems is that in the TRQ the implicit tariff (or quota rent) is captured by the holders of banana import licences, while the explicit tariff would be captured by the government of the importing country. However, as this technical note highlights, in practice it may not be possible to reproduce the *status quo* through a tariff-only system.

⁴ Some aspects of the CMOB relating to the allocation of licences to companies providing services such as marketing and ripening were found to violate the GATS.

Table 5: Claims by various stakeholders for the tariff level in tariff-only import system

Ecuador, Costa Rica, Colombia Guatemala, Honduras, Panama & Nicaragua AFP, 21 May 2004	Less than €75 per tonne
DOLE Inside US Trade, April 23, 2004	€ 106 – 143
ASSOBACAM (Cameroon) and OCAB (Côte d'Ivoire) Joint statement, April 2004.	€ 205 – 220
Conseil supérieur des importateurs de bananes (CSIB) FruitTrop, March 2004.	€ 220 for €/ \$ parity, €297 for 1.2\$/€
ACP Council of Ministers, Gaborone, 2004.	Not less than €275 per tonne
APEB (Association des Producteurs Européens de Bananes) Madrid, 5 July 2004	Maintain a minimum of €75 between ACP and dollar bananas; constrain duty free ACP imports by a quota, and exports over the quota be subject to a tariff only

On 12 July 2004 the European Commission received a mandate to open negotiations on modifications of the banana regime. According to a report by the European Community Banana Trade Association (2004), the conditions which the new tariff rate should fulfil are as follows:

“..the proposed recommendation for a negotiation mandate is driven by 3 main objectives including the respect of the EU-producers’ interests, the maintenance of a preference for ACP-countries and appropriate consideration of consumers. At the same time, the Commission would aim at negotiating an import tariff that would not be challenged by a dispute settlement procedure at the WTO.”

In a Communication dated June 2004, the European Commission stated that:

“In the course of the negotiations to move to the tariff-only regime... the Commission will seek to maintain a level of protection equivalent to that currently existing in order to ensure that Community production is maintained and that these producers are not put in a less favourable situation as before the entering into force of the import quota regime in 1993...”

As far as the ACP banana suppliers are concerned, the Commission is committed to ... examine appropriate ways to address their specific situation, including preferential access for ACP products, and seek to maintain a level of preference to the ACP countries equivalent to that afforded by the enlarged Community of 25.” (EC 2004).

- *Why is the value of the tariff-equivalent so important?*

Eighteen percent of all Ecuadorean banana exports, 33 percent of those of Costa Rica, and 46 percent of those of Colombia are exported to the EU. Latin American suppliers fear that the above objectives of the EU may not be achieved without

an increase in the import tariff from the current level of €75 per tonne, and that this would erode their quota rents as well as their competitiveness vis-à-vis ACP suppliers, in particular African countries. They feel that a high tariff will result in a loss of EU market share in the medium and long term, and therefore will not be “equivalent” to the current system.

The situation is different for ACP countries, whose bananas enjoy duty-free access to the EU market under the Cotonou Agreement. If the single tariff is too low, then their tariff preference might not be sufficient to offset the difference in competitiveness between them and suppliers of dollar bananas. ACP suppliers, in particular those with higher production costs, fear that a low tariff will erode their preferential access to the EU market and result in their exclusion from this market. This market is critical to their banana sectors. Virtually all bananas exported from Jamaica, Suriname, Belize and the Windward Islands are destined for the EU. Similarly, some 90 percent of banana exports from the Dominican Republic, Cameroon and Côte d'Ivoire go to the EU.

Analysts argue that it will be difficult to determine a tariff equivalent which would maintain the *status quo*. The impact of the tariff-only system would vary on a country by country basis, depending on the level of the tariff applied:

- a high tariff would leave Latin American exporters in competitive disadvantage relative to ACP and EU producers;
- a low tariff would favour Latin American exporters and leave ACP and EU producers at a competitive disadvantage; and
- an intermediate tariff level may result in an expansion of exports from Latin American countries and some ACP

countries to the EU and a decrease in EU domestic prices.

