

How would a WTO agreement on bananas affect exporting and importing countries?*

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Abstract

The paper provides a quantitative assessment of the impact on the banana market of the expansion of trade preferences the EU granted ACP countries with the Economic Partnership Agreements (EPAs) and of the erosion of these preferences as a result of different possible conclusions, if any, of on-going WTO negotiations. The results of the simulations performed suggest that the impact of the EPAs on production and consumption of bananas in the EU will be limited, while benefits for ACP countries (at the expense of MFN exporters) will be significant. An agreement between the EU and MFN countries to end the outstanding WTO disputes on bananas and/or the conclusion of the Doha round may bring an erosion of the preferential margins currently enjoyed by ACP countries of such an order of magnitude as to severely reduce these benefits.

Key words: bananas; WTO; Doha round; Economic Partnership Agreements; trade preferences; preference erosion.

JEL classification: Q17, Q18, F13.

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1. Introduction

Trade preferences for developing country exports are widely used, either under a multilateral umbrella, such as the Generalized System of Preferences (GSP) schemes, on a regional basis, such as the scheme established by the US African Growth and Opportunity Act (AGOA), or bilaterally.

The expected *a priori* effects of preferential trade agreements are well known, as well as obstacles which may limit their effectiveness in practice (Bureau, Disdier and Ramos, 2007; Candau and Jean, 2005; Gallezot and Bureau, 2004; Manchin, 2006; and Panagariya, 2002).

A reduction of Most Favoured Nation (MFN) tariffs¹ as a result of multilateral negotiations would imply a reduction in existing trade preference margins, or their disappearance. Applied MFN tariffs in agriculture are much higher than those for manufactured goods; this implies that both the value of existing preferences and potential losses associated with the reduction of MFN tariffs are much more pronounced in agriculture than in other sectors. It has already been decided that any final agreement on the Doha Development Agenda (Doha) round of WTO negotiations on agriculture will include provisions to mitigate the negative consequences of preference erosion (WTO, 2004: A-7, # 44).

This paper addresses trade preferences and preference erosion with reference to the banana market, possibly the one market in which benefits from trade preferences and potential losses from preference erosion are the greatest (Alexandraki and Lankes, 2004; Goodison, 2007; Law, Piermartini and Richter, 2006; Yang, 2005), and conflicts among the different interests involved are the most evident and vocal. The paper focuses on the impact of the Economic Partnership Agreements (EPAs) and the implications for bananas of the possible conclusion of WTO negotiations. Using an original quantitative model of the banana market, the paper first provides an assessment of the expected benefits for African, Caribbean and Pacific (ACP) banana exporters from the elimination (as a result of the EPAs) of the EU preferential import quota for ACP banana exports in place until the end of 2007. It then addresses the reduction of these benefits as a result of the erosion of preferential margins deriving from the conclusion of current WTO negotiations. In

¹ Members of the WTO agree not to discriminate between their trading partners; this implies that all members are entitled to the most favourable conditions a country grants to any other member. Most Favoured Nation (MFN) tariffs are the non discriminatory tariffs a country applies to all its trading partners members of the WTO. Exceptions to the MFN treatment principle include tariffs applied within free trade areas, as long as they comply with certain rules, and trade preferences granted to developing country members for which a special waiver has been granted.

particular, the paper considers the effects of the preference erosion which would derive from the lowering of the EU MFN tariff as a result either of the conclusion of the Doha round in accordance with the general consensus reached in Geneva in July 2008 or, if the Doha round should not end, of the successful conclusion of the WTO negotiations on bananas involving the EU on one side, and several MFN exporters and the US on the other.

The results obtained suggest that the impact of the EPAs on production and consumption of bananas in the EU will be limited, while benefits for ACP countries and costs for MFN ones will be significant. However, the final agreement of the Doha round (if any), or a conclusion of the negotiations between the EU and MFN exporters to put an end to the banana dispute, may bring an erosion of the preferential margins currently enjoyed by ACP countries of such an order of magnitude as to severely reduce these benefits.

2. Recent policy developments and WTO multilateral and “bilateral” negotiations

The EU is the world’s largest importer of bananas and among the top 20 largest producers. Domestic production covers around one sixth of domestic consumption, with imports from MFN and preferred ACP countries covering two thirds and one sixth of the EU market, respectively. All major exporters of bananas are developing countries and in most of them bananas account for an important share of export revenue. For Costa Rica, Ecuador, and Panama in 2006 this share was around 10 percent; for Guatemala and Honduras 7.5 percent, but the share was much higher for some of the smaller banana exporting countries, such as Dominica and Saint Vincent and the Grenadines, where it was 21 percent and 29 percent, respectively.

Historically the EU import regime for bananas has been a source of heated political confrontations, involving the conflicting interests of domestic producers and consumers, multinational firms that control a large share of international trade, holders of quota licences under the previous EU trade regimes, least developed country (LDC) exporters, preferred developing country exporters and developing country exporters subject to MFN conditions (Anania, 2006; Goodison, 2007; Josling, 2003; Read, 2001; Tangermann, 2003a and 2003b; Thagesen and Matthews, 1997).

Recent developments in EU relevant policies for bananas include the 2001 “Everything But Arms” (EBA) initiative, the introduction in January 2006 of the EU “tariff-only” import regime, the 2006 reform of the EU Common Market Organization (CMO) for bananas and the implementation in January 2008 of the EPAs.

With the EBA initiative² the EU granted duty-free and unlimited market access to all exports except arms and ammunitions from LDCs. Since 1 January 2006 banana exports from LDC countries enter the EU tariff-free and without any quantitative limitation.

On 1 January 2006 the EU introduced a new “tariff only” import regime for bananas, removing the quota for imports under MFN conditions, setting the MFN tariff equal to 176 €/tonne³ and expanding the duty-free quota reserved for imports from ACP countries from 750,000 to 775,000 tonnes (out-of-quota exports were subject to the 176 €/tonne MFN tariff).

In December 2006 the EU approved a reform of its domestic policies for bananas (EC, 2006; Anania, 2008). The reform cancelled the previous Common Market Organization (CMO) regime for bananas, which provided generous and fully “coupled” support to domestic producers through a “deficiency payment” scheme; the per unit aid was given by the difference between a reference price, which did not change over time, and the observed domestic price. Most of the banana production in the EU occurs in its “outermost regions”: Guadeloupe and Martinique in France, Canary Islands in Spain and Azores and Madeira in Portugal; outside the “outermost regions” bananas are produced in Greece, Cyprus and continental Portugal. The reform “decoupled” support (€4.6 million) for banana producing areas outside the “outermost regions” by including it in the Single Farm Payment introduced by the June 2003 Fischler reform of the Common Agricultural Policy. For the “outermost regions” financial resources of a similar order of magnitude to those previously absorbed by deficiency payments (€278.8 million) have been added to the budget allocation of their *Programme d’Options Spécifiques à l’Eloignement et Insularité* (POSEI); these programmes finance the use of a wide range of policy instruments, whose aim is to increase the competitiveness of agricultural production in these “disadvantaged” outermost regions. The decision on which policy instruments to implement is left to the individual member country. In France the entire budget allocation (€129.1 million) has been devoted to “decoupled” payments, but in order to receive their full entitlement of “decoupled” payments farms have to produce at least 80 percent of what they produced, on average, in a reference period. In Spain most of the budget allocation (€132 million) has been devoted to “decoupled” payments; in this case to receive their full entitlement of “decoupled” payments farms have to produce at least 70 percent of what they produced, on average, in the reference period. Obviously, conditions farmers in Guadeloupe, Martinique and Canary Islands have to satisfy in order to receive these “decoupled” payments make

² EC Regulation 416 of 28 February 2001.

³ The previous regime included a 3,113,000 tonnes tariff rate quota (TRQ) for MFN imports; imports within the quota were subject to a 75€/tonne import tariff, while a prohibitive tariff equal to 680 €/tonne was imposed on out of quota imports (out-of-quotas ACP exports were subject to an equally prohibitive 380 €/tonne preferential tariff).

them not really decoupled from production. In both cases it turns out that the financial incentive (around 11,800 €/ha) is large enough to ensure that farms find it profitable to produce the minimum volume of bananas needed to enable them to claim the full amount of “decoupled” payments. In Portugal, a much less important banana producer, the entire financial allocation is devoted to the introduction of a fully “coupled” fixed production subsidy.⁴ The expected impact of the reform of the EU domestic policy regime for bananas is a significant drop in EU banana production and an increase in imports (Anania, 2008). While the reform of the EU import regime for bananas has attracted much attention and generated considerable debate, very little interest has emerged so far in the trade implications of the reform of the EU domestic policies for bananas.

On 1 January 2008 the EU implemented the EPAs it negotiated with many ACP countries (EC, 2007).⁵ The EPAs will progressively remove barriers to trade between the EU and several groupings of ACP countries, in a bid to create free trade areas in compliance with WTO rules.⁶ All agricultural exports from ACP countries which have successfully concluded the negotiations are now allowed duty- and quota-free access to the EU. Bananas, along with sugar and rice have been indicated as the three agricultural commodities for which most of the export benefits of the EPAs for ACP countries are to be gained (for sugar and rice, however, the EPAs call for a progressive removal of EU market protection by 2010).

In July 2008 negotiators gathered in Geneva in an attempt to find a compromise to conclude the Doha round. Bananas were considered among the sensitive issues which could potentially lead certain countries to block any final agreement. Bananas are among the commodities which should be included in both the list of products covered by the provisions for “tropical products,” and the list of products covered by the provisions for “preference erosion”. In the Doha round final agreement, tropical products are expected to be subject to larger tariff reductions by developed countries, and these reductions to be implemented more rapidly than for the other products. A tentative agreement regarding tropical products had been reached in July 2008 in Geneva to set equal to zero all tariffs below or equal 20 percent and to reduce by 80 percent over five years all other tariffs.⁷ On the contrary, with regard to products for which preference erosion is a concern, the

⁴ These are the implementation decisions made by France, Spain and Portugal in their POSEI programmes for 2007, which have been confirmed unchanged for 2008 and 2009.

⁵ These are actually “interim” agreements, with the exception of the one signed with the Caribbean CARIFORUM countries.

⁶ A WTO waiver allowing the EU to grant ACP countries under the Cotonou Agreement unilateral trade preferences which discriminated against other developing countries expired at the end of 2007.

⁷ The December 2008 revised draft of the modalities for agriculture offers two alternative texts for the provisions regarding tropical products: the elimination in four years of tariffs imposed by developed countries not exceeding 25 percent and the reduction by 80 percent of those above 25 percent; the alternative text is less generous in terms of

reduction of bound MFN tariffs is expected to be delayed or to take place over a longer implementation period. This means that opposing interests exist in the negotiation among developing countries. Countries receiving significant preferences have an interest in the preference erosion provisions of the agreement and in bananas being excluded from the list of tropical products; meanwhile countries that do not receive preferential treatment, or with limited preferences, want the provisions for tropical products to apply to bananas, and seek the exclusion of bananas from the list of commodities to which the preference erosion provisions of the final Agreement on Agriculture will apply. For ACP countries, the key issue in the negotiation on tropical products is the loss resulting from the erosion of the preferences granted by the EU. This explains why, early in 2008, Pascal Lamy, the Director General of the WTO, decided to take the negotiations on bananas into his own hands to prepare the ground for a mutually acceptable solution.

The July 2008 meeting in Geneva failed to reach an agreement, but not because of bananas; on July 26 eleven Latin American countries, the US and the EU appeared to have reached a tentative provisional agreement to bring to an end the long-standing “Bananas III” dispute at the WTO.⁸ The agreement called for a reduction of the EU MFN tariff on bananas from 176 to 114 €/tonne between January 1 2009 and 2016, with a 28 €/tonne tariff cut in the first year, and for this tariff to be excluded from further cuts resulting from the conclusion of the Doha round. Bananas were to be included among the tropical products for all countries except the EU (a separate “banana protocol” containing the agreement reached between the EU, MFN exporters and the US was to be included as an Annex into the final Agreement on Agriculture). The 114 €/tonne tariff on EU banana imports would be greater than that resulting from the provisions on market access for both agricultural products in general and for tropical products, on which there is wide consensus in the negotiations. The EU had already made known its intention not to include bananas among its “sensitive” products, due to receive a lesser tariff cut in exchange for extended import quotas. ACP countries expressed dissatisfaction with this agreement, but nonetheless appeared willing to accept it in exchange for concessions from MFN banana exporters in the definitions of the list of the tropical products (including dropping sugar from the list, the other commodity for which preference

liberalization and foresees the elimination of tariffs not exceeding 10 percent, a lower reduction of tariffs above this threshold, and cuts being implemented over the longer general tariff reduction implementation period (WTO, 2008: 26).

⁸ The dispute dates back to 1996. The most recent episodes of the dispute refer to complaints by Ecuador in November 2006 and the US in June 2007 that the “tariff only” import regime the EU had introduced on 1 January 2006 did not comply with WTO rules. The panels concluded that (a) the MFN tariff introduced in 2006 is inconsistent with the EU WTO commitments and (b) preferences granted by the EU under the pre-EPA import regime in place until January 1 2008 to bananas originating in ACP countries were not compliant with its Most Favoured Nation obligations; these conclusions were upheld by the WTO Appellate Body in November 2008.

erosion is a serious concern for them) and for aid from the EU to improve the competitiveness of their agriculture sectors.

The failure of the WTO meeting in Geneva to find an agreement to conclude the Doha round left the banana dispute unresolved. In fact, the tentative “bilateral” agreement reached by the EU, on one side, and MFN exporters and the US, on the other, cannot hold without the agreement of all the other countries. In theory, an agreement on bananas could still be signed by all the countries involved without a conclusion of the Doha round. However, in this case, on the one hand, ACP countries cannot be sure that if and when the Doha round is concluded what they have asked for in exchange for accepting the agreement on bananas will be delivered (in addition, they have an obvious interest in the reduction of the EU MFN tariff being delayed as long as possible); on the other hand, only if the agreement is “multilateralized” by making it part of the final agreement of the Doha round can the EU be sure that the reduced tariff it is willing to impose on its MFN banana imports will not be subject to further cuts.

Negotiations to conclude the Doha round are currently stalled and resumption is not expected soon.

