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Bananas, the GATT, the WTO and US and EU domestic Politics

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Bananas, the GATT, the WTO and US and EU domestic Politics*

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Abstract

This paper revisits the celebrated conflict that lasted close to two decades and pitted the EU against the US and against MFN suppliers of bananas. It starts by recalling the major turning points in the dispute and argues that the EU-US conflict could largely be explained by the changing landscape on trade-policy making on both sides of the Atlantic. As to the EU-MFN grower dispute, it can be largely explained by uncertainty on the distribution of quota rents and on the reluctance to use economic analysis in the panel decisions. Econometric and simulation estimates are given in support of this argument.

JEL: F11, F15,

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«On a rarement vendu sous l'étiquette 'L'Europe Sociale' davantage de mensonges, de privilèges et d'injustices »

Patrick Messerlin,

«Mourir pour la Banane», Le Figaro, 19/9/1997

« Le cœur du conflit, exemplaire, reste que la production latino-américaine de la banane, outre des atouts physiques indéniables, trouve l'essentiel de sa compétitivité dans le niveau scandaleusement bas des salaires versés aux paysans, alors qu'aux Antilles les salaires versés sont au niveau du SMIC européen »

Michel Rocard

« Pour que Vive la Banane », Le Figaro 10/11/1997

1 Introduction

After rice, wheat and maize, bananas are the world's fourth most important food crop. It is a staple food and a key export commodity for many low income countries. 'Bananas' was also the longest running dispute in the post WWII multilateral trading system. It started in 1991 when an MFN supplier, Costa Rica, expressed concerns that the EU's impending banana regime triggered by the Single Market Program would discriminate against Central American MFN suppliers. The ensuing unresolved disputes and claims (8 disputes and 5 claims according to W/T/L/784) took eighteen years to be brought to rest when in December 2009 agreement was reached calling for a progressive lowering of the (specific) import tariff on MFN bananas from 176€/ ton to 114€/ ton by 2017.

The banana case is interesting in several respects. First, it is a perfect textbook case of the economic effects of a tariff-rate quota (TRQ) regime as taught in the classroom since bananas is a homogenous product. Second, from the point of view of dispute settlement, while the functioning of the TRQ regime was not transparent, the agreed-upon decision on the move from a TRQ regime to a tariff-only (TO) regime was, in principle, easy to adjudicate as it was not hostage to litigation on interpretations about 'like product' litigation, or on technical barrier to trade. Third, the vagueness in the panel decisions, in the compromises among the parties and in the rules for tariffication all contributed to delays in reaching a denouement. Fourth, it is an interesting case of how the then two largest trading partners, the EU and the US, came to fight over a product that was not produced on either continent. Finally, straddling equally the GATT and WTO periods, the narrative of the dispute is a good example of the application of GATT rules of the progression in their application and in the progressively greater reliance on rules in resolving disputes.

In addition to a good illustration of the ascendancy of rules in trade conflicts between powerful and less powerful countries, the “banana split” in transatlantic trade relations is an interesting case study of how particularistic interests prevailed in the trade-policy decision-making in the EU and the US. As the above excerpts from an interchange in the Press indicate between Patrick Messerlin and Michel Rocard (who had been Prime Minister at the time the TRQ regime was under elaboration), the debate was spirited. Not engaging in the debate would have been uncharacteristic of Patrick Messerlin who always stated his views with clarity and conviction¹. It is therefore a pleasure to revisit the after the conflict was resolved.

Section 2 gives background on the sources of the conflict. Section 3 recounts the milestones in the conflict at the GATT and then at the WTO. Section 4 reviews the role of trade-policy decision-making in the EU and domestic politics in the US shaped the transatlantic conflict until the launch of the Doha Round, at which time it had been resolved, then how the creation of the WTO contributed to the resolution of the settlement with the MFN suppliers. Sections 5 and 6 show how greater reliance on straightforward economic analysis would have shortened the length of the conflict. Section 7 concludes.

2 The contours of the internal and external conflicts on the EU’s banana’s trade regime.

I describe briefly the history of the conflict that proved so resistant to mediation within the EU, in transatlantic relations, and within the multilateral trading system (important dates and outcomes are summarized in table 1). I start with some background then turn to the elaboration of the EU’s banana’s trade regime that was required by the formation of the Single European Market (SEM) in 1993.

2.1 Background

In the late 1980s, 75% of the world banana’s exports originated from Latin America (Ecuador, Costa Rica, Colombia, followed by Honduras, Mexico, Nicaragua, Panama, Venezuela), all developing countries and henceforth the MFN suppliers. The EU consumed 40% of world’s bananas, with 1/3 coming in equal proportion from MFN suppliers, EU overseas territories (Canary islands, Martinique, Guadeloupe) and from former British and French colonies (the ACP countries). The level of self-sufficiency in bananas in the EU was thus much lower than for most other agricultural products, including most fruits.

As to the Banana Trade Regime (BTR) in the EU, prior to the creation of the single economic market, it was segmented, as Spain and France had overseas territories growing bananas (Martinique, Guadeloupe and Canaries) and, along with Britain had colonial ties with the ACP countries enshrined in the Lomé (1975) convention. Bananas originating from the African and Caribbean

¹ In the interchange, Michel Rocard cited Nobel prize Maurice Allais as espousing his views about the ‘scandalously low’ salaries in the Caribbean. Throughout the paper, I refer to the European countries as the EU even though it was initially the EC.

states were 'beneficiaries' of the Lomé 1975 convention. The legally binding article 1 of the banana protocol under that convention stated that:

"In respect of its banana exports to the markets of the Community, no ACP state will be placed, as regards to its traditional markets and its advantages on those markets, in a less favorable situation than in the past or at present".

When the SEM was put in place, cost disparities across suppliers were high with high-cost producers (EU territories and the Windward islands) over twice as high as those in Latin American suppliers.²

Before the start of the dispute, the banana market in the EU was segmented in three segments. The largest and most dynamic was the German market fuelled by German reunification where bananas were imported freely. In the middle was the Hanseatic market (Benelux, Denmark, Sweden) that applied the 20% Common External Tariff (75€ a ton bound at the Dillon Round). At the other extreme, France, Britain and Spain had closed markets: all of Spain's bananas came from the Canary islands, half of those eaten in France came from the Caribbean (Martinique and Guadeloupe) and the rest from Cameroon and Côte d'Ivoire. Three-quarters of bananas consumed in Britain came from the Caribbean, with over half from the Windward islands (Dominica, Santa Lucia, Saint Vincent, and Grenadines).

The trade in bananas from the EU overseas territories and the Caribbean was dominated by two firms, Geest (British) and Fyffes (Irish). The MFN bananas were marketed by Chiquita, Dole, and Del Monte. Chiquita who sourced in Latin America sold almost two-thirds of the world market and had 90% of the German market which was the most open (with zero tariff).

Moving to a SEM created two problems, an internal and an external one. Internally, with the single market where bananas circulate freely in the EU, if a tariff-only (TO) rate at approximately the CET rate had been adopted, then the commitment under article 1 of the Lomé convention would have been undermined and the EU producers would have been shut out. As described below, the solution that was adopted was to create a system of quotas that restricted entry to all non-ACP bananas at a level that would have also maintained the marginal EU producers in the market.

² Throughout, the conflict was about "Cavendish" or dessert bananas. These are homogenous and are always packed in boxes of 17 kilos. During the conflict, per-ton costs (FOR or FOT) of the low-cost suppliers were between 150-200\$/ ton while those of the Windward islands were 500\$/ton and in Martinique 700\$/ton (Vanzetti et al (2004) and Borrell (1999)) Chiquita sourced its bananas from MFN suppliers while Dole, the second largest seller in the EU market sourced largely from ACP producers.

The result was that the Germans then had to pay higher prices.³

Externally, the problem was that the Lomé convention contradicted the principle of non-discrimination (GATT article I). However, three caveats under the GATT allowed countries to discriminate against third parties: (i) the ‘enabling clause’ or ‘special and Differential Treatment (SDT) adopted in 1979 in the GATT’; (ii) Under article XXIV when creating an FTA or a CU; (iii) Under article XXV, countries can agree to a waiver for any rules, i.e. can permit discrimination. As the Latin American MFN exporters were developing countries, SDT was excluded, and since option (ii) did not apply, this left only option (iii) as the justification for article I of the Lomé convention. Indeed, throughout the conflict, no country objected to granting a waiver from article I.

At the time of the conflict to be described shortly, the most important issue was the extent of rents and who was going to get them since there was no open market for quota licenses and these licenses were distributed by the EU to the major operators described above. At the time, the price differential between the US internal price where bananas entered duty-free and the EU internal price was fairly constant (Vanzetti et al. 2004, figure 3)). Since the SEM in 1993 meant that imported goods could be re-exported to other member states, a comparison of prices in a tariff-free market like the US where the (homogeneous) bananas entered duty-free and any market in the EU (France in table 1) gives an estimate of the rents up for capture. According to table 1, the price was between 40% and 60%. Taking the lower figure, this amounts to \$400 or €300 per ton at the \$/€ exchange rate (\$1.3=€1 in 2004). Since the same quality bananas were sold in both markets and shipment costs were sensibly the same, with a market of about 4000 ton per year, rents (including tariff revenues and rents to suppliers and marketers) were at least € 1.2 billion per year.⁴

	USA		France	
	Import	Retail	Import	Retail
1990	0.66	1.19	1.19	1.41
1993	0.48	1.02	0.79	1.11
1998	0.46	1.01	0.73	1.72
2000	0.38	0.98	0.43	1.26
2001	0.50	0.96	0.51	1.40
2002	0.45	0.95	0.44	1.32

Source: FAO(2003, tab. 6)

³ The Treaty of Rome almost collapsed as West Germany who had no colonies insisted on being exempt from applying the 20% bound tariff on bananas negotiated under the Dillon Round. This was possible prior to the SEM as article 113 allowed countries to have their own quotas and in effect their own trade policy (Benelux and other North European countries applied the CET) , while Germany imported bananas at zero tariff under a special protocol of the Treaty of Rome that permitted the right to unrestricted imports of bananas. Interestingly, Germany (supported by Belgium and the Netherlands) lost a case challenging the BTR adopted in July 1993 (see table 2) denying the direct effects of GATT provisions. When the GATT was replaced by the WTO with its enhanced power of dispute settlement, WTO decisions could no longer be rejected as they could under the GATT.

⁴ Several studies have calculated the rents accruing to license holders and the associated welfare costs to EU consumers of both the old BTR and the one adopted under the CMOB. Borrell (1999) estimated an annual welfare loss of \$2 billion per year of adopting the CMOB (an increase of 20% relative to the old regime) compared to free trade. Messerlin (2001) estimated a loss of ECU 582 million for 1990. Badinger et al. (2001) give estimates by categories of countries comparing the costs of the CMOB with the previous BTR regime based on trend projections.