Thus, different interpretations have been given to the effects that the tariff-only system is supposed to achieve. Stakeholders claim tariffs that range from less than €75 to €300 per tonne (table 5). Latin American suppliers request a low tariff while ACP suppliers request a high tariff, since this tariff would only apply to their Latin American competitors.

As explained in this note, one of the key conclusions is that it is unlikely that a single policy instrument would preserve the interests of all the stakeholders, and therefore that the negotiation is inevitable.

- *How do stakeholders arrive at these estimates?*

In most cases stakeholders base their claims on the conclusions of analytical studies. These studies can be classified into price-gap analysis, accounting methods and simulation models. Price gap analyses measure the differences between internal and external prices, accounting methods compute tariff equivalents as the sum of the quota rent plus tariffs, and simulation models are mathematical representations of trade. While the WTO recommends price-gap analysis because of its transparency, some analysts have doubts about the appropriateness of using market prices and have suggested accounting methods. Other analysts have argued in favour of methods that can offer the opportunity to explore the actual impact of various tariff scenarios on supply and demand, such as simulation models.

The next section reviews a number of the key studies. It shows that the studies have a similar conception of world banana trade, but that they differ in terms of the data sets used, and the assumptions and the issues explored. This makes the comparison problematic. Table 6 highlights the key similarities and differences between them.

The methods used in these studies are not mutually exclusive. The accounting method has been used by some analysts to do price-gap analysis, and these two methods are used by analysts to calibrate their simulation models. For example in building the 2000-2002 baseline of a banana model, FAO (2004) calculated the cost to importers of supplying dollar bananas to the EU as the sum of the “internal” quota rent generated by importers of quotas A and B plus the tariff. The “internal” quota rent was calculated as the differential spread of free-on-rail (f.o.r.)-to-wholesale prices in the United States (a free market) and the EU. Borrell and Bauer (2004) use industry and publicly available data to find the level of preference currently afforded to ACP countries (they consider it to be equivalent to a

price-gap calculation), which is then used to calibrate the model.

4 Brief review of existing studies

- *Simulation models*

One of the most widely quoted studies of the impact of a tariff-only system on banana trade is that of Borrell and Bauer (2004). These authors use a modified version of the “Banarama” model developed by Borrell and Yang (1990). In this study, the authors use a net-trade partial equilibrium, dynamic model with synthetic⁵ parameters to represent the world banana market, and explore the effects of various tariff scenarios on market access for Latin American suppliers. After calculating the difference between c.i.f. Latin America and c.i.f. ACP, they argue that ACP producers do not currently receive the full tariff preference of €75 per tonne. Given other uncertainties in the market, they find that only a tariff lower than €40 per tonne will guarantee that Latin American exporters would not lose market access. They also use the model to explore the impact of a tariff of €300 per tonne, and conclude that in this scenario ACP would displace a large proportion of dollar bananas in the medium to long term. Key assumptions of the model are that African supply responsiveness is equivalent to that of Latin American producers, that no quota rent is captured by suppliers and that per capita consumption of bananas in the EU is declining. The authors seem to assume that licence holders have enough market power so that they do not need to share quota rent with their suppliers. An interesting feature of the study is that the model is run 10 000 times to assess the robustness of output to changes in key parameters.

⁵ Synthetic parameters are parameters that have been adjusted by expert judgement unlike econometric parameters which are solely obtained by regression analysis.

Table 6: Main characteristics of studies reviewed**Studies that calculate a tariff equivalent**

	Objective of tariff-only	Tariff equivalent (€ per tonne)	Methodology	QR ¹ of suppliers € per tonne)
Raboy (2004)	Maintain Latin American market access	106-143	Price-gap	68
Guyomard et al. (2002)	Maintain status quo	182-239	Accounting and partial equilibrium	182
Guyomard et al. (2004)	Maintain status quo	227	Partial equilibrium	n/a
Borrell and Bauer (2004)	Maintain Latin American market access	64	Partial equilibrium	0
NERA (2004)	Maintain competitiveness of Caribbean producers	197-259	Price-gap and accounting	122-184
AGREEM (2004)	Maintain status quo	252	Price-gap	n/a