However, since the breakdown of the meeting in Geneva in July 2008, EU and MFN exporters have continued to negotiate in order to try to find a solution to end the banana dispute. Any resulting agreement is expected to be not far from the tentative agreement reached in July 2008, and is likely to include a mechanism to shield the new EU import regime from possible further changes as a result of any conclusion of the Doha round.

Finally, not surprisingly, negotiations on bananas have been some of the most sensitive elements in the negotiations on regional trade agreements between the EU and the Andean Community, as well as those between the EU and Central American countries. As a result, these negotiations are interlinked with those taking place at the WTO, and interfere with them. In fact, the countries that reach a regional trade agreement which provides them significant banana export opportunities to the EU are in no hurry to see a solution of the dispute at the WTO materialize, as this would reduce their relative competitiveness *vis a vis* the other MFN exporters. These negotiations are a politically sensitive issue for the EU as well, because of the problems the conclusions of such regional trade agreements would raise with both the MFN countries not involved and ACP countries; for this reason a conclusion of negotiations on regional trade agreements in which bananas are a key component of trade is unlikely to occur before the WTO dispute is settled.

3. Banana production and trade

The banana sector is a dynamic industry. World production has expanded by 70 percent since the early 1990s, from around 50 million tonnes to 81.3 million tonnes in 2007; bananas traded internationally show a similar growth, increasing from around 10 million tonnes at the beginning of the past decade to 16.8 million tonnes in 2006 (Figure 1). Around 20 percent of world banana production is traded internationally; this share remained stable in recent years.⁹

In 2007, the six main producers of bananas (including plantains) accounted for two thirds of global production; they were, in order of importance: India (21.8 million tonnes), China (7.3), the Philippines (7), Brazil (7), Ecuador (6.1) and Indonesia (5) (Figure 2). Looking specifically at the main exporters to the EU market (Tables 1 and 2) a wide dispersion in production growth rates across countries emerges. Among the MFN countries, Ecuador and Guatemala show banana production growth rates between the early 1990s and 2007 above average rates for the world as a whole as does Belize among the ACP countries. On the contrary, Honduras and Panama among the main MFN exporters to the EU, and Suriname among the ACP ones, experienced a reduction of their production of bananas over the same period.

The list of the main net exporters¹⁰ of bananas and their ranking do not coincide with those based on production, as India and China, the two largest producers, are a marginal international trader and a net importer, respectively. The largest net exporter in 2006 was Ecuador (4.7 million tonnes), followed by the Philippines (2.3), Costa Rica (2.2), Colombia (1.6) and Guatemala (1.1) (Figure 3). Net banana exports are even more concentrated than banana production; in fact, in 2007 these five countries alone generated 83 percent of net world exports. Changes in net exports across countries between 1990 and 2006 show very different trends; differences do not parallel those observed for production, as bananas consumed domestically and bananas exported are usually different products, associated with different production systems and, as a result, subject to different dynamics. Among MFN countries the largest expansion in net exports between the beginning of the past decade and 2006 occurred in Guatemala (+182 percent), the Philippines (+166 percent), Brazil (+147 percent) and Ecuador (+96 percent, with an impressive increase of banana exports from 2.2 million tonnes in 1990 to 4.9 in 2006) (Tables 3 and 4). Banana exports by Honduras and Panama contracted over the same period of time by around 30 and 40 percent, respectively. The main ACP exporters increased their banana exports by an order of magnitude similar to those observed for the

⁹ Detailed analyses of the structural characteristics of the banana market are presented in FAO (2003) and UNCTAD (2003).

¹⁰ Many countries import and export bananas at the same time; net exports are given by the difference between exports and imports.

main MFN exporters; the Dominican Republic, a marginal exporter in 1990 and 1991, exported 187 thousand tonnes of bananas in 2006, while Belize, Cameroon and Ivory Coast exports in 2006 all exceeded 2.5 times their volume at the beginning of the 1990s (Table 4). Over the time horizon considered, total ACP banana exports expanded, but there was also a marked reallocation of exports within the group of countries (Figure 4). ACP countries other than Belize, Cameroon, Ivory Coast, Dominican Republic and Suriname saw their banana exports drop between the beginning of the past decade and 2006 by more than 80 percent (from 411,000 to 65,000 tonnes) (Tables 3 and 4; Figure 4); the largest reductions occurred in Dominica, Jamaica, Somalia, St. Lucia and St. Vincent.

Market concentration is even higher for imports than for exports; in 2006 the two main net importing countries, the EU-25 and the US, alone accounted for little less than 60 percent of world net imports of bananas; their net imports were equal to 4.1 million tonnes and 3.8 million tonnes, respectively; other important net importers in 2006 were, in order, Japan (1 million tonnes), Russia (882,000 tonnes), Canada (458,000 tonnes) and China (including Hong Kong) (405,000 tonnes) (Figure 5).

Banana trade flows show a clear pattern of regionalization; this is induced, at least in part, by past and current EU import regimes. Virtually all ACP exports are directed towards the EU, while Latin American MFN countries export bananas to Europe, Russia, and North and South America. For example, in 2005, Ecuador shipped 40 percent of its exports to the EU, 24 percent to Russia, 22 percent to the US and seven percent to other Latin American countries. Virtually all US and Canada imports of bananas come from Central and South America. The Asian market is largely characterized as a regional market separated from the rest of the world, with a very large share of imports satisfied by exporters from within the region itself. For example, in 2005 Japan, the largest importer of the region, imported 90 percent of its bananas from the Philippines, while China's imports came from the Philippines and Thailand.

Finally, let us briefly focus on EU imports. Between 1999 and 2005 EU imports of bananas from both MFN and ACP countries remained relatively stable (Figure 6). After the removal in January 2006 of the 3,113,000 tonnes TRQ the EU imposed on its MFN imports and the introduction of the "tariff only" import regime, imports from MFN countries started steadily increasing, moving from 3 million tonnes in 2005 to 3,4 in 2006, 3,7 in 2007 and 3,9 in 2008 (Figure 6); these figures seem to confirm the findings of Anania (2006) and Scoppola (2008) that, contrary to the WTO rulings in the 2005 arbitration, the new import regime unilaterally introduced by the EU in 2006 was to provide more market access to MFN banana exports than its predecessor.

At the same time, ACP exports expanded as well, from 765,000 tonnes in 2005 to 900,000 tonnes in 2006 and 850,000 tonnes in 2007; they reached 920,000 tonnes in 2008, the first year with the EPAs in place. Until 1 January 2006 ACP exports outside the 775,000 tonne duty-free quota were subject to a preferential tariff of 360 €/tonne, while since the introduction of the “tariff only” regime the tariff imposed on out-of-quota ACP exports became the much lower MFN tariff, i.e. 176 €/tonne. Figures 7 and 8 provide information on differences across countries in banana exports to the EU between 1999 and 2008. Among MFN exporters the expansion of EU imports since 1 January 2006 seems to have mostly benefited Colombia, Costa Rica and Ecuador, in that order (Figure 7). Among ACP countries, benefits from the reduction of the tariff imposed on their out-of-quota exports seem to have been more evenly distributed, with the Dominican Republic showing a somewhat stronger capacity to take advantage of the new market access conditions (Figure 8). The fact that in 2006 and 2007 around 15 percent of ACP banana exports to the EU were subject to the MFN tariff implies that certain ACP countries have developed a significant capacity to produce and market bananas competitively with MFN countries; this highlights the significant potential for expansion of ACP exports under the quota- and duty-free import regime in place since 1 January 2008 as a result of the EPAs.

4. The model.¹¹

The model developed is an expanded and updated version of the one used in Anania (2006, 2008); the main differences are: the data base refers to 2005 (in Anania (2006, 2008) it referred to 2002); the five EU banana producing member states are modelled individually; the modelling of the 2007 EU enlargement to Bulgaria and Romania; and the use of an innovative calibration procedure.

It is a single commodity, spatial, partial equilibrium, mathematical programming model. The fact that the model is “spatial” - i.e., it is solved for the trade flows between each pair of countries - makes it particularly suitable for representing policies that apply different regimes to imports from different countries, without having to resort to unrealistic assumptions, as is the case when non-spatial models are used.

The model assumes perfect competition on domestic and international markets,¹² and bananas as a homogeneous product. It includes five sources of domestic supply within the EU: France (Martinique and Guadeloupe), Spain (Canary Islands), Portugal (Madeira and Azores), Greece

¹¹ This section provides only a very brief presentation of the main characteristics of the model; all details regarding the model can be found in Anania (2006, 2009).

¹² Few firms control a large share of the world market for bananas (FAO, 2003; Taylor, 2003). However, studies which have attempted to empirically assess the degree of competition in the banana market disagree on whether these firms actually exert market power.

(Crete) and Cyprus. Banana production in continental Portugal is negligible and has been ignored. It also includes fifteen exporting countries: six ACP countries/regions (Ivory Coast, Cameroon, Dominican Republic, Belize and Suriname, other ACP non-LDC net exporters, and ACP LDC net exporters) and nine MFN countries/regions (Ecuador, Colombia, Costa Rica, Panama, Honduras, Brazil, Guatemala, other MFN non-LDC net exporters, and MFN LDC net exporters), and five importing countries/regions (EU15, EU10, Bulgaria and Romania, United States, “rest of the world” net importers).

The values of the elasticities used in the model are exogenously determined and are based on those used elsewhere. The sources for the other data used are the FAOSTAT and COMTRADE databases, the World Bank and the European Commission.¹³

The 2005 base model includes the modelling of the EU CMO for bananas and of the EU-25 import regime in place at the time. The capacity of the 2005 base model to reproduce observed country net trade positions appears satisfactory. Nevertheless, an innovative two step calibration procedure has been used to improve the capacity of the model to reproduce observed net trade positions as well as bilateral trade flows.

All simulations have been generated with reference to 2016, by when it will be possible to assess the market effects of the adjustments in production decisions as a result of changes in both the EU import and domestic policy regimes, as well as the implications of any successful conclusion of the negotiations between the EU and the MFN countries and/or the conclusion of the Doha round.

5. Simulation results

The results of the simulations are presented in Tables 6 and 7 and Figure 9.

In the “Base 2016” reference scenario the EPAs and the outcome, if any, of the multilateral and “bilateral” WTO negotiations are ignored. This reference base model has been obtained from the “Base 2005” one by modelling:

- (a) the 2007 enlargement of the EU-25 to Bulgaria and Romania;
- (b) the introduction on 1 January 2006 of the EU “tariff-only” import regime;
- (c) the implementation of the EBA initiative;
- (d) the 2006 reform of the EU CMO for bananas; and

¹³ All data used in the base model are provided in Table 5.

- (e) the changes in import demand and export supply functions in all countries/regions resulting from expected shifts in domestic demand and supply functions due to expected changes in yields, population and per capita incomes.

Import demand and export supply functions shift according to expected changes, *ceteris paribus*, in the quantities produced and consumed in each country/region.¹⁴ Consumption is assumed to vary over time on the basis of observed changes in population and in per capita incomes between 2000 and 2005;¹⁵ the values used for domestic demand income elasticities are provided in Table 5. Production in each country/region is assumed to change over time, *ceteris paribus*, in line with observed changes in banana yields between 1992-1995 and 2002-2005.¹⁶

The dollar/euro exchange rate in 2016 has been assumed to be 1.5 (in the 2005 base model it was 1.2441).

EU-27 domestic price of bananas is expected to decline by 36 €/tonne, and consumption to expand between 2005 and 2016 by 800,000 tonnes. This is due to the combined effects on the EU demand for bananas of several factors: Bulgaria and Romania becoming members of the EU, expected changes in per capita income and population, and the significantly stronger euro. Domestic production drops from 723,000 to 578,700 tonnes as a result of the reform of the CMO for bananas. In fact, in France and Spain banana production is forecast to equal the minimum threshold required for farms to claim the full amount of their entitlements of “decoupled” payments:¹⁷ 255,000 tonnes and 294,000 tonnes (Table 7), respectively, versus 309,000 tonnes and 384,000 tonnes produced in 2005 under the previous domestic policy regime. In Portugal, where support remains fully “coupled” (although under a different policy instrument), production equals 23,000 tonnes, while it was 19,000 tonnes in 2005. EU-27 imports increase by 940,000 tonnes. In the other two importing regions imports are forecast to move in opposite directions. They are expected to increase by 570,000 tonnes in the US and to decline by 85,000 tonnes in the “rest of the world.” Despite the robust increase in population and per capita incomes, imports decline in the “rest of the world” importing region as a result of the greater sensitivity of domestic demand to the price increase and, more importantly, because of the large expected increases in yields in domestic

¹⁴ The FAOSTAT data base is the source used for production and consumption data in 2005.

¹⁵ In both cases the data source is World Bank (various years).

¹⁶ The data source is the FAOSTAT database.

¹⁷ The model does not include uncertainty and, as a result, ignores the effects of risk on producer decisions in France and Spain. If producers are risk averse, their *ex ante* production decisions will target an expected volume of production above the minimum required for them to collect the full amount of support they are entitled to; this means that, *ex post*, on average, risk averse producers will overshoot their minimum production target and the model underestimates the expected volume of banana production in the EU.

banana production (Table 5). ACP countries fill up the 775,000 tonnes duty-free TRQ on the EU-27 market and export 190,000 tonnes to other countries. In 2006 and 2007, the first two years after the introduction of the new EU import regime, ACP out-of-quota exports to the EU (that were thus subject to the 176 €/tonne MFN tariff) were 116,000 tonnes and 62,000 tonnes, respectively. The simulation suggests that by 2016 ACP countries would find it more profitable to export to countries other than the EU. When changes in individual country exports are considered, different results emerge. Changes in yields, on the one hand, and in domestic consumption due to changes in population and per capita incomes on the other, had caused exports in Cameroon to decline severely between 2005 and the “no policy change” Base 2016 scenario.¹⁸ In contrast, exports increase sharply for the Dominican Republic, the aggregate of “other ACP non-LDC” and, to a lesser extent, Ivory Coast (Table 7). MFN exports to the EU are forecast to increase between 2005 and 2016 by one million tonnes, due to several factors: the change in the EU import regime, the reform of the EU domestic policy regime, the increase in the €/\$ exchange rate and changes over time in domestic supply and demand functions. Total MFN exports are expected to increase by 1.3 million tonnes. Among MFN countries, banana exports are expected to increase significantly, although by different degrees, in Guatemala, Ecuador, Costa Rica and Colombia, while the opposite occurs in Brazil and Honduras. LDCs are expected to exit the world market for bananas (LDC exports were 69,000 tonnes in 2005) as a result of their loss of competitiveness over time compared with both ACP and MFN countries, despite the introduction by the EU of the EBA initiative.