2.2 Patching up the Common Organization of the Market for Bananas (COMB) Trade Regime

Because of the combination of a favorable climate, topography and soil and labor regulations in Canary, Guadeloupe and Martinique patterned on those in continental Europe, the creation of an open SEM would have had disastrous consequences for the banana industries in the French, former British Caribbean, and other EU territories. Representatives of these states and territories argued that climatic conditions prevented them from diversifying into other products and that the abolition of the prevailing BTR would lead to their economic ruin while politicians in EU countries with overseas banana production would face 'political suicide' if they abolished the BTR. Five years of negotiations in the EC led to the 'Common Organization of the Market for Bananas' (COMB), a hard-fought compromise that replaced the then prevailing BTR. This new regime was compatible with the requirements of the SEM and the obligations towards maintaining market share for ACP producers under the Lomé 1975 convention. As explained below, this compromise was entirely at the expense of MFN producers and the US sellers of MFN bananas in the EC.

Borell (1999) and others have argued that, on paper at least, the EU had several options that would have largely dominated the COMB. Besides establishing a single unified market, the most significant change of the COMB amounted to a new quota allocation scheme that would in effect result in the subsidies to inefficient ACP and EU suppliers being paid by MFN banana traders in the EU market (i.e. the US multinationals) in part because of the pressure on expenditures associated with the Common Agricultural Policy (CAP).⁵ In a series of studies summarized in his 1999 paper, Borrell estimated that a tariff of 17 percent would have sufficed. However, this option would not have been possible as EU budgetary law prohibits tariff revenues to be ear-marked for product-specific subsidies. Therefore the money for the subsidies for producers would have to be raised by EU finance ministers who, in the 1990s wanted to contain any rising costs in the Common Agricultural Policy. As to compensation for ACP States, as the WTO panels repeatedly confirmed, the "Lomé waiver" would have been GATT compatible. Yet, the COMB was designed so that the burden of adjustment fell on banana traders of MFN suppliers.

The outcome under the COMB was exactly the opposite of the one predicted by the models of "interest-group" politics. As predicted by these models, by maintaining a high price, the COMB passed the costs of protection to consumers. However, one would have expected that the MFN suppliers/operators would have obtained some of the rents. Initially, however, this was not the case (see tables 2 and 3) as all licenses were awarded to EU marketers (see section 4), an arrangement that amounted to a 'winner-takes-all' outcome as EU traders and EU and ACP growers got all the benefits while growers and traders of dollar bananas got nothing.

⁵ Under the COMB, banana suppliers were split under three quota categories with quotas going directly to established banana traders in the EC (see table 3) ACP suppliers were exempt from the tariff on their quota allocations. Traders of ACP bananas had to purchase the higher-priced ACP bananas to be able to sell their bananas in the EU market.

3 The Conflict

Assembling the CMOB was a long process that lasted five years as a “qualified” majority was necessary in the EU since a “blocking minority” coalition of Hanseatic countries could have prevented the adoption of a new protectionist Banana Trade Regime (BTR). This explains why warnings surfaced at the GATT before the adoption of the CMOB. I start with a description of the conflict at the GATT, then turn to its evolution when the GATT was replaced by the WTO. The chronology of the main events and are entered in table 2.

**Table 2: Milestones in the Banana Dispute
2a: Under the GATT**

Number	Date/ Complaint	Motivation	Outcome
(1)	July 91 /Costa Rica (CR), Colombia (Co), Honduras (Hon), Mexico (Mex), Peru, Venezuela (Ve)	Warning to GATT Council to use UR to establish free trade in bananas as impeding EU banana regime would discriminate against Central American suppliers	Consultations fail
(2)	June 92/ Co, CR, Guatemala (Gua), Nicaragua (Nic), Ve	The 5 MFN suppliers request consultations with the EU.	Sept. 92: Consultations failed. Request good offices of the DG who suggests continuing informal discussions in Jan. 93 w/n UR→5 countries accept. Talks fail
(3)	Feb. 93 Above5 countries	Request for a panel against CMOB regime announced by EU council of ministers for July 93 on the following grounds: (i) would violate 20 percent maximum tariff binding on bananas granted to the EU under Dillon Round (ii) Quotas would violate article XI (iii) Tariff preferences for ACP violate article XXIV on FTAs and CUs	EU implements the new unified banana Trade regime (BTR)- 5 LA countries request a panel to examine the new regime June 93: "Bananas I" panel declares regime prior to BTR illegal and discriminatory Jan 94. "Bananas II" panel finds BTR discriminatory along: (i) preferential tariff treatment; (ii) preferential quota treatment; (iii) inconsistent quota allocation
(4)	March 94/Co,CR, NIC.,Ven.,	Withdraw legal action and accept direct allocation of quotas under EU "Banana Framework Agreement" (BFA). Gua. refuses	Sept. 94-Chiquita losses under BTR and BTA Obtains 301 investigation from USTR (Dole sourced bananas in ACP)
(5)	Dec 94/UR close	EU request waiver from art. 1 obligations for Banana protocol under Lomé I (1975) convention	EU obtains waiver until end of Lomé IV due in Dec.2000 (Lomé I-III discriminated between LDCs)

Table 2b: Under the WTO

Number	Date/ Complaint	Motivation	Outcome
(6)	Feb. 96/Ecuador (Ecu), , Gua, Hon, Mexico (Mex), US	Complaint under the Dispute Settlement System that EU banana regime unfairly restricted entry into the EU	May 97: "Bananas III": Panel rules that BTR regime is inconsistent with WTO rules: (i) EU quota to ACP was contrary to non-discriminatory allocation of quotas (GATT, art. XIII) (ii) Obligation to purchase EU/ACP bananas to import LA (or US) into the EU violated MFN (GATT, art. I)and NT (GATT art. III) (iii) Licensing system for service suppliers violated MFN under GATS (arts. II and XVII)
(7)	Jan. 99	EU adopts new banana import regime	April 99: "Bananas IV": New banana regime incompatible with EU's WTO obligations. WTO grants authorization to (i) US to apply sanctions (\$191 million) in Jan 99 On EU products entering US markets (ii) Ecuador sanctions (up to 201\$ million) in May 2000, to
(8)	April 2001	Agreement between Ecuador, US and EU that Ecuador and US will suspend sanction if EU moves to tariff-only (TO) regime by Jan 1, 2006. ACP still to retain preferences but not from country-specific quotas	Under agreement, EU has to re-negotiate market access agreements with all MFN suppliers and reach details on TO system so that the share of MFN suppliers be no less than before
(9)	Nov 2001 Doha Ministerial	Previous agreements formalized (including procedures and timetable in case of failure on the part of the EU to comply.	ACP bananas can enter tariff-free until Dec 31 2007.

Table 2b (continued) : Under the WTO

Number	Date/ Complaint	Motivation	Outcome
(10)	Jan 31 2005	EU informs WTO its new tariff of 230€ / ton (about 3 times the MFN rate of 75€/ton)	
(11)	March-April 2005/ (9) Brazil, Co, CR, Ecua., Gua, Hon, Nic, Pan, Ven.	Requests for arbitration under Doha ministerial decision	Aug. 2005: panel ruling : EU TO regime does not maintain market access for MFN suppliers
(12)	Sept. 12 2005	EU proposes a revised tariff of 187€/ton.	Further consultations among the parties No mutually-satisfactory solution
(13)	Sept. 25, 2005	Second arbitration by EU requesting an alternative (i.e. counter-proposal) to MFN tariff of 75€/ton) within 30 days.	Second arbitration issued: 187€/ton cum tariff quota of 775,000 ton on imports of ACP origin would not maintain total market access for MFN banana suppliers.→EU propose 176€/ton. →. Hon., Pan., Nic. Separately request consultations under DSU (art. 21.5)
(14)	Dec. 2005 Hong-Kong ministerial	Exasperation with EU non-compliance	Facilitator assigned to reach solution w/n 18 months.
(15)	Nov 2006-July2007	Ecua. first, then CO. and PA, then US file new disputes/request new panels	Feb. 2008. Duty-free quota for ACP bananas in violation of GATT art. 1 and 13. Adoption to be in place by 29 Aug. 2008 (EU appeals on Aug. 28).
(16)	Dec 2008	DSB adopts both reports (Ecua. and US)	EU reports to DSB it is in consultation with MFN suppliers to reach an agreement (proceedings along with those under “facilitator” confidential)
(17)	July-2008	Discussion at TNC	TNC unable to reach agreement under DR modalities on agriculture
(18)	December 15 2009	Comprehensive agreement	TO (bound) regime starting at 148€/ton in 2009 down to 114€/ton in 2017. Delay allowed if DR does not conclude

Sources: Barfield (2003), Cadot and Webber (2001) Badinger et al. (2001) and WTO (W/T/L784)

3.1 ... at the GATT

The conflict started when a group of banana producers expressed their concerns to the GATT council in 1991 (entry (1) in table 2) as they anticipated that the new BTR would be unfavorable to them. They hoped that these consultations would influence the design of the BTR prior to the conclusion of the Uruguay Round. Consultations failed so 5 GATT members requested a panel against the EU's CMOB announced to be put in place in July 1993 (entry 2). GATT-compatibility was objected to on three grounds, the most important being the allocation of quota licenses to companies (not to countries) that had traditionally traded EU and ACP bananas in the EU market ("Bananas II" in entry 3). The ensuing "Banana Framework Agreement" (BFA) helped assuage Colombia, the largest MFN supplier that had no licenses accorded to it under the CMOB but not Guatemala who did not receive any licenses and hence refused to sign the BFA (entry 4).

As the EU was failing to react to the panel decisions and Chiquita was not obtaining licenses, with the progressive capture of US trade policy decisions by interest-groups (see below), Chiquita obtained that the USTR file a 301 investigation against the EU.⁶ This was the first turning point since, regardless of the outcome at the GATT/WTO, the US had a credible threat to impose sanctions on EU imports, especially with the "carousel" method which selected imports subject to sanctions on a rotation basis.

The last significant decision under the GATT was the waiver obtained by the EU in the last hours of the Uruguay Round negotiations in December 1994, waiver that allowed the continuation of the BFA until 2000 when the new Lomé IV convention had to be approved (entry (5)).

3.2 ...at the WTO

Thanks to the waiver granted at the conclusion of the Uruguay Round, the EU had until 2000 to make its banana policy GATT-compatible. Except for Ecuador, the important dollar suppliers were GATT members. Yet until the change from 'consensus to accept' to 'consensus to reject' with the creation of the WTO, it was still possible for EU policymakers or EU courts to reject GATT decisions and to ignore the GATT panel rulings, as evidenced by the decision of the European Court of Justice in 1994 which rejected the GATT panel ruling. This changed with the dispute settlement process at the WTO. Also, Ecuador, by far the dominant MFN supplier, had now joined the WTO. With the complaints now lodged under the Dispute Settlement Understanding (DSU), panel findings were acquiring traction.