Studies that test the effect of various tariff levels

	Model	Objective of study	QR captured by suppliers (€ per tonne)	Parameters	Long run price elasticity			EU demand	Time
					Latin America	Africa	Caribbean		
Borrell and Bauer (2004)	Partial equilibrium	Maintain Latin American market access	none	Synthetic	3	3	1	Decreasing	Dynamic
Spreen et al. (2004)	Spatial equilibrium	Test various tariff equivalents	n/a ²	Econometric	0.4 to 1.44	1.1	1.02	Constant	Static
Vanzetti, Fernandez de Córdoba and Chau (2004)	Global simulation model (GSIM)	Test various tariff equivalents	€60 per tonne	Synthetic	0.48	1	0.48	n/a	Static
FAO (2004)	Partial equilibrium	Test various tariff equivalents	unknown	Econometric	1.1 to 1.5	0.69	1.16	Growing	Dynamic

¹ Quota rent. Assumptions on the share of QR captured by suppliers can have an effect on model results; see section 5 of this report

² Not available.

The original Bananarama model also provided the basis for Guyomard et al. (1999) to build a constant elasticity net-trade partial equilibrium model to assess the welfare effects of CMOB. The authors recently updated this study (2002), calibrated the model with 1996-1998 average values, with the objective of finding a tariff equivalent that would leave aggregate ACP and aggregate dollar banana imports unchanged in 2006 relative to 2005. Their model suggests that a tariff "equivalent" of €182 per tonne would leave ACP and dollar banana imports to the EU unchanged in 2006 relative to 2005. This equivalence would be valid only for 2006, as time shifters in the demand and supply equations result in dynamic effects that require the setting of different tariff equivalents for subsequent years. They assume that suppliers will capture a large share of quota rent in 2005. The quota rent is calculated as the average c.i.f. price in the EU, minus the sum of transportation costs between the EU import market and the dollar export zone, the average commercial margin, and the average f.o.b. price in the dollar zone. They updated the study once again in 2004 and arrived at a tariff of €227 per tonne.

Researchers at the University of Florida used a spatial equilibrium model (Spreen et al., 2003) similar to that of Kersten (1995, 2004) to study the potential impact of various EU tariff levels on ACP and Latin American exports. Taking 1999-2001 as the baseline period, they simulate three scenarios (i) free trade, under which the Caribbean ACP countries would stop exporting bananas, (ii) a tariff of €75 per tonne that would substantially reduce exports from ACP countries to the benefit of dollar countries, and (iii) a tariff of €300 per tonne which would leave ACP exporters in a slightly better position than in the baseline period. This study does not explore how quota rents are distributed along the chain.

Vanzetti et al. (2004), using the Global Simulation Model (Francois and Hall 2003), studied the effects on world trade of the loss of quota rent from the implementation of the tariff-only regime. The model allows the computation of imports by origin, making it an attractive tool to identify trade flows. The results of the model are sensitive to two key parameters: the elasticities of substitution between imports of different sources, which they assume to be 5, and the quota rent captured by suppliers. Out of an estimated total quota rent of €300 per tonne generated by the system, the authors argue that suppliers capture €60 per tonne. The authors seem to assume that licence holders have enough market power not to need to share quota rents with their suppliers. Based on these assumptions, they conclude that "maintaining the €75 per tonne preferential tariff on non-ACP exports is more than adequate to compensate the ACP countries for the loss in quota rents." In terms of banana exports to the

EU, this tariff would expand non-ACP exports by 30 percent, and ACP exports by 26 percent.

FAO has explored the effects of a tariff-only system on world banana trade with the aid of two different models. A synthetic⁶ model built in early 2002 (FAO 2003) projected world banana trade until 2010, and found that a tariff of €300 per tonne would maintain EU imports unchanged in 2006 relative to 2005. This model assumed parity between the dollar and euro, and did not take into consideration the EU enlargement of May 2004. A different model currently being developed (FAO 2004) incorporating econometrically estimated parameters, explores the impact of the tariff only regime, includes new EU accession countries and simulates exchange rate variations. Preliminary results indicate that, given a number of assumptions (inter alia that ACP suppliers capture 50 percent of the quota rent), a tariff of €141 per tonne would be required to maintain the shares of ACP and dollar bananas unchanged in the EU market in 2006 relative to 2005. This tariff would produce an expansion in the volume of EU imports of 11 percent, a fall in EU domestic prices of 18 percent, and an increase in tariff revenue of 108 percent.