Six policy scenarios are considered. All simulations are generated with respect to 2016 and they all include the implementation of the EPAs; for bananas this means the removal on January 1 2008 of the quota on EU imports from ACP countries, which now occur duty- and quota-free.

Differences in the six policy scenarios relate to assumptions made with respect to the conclusion of multilateral and “bilateral” WTO negotiations and the consequent reductions in banana tariffs.

In the first two scenarios it is assumed that no Doha round agreement is reached. In the first it is assumed that negotiations between the EU, on one side, and MFN countries, on the other, to solve

¹⁸ In Cameroon yields between 1992-1995 and 2002-2005 drop by a significant amount; however, in the model they are assumed not to change between 2005 and 2016 (Table 5). Nevertheless this makes the relative competitiveness of bananas production in Cameroon decline with respect to that of countries where yields, based on observed changes between 1992-1995 and 2002-2005, are modelled to increase. In addition, domestic consumption of bananas in Cameroon is assumed in the model to increase significantly over time as a result of the robust changes in population and per capita income observed in previous years (Table 5); everything else held constant, this makes the export supply of bananas in Cameroon reduce further over the years. While total ACP banana exports to the EU increased between 2003 and 2008 from 805,000 to 921,000 tonnes, exports by Cameroon declined from 299,000 to 280,000 tonnes

the current dispute in the WTO also fail to achieve a mutually acceptable solution; hence, this scenario simulates the impact of the implementation of the EPAs only. The second scenario assumes that, on the contrary, the EU and MFN countries agree to implement the tentative agreement reached in July 2008 in Geneva that the current 176 €/tonne MFN tariff is replaced by 2016 by a tariff equal to 114 €/tonne; because there is no Doha agreement, the import tariffs imposed by the US and the aggregation of all other net importing countries remain unchanged (they equal 0.5 percent and 18.9 percent, respectively).

In the first scenario, the one simulating the impact of the EPAs but with everything else remaining unchanged, the EU market is only marginally affected: total imports and consumption increase and domestic production and price decline as a result of the increased preferential market access, but by a small amount in every case. Where the impact of the EPAs is felt is in the composition of EU imports. The removal of the import quota leads to an increase of ACP exports to the EU by one million tonnes, while MFN exports to the EU decrease by 970,000 tonnes. All ACP exports are now directed toward the EU, which means total ACP exports increase by smaller amounts (817,000 tonnes). Simulation results for individual exporters are provided in Table 7. Imports and consumption in the other importing countries increase as a result of the expansion of the MFN export supply towards countries other than the EU because of the loss in relative competitiveness of MFN banana exports on this market; as a result, total MFN exports decline by 588,000 tonnes. Banana export revenue in ACP countries more than triples,¹⁹ while it declines by 8.1 percent in MFN ones.

In the second scenario, the lower EU MFN tariff leads to an increase in EU imports and consumption and a drop in tariff revenue compared with the results seen in the first simulation; EU domestic price is lower by 10.7 percent, consumption and imports increase by 4.9 percent and 5.6 percent, respectively, and tariff revenue declines by 24.5 percent; EU domestic production is only slightly affected by the policy change, as production in France and Spain remains unchanged (it equals the minimum required for farmers to collect their full entitlements of direct payments) and only production in Greece, Portugal and Cyprus adjusts to the change in domestic price.²⁰ The 114 €/tonne tariff remains short of “compensating” MFN countries for the loss of competitiveness of their exports on the EU market as a result of the EPAs. In fact, if this second scenario is compared with the first, MFN banana exports to the EU increase by 515,000 tonnes but remain below those in

¹⁹ Export revenue for ACP countries in the “Base 2016” scenario does not include quota rents, which are assumed to be enjoyed by holders of quota licences, located outside the exporting country (importers in the EU or multinational trading firms).

²⁰ This is the case in all other scenarios as well (Table 7).

the “Base 2016” scenario; ACP exports to the EU decline by 240,000 tonnes, remaining well above those when the EPAs are not in place.

In order to show the implications of the possible outcomes of the negotiation between the EU and MFN exporters, in Figure 10 total EU imports in 2016 and their composition by origin (ACP and MFN countries) are provided as a function of the EU MFN tariff. EU imports increase as the MFN tariff is reduced, while MFN exports to the EU increase and those from ACP countries decrease. The MFN tariff being equal to 176 €/tonne corresponds to scenario one in Table 6. However, if MFN countries are granted the same treatment as ACP ones (i.e., all EU imports of bananas occur duty- and quota-free), total EU imports reach 5.7 million tonnes, MFN exports to the EU equal 4.6 million tonnes and ACP exports contract to 1.1 million tonnes (the EU would now become their only export destination); this would represent a volume of ACP exports that is still above their total exports in the no-EPA, no-WTO agreement “Base 2016” scenario. The MFN tariff would have to be set at 60 €/tonne in order to ensure that the volume of 2016 MFN exports to the EU equals the level without EPAs (4.076 million tonnes) ; this tariff would yield EU imports (5.403 million tonnes), and ACP exports (1.330 million tonnes) that are well above their levels in the “Base 2016” scenario.

The other four scenarios all assume that a Doha round agreement is reached, that in 2016 the implementation period is completed, and that bananas are not included by the EU among its “sensitive” products. The latter is mainly based on unofficial information regarding developments in the negotiations on agriculture²¹ and on the presumption that the EU will be unlikely to reintroduce import quotas for bananas.

In the third scenario it is assumed that the Doha round Agreement on Agriculture will include the tentative agreement on bananas reached by the EU and the MFN countries in July 2008, and that bananas are included in the list of “tropical products”; based on the convergence which seems to have emerged during the July 2008 meeting in Geneva, this is assumed to imply that all import tariffs on bananas (with the exception of the tariff imposed by the EU) less than, or equal to 20 percent are set equal zero and all those greater than 20 percent are reduced by 80 percent. This means that the EU MFN tariff is equal to 114 €/tonne, while bananas now enter the US as well as the aggregation of the other net importing countries duty free. The results of the simulation are only slightly different from those obtained for the second scenario. EU consumption and imports are both 40,000 tonnes lower; EU imports from ACP countries increase by 35,000 tonnes as a result of

²¹ Bridges Weekly (ICTSD, 2008) reported that MFN exporters had prevailed on preference-receiving countries in having bananas removed from “a potential list of sensitive products” to be designated by major importers.

the increase of MFN exports to destinations other than the EU; total MFN exports increase by 515,000 tonnes and imports by the US and the other net importing countries increase by 45,000 and 630,000 tonnes, respectively.

The fourth scenario is a reference scenario in which banana trade is fully liberalized, a policy option which is not on the horizon. As expected, EU consumption and imports are the largest among all scenarios considered (they equal 6.2 and 5.6 million tonnes, respectively). The same is true for MFN exports, both in total (13.8 million tonnes) and to the EU (4.5 million tonnes). On the contrary, ACP countries experience a severe erosion of the preferential margins enjoyed under the EPA: ACP exports now equal 1,130,000 tonnes, versus 970,000 tonnes in the “Base 2016” scenario (the one with no EPA and no Doha round agreement) and 1,780,000 tonnes in the scenario that is most favourable to the ACP countries (this is scenario one, in which the EPA is in place and the EU MFN tariff remains unchanged at 176 €/tonne). Banana export revenue in ACP countries is now 34% higher than in the “Base 2016” scenario, but 58 percent lower than in scenario one.

In the final two scenarios it is assumed that the July 2008 tentative agreement on bananas between the EU and MFN exporters does not become part of the final Doha round agreement and the EU MFN tariff on bananas is subject instead to the provisions for “tropical products.” After the November 2008 determinations of the WTO Appellate Body on the more recent episodes of the banana dispute, the EU bound tariff for bananas remains an open issue.²² In the fifth scenario the EU bound tariff to be reduced by 80 percent is assumed to be 680 €/tonne, the final bound tariff indicated in the EU schedules annexed to the 1994 Uruguay round Agreement on Agriculture. In the sixth scenario, it is assumed to be 176 €/tonne, the MFN tariff introduced by the EU in 2006. In both scenarios, tariffs imposed by all importers apart from the EU drop to zero, while the EU tariff on MFN imports becomes 136 €/tonne in scenario five and 35.2 €/tonne in scenario six (in both cases the ad valorem equivalent of the tariff to be reduced exceeds 20 percent). These two alternatives possibly represent the boundaries for any decision on the EU MFN tariff for bananas in the final Doha agreement.

In scenario five ACP countries are better off than they are under scenario three (when the tentative July 2008 agreement on bananas reached by the EU and the MFN countries is included in the Doha round agreement), while the contrary is true for MFN banana exporters. The EU imports equal 5,030,000 tonnes, 1,660,000 tonnes from ACP countries and 3,370,000 tonnes from MFN

²²The Appellate Body upheld the Panel’s decision that the 176 €/tonne tariff the EU is currently imposing on its MFN imports, because of how it has been introduced, is “*an ordinary customs duty in excess of that provided for in the European Communities’ Schedule of Concessions*”, which is 680 €/tonne. This leaves undetermined what the legally bound EU MFN tariff for bananas actually is.

countries. In scenario six, the opposite is true: the MFN tariff equals 35.2 €/tonne instead of 114 €/tonne and 136 €/tonne, everything else remains unchanged, EU imports are higher (5,470,000 tonnes), ACP exports lower (1,270,000 tonnes) and MFN ones higher (4,200,000 tonnes) than in both scenarios three and five. The US and “rest of the world” imports move in the same direction as the EU MFN tariff: when this increases, MFN export supply to markets other than the EU expands, leading to an increase in exports towards these destinations and a decline in import prices.

Four main conclusions can be drawn from the results of the simulations:

- (a) EU production of bananas is largely independent of changes in trade policies; in fact, because of the current domestic policy choices for banana producers, only production in Portugal, Greece and Cyprus (less than 5 percent of the total) responds to changes in market prices. However, banana producer incomes, everywhere in the EU, are affected by trade policy changes through the effect of the latter on domestic prices;
- (b) the EPAs are expected to have only a minor impact on the EU market, but a very significant one on ACP and MFN exports of bananas to the EU. Effects extend to other markets as well, because of the diversion towards these countries of the MFN export supply of bananas;
- (c) if the July 2008 tentative agreement between the EU and MFN countries were to be implemented, it would affect EU imports of bananas and domestic price. ACP exports of bananas would remain well above pre-EPA levels, while MFN ones (although they would increase by almost 400,000 tonnes) would remain below pre-EPA levels;
- (d) if the Doha round is concluded and includes the tentative July 2008 agreement on bananas, it would not effect the EU market much with respect to the scenario in which only the July 2008 agreement is implemented. Both MFN and ACP exporters would benefit from the liberalization of banana trade in countries other than the EU.

6. Sensitivity of simulation results to some of the assumptions made

As is always the case, the results of a modelling exercise depend, at least to a certain extent, on the quality of the information used and the assumptions made. The main issues to be aware of when considering the results of the study presented in this paper are: the quality of the data available; the assumption that all actors involved in the banana market behave competitively (i.e. countries as well as multinationals involved in banana production and trade and large retail agglomerations); the assumption that bananas are a homogeneous product (which, among other things, means ignoring

the growing importance of “fair trade” and organically grown bananas); the assumption that banana producers in France and Spain are risk neutral, or risk averse but operate under no uncertainty; and finally, the assumption that the supply of transportation services is infinitely elastic (i.e. banana trading is not constrained by transportation capacity, and transportation and other transaction costs do not vary either as a function of the volume traded or over time).

In order to assess how robust the results are with respect to the assumptions that we made regarding the parameters of the model, sensitivity analyses have been performed on some of those assumptions which appear potentially more critical: (i) the €\$ exchange rate; (ii) the extent of production increases over time due to technical changes; (iii) the risk behaviour of banana producers in France and Spain; (iv) the price responsiveness of banana exports in ACP countries; (v) the changes over time in transaction costs. Sensitivity analyses have been conducted for scenario two in Table 6, i.e. for the scenario in which EPAs are in place, no Doha round agreement is reached and the EU implements the tentative July 2008 agreement reached between the EU, MFN exporters and the US. The results presented in Table 8 are intended to provide the reader with a sense of “to what extent” and “in which direction” the simulations presented above would change if different assumptions were made with respect to some of the parameters used in the model.

In the simulations presented in section five the €\$ exchange rate in 2016 is assumed to be 1.5 (in the “Base 2005” model it was 1.2441); two alternative values have been considered to test the sensitivity of the results to this parameter: 1.8 and 1.2 . Changes in the exchange rate modify the competitiveness of EU imports, regardless of their origin, relative to domestic production. These changes affect the price of bananas in the EU market: a higher exchange rate increases the competitiveness of EU imports and lowers the price, while a lower exchange rate makes imported bananas less competitive on the EU market and causes the price of bananas in the EU to increase. If the €\$ exchange rate in 2016 is assumed to equal 1.2 or 1.8 (simulations [a] and [b] in Table 8), simulation results remain relatively similar to those resulting from an assumed 1.5€\$ exchange rate. When the €\$ exchange rate is 1.8, EU imports are larger by 280,000 tonnes (+4.8 percent) and ACP and MFN exports to the EU by 110,000 tonnes and 170,000 tonnes (+7.0 percent and +4.7 percent), respectively. MFN total exports increase by 1 percent only, as their exports to countries other than the EU contract. When the exchange rate is equal 1.2, EU imports are 410,000 tonnes lower (-7.9 percent), and ACP and MFN exports to the EU are 115,000 tonnes and 295,000 tonnes lower (-7.4 percent and -8.1 percent), respectively (MFN total banana exports decline by two percent).