In May 1997, a WTO panel ruled that the EU BFA violated GATT rules in three respects (entry 6), ruling that was upheld by the Appellate Body in September 97 ("bananas III"). An important decision in the ruling indicating the move towards rule-based resolution of trade conflicts regarded the interpretation of the wording in the waiver from art. I. The wording referred to "preferential

⁶ Of course, in spite of the large campaign contributions by the banana traders to both Democrat and Republican parties, the then USTR denied any link between his decision and campaign contributions. In the late 1990s, Chiquita became the third largest contributor to political campaigns (Cadot and Webber (2002)).

Treatment in general” and not to “Preferential tariff treatment”, but the panel concluded that the wording did not allow the EU to interpret its meaning as it wished, i.e. to decide on the allocation of quotas⁷. The panel also found that BFA countries were allowed to manage their own export certification system while non-BFA countries were not.

Importantly, the panel ruled against the 30% allocation from the MFN quota (857 KT -see table 3)) given to historical importers of the EU and traditional ACP bananas (the allocation under category B in table 3). This allocation was between 50 and 100 KT greater than the best-ever export volume prior to 1991. In sum, , the decision required the EU to provide the same treatment to ACP and non-ACP suppliers in its quota allocations implying that it would not be allowed to cross-subsidize ACP bananas via the quota allocation mechanism. This meant that if the EU was to give legally quotas to the ACP on a basis other than in proportion to market shares in its BTR, it would need a waiver to art. XIII. This, in turn, would require a three-quarter support at the WTO (50% at the GATT).

A new banana regime announced by the EU in January 1999, failed once more to be WTO-compatible and the WTO granted the application of compensatory sanctions to Ecuador and to the US (“bananas IV” in entry 7). Most importantly, the panel granted Ecuador sanctions that could be applied on imports of services in recognition that sanctions on goods would not be sufficiently punitive. Even though in the end these sanctions were never applied (it would have been difficult to estimate damages in services), this was a landmark in the conflict and, more broadly, to those who wished to see the World Trading System moving towards becoming rule-oriented.

During the dispute settlement procedures under “banana IV”, the panel heard representations from third parties that included the Caribbean states. Among these, the Winward islands (Dominica, St. Lucia and St. Vincent) were high-cost producers depending heavily on exports of bananas at the then prevailing prices in the EU. The prosperity created by the TRQ led to bananas being called “green gold” in these vulnerable islands. The Caribbean Banana Exporting Association that represented 7% of the EU market rejected financial aid that would, according to them, amount to “subsidy idleness”. They wanted “to be traders not beggars”. They argued that moving to a TO regime would require at least a ten-year adjustment period to avoid the total collapse of the vulnerable Winward islands.⁸ With the adverse panel finding, it had become clear that the BTR would not be able to serve as development assistance to the ACP through cross-subsidization by MFN producers and traders.

Faced with the prospects of these sanctions, the EU consulted with the US and with the Colombia and Costa Rica, the major MFN exporters who had what they considered fair quota shares under the BTA. It was clear from “bananas IV” that a TO regime would be WTO-compatible and easier than

⁷ Article XIII on the allocation of quotas stipulates that these should be on a proportional basis to all members with a ‘substantial interest’ –defined on the threshold of a 10% market share–. The panel found that quota allocations had been fair only for Colombia (21%) and Costa Rica (23%) but not to other suppliers with substantial interests. The EU was also found to be unfair in its allocation towards countries with ‘non-substantial’ interests.

⁸ This position was reflected in the report submitted by NERA Economic Consulting on behalf of Oxford Policy Management to DFID (see their TO equivalent estimates in table 3 below).

the alternative requiring a waiver to art. XIII on the rules about quota allocation. While the EU would have envisaged moving to a TO regime, the ACP and Ecuador were satisfied with their quota shares based on a post-1993 reference period, and the US also preferred the maintenance of a TRQ, though one based on a pre-1991 period when Chiquita had a much larger share. The US also made it clear that it would not lift sanctions unless the new BTR was found to be WTO-compatible. The EU also found out that the two options about license-allocation methods (first-come-first-serve (FCFS) or by auction) other than the use of a historical reference period--where the US and Ecuador disagreed on the reference period-- had no support among the banana operators.

The EU was then in a difficult position. On the one side, it was faced with the desire by operators to keep the opacity of a TRQ where 'obfuscation'—to use the description by Magee, Brock and Young (1978)—would allow them to keep rents unnoticed, and on the other side it was being held 'hostage' by MFN suppliers who would not grant the waiver on art.1 necessary for the approval of the Cotonou agreement that was to replace Lomé IV. With the prospect of a new round at Doha in sight, the EC finally reached an agreement with the US, then after further negotiations with Ecuador. Licenses were to be allocated on a historical basis (1994-6) with a reduction of 100KT licenses to the ACP. The EC also promised to implement a Tariff Only (TO) regime by January 1, 2006 in return for the promise by Ecuador and the US to suspend sanctions (entry 8).⁹ Table 3 shows the two steps that the EU was proposing to carry out during phase I between July 2001 and 2006 (the next steps were not specified).

At the Doha Ministerial where the agreement was formalized (entry 9), the Decision specified that:

"[...] any rebinding of the EC tariff on bananas under the relevant GATT Article XVIII procedures should result in at least maintaining total market access for MFN banana suppliers and its willingness to accept a multilateral control on the implementation of this commitment."

⁹ This agreement was to be formalized at the Doha Ministerial: it linked formally the EU's pledge to move to a TO regime by 2006 with obtaining waivers from GATT Articles I (MFN) and XIII (how to apply non-discriminatory QRs) requested by the EU to cover special treatment for ACP countries under the Cotonou Convention as part of a transitional arrangement extending to 2007. Read (2004) states clearly the issues surrounding the waivers. He also points out that if the EC has not reached agreement with the MFN suppliers on market access, and it wanted to rebind its TRQ at a level above 75€ per ton, it would have to compensate the MFN suppliers. As pointed out by Read, even though the MFN suppliers could withdraw "substantially equivalent concessions", it is unlikely it would have been a desirable outcome because the MFN countries would have had to impose such high tariffs on EU imports that they would have been substantially hurting themselves in the process. Furthermore since article XVIII on rebinding does not provide derogation from article I, compensatory concessions would have had to be applied to all countries.

Article XVIII stipulates that the country undertaking tariffication should consult with supplying countries and that if no agreement can be found, the latter may seek arbitration at the WTO. That the maintenance of market access for dollar banana exporters was a central aspect of the transition was further clarified in the Decision's Annex, which stated that

"[...] if the rebinding would not result in at least maintaining total market access for MFN suppliers, the EC shall rectify the matter. [...] If the EC failed to rectify the matter, this waiver shall cease to apply to bananas upon entry into force of the new EC tariff regime."

Note that market access was purposely left vague: was it in volume rather than in value terms, what was the choice of base years for calculations and, most importantly, was it applicable to all MFN suppliers rather than to individual MFN suppliers?¹⁰

¹⁰ The WTO summed up Doha's ministerial decision as follows:

"The Doha Ministerial's decision essentially transformed a bilateral agreement into a binding multilateral commitment. In accordance with the terms of the April agreement, the US and Ecuador supported the EU's waiver request." (WTO, WT/MIN(01)/15).

Table 3 : Transition from TRQ to TO regime

	Event /Date	Quota type	Quantity (tons)	Tariff rate (€/ton)	Tariff type	ACP tariff preference
1993	COMB	ACP ^a	857KT	NO		
		A ^b	1.3MT	100 ECU		
		B ^c	600KT	100 ECU		
		C ^d	70	100 ECU		
		Out-of-quota (MFN)		850 ECU		
		Out-of-quota ACP & European ^e		750 ECU		
EU/US April 2001	Phase 1 Step 1 (July 01)	A	2.2 MT	75	Bound	75
		B	353 KT	75	Aut.	75
		C	850 KT	300	Aut.	300
		Out-of-quota		680	Aut.	300
EU/US April 2001	Phase 1 Step 2 (Jan. 02)	A	2.2 MT	75	Bound	75
		B	453 KT	75	Aut.	75
		C	750 KT	n.a.		n.a.
		Out-of-quota		680	Aut.	300

Source: Elaboration on the basis of Messerlin (2001), Badinger et al. (2001, tables 1 and 2) and Vanzetti et al. (2004, table 1). One Ecu was approximately equivalent to one Euro. KT= 1000 kilos, MT= million tons.

During the period, all bananas were sold in-quota because the out-of-quota tariff was prohibitive. Quota B was created in 1995 to reflect the enlargement of the EU to include Austria, Finland and Sweden. Quotas A and B are managed as if they formed a single quota and are often referred to as quota A/B. Tariffs under quotas A are bound, Tariffs under quotas B and C are not bound

^a Traditional ACP (Cabo Verde, Cameroon, Côte d'Ivoire, Belize, Dominica, Jamaica, Surinam, Somalia, Winward islands (Dominica, Santa Lucia, Saint Vincent, Grenadines)

^b Category A: Licenses for established operators of MFN and non-traditional suppliers in EC (65% of quota). Licenses are transferable within the category.

^c Category B: Licenses for established European companies in EC (30% of quota). Licenses are transferable within the category.

^d Category C: New operators (post 1992) (3.5% of quota). Licenses cannot be sold.

^e. Non-traditional ACP: (Dominican Republic and Ghana) plus European producers (French overseas departments, Balearic islands and Crete).

Between 1993 and 2001 the major change was the allocation of 49% of quotas in category A away from established operators to Colombia, Costa Rica, Nicaragua, and Venezuela under the BFA (See table 2, entry 4).

In the following years, the EU inched towards the TO regime, but the negotiations lasted another eight years essentially doubling the time required to resolve the conflict. As discussed below, this was partly due to the incompatibility of guaranteeing market access to MFN and ACP suppliers in an unchanging market with changing preferences that would elicit supply response and hence

changing market shares. It was also partly because of the typical vagueness in the 'diplomatic' language described above and in the tariffication procedures described below.¹¹

In July 2004, the EU Commission notified the WTO of its intention to enter Article XXVIII negotiations (required to rebind the EU tariff on bananas).¹² Followed a succession of consultations and panel decisions starting in late 2004. At one end, MFN suppliers said that the EU tariff should be the MFN tariff of €75/ton and, at the other end, an ACP Council of Ministers indicated that they considered €275/ton as the lowest acceptable limit for the tariff. In December, outgoing Commissioner Lamy announced €230/ton as an initial negotiation position for the EU, although in October Germany had publicly voiced its desire to see the tariff re-bound at a low level. This figure was announced by the EU in January 2005. (entry 10). Following other adverse panel rulings, the EU lowered the proposed tariff to 178€/ton by the end of 2005, a level that continued to be unacceptable to the MFN suppliers (entries 11-13).