In summary, the simulation models of the transition to a tariff-only system in 2006 have similar structures (net-trade partial equilibrium) but differ significantly in their assumptions and results. Key differences in these assumptions relate to the value and distribution of the quota rent⁷, price elasticities, the euro/dollar exchange rate, the competition from other fruits and the nature of the demand in the EU and are explored in more detail in Section 5. Despite all these differences, these studies indicate that no tariff equivalent would maintain the status quo: A low tariff would benefit Latin American suppliers and hurt EU domestic and ACP suppliers. A high tariff would benefit ACP and EU domestic suppliers, but hurt Latin Americans. And an intermediate tariff value would foster an expansion of both ACP and Latin American imports, but could affect EU domestic suppliers because of a fall in the EU domestic price.

- *Price-gap analysis*

Raboy (2004) argues that simulation models may not be well suited for estimating tariff equivalents, as their validity rests on a precise estimation of elasticities, which may be very difficult, if not impossible, because of the poor quality of the publicly available data on prices and quantities and because using estimates of elasticities on the

⁶ A synthetic model uses parameters that have been adjusted by expert judgement.

⁷ The value of the quota rent captured by suppliers has a significant influence on supply as discussed in section 5 of this note.

basis of historical time series data is questionable when projecting response under a different policy regime. As an alternative, he adopts price-gap analysis, which was also indicated in Annex 5 of GATT's Agreement on Agriculture (AoA) as the preferred methodology for estimating tariff equivalents. He computes the price gap as the difference between the internal price of the market applying the quota, and the external price, but warns that key assumptions underlying the validity of this approach should be subject to further investigation, including the "small country" assumption and that of a perfectly competitive market. In addition, he argues, the analysis is complicated by the need to separate the effects of the quota from the tariff preference granted to ACP countries.

Raboy's policy objective is to find a tariff that would maintain the level of imports of dollar bananas. He defines the internal price as the weighted average of bananas originating in territories that are formally part of the EU, and of bananas imported from countries with trade preferences (ACP countries). Lack of data prevents him from computing a fully weighted average, and he approximates this value by estimating from EUROSTAT data the weighted c.i.f. price for ACP-sourced bananas only. For external price he takes a literal definition given by the AoA, as the average c.i.f. unit value of a near country, and he proposes Norway. The gap computed for Norway has to be discarded because of an outlier, and he decides to construct an external price using the United States, adjusted for differences in transportation costs. He computes a value for the price gap of €68 per tonne.

The calculated gap, he argues, may measure not only the effect of the quota, but also capture some of the protection given by the tariff, but since there is no empirical way of measuring the additional contribution of the tariff, the tariff equivalent is estimated as being somewhere between €143 per tonne (where the tariff effect is not captured) and €106 per tonne (where 50 percent of the tariff effect is captured). If the tariff in a tariff-only regime is set higher than this range, the study states that the volumes of Latin American banana imports "will be less than current levels".

Borrell and Bauer (2004) also use price-gap analysis to measure the current level of ACP protection. They also use the ACP c.i.f. price as the internal price, but they claim nothing needs to be added back. They claim that this price captures the whole share of the price advantage received by protected producers due to the effect of both the tariff and the quota. They take the fact that there were more ACP fruit imports than ACP quota in 2003 as an indication that marketers with import licences no longer have to pay any share of the quota rent to secure supply. Thus, they

conclude that producers no longer receive quota rents, but only tariff rent, and find a tariff equivalent of €64 per tonne, namely the difference between the c.i.f. price of Latin America and the weighted average c.i.f. price of ACP suppliers.