Observed average yearly changes in banana yields between 1992-1995 and 2002-2005 are used in the model to forecast, everything else held constant, effects of expected technical developments on banana production between 2005 and 2016 in each country/region, net exporters as well as net importers. Percentage yearly changes below zero and above five have been set equal to zero and five, respectively (Table 5). Changes in banana yields over the past few years show very different patterns across countries. Banana yields between 1990 and 2007 in some of the major exporting countries are presented in Figure 11. In order to assess how sensitive the results presented in section five are to assumptions made regarding expected technical developments in banana production between 2005 and 2016, a two percent maximum constraint has been imposed on yearly increases in yields. This means that a percent yearly increase in yields that is lower than the one observed between 1992-1995 and 2002-2005 was used for Cyprus, Ivory Coast, Dominican Republic, other ACP non-LDC countries, and Guatemala, and, among the importers in the “rest of the world” region. In this case, results appear quite sensitive to the assumptions made (simulation [c] in Table 8). Among exporters the main impact is a significant reduction in the aggregate competitiveness of ACP banana exports *vis a vis* those from MFN countries. The reduction in the rate of adoption of technical changes among the “rest of world” region makes their import demand function expand significantly. EU imports are now 160,000 tonnes lower (-3 percent) than those in the simulation presented in the previous section, and imports in the “rest of the world” region are 900,000 tonnes (+20 percent) higher. ACP exports drop by 50 percent (-770,000 tonnes), while total MFN exports are 1.3 million tonnes (+10 percent) higher. Because the changes in the model parameters considered affect only some of the ACP countries, they modify the relative competitiveness of individual countries within the group. Total banana exports of the Dominican Republic and the “other ACP non-LDC” decline by more than 50 percent and those by Ivory Coast by 22 percent, while exports by Cameroon, Belize and Suriname expand by 22 percent and eight percent, respectively.

In order to test how sensitive the results obtained are to the assumptions made regarding the risk behaviour of banana producers in France and Spain under uncertain production conditions, these producers have been assumed to be risk averse and, as a result, to overshoot, on average, the production target which allows them to receive the full amount of support they are entitled to. In simulation [d] in Table 8 it is assumed that they decide to produce, on average, 115 percent of their production target. EU production increases by 82,000 tonnes (+14.3 percent, as production in Cyprus, Greece and Portugal slightly declines as a result of the small reduction in the EU domestic price). The trade impact of this assumption is limited, as EU imports decline only by 1.5 percent.

In order to test how sensitive the results obtained are to the assumptions made concerning the elasticity of the export supply functions in ACP countries (i.e., their capacity to expand production and exports in response to an increase in price), these elasticities for Ivory Coast and Cameroon have been lowered from 1.5 to 1, making their exports less price responsive (simulation [e] in Table 8). These two countries alone account for almost 60 percent of ACP banana exports. The results obtained in the simulation presented in the previous section appear to be robust with respect to these changes, as ACP exports to the EU are now lower by less than one percent .

In simulation [f] all bilateral transaction costs associated with international trading are increased by 30 percent in order to determine whether the results presented in section five were significantly affected by the assumption that transaction costs do not change over time or with the volume traded. The relatively large increase in international transaction costs considered has limited effects on the results of the simulations. The increase not only makes all exports more costly, but changes the relative competitiveness on each market of exports from different sources (changes in an exporter's relative competitiveness depend on the incidence of its transaction costs to that specific destination on the price in that market). While MFN total exports contract by 4.1 percent (and those to the EU by 3.4 percent), ACP exports do not change. EU imports decline by 2.4 percent, and those by the US and the "rest of the world" net importers by 2.1 percent and 6.5 percent, respectively.

Finally, to provide the reader with an assessment of the implications of the assumptions made with respect to expected changes in banana demand and supply functions between 2005 and 2016, in Table 9 three of the policy scenarios considered are simulated as if they had occurred in 2005. The "Base 2005" column presents the results of the simulation in the base model with modelled policies being those in place in 2005 (EU-25; pre-"tariff only" and pre-EBA EU import regime for bananas; pre-2006 reform domestic policy regime for bananas; and €\$ exchange rate equal to 1.2441). The "Base" column presents the results of the simulations when various factors are introduced in the model - the 2007 EU enlargement, the "tariff only" import regime, EBA, the reform of the CMO for bananas and the €\$ exchange rate being equal to 1.5 - all as if they occurred in 2005 (i.e. without introducing any change in demand and supply functions). Three of the policy scenarios considered in section five are then simulated: the introduction of EPAs; the introduction of EPAs and the implementation of the tentative July 2008 agreement, but without a conclusion of the Doha round; and the EPAs and the implementation of a Doha agreement which includes the tentative July 2008 agreement (these scenarios are labelled as one, two and three, respectively, in Table 6). By comparing results presented in Tables 9 and 6, it is evident that two of the elements of

the simulations presented in section five are sensitive to the drivers of change in banana supply and demand between 2005 and 2016. These are the impact of the EPAs on ACP and MFN exports to the EU, and the role of LDCs in the banana market. If EPAs had occurred in 2005, their effects would have been predicted to be significant (non-LDC ACP exports increase by 226,000 tonnes, +29.2 percent) but much smaller than those expected in 2016. As pointed out above, Cameroon exports are predicted to decline sharply between 2005 and 2016, regardless of the trade policy regime considered, as a result of expected changes over time in its domestic consumption and production of bananas. If these expected changes are ignored as in the simulations presented in Table 9, Cameroon exports increase as a result of the EPAs from 254 thousand tonnes to 353; if the tentative agreement reached in Geneva is implemented (scenario two in Table 9) they equal 278 thousand tonnes, while if a Doha round agreement is reached (scenario three) they equal 287 thousand tonnes. If over time developments in supply and demand functions are ignored, then LDCs remain active as net exporters of bananas: EBA doubles their exports and redirects all of them to the EU; EPAs have a very small effect on LDC exports, while the effect of a reduction of the EU MFN tariff and a Doha round agreement would be more significant (LDC exports drop by more than 40 percent). Again, these simulations are provided here only to help the reader assess how sensitive the results presented in the paper are to the assumptions made to model expected changes in the supply and demand of bananas. Not only did the policy developments considered in the paper not occur in 2005 but, if they ever do materialize in the future, producers will need time to adjust their production and investment decisions; hence, time is an important element to be considered and future changes in market conditions not directly related to policies cannot be ignored.

7. Conclusions

The goal of this paper was to provide a quantitative assessment of the impact on the banana market, first of the expansion in trade preferences the EU granted to ACP countries with the EPAs, then of the erosion of these preferences implied by different possible conclusions, if any, of the Doha round or by the positive conclusion of negotiations between the EU on one side, and MFN exporters and the US on the other, to find a solution to the long-standing WTO dispute on bananas.

The results presented confirm the importance of the benefits in the banana market that the implementation of the EPAs induces for ACP countries, at the expense of MFN exporters. The simulations performed suggest the EPAs will have only minor implications for the EU domestic market for bananas, while the impact on the composition of EU imports by origin will be significant. As a result of the EPAs, ACP exports in 2016 are forecast to increase by 84 percent

(from 970,000 tonnes to 1,800,000 tonnes) at the expense of MFN exports, which decline by five percent (from 12.8 to 12.2 million tonnes; MFN exports to the EU decline by 24 percent). The MFN tariff would have to be reduced to 60 €/tonne, everything else held constant, to leave MFN exports unchanged with respect to the scenario in which the EPAs are not implemented (while ACP exports would remain well above the level they would reach if the EPAs were not implemented).

In Table 10 a comparative qualitative analysis is presented of the impact on the main actors of the alternative scenarios considered in the paper with respect to possible conclusions of on-going “bilateral” and multilateral WTO negotiations. This comparative assessment is based on the results presented in section five but, to a large extent, does not depend on the specific quantitative estimation of the impact of the different policy scenarios obtained in the modelling exercise.

In Table 10 the impact on both EU producers and consumers is considered. EU banana production is only marginally affected by trade policy changes. In fact, production in the EU “outermost regions” is driven by the domestic policy regime, which isolates production decisions from changes in market prices, while production in Cyprus, Greece and continental Portugal, which respond to market price changes, is a very small share of EU banana production. However, all EU domestic producers are affected by trade policy changes because the price changes they induce affect revenues and incomes. Hence, the more open to imports the EU market is, the lower the domestic price and domestic producer incomes.²³ The best scenario for EU banana producers is the one with the EPAs in place and no WTO agreement of any sort; the worst is the reference scenario in which it is assumed that the conclusion of the Doha round brings a full liberalization of the banana market. The ranking of the policy options for EU consumers is the reverse of that for producers.

In countries other than the EU, imports are affected by the EU import regime as well as by their own (Table 10). The more open the EU market, the higher the price of bananas in the other importing countries and the lower their imports. However, when import tariffs in importing countries other than the EU are all set at zero as a result of the conclusion of the Doha round and the implementation of its provisions on tropical products, then, everything else held constant, US imports are expected to decrease rather than increase. This is because the tariff the US imposes on

²³ In considering the drivers of EU imports one should look not only at the EU import regime, but, for a given regime, to the import restrictiveness of the other markets as well, as this affects export supplies towards the EU. This is the case when scenarios two and three in Tables 6 and 10 are considered; in these scenarios the EU import regime is the same (EPAs are in place and the MFN tariff is 114 €/tonne), but in scenario three import tariffs in the other net importers are set equal zero, driving a diversion of exports from the EU to these markets.

its banana imports is very low, much lower than that imposed by the other main net importers. This means that for the US the “trade diversion” effect of the elimination of import tariffs in all countries other than the EU prevails over the “trade creation” effect, and MFN exports to the US (which is the second largest importer of bananas) decrease, while those directed to the “rest of the world” net importers, which imposed larger tariffs, expand significantly.

For MFN exporters the issue is trade liberalization; the more liberalized banana trade becomes, the higher export prices, exports and export revenue (Table 10). The preferred scenario is the one in which all import tariffs are set at zero, and the worst one is when EPAs are in place and no WTO agreement, either multilateral or the tentative July 2008 accord, is concluded and implemented. For MFN countries the conclusion of the Doha round is more beneficial than the July 2008 agreement with the EU, as long as the multilateral agreement includes the July 2008 one (scenario three in Tables 6 and 10) or the provisions for tropical products are those on which consensus seems to have emerged in July 2008 in Geneva (scenarios five and six).

For ACP countries the most favourable scenario is when they have access to the EU market quota- and duty-free and neither the Doha round or the tentative July 2008 agreement are concluded and implemented (scenario one). A successful conclusion of the Doha round could have a limited or a very significant impact on the erosion of the preferences the EU grants to ACP countries, depending on the terms of the final agreement. At one extreme, if bananas are included among the tropical products and the EU bound tariff to be reduced is assumed to be 680 €/tonne, then preference erosion for ACP countries would be limited. At the other extreme, if a final agreement of the Doha round is reached and it calls for the elimination of all import restrictions for bananas, then most of the benefits to ACP countries from the EPA would vanish. Under this scenario, ACP exports are forecast to be higher than in the no-EPAs scenario by only 17 percent, rather than by 84 percent when the EPAs are in place and no WTO agreement is reached. If only the tentative July 2008 agreement is implemented, it would imply the erosion of one third of the benefits resulting from the preferences granted by the EU to ACP countries with the EPAs. If the EU MFN tariff is to be reduced, then it would be better for ACP countries if it occurs within the framework of the conclusion of the Doha round, because this will bring an increase in market access in countries other than the EU and a partial diversion of MFN export supply towards non-EU markets, increasing ACP competitiveness on the EU market as well as the EU import price.

This means that MFN and ACP banana exporters share at least one common interest: if a WTO agreement is to be reached, this should be the conclusion of the Doha round rather than a deal between MFN countries and the EU alone, along the lines of the tentative July 2008 accord.

The modelling exercise suggests that, by 2016, LDCs will become unable to compete with MFN and ACP countries on the banana market, and that this would be the case regardless of the banana trade policy regimes in place, i.e. even without the implementation by the EU of the EPAs (Table 6, “Base 2016” scenario). Nevertheless, the conclusions of the EPAs implied an erosion of the preferences granted by the EU under the EBA initiative - an erosion which countries have not so far claimed deserves any compensation. With respect to the different possible WTO agreements considered, the more the EU market is open to MFN exports, the worse for the competitiveness of LDC bananas on this market (Table 10).

Finally, while the results presented in section five appear robust enough to withstand changes in a number of the assumptions made, they are relatively sensitive to the hypotheses regarding expected changes in yields. Because ACP exporters are less efficient in producing and marketing bananas than MFN ones, this suggests that aid targeted at improving efficiency in banana production in ACP and LDC countries may be as beneficial as granting them preferential market access, and that the negative effects of preference erosion can be offset by providing the financial and in-kind resources needed to improve the logistic infrastructure and technical efficiency of their banana industry. This result is consistent with the ACP countries’ request for additional technical and financial aid from the EU aimed at improving the market competitiveness of their bananas, as a condition for their acceptance of the tentative July 2008 agreement.