Exasperation with the EU's lack of compliance at the Hong-Kong ministerial resulting in further disputes filed by the US and MFN suppliers, leading to yet another panel ruling that the duty-free quota for ACP violated articles I and XIII on non-discriminatory allocation of quotas. A facilitator was assigned to help confidential negotiations (entry 14) that finally led to the December 15 2009, comprehensive agreement (entries 14-18). Not only were EU trade in bananas to be fully WTO compatible at the substantially lower tariff of 117€ by 2017 (giving nearly a ten-year period to find alternative compensation for the very vulnerable Winward suppliers, but all other pending disputes (8) and claims (5) at the WTO were finally settled after eighteen years of litigation.

4 The Political Economy

This prolonged dispute had two components, the transatlantic trade conflict between the EU and the US, and the WTO dispute with the MFN suppliers. I examine both below, arguing that the transatlantic dispute was largely explained by domestic politics in the EU and the US while the dispute with the MFN suppliers that lasted for another 8 years following the 2001 Doha agreement, could have been resolved earlier by greater acceptance of economic analysis by WTO panels.

¹¹ As shown in the bottom part of table 2, a succession of MFN tariff rates to replace the TRQ were found to be WTO-incompatible, principally because MFN suppliers were not going to preserve previous market access. FAO (2004, table 4) shows the huge variation in claims by the various stakeholders when they submitted their estimate of the TO: at one end, MFN suppliers wanted a tariff inferior to €75 per ton and at the other, to over €300 for EU banana importers

¹² If the EU intended to set the new tariff at €75/ton, no rebinding would be necessary and Article XXVIII negotiations would not be called for. Any higher level involves a rebinding and must accordingly follow Article XXVIII procedures. These involve: (i) providing of information by the EU on the method used to calculate the new tariff level and, following the announcement of its intentions; (ii) allowing any interested party to request arbitration should a negotiated solution fail to be reached. This is the current situation at the time of writing this report (March 2005).

4.1 EU Decision-making and US Domestic Politics¹³

Since the implementation of the SEM did not result in a move towards a significantly more protectionist stance, why was this so with the adoption of the CMOB? As argued by Cadot and Webber and others (see e.g. Barfield (2003)), three traits of the agricultural and trade policy-making in the EU contributed to the outcome. First, the lead Directorate-General (DG) for agricultural trade was DG agriculture (under scrutiny for CAP expenses). Compared to DG trade which is required to balance domestic political exigencies with external political obligations, DG agriculture gives greatest priority to domestic agricultural interests. Second, the absence of a EU cabinet contributed to sectoral policy-making that was also reflected in intergovernmental relations (e.g. Kohl deferring to French leadership on bananas to avoid a Franco-German trade conflict). As inter-DG conflicts on bananas could not be resolved within the college of Commissioners, DG agriculture alone was to solve the conflict. This was made possible by the practice of issue-linkage or package-making.

The constituency for bananas was concentrated in the Mediterranean with British and Irish trading companies that coalesced with Mediterranean growers. As there was no banana constituency in the Hanseatic states, these were compensated with victories in other agricultural policy issues in the council at the time. Realizing that it would never get its way in Europe (i.e. get licenses to sell to the Hanseatic states), Chiquita decided that it would have "to go to Washington" to get the regulation changed (Cadot and Webber P. 16 and table 2, entry 4)¹⁴. In Washington, such a course of action was getting increasingly likely to succeed, especially if one had a big 'war chest' as in the case of bananas and otherwise costly lobbying (in terms of resources expended) could be avoided.¹⁵

Again three traits of trade-policy making, this time in the US, increased the likelihood of conflict. First, the Congress was reasserting its constitutional prerogatives over foreign trade policy as the Executive was finding it increasingly hard to get "fast-track authority". Second, the 1988 Trade Act with its controversial revised section 301 that made the administration more accountable to the interests of the private sector reduced greatly the leeway for the executive branch to protect consumer interests. The revised 301 institutionalized the growing practice of giving the decision on unfair foreign trade practices to the president of the USTR (where firms had direct access). Third, was the "buying of electoral outcomes" by private-sector donations as the 1990s saw a sharp increase in electoral campaign contributions. Cadot and Webber (table 1) report that, over Clinton's presidency Chiquita contributed 6\$ billion and Dole 660\$million. Traditional old-fashioned trade politics on both sides of the Atlantic were playing out, but the conflict was one

¹³ What follows draws on Cadot and Webber's (2002) excellent review of the politics behind the EU-US transatlantic dispute.

¹⁴ Cadot and Webber note that Geest, the large British banana importer participated in British banana policy since the 1950s. The European Court of Justice rejected an attempt by the German government (supported by Belgium and Netherlands) to have consumer interests prevail.

¹⁵ Contributing directly to electoral funding is less costly and less uncertain in terms of resources than expending resources on legal spending to change domestic legislation. Also, there were at most three contestants which also reduces spending for a given probability of success. (In a Cournot model where n symmetric contestants vie for a rent of amount R with equal probability of success, per-contestant expenditure will be given by $X=R(n-1)/n$.)

where particularistic interests were increasingly preventing Brussels and Washington from formulating more moderate positions.

Resolution of the transatlantic dispute in April 2001 was helped by Chiquita's bankruptcy, a change of government with the Bush administration that wished to start on a clean slate and by the upcoming Doha negotiations.

4.2 The Dispute over Market Access for MFN Suppliers.

As made clear at the Doha ministerial, the EU would only benefit from the waiver needed to give preferential access to ACP countries if the rebinding of the tariff maintained the market shares of the MFN suppliers. At the same time, the EU had to maintain market access to ACP countries (to honor its legal commitment to maintain market access under the Banana protocol). To move to the TO regime, the EU Commission relied on the price-gap conversion method (PG), proposing a 'tariff-equivalent' to the TRQ of €230 per ton in January 2005 (entry 10). The presumption was that this tariff rate, calculated as the difference between a suitably defined internal price index and a suitably defined external price index (i.e. a cif-landed price) would maintain the internal price unchanged and would leave the market unaffected. The Commission, however, acknowledged that there would be a supply response by ACP producers under a higher preferential margin (three times higher than previously).

As reviewed in section 5, energies on all sides were expended on interpreting a mechanical application of the Price-Gap (PG) methodology to compute the tariff equivalent of the TRQ regime. Bananas under dispute (so-called dessert or "cavendish" bananas sold in boxes of 17 kgs each), being homogenous, then country i will sell in the EU if unit production costs (say per box), c_i , augmented by all additional transaction costs (i.e. unit transport costs to the EU, θ_i , unit packing costs, ϕ_i , and by tariffs (for MFN suppliers only), τ , and rents accruing to supplier i , λ_i) do not exceed the unit market price in the EU, P^{EU} :

$$\begin{aligned} c_i + \theta_i + \phi_i + \lambda_i + \tau &\leq P^{EU} \\ EP + \lambda_i + \tau = IP &\Rightarrow PG = IP - EP \end{aligned} \tag{0.1}$$

If condition (0.1) is not met, then supplier i will not sell in the EU. Since bananas can be considered of same quality, the same condition prevails in the US except that the cost less than price condition is expressed in terms of the unit price in the US, P^{US} . Condition (1.1) also gives the expression to calculate the tariff-equivalent of the TRQ by the price gap (PG) method (see below). Note that if the PG is less than the MFN tariff ($PG < \tau$), Then the quota is not binding for MFN suppliers and they will not be willing to pay for licenses to sell in the EU. The condition also shows that if we have reasonably accurate estimates of unit production costs (freight and packaging costs are easier to

obtain), one can use this expression to compute rents. Likewise, if there had been a market for licenses, the computation of the PG would have been less controversial.

The PG is shown in figure 1. To reflect the different quota allocation schemes in table 3, three distinct groups of suppliers (MFN, ACP and EU) to the EU market are shown in order of increasing supply costs. First are the MFN, then the ACP suppliers subject to quotas, with MFN suppliers are also subject to an in-quota tariff (the quasi-prohibitive out-of-quota tariff was never applied as quotas were never exceeded is not shown). Marginal high-cost EU suppliers come last.

Panel (a) of Figure 1 describes the market arrangement under the TRQ assuming that the quotas were filled (which was the case) with the amounts for each quota category given by those in 2001 under phase 1 step 2 in table 3.¹⁶ Panel (b) shows the situation that would prevail after the shift to a TO regime based on price-gap tariffication. The three blocks of suppliers (EU overseas, ACP, and MFN) are positioned horizontally by increasing order of landed unit costs. This implies a reshuffling between panels as MFN countries switch from least costly (under TRQ in panel (a)) to most costly (post-tariff under TO in panel (b)) since they are the only ones paying the tariff.

Panel (a) can be used to illustrate the problems raised by the PG estimates found in the literature. Several PG estimates were below the MFN tariff of 75€ per ton (see the estimates of Raboy (2004) and Borrell and Bauer (2004) in table 4). Since bananas from different origins are perfect (or close to perfect) substitutes, such estimates would imply that the price differential between the most efficient (MFN) supplier and the least efficient (EU) supplier would be less than the tariff (of €75 per ton, or €1.35 per box) in which case, as explained above, the quota would not be binding and hence MFN suppliers would not have been willing to pay for licenses. These estimates (see below) cannot be reconciled with the fact that MFN suppliers were reportedly ready to pay for licenses to sell in the European market.¹⁷