NERA Economic Consulting (2004) also uses price-gap analysis to estimate a tariff equivalent, but unlike Raboy, they assume that the objective of the tariff is to leave the internal EU price unchanged, thereby protecting the weaker ACP producers in the Caribbean. They argue that this is equivalent to finding the "competitiveness gap" of the marginal supplier, more specifically the higher cost producers who compete with domestic EU suppliers. They compute it as the difference in f.o.b. prices between Caribbean and dollar bananas. NERA argues that this methodology has the advantages of avoiding complex comparisons of EU prices with those of nearby countries, reducing the distortions to price gap measurement created by the quota rent, and side-stepping the need to estimate transportation costs. They arrive at a value of €259 per tonne, but warn that this may be a lower boundary, because the most important biases to their methodology contribute to underestimating the price gap (the downward bias is said to be generated, *inter alia*, by assuming perfect elasticity of Latin American supplies and lower transport costs for Latin America compared to the Caribbean). The authors argue that this tariff would maintain EU imports (provided dollar bananas have a perfectly elastic supply), maintain Caribbean exports, increase African exports (African exports are assumed to be currently constrained by the lack of access to import licences) and decrease dollar banana exports to the EU.

In summary, and relative to simulation models, price-gap analysis appears to be a simpler and more tractable methodology. However, the results depend on the choice of external and internal prices, about which researchers disagree. In addition, its validity rests on the assumptions that the importing country is small and that the market is perfectly competitive, both of which are highly questionable in the case of the EU, as explained below. Finally, price-gap analysis does not allow for projections of the impacts of the CMOB reform over time, unlike the simulation models.

- *Accounting methods*

An alternative method to price-gap would be to calculate the costs, profit margins and quota rents at each stage of the banana chain, and to compute the tariff equivalent as the sum of quota rents and tariffs. However, this approach would require information for all markets on production costs, transportation and administrative costs, including the price of licences, and thus this method faces serious data constraints. For example, licences are not traded in public auction

but allocated to importers according to their previous performance (“historical references”). Licences can be traded but only anecdotal evidence of their value is available. This is due to the fact that there are no official figures (the available data come from industry sources). Another problem is that licence prices change continuously.

Raboy’s price-gap analysis (2004) provides an illustration of the limitations researchers face in trying to account for transportation costs. NERA (2004) also provides an interesting example of approximating a tariff equivalent through this method. Based on information provided by industry sources, NERA assumes that licences to import within quotas A and B have a market value of €122 per tonne. This figure, they argue, is the premium paid for the right to import from the dollar zone, to which the tariff of €75 per tonne needs to be added for these bananas to be sold in the EU market. Thus, this method gives them a total “level of protection” for ACP bananas of approximately €195 per tonne.

5 Why do results differ?

As explained above, different methods have been used to calculate the tariff equivalent to the current tariff-quota system governing banana imports into the EU. In addition, and independently of the method used, different interpretations of the policy outcome that the tariff-only system should achieve have been made. For example, the value of the tariff obtained is different depending on whether the objective is to maintain import volumes from Latin America at their current level or to maintain banana prices in the EU.

The methodologies and studies reviewed are of interest because they shed light onto different areas of the debate. Key assumptions and uncertainties that all the models share include: defining the relevant prices, deciding who the market players are, understanding how market players respond to the change in import regime, and the specification of EU import demand.

- *Which prices should researchers use?*

The prices used have a key influence on the results for both simulation models and price-gap analysis. In theory, EU internal prices could be approximated by c.i.f. prices plus the cost of the licence if the following conditions applied: perfect competition, licences sold to importers in a public auction, importers granted the right to purchase from any source, bananas enter duty free within the quota, the quota is binding, and consumers have homogeneous preferences. However, very few of these apply to the reality of this particular market, where: most import licences are allocated according to historical records to a limited number of importers, some licences (quota C) are

reserved for imports from ACP countries, some countries are granted duty free access but not others, and there appear to be differences in fruit quality. Therefore, it is not surprising that researchers struggle to decide what prices to use, or in determining how differences in c.i.f. prices between ACP and dollar bananas reflect tariff, import quota or fruit quality effects.

A clear example of this confusion is observed in what the WTO argues is the most transparent methodology for finding tariff equivalents: price-gap analysis. Compare for example Raboy’s external (€563) and internal (€631) prices with those used by NERA (€259 and €560). Different simulation models also use different prices, for example FAO (2004) assumes that the world price is the internal EU price minus the tariff (if applicable) and minus the quota rent, while Borrell and Bauer assumed that it is the c.i.f. price of bananas imported under quotas A and B. In estimating a tariff equivalent, however, it should be pointed out that Annex 5 of the Agreement on Agriculture indicates that, in general, in price gap analysis internal prices should be wholesale prices, and external prices should be c.i.f. prices.