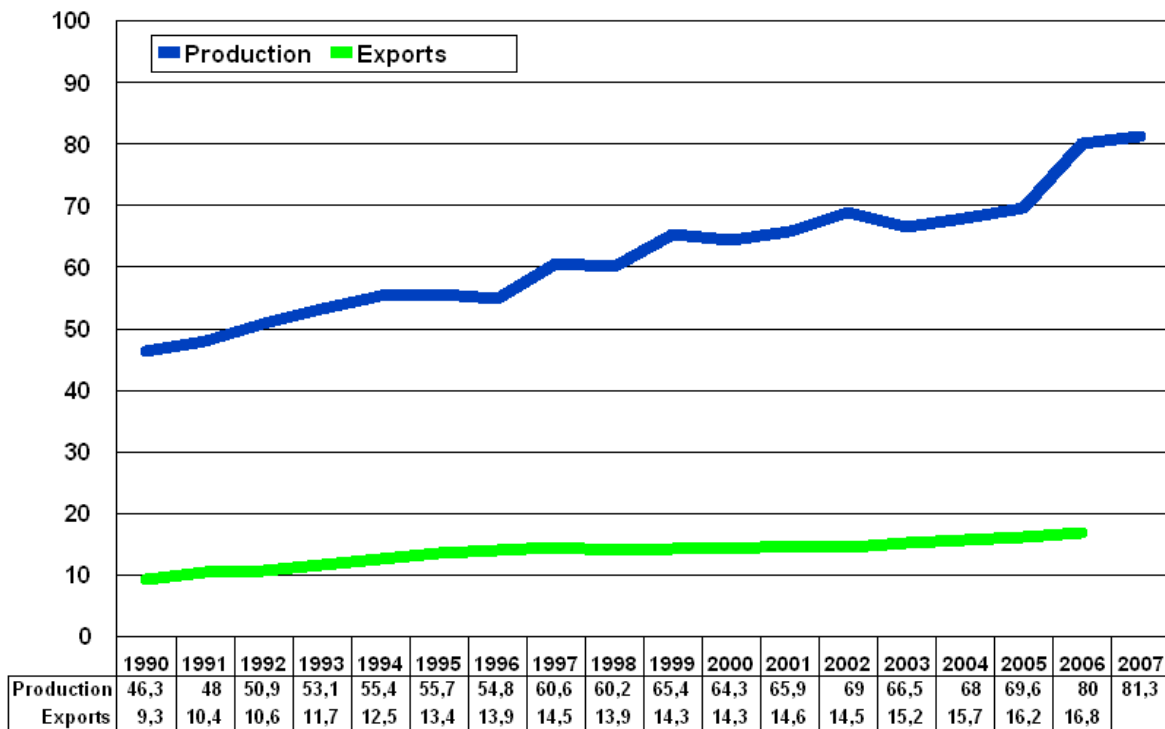
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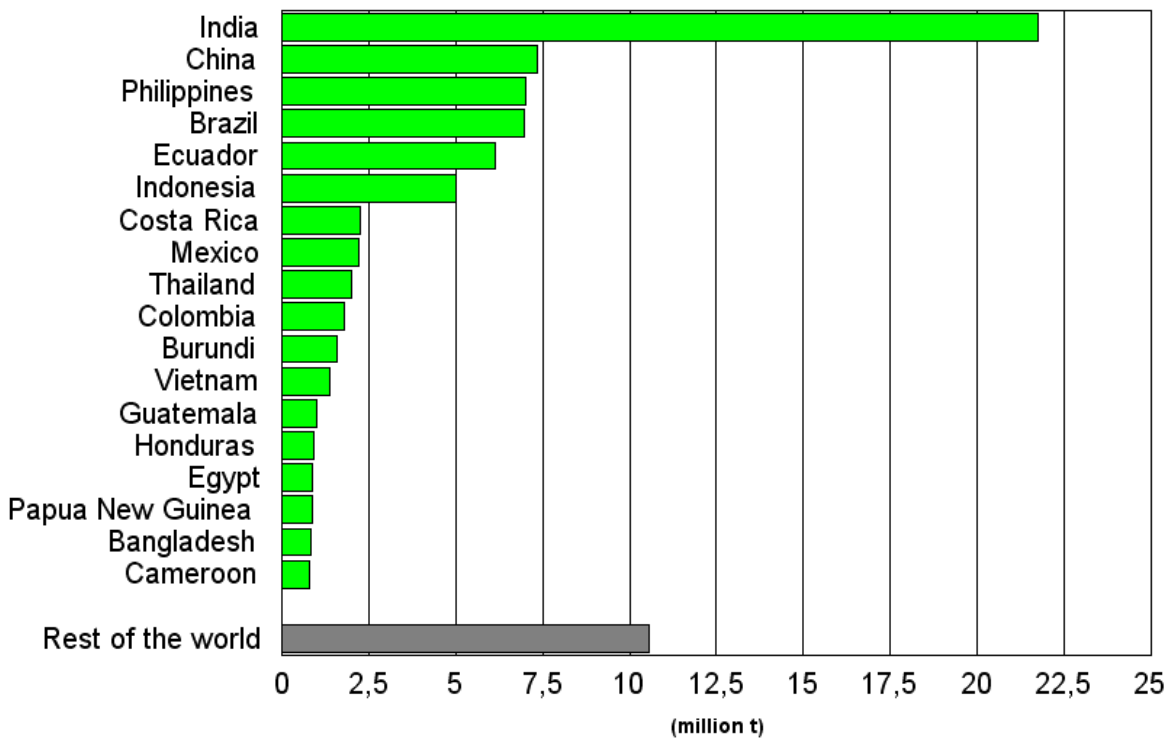
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Figure 1 - Bananas. World production, exports and export as a percentage of production [million t; %; 1990-2007 (production), 1990-2006 (exports and export/production)].



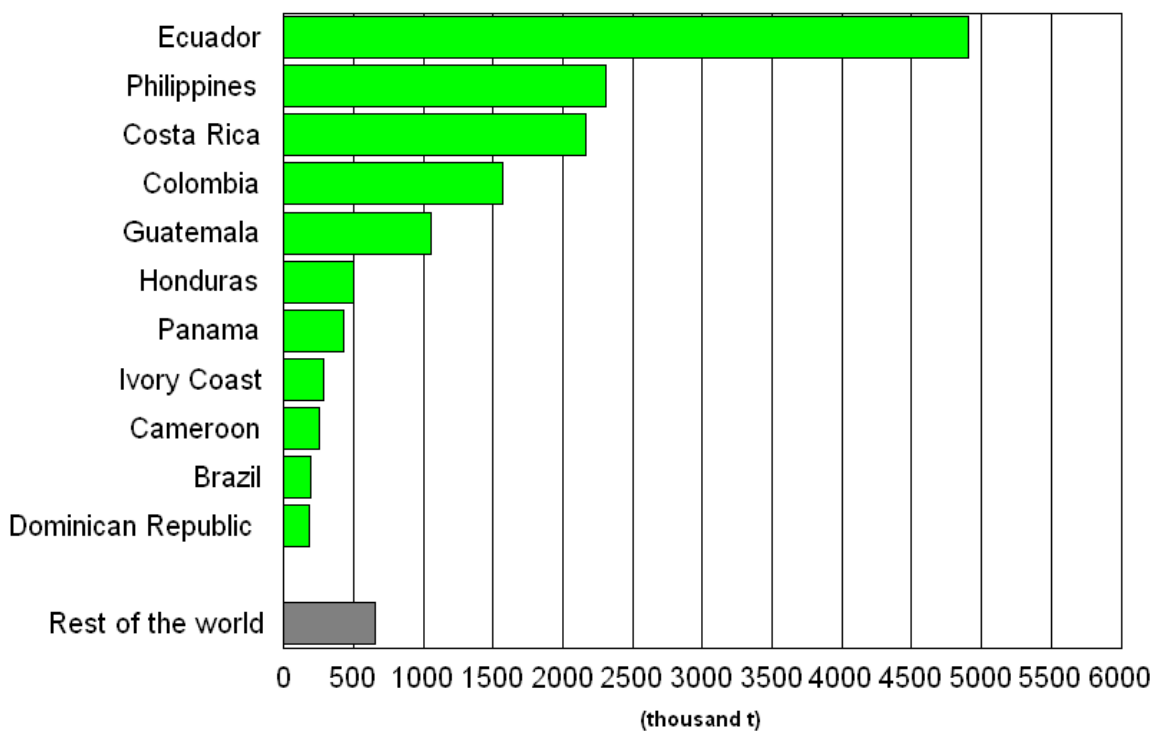
Source: Faostat.

Figure 2 - Bananas. Main producing countries (million t; 2007).



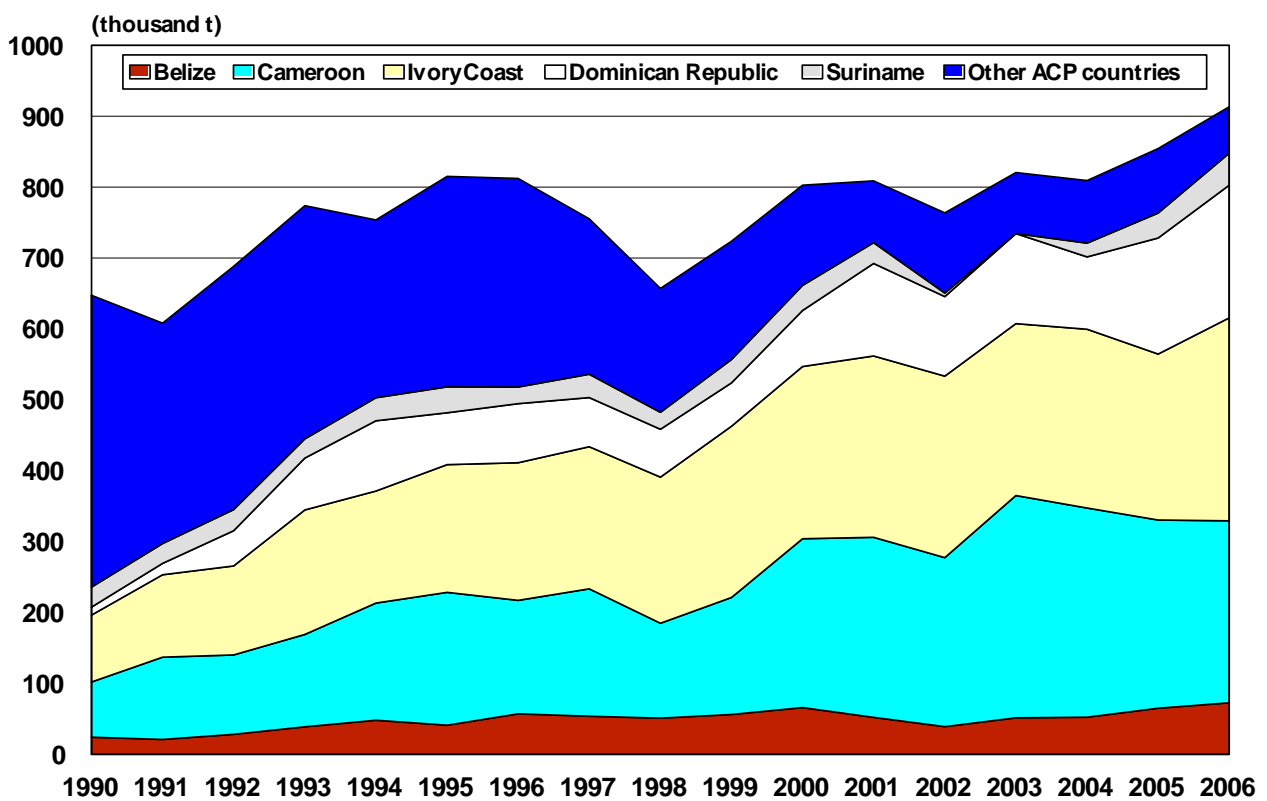
Source: Faostat.

Figure 3 - Bananas. Main exporting countries (net exports; thousand t; 2006).



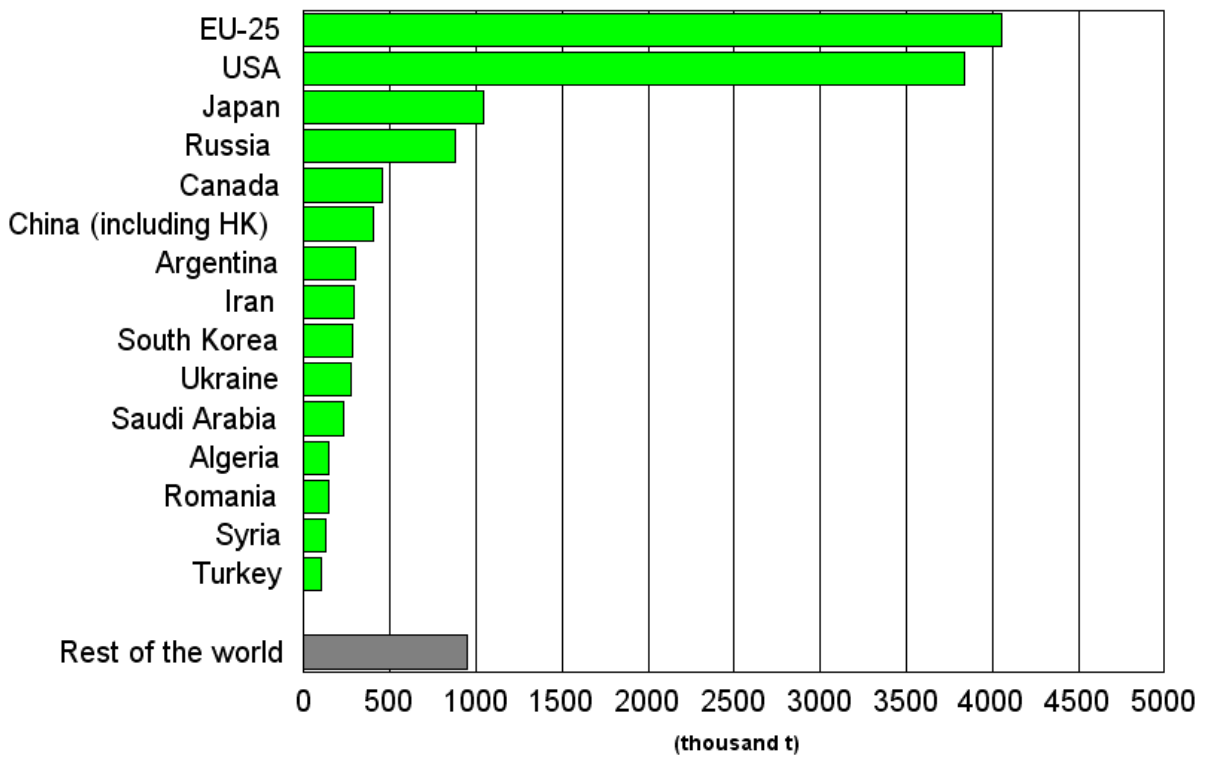
Source: Faostat.

Figure 4 - Bananas. ACP net exports by country (thousand t; 1990-2006).