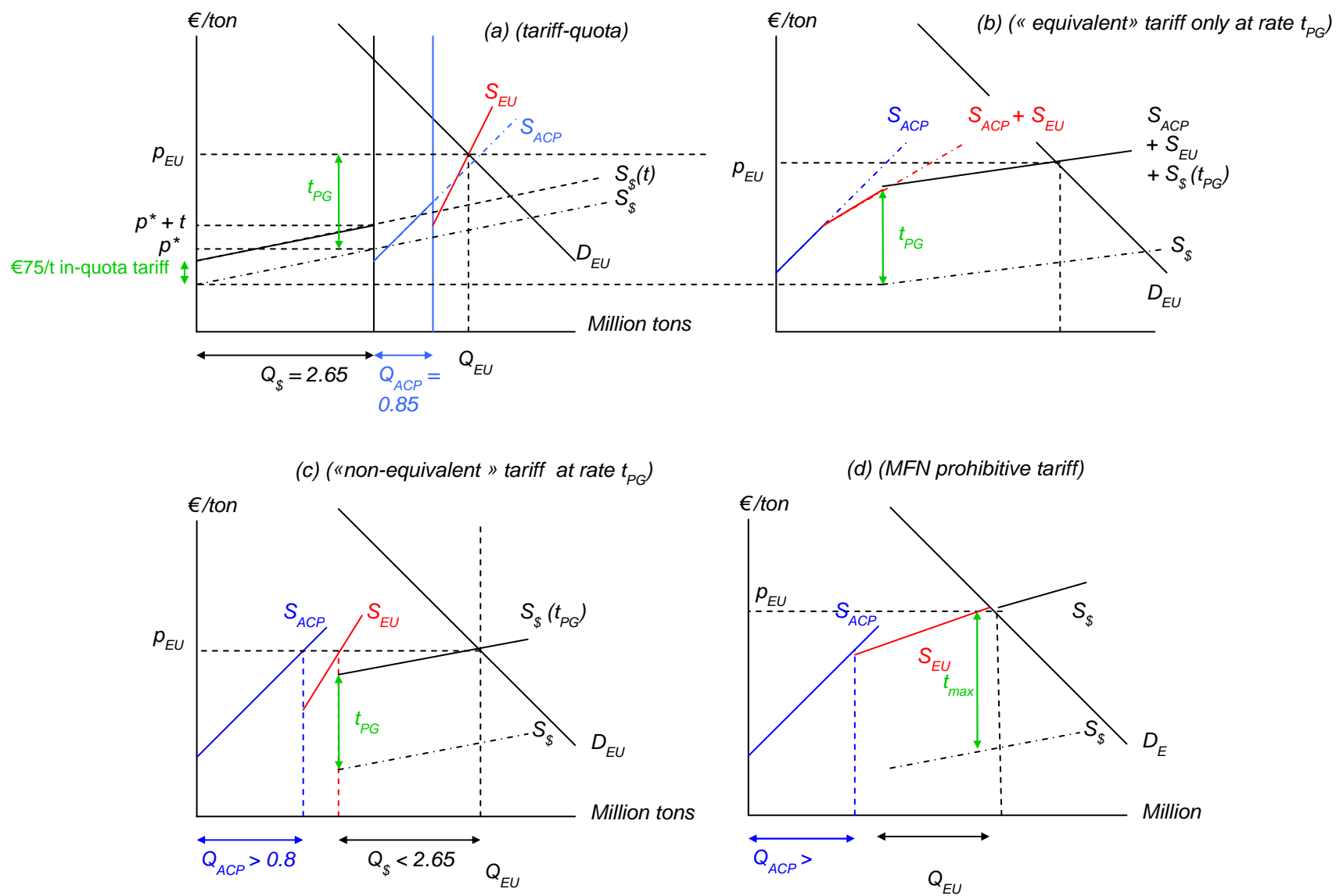
Panel (b) shows the same picture as in panel (a) but in a different way as it recognizes that ACP supplier will have a positive supply response under the TO. It shows the construction of the aggregate supply curve by horizontal addition of the supply curves of the three blocks. Put side by side with (a), it highlights the price effect of the scenario considered. Consistent with a PG-based tariffication, the tariff imposed on MFN producers in (b) is equal to the vertical height between the internal and world prices in panel (a). In the scenario considered here, the equilibrium price on the EU market is slightly lower in panel (b) after tariffication than before.¹⁸

¹⁶ The out-of-quota supply curve is irrelevant to the determination of equilibrium so long as $P_{EU} - P^* < T_{OQ}$, the out-of-quota tariff which was always the case (see table 3).

¹⁷ A box weighs 18 kg. According to informal discussions, during the passage to a TO regime in early 2000 Costa Rica and, presumably, other MFN suppliers were ready to pay between \$2.50 and \$5.00 per box for licenses. At the then prevailing exchange rate of \$1.30 per euro, this amounted to between €108 and €213 per ton.

¹⁸ This will always be the case so long as the marginal supplier has a supply that is upward sloping at a price slightly above P^* .

Figure 1: Tariff-quota and Tariff-equivalent (t_{PG})



At first sight, one might expect that if the tariffication reduced the equilibrium price on the EU market (P_{EU} in Figure 1 panel (b)), market access could improve for MFN countries since quantities consumed would increase. But this is not necessarily so, as illustrated in panel (c) because the tariffication also elicits a supply response from ACP producers and redistributes supply between MFN and ACP producers in a way that can penalize the former.¹⁹ Panel (c) illustrates the possibility that in spite of an aggregate expansion of quantities sold, the volume of MFN sales can go down (the horizontal axes are in volumes). Finally, panel (d) illustrates a tariff that would have foreclosed supplies from MFN countries.

5 Estimating the tariff equivalent to the TRQ

The Commission opted for the PG conversion method, the preferred methodology for estimating tariff equivalents according to Annex 5 of the GATT's Agreement on Agriculture. The PG method ignores supply response which had to be important given that the many estimates were around three times the MFN bound rate of €75 per ton. In its choice of conversion method, the Commission felt that a PG conversion would be less controversial than a simulation analysis.²⁰ I recall the results from various PG calculations to show that this was not the case and that model-based estimates along the lines of those in section 6 would have helped focus the negotiations.

5.1 The Tariff-equivalent I: Price-Gap Calculations

The EU chose to justify its proposed TO rate of 230€ by using the PG method which it applied to the EU-25 to account for the new members using an average over 2000-2. As discussed here, though straight-forward in principle, the application turned out to be complicated and controversial, leading to a wide range of estimates that I report in table 4. For the calculation of the IP, annex 5 of the WTO guidelines state that

[..] The internal price shall generally be a representative wholesale price ruling in the domestic market or an estimate of that price where adequate data is not available."

Although bananas are by and large a relatively undifferentiated commodity, there is no single accepted index of its wholesale price in the EU or elsewhere. The Commission decided to use FAO price statistics as the source of its estimates that were computed over the period 2000-02 which the Commission interpreted as landed, duty-paid prices Free on Truck (FOT) in Hamburg for bananas from Latin America (all LA origins combined) whose average price over the period 2000-2002 was (€890). The Commission then applied three "adjustments" to arrive at a price of €789 (see

¹⁹ Based on GTAP data, Borrell and Hanslow (2004) suggest supply estimates of around 3.0 for MFN suppliers and African ACP suppliers but much lower ones around 0.3 for the Winward islands and for most EU producers.

²⁰ This fear about simulation methods was voiced by the WTO (2005) arbitrator award (WT/L/616, para. 79) of its decision when it "notes that the benefits from their [referring to simulation models] use must be carefully balanced against the technical hurdles and uncertainties posed by the choice of parameters and data". Raboy (2004) also expresses doubts about the use of simulation methods that rely on elasticities that may be hard to estimate because of the poor quality of the data on prices.

series (b) in table 4).²¹ Though authoritative, FAO price series are not the only ones. An alternative are the World Bank estimates from their “pink sheet” series based on an average of the three major brands (Chiquita, Dole and Del Monte) sold in Hamburg FOT/FOR. These are reported as series (a) in table 4.

For the calculation of the EP, annex-5 of the WTO guidelines stipulates that

“External prices shall be, in general, actual average CIF unit values for the importing country. Where average CIF unit values are not available or appropriate, external prices shall be either

- (a) the appropriate average CIF unit values of a near country; or
- (b) estimated from average FOB unit values of (an) appropriate major exporter(s) adjusted by adding an estimate of insurance, freight and other relevant costs to the importing country.

The guidelines’ first choice is the CIF unit value of the TRQ-constrained product on the *importing country’s market* exclusive of duties and quota rents. The guidelines requiring the use of unit values in the importing market considerably narrows the choices in computing the PG. In accordance with the guidelines, the Commission used Eurostat CIF unit values of MFN (TRQ-constrained) bananas as its proxy for the external price. Details were not given but the Commission’s average value for 2000-2002 was €559 per ton for the EP, a figure lower than an alternative based on the EU-15 (see table 4). Given their IP estimate of €789, the Commission’s PG estimate was €230 per ton. While acceptable and in line with the guidelines, depending on the choice of series, the PG estimate would vary by 17% as shown in table 4(a).

While the EU Commission did not divulge its objectives in using the PG method, the other estimates in table 4 reflect the objective of the authors. These ranged from NERA’s (2004) estimates with as objective to maintain the marginal Caribbean (i.e. Winward islands) in business to those of Raboy (2004) and Borrell and Bauer (2004) who were interested in estimating the TO that would maintain imports of MFN suppliers. NERA estimated the competitiveness gap of the marginal supplier by computing the difference between the fob prices of the marginal Caribbean suppliers and the fob prices of the MFN suppliers which they estimated at €259/ton (an ad-valorem TO of 46% calculated on the basis of a cif price of €560/ton) .

At the other end, estimates that would maintain MFN supplies were around 10%. Raboy (2004) looked for an index of the price of the high-cost marginal producers (i.e. the producers in the EU territories). Unable to get estimates of EU producers, he used the cif price of ACP bananas as reported by EUROSTAT. For the EP he started using the unit value for Norway, a neighboring country with no restrictions. Faced with an outlier estimate for the 2002 unit value (see table 4(b)),

²¹ The adjustments were minor and consisted of: (i) adjusting for discrepancy between FAO and EUROSTAT data for LA exporters; (ii) correct for higher prices in Germany on the basis of undisclosed data; (iii) taking into account the newcomers in the EU had lower prices. Cumulating these downward adjustments resulted in a multiplicative factor of .94 on the FAO statistics.

he used the US price adjusted for transport costs. Since African ACP producers were getting increasingly competitive, this gave him an estimate of €68 per ton (called “unadjusted” in table 4b). To this estimate he added an estimate of the protection afforded by the tariff which he argued might be either half or the full value of the MFN tariff (i.e. either €75/ton or €37.5/ton) giving him an estimate in the range of €106-€143/ton.

**Table 4 Price-Gap Estimates
(€/ton: Average 2000-2)
4(a) FAO and World-Bank Series**

	IP:	EP:	PG:
EU WP ^a	817		
EU WP ^b	789		
MFN supplier estimates (EU)			
--Avg.MFN-4 to EU-15 (cif)		572	
--Avg.MFN-4 to EU-25(cif)		557	
--Avg. LA to EU-25(cif)		559	
PG estimates: Maximum	817	557	260
PG estimates: Minimum	789	572	217

Notes:

(a) World Bank pink-sheet series

(b) FAO series, duty paid as modified by European Commission

4(b) Raboy (2004)

	2000	2001	2002	Avg.
IP (ACP suppliers)	624	656	614	631
<i>EP-US</i>	542	598	549	563
<i>EP-Norway</i>	546	589	747	627
<i>EP-EU MFN (cif)</i>	542	583	612	579
«Unadjusted» (PG)				
<i>IP-US</i>	82	58	65	68 ^C
<i>IP-Norway</i>	78	67	-133	4
<i>IP-EU MFN</i>	82	73	2	52

(c) Adjusted PG estimate: $\text{€}(68+37.5)=\text{€}106 < \text{PG} < \text{€}(68+75)=\text{€}143$

4(c) Borrel and Bauer (2004)

	2000
Internal price (ACP suppliers)	624
External price (MFN suppliers)	560
Price gap	64

4(d) NERA (2004)

	Average (1999-02)
Internal price (fob Caribbean)	521
External price (fob LA suppliers)	262
Price gap	259

As pointed out by Borrell and Bauer (2004), this amounted to “dirty tariffication” or double counting since the IP captures the effects of all border measures. That ACP producers would be unable to capture 15% of the MFN tariff would then reflect the bargaining power of banana importers relative to ACP producers. Borrell and Bauer used the same approach but relied on prices estimates from their (unspecified) model to obtain an estimate of €64/ton of 11.4% (table 4c). The obvious problems are that neither the model nor the underlying data are provided to the reader. Moreover, these findings were inconsistent both with the large sums expended on electoral campaigns in the US and with the anecdotal evidence that MFN suppliers were disposed to pay between €100/ton and €120/ton (FAO(2004), p.13) to obtain licenses to sell in the EU.