- *Who are the market players?*

Although world banana trade is concentrated in a small number of multinational companies, each of which has interests in many major exporting countries, most analysts specify their models under the assumption that the market players are countries rather than companies. To the extent that tariffs and quotas are applied to countries, and that little trade data for multinational companies is available, this approach appears to be justifiable. However, researchers need to explore the consequences of this assumption vis-à-vis the concentration of trade along the supply chain, which is characterized by a succession of oligopsonist and oligopolist markets.

- *How do market players respond to the changing import regime?*

This is a fundamental question that underlies any attempt at quantifying the effects of the new import regime, but unfortunately not all the models reviewed share the same architecture. Some studies assume demand and supply to shift over time, while others assume them to be static. In addition, the values of the elasticities differ widely across studies. For example, some researchers use relatively high values for Cameroon (up to 3 in Borrell 2004), while others have more conservative estimates (1.4 in FAO).

The values of elasticities are different because most researchers have reservations about the quality of the data available. Some have tried to estimate them econometrically, while others prefer to use values from other models (for example Guyomard et al. using the Bananarama model).

Some researchers have tried to tailor elasticities for specific countries, while others assume that it is possible to apply one value to entire regions. For example Vanzetti et al. (2004) assume that African ACP countries have a price elasticity of 1, and Latin American countries of 0.48.

Some researchers obtain the elasticity values from running simulations in other synthetic models. For example, Borrell and Hanslow (2004) use GTAP to decompose supply elasticities into separate components. Taking the case of Ecuador, they obtain a long-run elasticity of 2.9, a value which is much higher than reduced-form econometric estimates. Arguing that Africa has the capacity to adopt a similar level of technology and benefits from good natural resources for growing bananas and low cost of land, they claim that a similar long-run elasticity (of around 3.0) is likely in Africa. However, they do not provide a similar case study in Africa to support this claim. A recent paper (Horus, 2004) argues that a significant expansion of banana exports from Cameroon and Côte d'Ivoire in the future is unlikely due to the scarcity of land suitable for banana cultivation, the insecurity of land tenure and the limited access of growers to the capital of multinational banana companies.

Many critiques of simulation models have been made. A first one is the suspicion that long-term elasticities may not be constant. Technological and structural changes in the banana industry suggest that (at least) the supply curves are shifting. A second critique is that simulation models do not take into account the fact that higher-cost supplying countries are likely to simply stop exporting if banana prices in the EU fall below a certain level, in particular below their total cost of production and marketing (which for example may lead to underestimating the adverse consequences of a low tariff on the Windward Islands). A third critique is that the assessment of the likely responses of market players to changing policy regimes also requires a definition of two additional sets of parameters: firstly how market players will respond to their loss of the quota rents, and secondly how world prices would change with the new regime.

As far as the quota rent is concerned, analysts have yet to produce a convincing estimate of how much of it is captured by each market player. Even the quantification of the *total* quota rent generated is problematic because licences are allocated according to past records and only anecdotal evidence exists of their market value. On the supply side, market players are mostly vertically integrated firms that trade their own production as well as substantial volumes from independent producers (Arias et al. 2004), and therefore the share of quota rent captured by suppliers needs to be estimated with data that is not publicly available. On the demand side, the studies have yet to explore how much quota rent

is captured by importers, and how their loss would be passed-through to wholesalers and retailers.

A fourth critique is that what matters to suppliers (consumers) may not be the EU import price, but the price they receive (pay) for the goods. An assessment of supply (or demand) response to policy changes requires knowledge of how prices are transmitted through the chain. McCorrison (2003) shows that in situations of successive oligopolies, not much market power is needed for price transmission to be limited, as the impact of market power at one stage may be exacerbated by the characteristics of the next stage (McCorrison 2003).