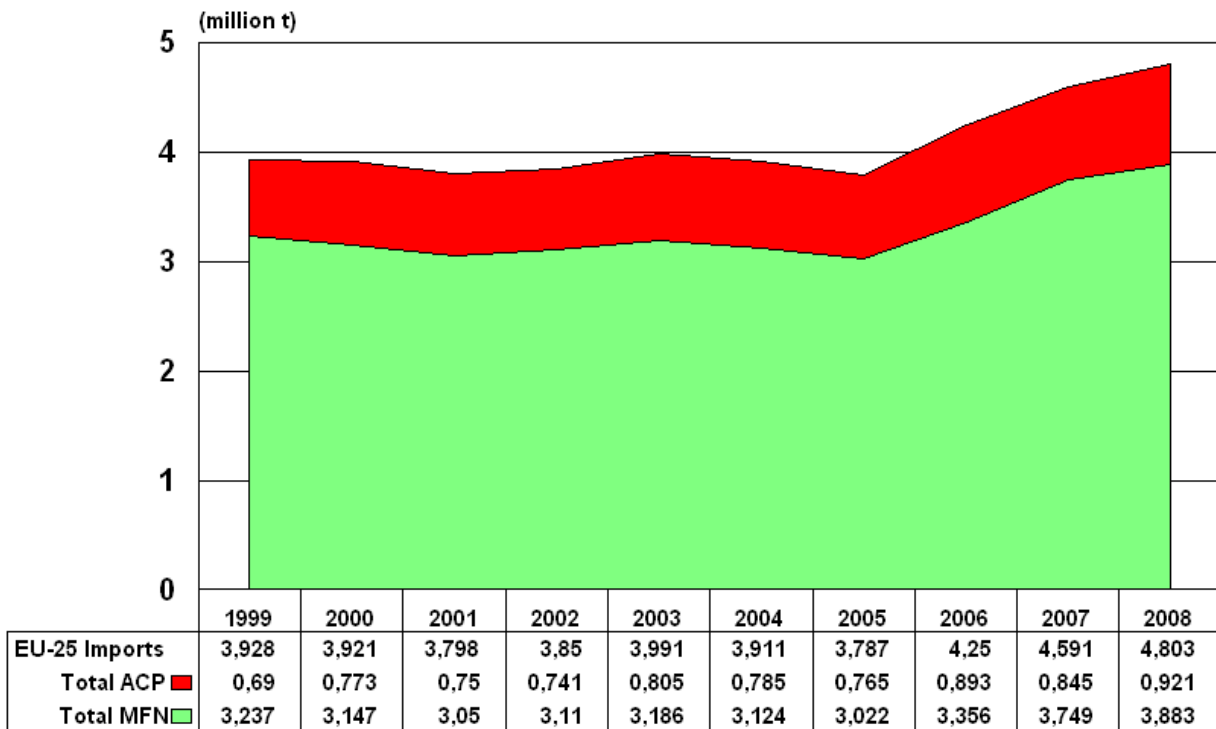
Source: FAOSTAT.

Figure 5 - Bananas. Main importing countries (net imports; thousand t; 2006).



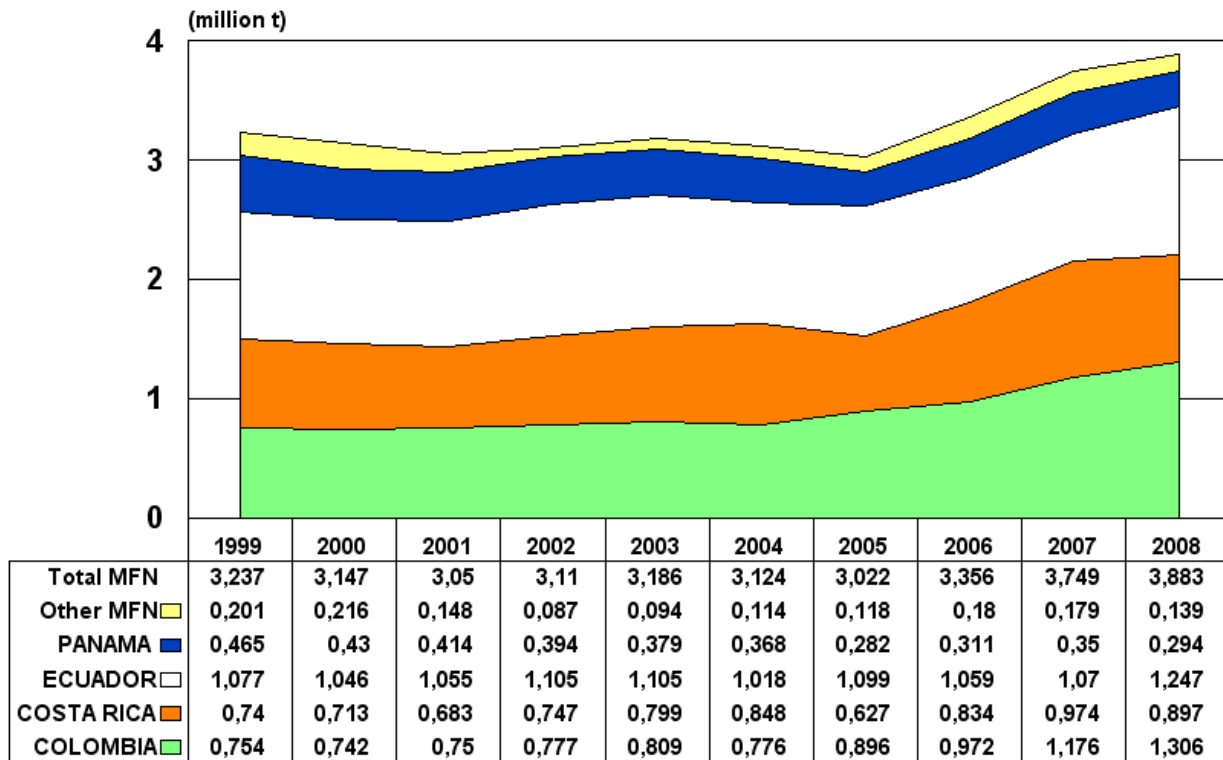
Source: Faostat.

Figure 6 - Bananas. EU-25 imports (extra-EU trade only) by MFN and ACP countries (million t; 1999-2008).



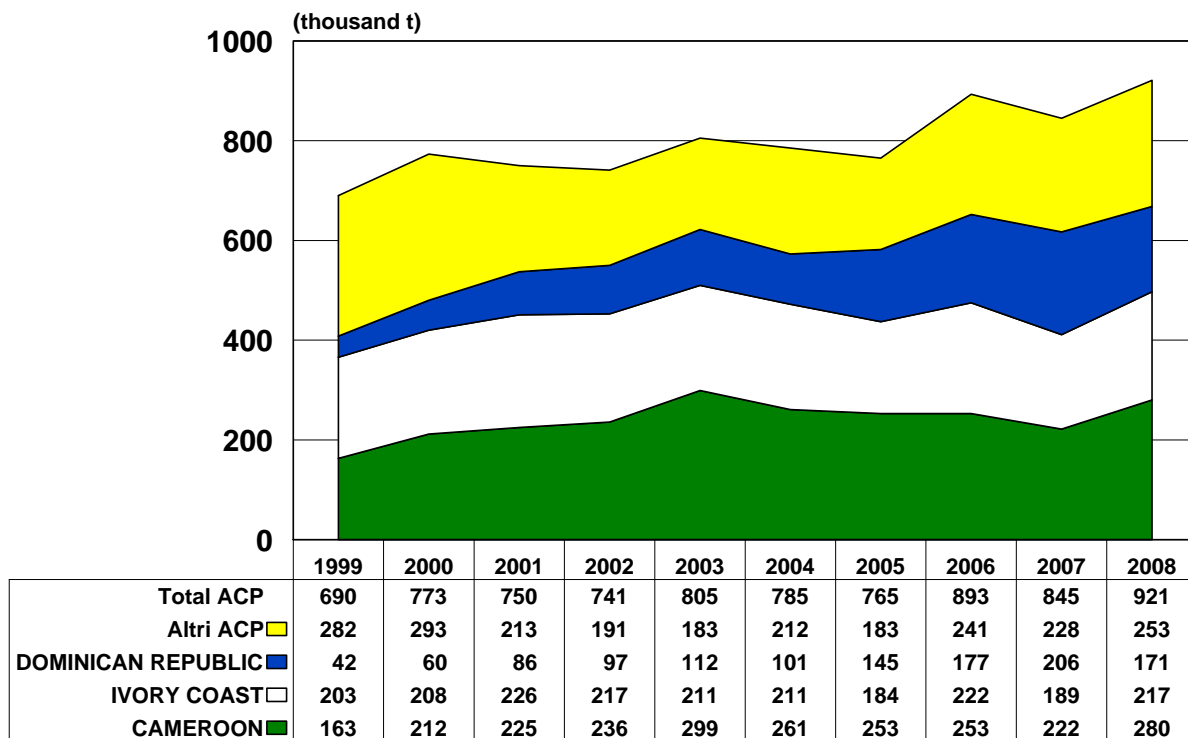
Source: Eurostat.

Figure 7 - Bananas. EU-25 imports (extra-EU trade only) by the main MFN exporting countries (million t; 1999-2008).



Source: Eurostat.

Figure 8 - Bananas. EU-25 imports (extra-EU trade only) by the main ACP exporting countries (million t; 1999-2008).



Source: Eurostat.

Figure 9 - Impact of the EPA and of different possible conclusions of on-going “bilateral” and multilateral WTO negotiations [2016; “Base 2016” scenario (no EPAs, no “bilateral” EU-MFN agreement, no Doha round agreement) = 100]

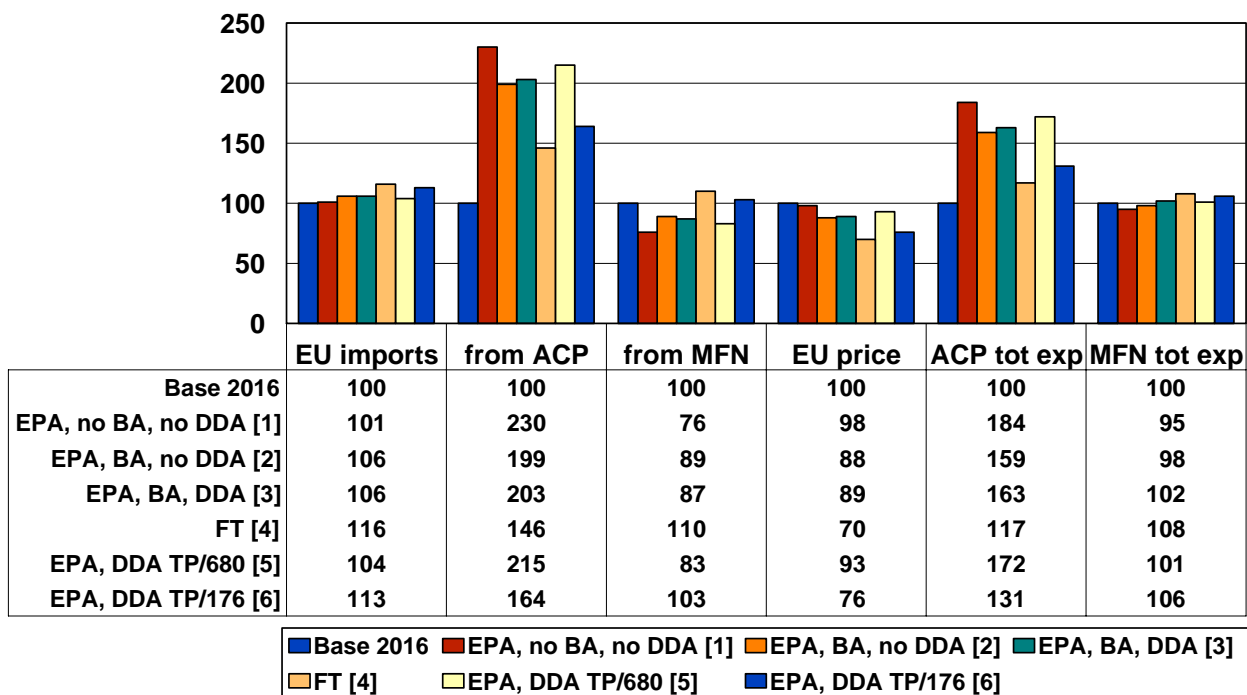


Figure 10 - EU-27 banana imports (in total and by origin) as a function of the MFN tariff (2016; EPAs in place, no Doha round agreement).