5.2 The Tariff Equivalent II: Econometric Estimates

The large discrepancies in the estimates generated by price-gap analysis raise questions about the methodology, the choice of prices and the possibility of fruit quality effects. An alternative then is to “let the data speak” and exploit all the data on banana trade over a long time period straddling the period of the CMOB. This gives an estimate of the determinants of banana trade and helps isolate the effects of the CMOB. The popular gravity model of trade provides such estimates. In this model (see details in annex 1) , the volume of trade in bananas between any two countries, $X^{i,j}$ where $i(j)$ is an exporter (importer) country is a function of the size of the countries, Y^{it} and Y^{jt} , the transport costs between countries approximated by distance, d^{ij} , and dummy variables, I^i and I^j that capture time-invariant characteristics of the pair of countries such as climate, geography and tastes and time-specific common shocks such as a change in fuel costs . The effects of trade policy are captured by the tariff rate applied on banana imports and the effects of the CMOB are captured by a dummy variable. The model is estimated over the period 1988 to 2003 with data on bilateral trade in bananas taken from the COMEXT data in EUROSTAT.

$$\begin{aligned} \ln X^{ij} = & \beta_0 + \beta_1 \ln Y^{it} + \beta_2 \ln Y^{jt} + \beta_3 \ln d^{ij} \\ & + \beta_4 \ln(1 + \tau^{ij}) + \beta_5 I^i + \beta_6 I^j + \beta_7 t \\ & + \beta_8 Q^{ij} + u_{ijt} \end{aligned} \quad (0.2)$$

The results are reported in table 5. As shown in annex 1, the estimation allows one to calculate the tariff equivalent, τ , of the quota under the BTR. This implies computing the predicted value of trade with and without a tariff and with and without a quota and equalizing these two predicted values. Letting a hat over a variable indicate its estimated value, as explained in annex 1, the tariff equivalent is given by

$$\hat{\tau} = \exp\left(\hat{\beta}_8 / \hat{\beta}_4\right) - 1 \quad (0.3)$$

This estimate is given in the last line of table 5 and the plausibility of this estimate depends on the overall plausibility of the other estimated parameters reported in the table (see annex 1 for a full description of the variables, the data sources, and how heteroskedacity is handled).

Table 5 : Gravity Model Estimates

Dep. var.: trade value	OLS	OLS robust	OLS robust	Iterative	Iterative
Column					
log (1+t), applied	-1.136 (-2.33) *	-1.136 (-2.28) *		-1.261 (-2.69)	
log (1+t), unconstrained			-1.192 (-2.05) *		-1.136 (-2.12) *
log (1+t), constrained			-1.028 (-1.52)		-1.485 (-2.15) *
MFN quota dummy	-0.674 (-4.12) **	-0.674 (-4.08) **	-0.7 (-3.42) **	-0.515 (-3.28) **	-0.459 (-2.3) *
Framework Agr. dummy	0.469 (1.62)	0.469 (1.45)	0.472 (1.45)	0.395 (1.42)	0.387 (1.39)
ACP dummy	1.048 (4.8) **	1.048 (4.37) **	1.046 (4.35) **	0.993 (4.73) **	0.998 (4.74) **
Ivory Coast*time trend	0.087 (1.34)	0.087 (1.16)	0.088 (1.17)	0.157 (2.51) *	0.156 (2.49) *
Cameroon*time trend	0.212 (2.85) **	0.212 (2.69) **	0.213 (2.7) **	0.26 (3.64) **	0.258 (3.6) **
log distance	-1.121 (-17.73) **	-1.121 (-14.9) **	-1.12 (-14.89) **	-1.269 (-20.89) **	-1.271 (-20.92) **
log importer's GDP	0.843 (3.01) **	0.843 (2.78) **	0.845 (2.78) **	0.729 (2.71) *	0.723 (2.69) **
log exporter's GDP	0.18 (0.82)	0.18 (0.81)	0.179 (0.81)	0.251 (1.19)	0.252 (1.2)
log importer's exch. rate	-0.049 (-0.55)	-0.049 (0.62)	-0.049 (0.61)	-0.034 (-0.39)	-0.035 (0.41)
log exporter's exch. rate	0.071 (2.2) *	0.071 (2.57) *	0.071 (2.58) *	0.086 (2.79) **	0.085 (2.77) **
Constant	-14.312 (-1.77)			-321.06 (-2.55) *	-11.742 (-1.51)
Observations	6'984	6'984	6'984	6'970	6'983
R-squared	0.58	0.81	0.81	0.62	0.62
Cook-Weisberg chi-sq.	3.51				
Implied tariff equiv. (€/ton)	354	354	350	221	158

Source : de Melo and Grether, table 5.1

Notes :

For definition of variables, see annex 1

Estimates in columns (4) and (5) are obtained after elimination of outliers. See discussion in annex 1

The coefficient estimates in table 5 are plausible. As in most gravity models, the elasticity of banana trade flows to distance is close to unity. The elasticity with respect to the importing country's GDP which can be taken as a rough approximation of the income elasticity of banana consumption (since there is no domestic production in most importing countries) is less than unity (between 0.72 and 0.84 depending on the estimation method). This too is plausible since bananas are largely consumed by the poorer households in importing countries and can be considered a necessity. As expected, the exporter's GDP is not significant. Indeed for commodities where climatic and resource endowments are crucial in determining comparative advantage, one would not expect country size to determine the volume of trade in that commodity. Exchange rates are significant and with the expected sign for exporter countries (banana exports go up when the exporting country's currency depreciates vis-à-vis the dollar) but not for importing countries.

Turning to the estimates of direct interest, with the exception of the Framework Agreement dummy, special-regime variables are highly significant and with the expected sign. The same is true of tariffs. Moreover, the estimated coefficients imply an elasticity of substitution equal to $\hat{\sigma} = 1 - \hat{\beta}_4$ with values ranging between 2.03 and 2.49 depending on the estimation method. These values, which measure the elasticity of substitution between bananas from two different (arbitrary) source countries, are plausible though arguably on the low side.²²

Finally, the gravity model yields a second estimate of the PG tariff equivalents. Estimates converted into a specific tax rate on the basis of a CIF unit value of €438/ton are reported at the bottom of Table 5. The last estimate (€158/ton) is obtained using as " β_4 " the coefficient on the tariff on QR-constrained markets.²³

The measure captures only the effect of the quota, i.e. the quota rent. Thus, the combined effect of the quota and in-quota tariff is estimated at €158 + €75 = €233. This is slightly on the high side compared to the price-gap estimates of (€210) in table 4, but nevertheless in the same range.²⁴

6 Preserving market access for MFN suppliers: simulation estimates

The tariff-equivalent estimates presented above do not take into account the supply response from various suppliers under the new tariff regime. They cannot inform on what TO regime would keep MFN suppliers market share. Below, I give a minimalist model that is transparent and gives a response to this question (full description of the model in the annex 2) while at the same time

²² Elasticities of substitution retrieved from a gravity model can be interpreted as short-term elasticities and are sometimes considered to be about half their long-run values. In terms of the underlying theory behind the gravity model, this elasticity of substitution is in fact the Hicksian (or income-compensated) price elasticity of demand for bananas from different sources.

²³ This choice has advantages and disadvantages. On one hand, what is measured is the effect of in-quota tariffs which might be expected to be non-binding (although the data suggests that they are). On the other hand, because the QR-constrained market is the EU's, the coefficient measures the elasticity of substitution on the EU market, which, if the assumption of constant elasticity of substitution is not taken at face value, is better than using the elasticity of substitution applying to other markets.

²⁴ Note that the lower bound of the 95% confidence interval for β_4 is -2.83, implying a specific-tariff equivalent of the quota equal to €76.90 (still using €438/ton as the unit value), or €152 including the in-quota tariff of €75/ton.

pointing out what information would have been needed to progress more rapidly in the negotiations.

Because overseas EU suppliers were marginal and of little consequence during the conflict, I neglect EU producers and any spillover effects from a change in price in the EU market on the ROW. The model (see annex 2) then boils down to a demand, X^d function for all bananas, a supply function for each producer, X^s where producers are grouped in two categories of suppliers, ACP suppliers indexed by y and MFN suppliers indexed by z with i an index covering all suppliers. Suppliers have different unit costs, c_i , and different productivity, b_i . with increasing marginal costs (if marginal costs were constant, in equilibrium all supply would come from the least-cost producer). The market equilibrium condition in (1.4) closes the model and gives the price

$$X^d = aP^{-\varepsilon_p} ; \varepsilon_p > 0 ; X_i^s = b_i (c_i)^{\sigma_i} ; \sum_z X_z^s + \sum_y X_y^s = X^d \quad (0.4)$$

Following the notation in (1.1), let PP denote the ex-factory price per box (or per ton) and P the landed EU price inclusive of all transaction costs and rents. Three cases were possible (see annex 2):

Case 1: Individual countries receive *non-transferable quotas* (more representative of the situation prevailing before 2001). Then the non-arbitrage condition states that each supplier gets his own rent, λ_i and λ_j (see equation (1.1) and equations (1.18) and (1.19) in annex 2):

Case 2: Quotas are transferable within categories (more representative of the situation post 2001 when quotas became transferable within MFN and ACP categories). Then rents are equalized within categories : λ^m is the rent common to MFN categories, and λ^a is the rent common to ACP suppliers (see equations (1.20) and (1.21))

Case 3: Fully transferable quotas across all categories. Then rents are equalized and $\lambda_z = \lambda_y = \lambda$ (see equation (1.24))

Table 6 gives the ingredients needed to run the model. Production, packing and shipping cost data reflect information from, industry producers, FAO (2003) and Grether and de Melo (2004), see chp. 4 for details). The model was calibrated (i.e. the parameters a and b_i in (1.4) to the observed trade flows from each producer and to an assumed landed price of €580 per ton. The model's calibration is then closed by computing the implied rents from the zero profit condition in (1.1) (this corresponds to case 1 above). Of course, there is arbitrariness because of the confidentiality about cost data on the part of suppliers.

The estimated rents implied by this data are shown in table 6 column (g). They indicate an average rent of €125 per ton for MFN producers and €67 for ACP producers, estimate close to the fragmentary estimates mentioned above. If the landed price in the EU were €500, the corresponding rents would be €53 for MFN and €5 for ACP, implying that the ACP would not be in business. The usefulness of the modeling approach is clear since it helps narrow down the discussion.