The high level of concentration at import, wholesale and retail levels of the EU banana trade suggests that price transmission may be imperfect. Thus, there is the possibility that the policy outcomes of studies, where analysts assume perfect competition following the transition to a tariff-only system, may be different from what is likely to occur in reality (McCorrison and Sheldon 1996). Nevertheless, Herrmann and Sexton (2001) did not find definitive evidence of market power in the German banana market prior to the Single European Market (SEM) and thus deduce that conclusions about market conduct should not be drawn from market structure. Preville (2003), however, uses a similar approach and finds some evidence of market power. In any case, the lifting of quotas is expected to increase the number of players, and therefore competition.

Finally, McCorrison (2004) has argued that under imperfect vertical competition along the chain, different trade policies can affect the degree to which market power is exerted. In other words, the substitution of a TRQ by a tariff-only system may result in changing market strategies by the large multinational companies that dominate the banana trade. For example, the elimination of historic licences will allow the participation of a larger number of sellers, and multinational companies will need to adjust their strategies to the new market environment.

- *Why does the distribution of the quota rent matter to suppliers?*

The amount of quota rent captured by suppliers is important for analysts, as this parameter measures the extent to which suppliers benefit from the current TRQ system. However, the assessment of supply response following the loss of quota rent is not straightforward. Only "operators" have rights to licences, and these are defined as persons or registered companies that have imported bananas into the EC over a specific period of time. These operators may or may not capture quota rent depending on how much they need to pay suppliers to secure trade. On the one hand, operators that purchase bananas from the world market may not need to

share their quota rent because they face an inelastic supply (competitive transactions). On the other hand, many "traditional operators" (as defined by the 2001 version of CMOB) can also be qualified as suppliers because they are directly involved in the production or shipping of bananas in the producing countries.

The quota rent is thought to be of particular importance to ACP suppliers. If no quota rent were captured by them, the only benefit of the current system to them would be the tariff preference of €75 per tonne. While Borrell claims that this is the case, many researchers argue that ACP suppliers benefit from quota rents in the form of higher prices. When operators with rights to import licences are controlled by ACP producers, the latter capture all the quota rent. The Caribbean Banana Exporters Association (CBEA)'s position in the negotiations is an example of how the loss of quota rents following the shift to a tariff-only system may affect supply. CBEA suggests an EU tariff of €275 per tonne, and therefore implicitly states that it needs an incentive of at least €200 per tonne beyond the current tariff preference of €75 per tonne for exports from the Windward Islands to be viable.

- *What is the nature of banana demand in the EU?*

All EU member countries are subject to the same import regime, and yet the aggregation of demand into a unique equation, as assumed in most models, is questionable. Firstly, there are historical and cultural reasons why consumers have a preference for bananas of specific origins. For example Germany imports bananas mainly from Latin America, the United Kingdom imports substantial quantities from the Caribbean, and large shares of the bananas consumed in France and Spain originate from EU territories. This suggests that EU demand would be better split into individual countries, and represented by a model that distinguishes imports by origin (as for example the well known Armington type models; see Vanzetti et al.). However, these models tend to be strongly influenced by the elasticities of substitution used, and no research is currently available that indicates what their values may be.

Secondly, the time series available to estimate aggregate demand elasticities for the EU is short and has many potential structural breaks. Trade distorting effects of the TRQ, the successive changes in banana import policies and the two enlargements of the EU during the last 10 years have not allowed the estimation of statistically significant aggregate demand elasticities. This means that in most cases researchers have been inclined to assume these to be similar to those of other markets (such as the United States), or to rely on synthetic values based on expert judgement.

It is unclear whether there have been changes to the EU demand curve, other than those related to price movements in recent years. According to Borrell and Bauer (2004), during the 1990s, the total population of the EU increased, banana prices fell, and per capita consumption diminished. They have taken this as evidence that the EU demand for bananas has stagnated or fallen, and in calibrating their model to the past decade, they required a declining trend of 2 percent per year to explain their computed fall in quota rents.

The exchange rate of the Euro to the dollar also has a significant impact on the results of simulation models and much uncertainty exists as to its likely value in 2006. In the last two years this rate has exhibited variations of over 50 percent. Within this range, a tariff of €200 per tonne would have translated to a dollar denominated tariff of 164 to 260 US dollars per tonne, which represents a considerable difference for Latin American suppliers.