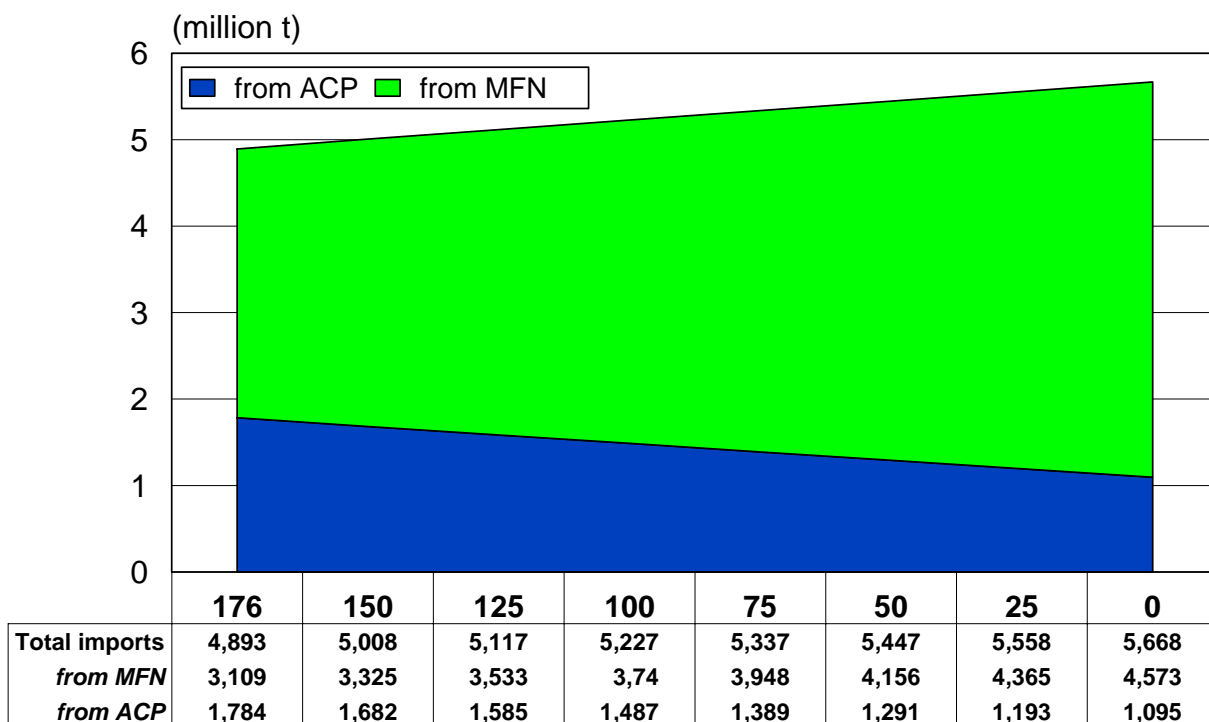
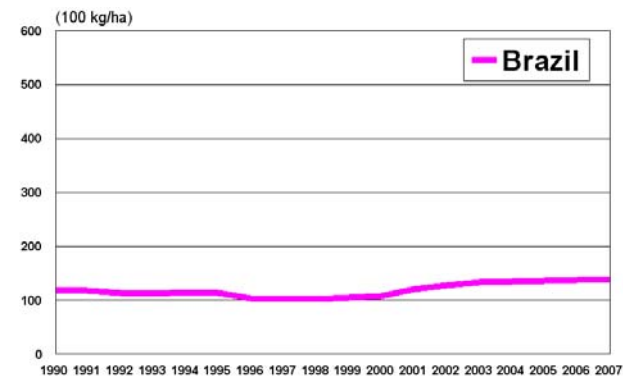
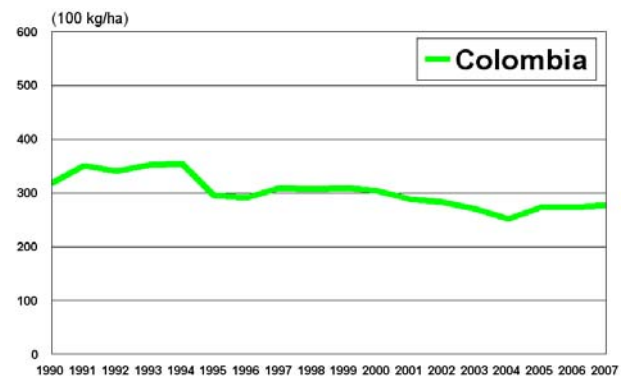


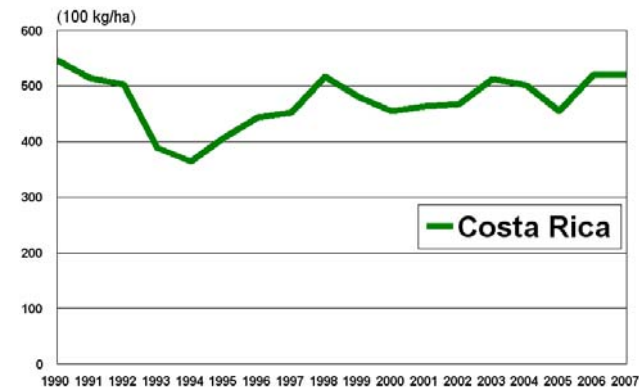
Figure 11 - Banana yields in some of the major exporting countries (100kg/ha; 1990-2007).



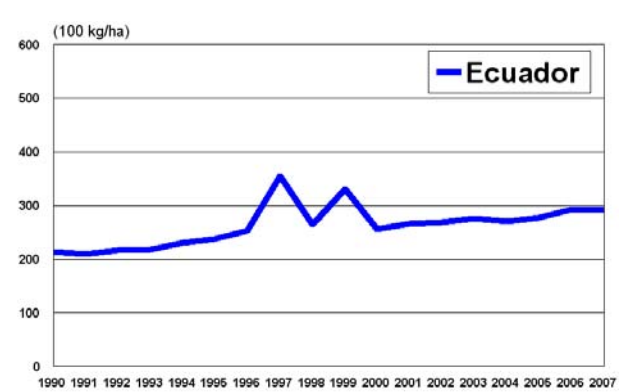
Source: Faostat



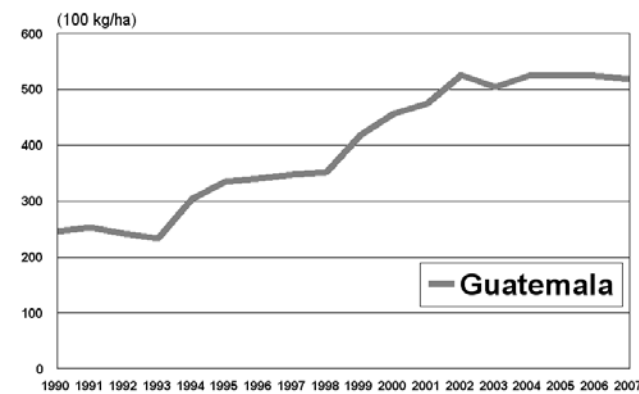
Source: Faostat



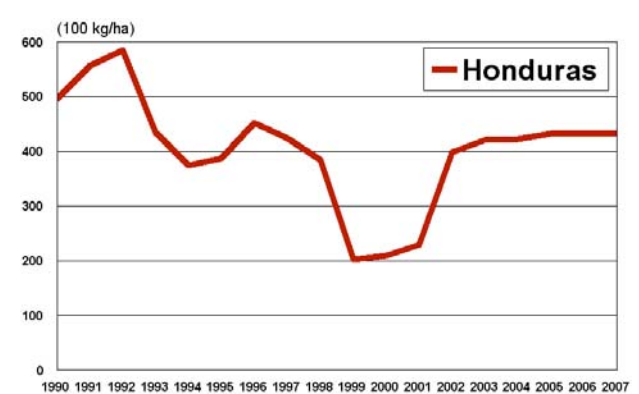
Source: Faostat



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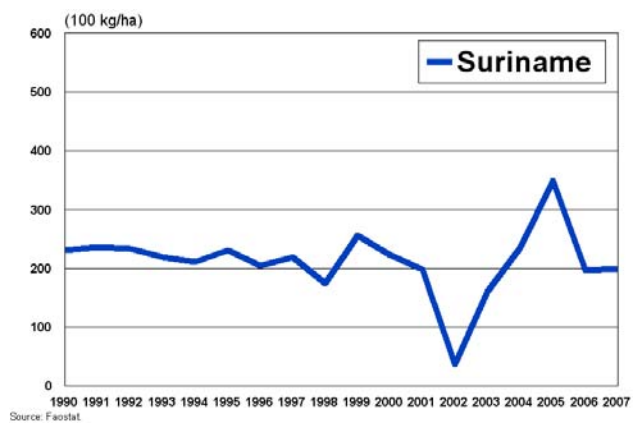
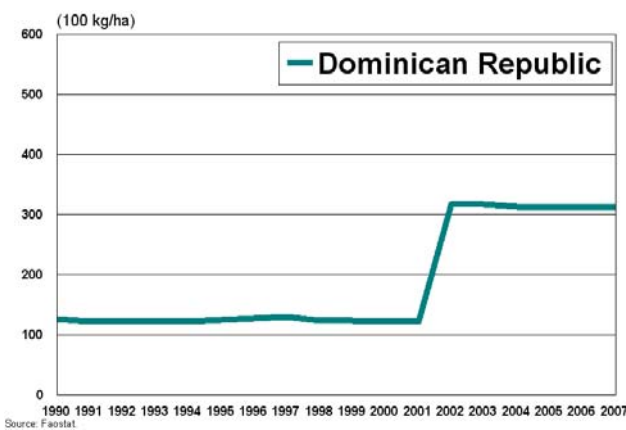
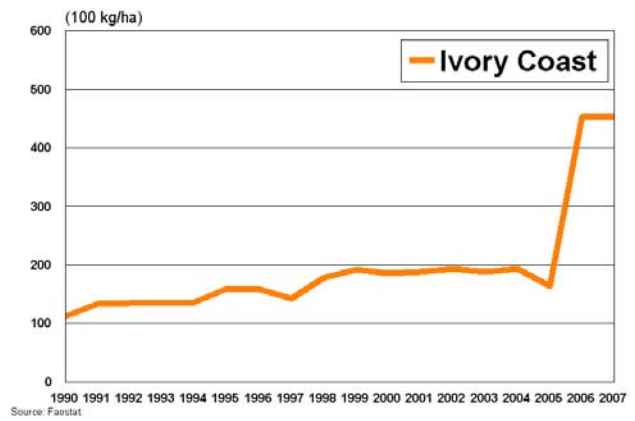
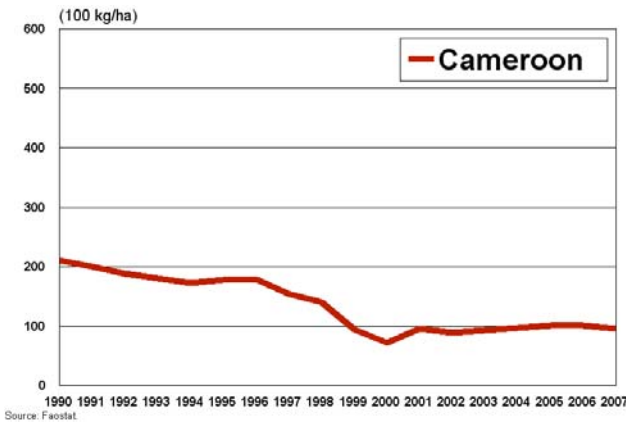
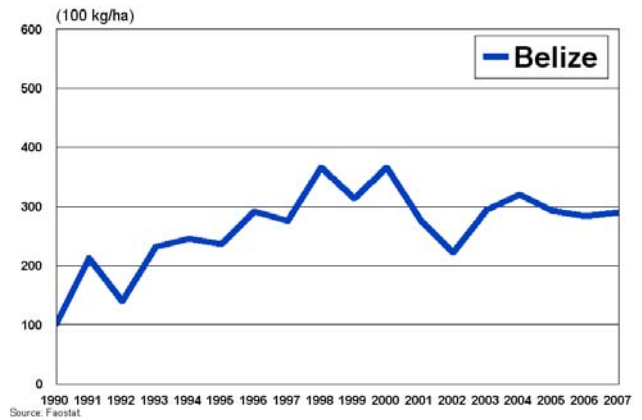
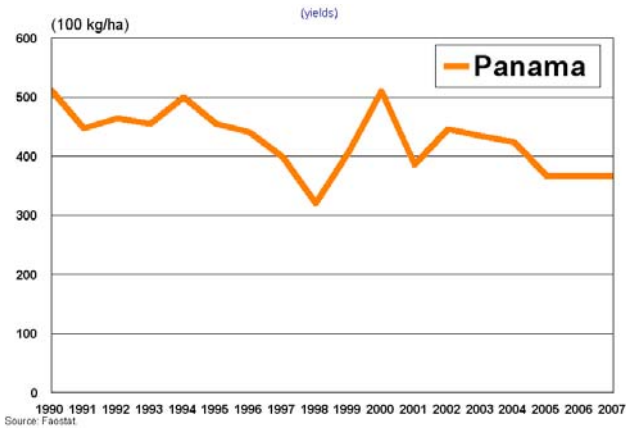


Table 1 - Banana production by some of the main exporting countries (focus is on the main exporters to the EU) (000 tonnes; 1990-2007).

	Brazil	Colombia	Costa Rica	Ecuador	Guatemala	Honduras	Panama	Other MFN countries	Belize	Cameroon	Ivory Coast	Dominican Republic	Suriname	Other ACP countries	World
1990	5726	1329	1740	3055	454	1046	1177	24044	25	719	146	395	48	6362	46265
1991	5762	1606	1720	3525	505	973	850	25214	22	800	174	389	50	6373	47964
1992	5849	1714	1920	3995	484	1023	882	26940	29	850	175	384	50	6565	50859
1993	5803	1893	1920	4422	490	1013	819	28716	43	900	242	426	47	6344	53079
1994	5955	1930	1920	5086	638	839	899	30491	53	950	230	415	48	5987	55442
1995	5801	1598	2122	5403	705	867	864	30742	47	980	232	349	50	5967	55726
1996	5160	1491	2305	5727	681	1022	838	29646	60	986	252	383	44	6248	54844
1997	5412	1607	2227	7494	730	946	758	33410	56	800	227	389	45	6480	60581
1998	5322	1517	2429	5463	880	862	576	35163	53	730	283	359	38	6519	60194
1999	5478	1735	2351	6392	733	453	776	39107	59	623	316	432	55	6876	65385
2000	5663	1613	2181	6477	830	469	660	37968	69	626	305	343	49	7058	64313
2001	6177	1470	2065	6077	898	516	533	39477	59	632	311	442	43	7231	65928
2002	6423	1561	1975	5528	1000	659	522	42496	43	693	320	503	8	7289	69020
2003	6801	1536	2144	6454	960	735	509	38267	74	743	311	515	1	7472	66522
2004	6584	1577	2118	6132	1071	811	497	39611	79	798	320	468	35	7854	67955
2005	6703	1765	1875	6118	1150	887	439	41078	76	856	270	547	58	7824	69647
2006	6956	1750	2220	6127	1001	890	440	51086	85	860	235	548	43	7789	80030
2007	6972	1800	2240	6130	1010	910	440	52304	90	790	235	553	44	7746	81263

Source: FAOSTAT.

Table 2 - Banana production by some of the main exporting countries (focus is on the main exporters to the EU) (average 1990-1992=100; 1990-2007).