Table 6
Data for Simulation Model
(euros per box)

	€ Unit costs						
	Prod	Pack	Trans	CPBX	IQT	EUPRBX	RENTPBX
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
ECU	2.31	1.23	2.69	6.23	1.35	10.44	2.86
CR	3.85	1.23	1.92	7.00	1.35	10.44	2.09
COL	3.08	1.23	2.69	7.00	1.35	10.44	2.09
PAN	3.08	1.23	1.92	6.23	1.35	10.44	2.86
OTHMFN	4.23	1.23	2.31	7.77	1.35	10.44	1.32
<i>AVMFN</i>	<i>3.31</i>	<i>1.23</i>	<i>2.31</i>	<i>6.85</i>	<i>1.35</i>	<i>10.44</i>	<i>2.24</i>
CAM	5.00	1.54	2.31	8.85	0.00	10.44	1.59
CIV	5.00	1.54	2.31	8.85	0.00	10.44	1.59
BEL	5.38	1.54	2.31	9.23	0.00	10.44	1.21
DOM	5.38	1.54	2.31	9.23	0.00	10.44	1.21
OTHACP	6.15	1.54	2.31	10.00	0.00	10.44	0.44
<i>AVACP</i>	<i>5.38</i>	<i>1.54</i>	<i>2.31</i>	<i>9.23</i>	<i>0.00</i>	<i>10.44</i>	<i>1.21</i>

Notes

Data for 2004. Dollar cost figures converted into euros at \$1.3 per euro. Per ton estimates are obtained by multiplying by 55.5.

CPBX: Cost data constructed on a per box basis, calculated by summing production, packing and transport costs in columns (a) to (c)

IQT: In-quota tariff €75/ton converted to an 18kg box)

EUPBX: EU price per box (€580/ton for MFN producers)

RENTPBX: quota rent per box, calculated as $(f) - [(e)+(d)]$.

AVMFN: simple average of MFN-4 (Ecuador, Costa Rica, Columbia and Panama).

AVACP: simple average of Cameroon, Côte d'Ivoire, Belize, Dominican Republic and other ACP

At the time, the conflict at the time was about the TO that would maintain supplies for all MFN producers. Crucial to this task is the supply response that will depend on the assumed estimate of rents across countries. The estimates in table 6 show large discrepancies within and across the MFN and ACP groups. At the time, under the transition regime licenses were transferable across quota categories A,B,C according to what the Commission called the 'single pot' regime. Two alternatives would likely bracket the prevailing situation: (i) rents are not equalized within groups (case 1 above); (ii) all rents are equalized within MFN ($\lambda_i = \lambda_j = \lambda^m = 2.24$) and within ACP

($(\lambda_i = \lambda_j = \lambda^a = 1.21)$) groups as in case 2 above). A third option is that rents were already equalized across all groups (i.e. $(\lambda^m = \lambda^a = 2.09)$) corresponding to case 3 above).

The model then has to be calibrated differently. One alternative is to assume that all parameter values in table 6 are trustworthy in which case the model would be solved for equilibrium quantities that would not correspond to those observed in 2004. An alternative would be to compute residually one of the parameters in (1.1), for example unit costs, c_i (or the scale parameter

b_i), unit transport costs, θ_i , unit packing costs, Φ_I which then gives the same starting point (the observed flows by origin in 2004). The alternative of comparing the effects of different assumptions about rents from the same starting being easier to interpret, the calibration to different rents was done by adjusting packing costs.

Table 7:

Alternative tariff only simulation scenarios

7a: Rents equalized within quota categories

tariff	Tariff rate € per ton	EU price € per box	MFN share	CR ECUA (percent change)
Base (quotas)	75	10.4	0.77	0.0 0.0
EU proposal.	230	10.5	0.72	-13.5 4.5
	150	9.6	0.77	-2.0 23.0
	75	8.9	0.81	11.0 43.0

7b: Rents equalized across quota categories

tariff	Tariff rate € per ton	EU price € per box	MFN share	CR ECUA (percent change)
Base (quotas)	75	10.4	0.77	0.0 0.0
EU proposal	230	10.7	0.70	-9.0 -14.0
	150	9.8	0.76	5.0 8.3
	75	8.9	0.81	18.6 31.0

Notes: In all simulations, $\varepsilon_p = 1.0$; $\varepsilon_s = 1.0$

Results from alternative scenarios in which rents are removed and replaced by a tariff (applied only to MFN countries) are reported in table 7 where for the sake of simplicity an identical unitary supply elasticity is assumed for all suppliers. On the assumption that the cost data are accurate, if rents were not equalized within categories (i.e those shown in table 6), a tariff of €150 would have maintained the aggregate share of MFN suppliers at the 2004 level while the EU proposal would have led to a loss of market share of 5 percentage points (table 7a). However, most of the adjustment would be by Ecuador the low cost producer. As feared by other MFN suppliers, (e.g. Costa Rica) would have lost market share.²⁵ Table 7 b shows the results from applying the same tariff rates, but starting from a situation where rents are equalized within MFN and ACP groups. Then, a tariff of €150/ton would have maintained the shares of all MFN suppliers. However, the pattern of adjustment across suppliers is different as the cost-advantage of the high-rent suppliers (e.g. Ecuador for the MFN) is diminished relative to others (e.g. Costa Rica) which explains why Costa Rica expands more, and Ecuador less, under this alternative.

²⁵ Costa Rica, a supplier in the middle-range of the ladder of comparative among MFN suppliers would have needed a tariff of €100/ton (not shown here) to maintain its market share.

The results in table 7 confirm that a low tariff would favor MFN producers at the expense of ACP producers and that no single tariff would have maintained the status quo among the main banana producers. This 'basic result' that is robust to a wide range of changes in ingredients in this minimalist model, failed to be recognized in the debate. Indeed, in the eight year debate that ultimately led to the December 2009 agreement, model results were rarely used and, when used, their underpinnings were never spelled out, a complaint raised in FAO who describe the models by saying that the authors "seem to assume" (2004, pp 7,9). In sum, like the PG calculations, the models were prescriptive rather than informative.

7 Conclusions

The banana conflict was the longest running trade conflict in the current World Trading System. Its resolution confirmed that tariffication is difficult to carry out as it was with the negotiations on agriculture during the Uruguay Round. In the end, the prolonged period of negotiations corresponded to the amount of time that the high-cost Winward producers said would be necessary to adjust since at the hearings on the "banana IV" panel in 1999, producers' association requested at least a ten-year adjustment period which is close to the eight-year period of adjustment that was finally agreed-upon in 2009. This outcome also resembles the outcome on the removal of other quota regimes like the MFA which took place over a ten-year period.

For the transatlantic component of the dispute, the substantial vested interests over annual rents of around \$2 billion dollars annually by a handful of powerful banana traders on each side of the Atlantic along with the decision-making processes in the EU and in the US explains why it occurred even though no bananas were grown on either continent. Regardless of the evolution trading system from the GATT to the WTO, this dispute would have been solved by threats.

For the MFN suppliers however, absent the transition towards a more rule-oriented system, the stalemate that characterized the conflict under the GATT would have likely continued. Its resolution would have been difficult if MFN suppliers could not have held the EU hostage on the renewal of the Lomé Convention at the Doha ministerial. The EU then would have found a way to maintain a TRQ allowing the cross-subsidization of ACP (especially small Caribbean) producers by MFN producers even though the preferential access under negotiation was already losing in significance.

The economics of the dispute was straightforward and even though the rents were cleverly hidden, it would have been relatively easy to recognize early on that any tariffication would have altered market shares and engaged in negotiations for a tariff-only regime in the range of €100-150/ton (with a minimum of information, this range could have been easily established by an independent panel mandated by the WTO). Yet, the evidence used during the debate lacked singularly in clarity, and arguably contributed to its longevity. Today, the world trading system is under much greater stress with environmental issues ranging from climate change to the preservation of species and biodiversity. Estimates of the rents that will up for contest if a carbon tax of \$100/ton are around \$1 trillion. Let's hope the international community will do better this time around.

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Annexes

A. 1 Description of the Gravity Model

The Model. Under a broad range of assumptions, (see e.g. Feenstra, 2004, p. 157) equilibrium imports of country j from country i are, after some algebra and normalization, are given by

$$X^{ij} = \frac{Y^i Y^j}{Y^W} \left[\frac{d^{ij} (1 + t^{ij})}{P^i P^j} \right]^{1-\sigma} \quad (0.5)$$

where Y^i and Y^j are the GDPs of the two trading countries relative to the aggregate GDP of the sample, Y^W , P^i is the FOB price of country i 's "representative" export good, d^{ij} is trade friction costs (or more generally all transaction costs proxied by distance between countries i and j , t^{ij} is the tariff applied by j on imports from i , and P^j is an index of prices in country j . Putting (0.5) in logarithmic form, we have

$$\begin{aligned} \ln X^{ij} = & \ln Y^i + \ln Y^j + (1 - \sigma) \ln d^{ij} \\ & + (1 - \sigma) \ln (1 + t^{ij}) + (\sigma - 1) \ln P^i + (\sigma - 1) \ln P^j. \end{aligned} \quad (0.6)$$

where the aggregate GDP, Y^W is subsumed in the constant term (not indicated here). Before (0.6) can be taken to the data, several adjustments must be made. On one hand, several years of observation are typically available, so a data point is really a trade flow between two countries at time t . Adding a time dimension improves the amount of information that can be extracted from the data. On the other hand, P^i and P^j are typically unobserved and must then be proxied by "fixed effects" (assumed to be time-variant) applied to exporting and importing countries, $I^i I^j$. Finally, a dummy variable Q_{ijt} equal one marking country pairs affected by the EU quota (i.e. dollar exporters and EU importers for years post 1993) is added to separate tariff from quota effects. The estimation becomes:

$$\begin{aligned} \ln X^{ijt} = & \beta_0 + \beta_1 \ln Y^{it} + \beta_2 \ln Y^{jt} + \beta_3 \ln d^{ijt} \\ & + \beta_4 \ln (1 + t^{ijt}) + \beta_5 I^i + \beta_6 I^j + \beta_7 t \\ & + \beta_8 Q^{ijt} + u^{ijt} \end{aligned} \quad (0.7)$$

Here the gravity equation is applied to one commodity. This has advantages and disadvantages. On the advantage side, the trade flows to be explained by the equation are well defined flows instead of aggregates of heterogeneous goods; thus, we do not have unwanted composition effects. Moreover, countries either export or import bananas but not both, and importing countries typically produce only marginally or not at all. This too facilitates the interpretation of some of the equation's coefficients. On the disadvantage side, , many countries do not trade bananas, so using

several years palliates the limited number of country-pairs that one would have with a cross-section.²⁶

Let hats denote estimated coefficients and predicted trade values and Z_ℓ^{ijt} (with ℓ going from one to seven) the explanatory variables other than the quota. Bunching together coefficients β_0 to β_7 , we have :

$$\ln \hat{X}^{ijt} = \sum_{\ell \neq 8} \hat{\beta}_\ell Z_\ell^{ijt} + \hat{\beta}_8 Q^{ijt}.$$