6 Next steps: areas requiring further research and data

The prices used are critical parameters which significantly influence the results of all analyses. Deciding on a specific price is especially difficult due to the confidential nature of prices along the marketing chain. Also, researchers need to know the value of the quota rent in order to construct the internal EU price.

The value of the quota rent is therefore another critical parameter of the analysis. However, it is difficult to estimate. Anecdotal evidence on the price of import licences in the market suggests that quota rents may have a market value of between €100 and €120 per tonne.

In addition, researchers need to know the distribution of the quota rent among operators in the banana marketing chain. This distribution is not known due to the lack of data on prices and uncertainties surrounding the bargaining power of the different market operators. Some researchers believe that most of the rent is captured by licence holders, i.e. importers. However, the vertically integrated structure of banana trade makes it likely that the rent is redistributed along the supply chain. Multinational banana companies encompass production, export, import, ripening and distribution operations. When they receive import licences, this rent probably benefits all these operations (including production), not only their import division. Similarly, some groups of banana growers and exporters control import companies in the EU which receive import licences. Quantifying the share of the rent that is captured by suppliers would be useful to researchers using econometric and price gap analysis methods.

The available data is far from sufficient. Accurate and reliable data on f.o.b and c.i.f prices is lacking and experience shows that unit values of exports and imports are not good proxies for these prices. Only companies have the type of information required to undertake a proper analysis of imperfect competition, but this information is commercially confidential and few researchers have access to it. Lack of good data prevents analysts from identifying the nature of supply and demand response; namely more research into supply and demand elasticities is required.

All the simulation and price gap methods reviewed in this document assume perfect competition. Herrmann and Sexton (2001) have not found evidence that market power is exerted despite the high degree of participation of multinational marketing companies. Other analysts disagree and argue that oligopolistic behaviours by importers have diverted profits away from producers and raised retail prices, as banana trade is characterized by a succession of oligopolies and oligopsonies along the supply chain from production to retailing. They consider that the market is virtually closed to new entrants. Empirical research in competitive and imperfectly competitive models is needed to test competing theories. This issue is of key relevance because no tariff equivalent would exist where an imperfectly competitive market prevails.

7 Concluding remarks

Each method reviewed that calculates tariff equivalents has its strengths and weaknesses, but the most pressing issue that needs to be determined before selecting a particular methodology is the rationale for choosing specific prices.

Policy makers should at the outset evaluate the results according to the objective set in any given study and to the assumptions made. As indicated

in this report, the various studies produced so far have often differed in their objectives (i.e. maintaining total imports from Latin America, or maintaining export earnings from ACP countries, or keeping EU prices stable), and have therefore found different “optimal” tariff values. It is equally imperative to test deviations from the assumptions and observe how the results are affected. Such sensitivity analyses will generate a range of estimates of the tariff equivalent rather than a single value.

The wide diversity of stakeholders and their conflicting interests makes the search for a consensus on a single tariff extremely difficult. In addition, neither the “dollar suppliers” nor the ACP suppliers are homogeneous groups of countries. Within the ACP group, for example, there are considerable differences across countries in terms of production structures, productivity, competitiveness and capacity to respond to demand changes. As a result, the reform of the EU banana regime will have very different impacts on each of them.

It seems unlikely that there exists a tariff equivalent that would maintain the *status quo* in all regards. A single policy instrument is not likely to be sufficient to preserve the interests of all the stakeholders. From a policy perspective, it may be preferable to use not just one, but several policy instruments. For example, some analysts advocate a tariff preference on a low tariff rate combined with deficiency payments or direct income support to the most vulnerable producers. However, others are less certain as to whether these measures would have the same effects on the local economy as trade preferences, arguing that banana production has multiplier effects in terms of generation of income and jobs that direct payments do not have. They also suggest that too high a deficiency payment might not be compatible with WTO rules.

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Food and Agriculture Organization of the United Nations (FAO)

Viale delle Terme di Caracalla

00100 Rome, Italy

Telephone: (+39) 06 57051

Fax: (+39) 06 57053152

E-mail: TradePolicyBriefs@fao.org

www.fao.org