Since Q^{ijt} is equal to one if a quota applies and zero otherwise, the predicted difference in trade between a country pair with a quota and the same country pair without the quota would be

$$\begin{aligned} \ln \hat{X}_Q^{ijt} - \ln \hat{X}_{NQ}^{ijt} &= \sum_{\ell \neq 8} \hat{\beta}_\ell Z_\ell^{ijt} + \hat{\beta}_8(1) - \left[\sum_{\ell \neq 8} \hat{\beta}_\ell Z_\ell^{ijt} + \hat{\beta}_8(0) \right] \\ &= \hat{\beta}_8. \end{aligned} \quad (0.8)$$

A similar calculation isolates the effect of a tariff on trade flows:

$$\begin{aligned} \ln \hat{X}_T^{ijt} - \ln \hat{X}_{NT}^{ijt} &= \sum_{\ell \neq 4} \hat{\beta}_\ell Z_\ell^{ijt} + \hat{\beta}_4 \ln(1+t^{ijt}) \\ &\quad - \left[\sum_{\ell \neq 4} \hat{\beta}_\ell Z_\ell^{ijt} + \hat{\beta}_4 \ln(1) \right] \\ &= \hat{\beta}_4 \ln(1+t^{ijt}). \end{aligned} \quad (0.9)$$

A tariff equivalent of quota Q^{ijt} is a tariff that has the same effect on trade flows. This is equivalent to equating the left-hand sides of (0.8) and (0.9). But if their left-hand sides are equal, so are their right-hand sides; thus, the tariff equivalent $\hat{\tau}$ of quota Q^{ijt} satisfies

$$\hat{\beta}_4 \ln(1+\hat{\tau}) = \hat{\beta}_8 \quad (0.10)$$

or

$$\hat{\tau} = \exp\left(\hat{\beta}_8 / \hat{\beta}_4\right) - 1 \quad (0.11)$$

This simple calculation can be programmed after the estimation of the gravity equation, yielding an ad-valorem tariff equivalent to the EU's quota. In a final step, observed unit values are used to translate the ad-valorem equivalent into a specific form.

Data Trade data are from UN's COMTRADE data for bananas, including plantains, fresh or dried (HS-0803) which corresponds closely to the bananas imported by the EU under the BTR. These data are the euro values forwarded by Eurostat from its own COMEXT database. Data cover 1988 to 2003. All variables are in current values, as any attempt to deflate them would create problems of its own. GDPs and exchange rate series (period averages) are from the IMF's International Financial

²⁶ It is important to keep in mind that the units of observation are country *pairs* rather than countries, so that there are many more observations than countries. For instance, if all 236 countries in the COMTRADE data base traded bananas with each other, the number of observations would be $(236)(235)/2 = 27'730$ for just one year.

Statistics (IFS) database. The distance variable is the distance between the capital cities of the trading countries.

The tariffs are from UNCTAD's TRAINS database. The quota dummy for dollar bananas kicks in starting in 1994. Other "special-regime" proxies include an ACP dummy²⁷ and a framework-agreement dummy (also both post-1994).

Finally, Cameroon and the Côte d'Ivoire can be considered as "special" because of the heavy investments made there by Dole in recent year. So, in addition to fixed effects applying to all countries we have included dummy variables interacted with time (to control for the non-stationarity of their output) for those two countries.

Estimation The Cook-Weisberg test statistic shows that the homoskedasticity assumption is rejected at the 10% level. To deal with this heteroskedasticity, I use two alternatives I report OLS estimates with "robust" test statistics and alternatively report estimates obtained by eliminating iteratively influential (outlier) observations. This iterative method should be considered more reliable in this large sample where errors of reporting have certainly crept into the data.

One additional issue is whether to deal in the same way with in-quota tariffs and with tariffs on markets unaffected by quantitative restrictions. Although the difference in estimated coefficients is minimal, it is probably best to deal with them separately so table 4 reports both sets of estimates. The variable labeled "log(1+t), applied" uses the tariff applied on bananas by importing countries, irrespective of other measures they may have. The variable labeled "log(1+t), constrained" uses the tariff applied by the EU on dollar bananas post-1994; the variable labeled "log(1+t), unconstrained" uses the tariff applied in all other cases.²⁸

A.2 Description of the Simulation model

The model. Two sets of producers, ACP producers indexed over y , and MFN producers are indexed on z . Each supplier produces a homogenous product that is in competition with the same product produced by other suppliers. The EU market is considered in isolation, i.e. spillover effects from changes in the EU market on other markets are ignored. These are second-order effects that can be safely ignored.

The demand for bananas is given by a constant elasticity of demand function:

$$X^d = aP^{-\varepsilon_p} ; \varepsilon_p > 0 \quad (0.12)$$

where P is the EU internal landed (duty inclusive) price (usually taken below to be €580 per ton) and a is a parameter to be calibrated so that given the choice of units for prices (here $P=1$) and for

²⁷ One might argue that the ACP dummy is redundant because the tariff variable used is the applied tariff, not the MFN one, so the tariff-free regime is already picked up by the zero value of the tariff. However other specificities of the ACP regime may influence trade flows, such as trading ties and more importantly the allocation of licenses. Omitting this dummy would then result in an omitted-variable bias.

²⁸ For country-pairs with no QRs, the variable "log(1+t), constrained" is zero, but then the variable "log(1+t), unconstrained" is positive. (They cannot both be zero).

the elasticity, the quantity consumed is equal to the quantity actually consumed in the base year. In all simulations, $\varepsilon_p = -1.0$. Letting index i cover all producers, the supply for each country is given by the constant elasticity of supply function:

$$X_i^s = b_i (c_i)^{\sigma_i} \quad (0.13)$$

where b_i is a parameter to be 'calibrated'(see below). In a competitive equilibrium, firms must make zero profits, so that unit price received by producers equal unit costs, i.e.:

$$PP_i = c_i \quad (0.14)$$

where c_i is unit production costs. Note that marginal costs are increasing, this capturing diminishing returns: as production expands, either less efficient producers get in the market, or existing producers get into less productive plantations or land.²⁹

The assumption that bananas from different origin are perfect substitutes implies that they have to fetch the same price in the EU market once transaction costs and tariffs are added. This translates into no-arbitrage conditions for MFN and ACP countries respectively which will vary depending on the assumption about transferability of licenses (see below). The model is closed by the demand-equal-supply equilibrium condition:

$$\sum_z X_z^s + \sum_y X_y^s = X^d \quad (0.15)$$

This minimalist model of the banana market is not too demanding on the data and it emphasizes the importance of differences in costs and policies on the equilibrium in the EU market. It neglects marginal EU suppliers who received a variable support along the lines of the EU's Common Agricultural Policy. This means their supply would remain unchanged with respect to alternative tariff policies. Supplies to other countries, notably the US are indirect second-order effects. For the range of tariff rates considered, (i.e. around 230€ or less tariff per ton), these indirect effects would have been negligible.³⁰

The three alternative quota allocation systems described in the text are detailed here.

Individual-country quotas (Non-transferable licenses) Prior to 2001, each 'major' supplier faced a quota. This means that exports by country z , X_z^s had to be less than the quota, \bar{X}_z allocated to that country (the same condition applying for ACP producers). This implies the following quota constraints:

$$X_z^s \leq \bar{X}_z \quad (0.16)$$

and likewise for ACP countries:

²⁹ With constant returns to scale and constant marginal costs, under the assumed homogeneity of bananas across suppliers, only one country would produce bananas in equilibrium.

³⁰ For example, suppose that the passage to a TO of 230€ per ton raises costs of production of MFN suppliers by 5%. Then the price in the US market would be raised, and demand would fall slightly. It is here that the indirect effect would kick in. The fall in demand in the US would free bananas for the EU market, so that in the end, when the indirect effect is included, the adjustment among MFN suppliers would be less because of this spillover effect.

$$X_y^S \leq \bar{X}_y \quad (0.17)$$

Under these conditions, the no-arbitrage conditions describing an equilibrium would be given by:

$$P \geq PP_z + \lambda_z + \theta_z + \phi_z + \tau_z \quad (0.18)$$

$$P \geq PP_y + \lambda_y + \theta_y + \phi_y \quad (0.19)$$

In these expressions, θ_i represents unit transport costs, ϕ_i unit packing and handling charges, τ_z is the current tariff quota of 75€ per ton, and $\lambda_i \geq 0$ is the unit rent due to the quota (with $\lambda_i = 0$ if it were not binding).³¹ Because each supplier faces a constraint, each supplier gets its own rent.

Quotas per category (licenses transferable within quota group categories).

With licences transferable within quota categories, the no-arbitrage conditions become

$$P \geq PP_z + \lambda^m + \theta_z + \phi_z + \tau_z \quad (0.20)$$

where λ^m is the common (to all MFN countries) rent per box and the other parameters are defined as previously. Likewise, for ACP countries the corresponding no-arbitrage condition is:

$$P \geq PP_y + \lambda^a + \theta_y + \phi_y \quad (0.21)$$

where λ^a is the common (to all ACP countries) rent per box. These equilibrium rents per unit are computed to satisfy the respective global quotas given by³²:

$$\sum_z X_z^S \leq \bar{X}_m \quad (0.22)$$

where \bar{X}_m is the quota on MFN exports. Likewise the quota for ACP countries is given by³³:

$$\sum_y X_y^S \leq \bar{X}_a \quad (0.23)$$

³¹ A negative value for λ_i is economically impossible in equilibrium since producer price would not cover unit production costs.

³² Under the BTR that prevailed after 2001, MFN suppliers had access to the EU market via two quotas (called “quota A” and quota “B”) of 2,200,000 tons and 453,000 tons respectively that enter the EU market with a tariff of 75€ per ton. Quotas A and B are open to imports from any origin with imports outside (beyond) the quota paying a tariff of 680e per ton with ACP bananas benefiting from a tariff preference of 300€ per ton. In what follows, we do not consider imports outside quotas.

³³ Under the current BTR, ACP suppliers also have a quota (called “quota C”) of 750,000 tons which enters duty free into the EU market.

where \bar{X}_a is the quota on ACP exports. Basically under the previous model, each country was facing its own quota, so that there were $z = 1, \dots, 5$ MFN countries each having a constraint similar to (0.22) with λ_z being the rent per box that satisfied that constraint. Of course, the same applied to ACP countries.

Fully transferable licenses across all quota categories. Under the third alternative is one in which licenses are transferable across all quota categories. Now equations (0.20) and (0.21) are replaced by:

$$P \geq PP_i + \lambda + \theta_i + \phi_i \quad (0.24)$$

in which the index i applies to both ACP and MFN suppliers, and the rents are equalized, i.e. $\lambda_z = \lambda_y = \lambda$. At the same time, the group quota constraints (0.22) and (0.23) are replaced by:

$$\sum_i X_i^S \leq \bar{X} \quad (0.25)$$

i.e. all quota categories are aggregated into a single quota for ACP and MFN suppliers.



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