	Brazil	Colombia	Costa Rica	Ecuador	Guatemala	Honduras	Panama	Other MFN countries	Belize	Cameroon	Ivory Coast	Dominican Republic	Suriname	Other ACP countries	World
1990	99,1	85,7	97,0	86,7	94,4	103,2	121,4	94,7	99,3	91,1	88,6	101,5	97,3	98,9	95,7
1991	99,7	103,6	95,9	100,0	105,0	95,9	87,7	99,3	85,9	101,3	105,3	100,0	101,4	99,1	99,2
1992	101,2	110,6	107,1	113,3	100,6	100,9	90,9	106,1	114,7	107,6	106,1	98,5	101,3	102,0	105,2
1993	100,4	122,1	107,1	125,5	101,8	99,9	84,5	113,1	167,5	114,0	146,6	109,6	96,4	98,6	109,8
1994	103,1	124,5	107,1	144,3	132,6	82,8	92,7	120,0	205,5	120,3	139,8	106,7	96,4	93,1	114,6
1995	100,4	103,1	118,3	153,3	146,5	85,5	89,1	121,0	182,5	124,1	140,5	89,6	100,9	92,8	115,2
1996	89,3	96,2	128,5	162,5	141,6	100,8	86,4	116,7	233,0	124,9	153,0	98,4	89,4	97,1	113,4
1997	93,7	103,7	124,2	212,6	151,7	93,3	78,1	131,5	219,5	101,3	137,8	100,0	91,7	100,7	125,3
1998	92,1	97,9	135,4	155,0	182,9	85,0	59,4	138,4	208,3	92,4	171,8	92,2	76,3	101,3	124,5
1999	94,8	111,9	131,1	181,3	152,3	44,6	80,0	154,0	229,6	78,9	191,9	111,0	111,0	106,9	135,2
2000	98,0	104,1	121,6	183,8	172,5	46,3	68,1	149,5	269,2	79,3	185,2	88,2	98,8	109,7	133,0
2001	106,9	94,8	115,1	172,4	186,7	50,9	54,9	155,4	228,2	80,0	188,4	113,5	87,6	112,4	136,3
2002	111,1	100,7	110,1	156,8	207,9	65,0	53,8	167,3	167,9	87,7	194,0	129,2	16,4	113,3	142,7
2003	117,7	99,1	119,6	183,1	199,5	72,5	52,5	150,7	286,5	94,1	188,8	132,3	2,6	116,1	137,5
2004	113,9	101,8	118,1	174,0	222,5	80,0	51,3	156,0	309,6	101,0	194,0	120,3	71,6	122,1	140,5
2005	116,0	113,9	104,6	173,6	239,1	87,5	45,3	161,7	296,2	108,4	163,8	140,6	117,4	121,6	144,0
2006	120,4	112,9	123,8	173,8	208,1	87,8	45,4	201,1	331,3	108,9	142,6	140,8	87,3	121,1	165,5
2007	120,7	116,1	124,9	173,9	209,9	89,8	45,4	205,9	350,8	100,0	142,6	141,9	89,3	120,4	168,0

Source: author's calculation based on FAOSTAT data.

Table 3 - Banana net exports by the main exporting countries (thousand tonnes; 1990-2006).

	Brazil	Colombia	Costa Rica	Ecuador	Guatemala	Honduras	Panama	Philippines		Belize	Cameroon	Ivory Coast	Dominican Republic	Suriname	Other ACP countries	Total ACP countries
1990	53	1148	1434	2157	360	781	745	840		24	78	94	11	28	411	647
1991	91	1473	1538	2663	332	705	706	942		21	116	116	16	28	311	608
1992	92	1404	1730	2683	428	743	718	822		28	112	126	50	30	343	688
1993	90	1563	1870	2563	390	647	688	1153		39	130	176	73	27	329	774
1994	52	1686	1869	3008	568	446	712	1155		48	165	158	99	33	251	754
1995	12	1308	2022	3665	636	522	690	1213		41	187	180	73	37	297	815
1996	30	1428	2103	3866	611	572	632	1252		57	160	194	83	24	294	812
1997	40	1536	2026	4462	659	487	608	1143		54	180	201	69	33	219	755
1998	69	1388	2287	3856	794	463	462	1150		51	134	206	67	24	175	657
1999	81	1657	2229	3966	623	107	593	1320		56	165	242	61	33	167	724
2000	72	1461	2079	3994	800	373	489	1600		66	238	243	79	35	141	803
2001	105	1338	1959	3990	871	424	426	2129		52	254	256	131	29	87	809
2002	241	1454	1873	4199	974	437	404	1685		39	238	256	112	5	113	764
2003	221	1418	2042	4665	935	453	385	1829		51	314	242	127	0	86	820
2004	188	1467	2016	4521	1046	571	397	1797		52	295	252	102	19	88	809
2005	212	1616	1773	4764	1125	535	352	2024		65	265	234	164	35	91	854
2006	194	1564	2166	4909	1051	501	431	2312		73	257	286	187	45	65	913

Source: FAOSTAT.

Table 4 - Banana net exports by the main exporting countries (tonnes; average 1990-1992=100; 1990-2006).

	Brazil	Colombia	Costa Rica	Ecuador	Guatemala	Honduras	Panama	Philippines		Belize	Cameroon	Ivory Coast	Dominican Republic	Suriname	Other ACP countries	Total ACP countries
1990	67,4	85,6	91,5	86,2	96,4	105,2	103,1	96,8		98,6	76,5	84,1	44,2	98,2	115,9	99,9
1991	115,8	109,8	98,1	106,5	89,0	94,9	97,6	108,5		86,1	113,7	103,7	62,5	97,8	87,5	93,9
1992	116,7	104,6	110,4	107,3	114,6	99,9	99,3	94,7		115,3	109,8	112,1	193,3	104,0	96,6	106,2
1993	113,9	116,5	119,3	102,5	104,5	87,1	95,2	132,9		159,2	127,6	156,8	285,5	94,1	92,6	119,4
1994	65,8	125,7	119,2	120,3	152,1	60,0	98,5	133,1		196,6	162,1	141,1	386,5	113,4	70,6	116,3
1995	15,8	97,5	129,0	146,6	170,2	70,2	95,4	139,8		168,7	183,6	160,9	285,0	126,7	83,6	125,8
1996	38,0	106,4	134,1	154,6	163,7	77,0	87,4	144,3		233,5	157,1	173,4	324,2	81,9	82,9	125,4
1997	50,9	114,5	129,2	178,4	176,6	65,6	84,1	131,8		220,0	176,2	179,1	269,8	114,2	61,7	116,6
1998	87,1	103,5	145,9	154,2	212,6	62,3	64,0	132,5		208,8	131,4	184,0	263,5	82,6	49,2	101,4
1999	103,2	123,5	142,2	158,6	166,8	14,5	82,1	152,1		230,5	161,8	215,7	238,6	114,4	47,0	111,7
2000	92,1	108,9	132,6	159,7	214,3	50,3	67,7	184,4		269,8	233,5	217,0	308,4	122,6	39,8	123,9
2001	133,6	99,7	125,0	159,6	233,4	57,1	58,9	245,4		213,3	249,1	228,2	510,0	101,9	24,5	124,8
2002	306,3	108,4	119,5	167,9	260,9	58,8	55,9	194,2		160,0	233,7	228,6	438,0	17,2	31,8	117,9
2003	280,6	105,7	130,3	186,5	250,4	60,9	53,3	210,8		210,4	307,6	216,5	496,3	0,0	24,2	126,6
2004	239,0	109,4	128,6	180,8	280,1	76,8	54,8	207,1		214,9	289,1	225,2	398,3	67,3	24,9	124,9
2005	269,6	120,5	113,1	190,5	301,4	72,0	48,7	233,3		266,2	260,3	209,2	638,3	122,2	25,6	131,9
2006	247,0	116,6	138,2	196,3	281,5	67,5	59,6	266,4		298,2	251,6	255,6	730,6	156,5	18,4	141,0

Source: author's calculation based on FAOSTAT data.

Table 5 - Base model input data (2005).

Country/Region	Base Net Imports ¹ (000 t)	Base Net Exports ² (000 t)	Import Prices (\$/t)	Export Prices ³ (\$/t)	Export Supply Price Elasticities	Import Demand Price Elasticities	Domestic Demand Income Elasticities	% Yearly Changes in Yields ⁴	% Yearly Changes in Population	% Yearly Changes in Per Capita GDP ⁵
EU-15	4368,5		703,1			-0,50	0,5		0,4	1,19
EU-10	203,4		773,4			-0,75	0,9		-0,2	4,27
Bulgaria and Romania	45,8		611,2			-0,80	1,0		-0,7	7,28
USA	3843,2		411,6			-0,40	0,4	1,79	1,0	1,85
Other importers	4580,4		533,2			-0,80	0,5	3,25	0,8	3,46
Spain		384,0		957,5	1,0			0,04		
France		308,5		607,0	1,0			0,00		
Portugal		18,8		757,3	1,0			0,00		
Greece		2,8		667,8	1,0			0,00		
Cyprus		8,9		485,6	1,0			2,42		
Ivory Coast		196,6		565,6	1,5		0,5	5,00	1,6	-1,98
Cameroon		245,8		416,0	1,5		0,5	0,00	1,9	1,94
Dominican Republic		152,9		518,5	1,0		0,5	5,00	1,5	0,60
Belize and Suriname		111,0		493,8	1,0		0,5	1,87	1,6	0,63
Other ACP non LDC		59,6		467,1	1,0		0,5	4,77	1,7	2,62
ACP LDC		8,1		369,9	1,5		0,5	0,00	2,3	3,10
Ecuador		4084,8		308,5	1,3		0,5	1,95	1,5	3,69
Colombia		1379,4		328,5	1,3		0,5	0,00	1,6	1,94
Costa Rica		1589,7		321,7	1,0		0,5	1,65	1,9	2,15
Panama		322,5		345,3	1,0		0,5	0,00	1,8	2,58
Honduras		468,0		301,6	1,5		0,5	0,00	2,3	1,30
Brazil		211,9		244,8	1,0		0,5	1,58	1,4	0,80
Guatemala		1121,6		267,2	1,5		0,5	5,00	2,4	0,10
Other MFN exporters non LDC		2305,5		363,8	1,0		0,5	1,18	1,5	1,07
MFN LDC		60,9		249,0	1,5		0,5	0,00	2,1	3,49

¹: For EU-15 and EU-10 apparent consumption (imports + domestic production - exports).

²: For Spain, France, Portugal and Greece average production in 2002-2006.

³: For Spain, France, Portugal and Greece official farm gate prices, including compensatory aid; for Cyprus it is the official farm gate price. The average unit value of exports of Panama from FAO was unrealistically high compared with values for other countries in the region and average unit values based on the COMTRADE database; it has been adjusted based on the differences in average unit values for exports of countries in the region calculated using COMTRADE.

⁴: Percentage changes below 0 and above 5 have been set equal to 0 and 5, respectively.

⁵: For Belize and Suriname this is the 2004/2005 annual rate of change due to lack of data for the period 2000/2005.

Table 6 - Simulation results (2016).

	Base 2016 (no EPA)	EPAs					
		no Doha round agreement		Doha round agreement			
		no EU-MFN countries agreement	EU-MFN countries "tentative" agreement (Geneva, July 2008)	EU-MFN countries "tentative" agreement (Geneva, July 2008)	all t = 0	tariff reduction: t ≤ 20% → 0% t > 20% → - 80% and EU current bound t = 680 €/t	tariff reduction: t ≤ 20% → 0% t > 20% → - 80% and EU current bound t = 176 €/t
		EU t _{MFN} =176 €/t US t=0.5% ROW t=18.9% [1]	EU t _{MFN} =114 €/t US t=0.5% ROW t=18.9% [2]	EU t _{MFN} = 114 €/t US t=0% ROW t=0% [3]	EU t _{MFN} = 0 €/t US t=0% ROW t=0% [4]	EU t _{MFN} = 136 €/t US t = 0% ROW t = 0% [5]	EU t _{MFN} = 35.2 €/t US t = 0% ROW t = 0% [6]
EU-27 consumption (000 t)	5429,6	5471,8	5741,5	5702,6	6197,1	5607,1	6044,5
EU-27 production (000 t)	578,7	578,6	575,8	576,2	569,8	577,2	572,8
EU-15 border price (€/t, tariff inclusive)	529,2	520,0	464,2	472,3	369,7	492,1	401,4
EU-27 imports (000 t)	4850,8	4893,2	5165,7	5126,3	5627,3	5029,9	5471,7
<i>from ACP non LDC</i>	775,0	1784,1	1541,5	1576,6	1131,7	1662,4	1269,0
<i>from MFN non LDC</i>	4075,8	3109,1	3624,2	3549,7	4495,6	3367,4	4202,7
<i>from LDC countries</i>	0	0	0	0	0	0	0
EU-27 tariff revenue (mill €)	717,3	547,2	413,2	404,7	0,0	458,0	147,9
USA imports (000 t)	4412,0	4475,0	4433,1	4388,4	4309,9	4403,6	4334,2
Rest of the world net imports (000 t)	4496,6	4620,2	4538,0	5170,7	5040,4	5195,9	5080,8
ACP non LDC, total exports (000 t)	967,1	1784,1	1541,5	1576,6	1131,7	1662,4	1269,0
ACP non LDC, export revenue (mill \$) ¹	382,7	1213,0	918,4	958,4	513,1	1060,1	636,0
MFN non LDC, total exports (000 t)	12792,3	12204,3	12595,3	13108,9	13845,9	12966,9	13617,7
MFN non LDC, export revenue (mill \$)	4703,3	4321,4	4573,6	4915,0	5427,4	4819,1	5266,0
LDC, total exports (000 t)	0	0	0	0	0	0	0

¹: in the "Base 2016" scenarios it does not include quota rents.

Table 8 - Sensitivity analysis of simulation results to changes in selected parameters of the model. Policy scenario: EPAs, EU-MFN countries Geneva July 2008 "tentative agreement", no Doha round agreement. (2016)

	EPA + EU-MFN countries Geneva July 2008 "tentative agreement" + no Doha round agreement (base simulation)	Sensitivity analyses					
		US\$/€ exchange rate = 1.2 (instead of 1.5) [a]	US\$/€ exchange rate = 1.8 (instead of 1.5) [b]	yearly per cent increases in yields limited to max 2% [c]	banana production in France and Spain equal at least to 115% of the minimum required for producers to receive the full amount of support they are entitled to [d]	export supply elasticity for Cameroon and Ivory Coast = 1 (instead of 1.5) [e]	all bilateral international trade transaction costs increased by 30% [f]
EU-27 consumption (000 t)	5741,5	5335,1	6018,4	5586,0	5745,8	5740,1	5617,1
EU-27 production (000 t)	575,8	578,3	574,1	577,2	658,2	575,9	576,1
EU-15 border price (€/t, tariff inclusive)	464,2	547,4	407,5	496,4	463,3	464,5	487,9
EU-27 imports (000 t)	5165,7	4756,8	5444,2	5008,8	5087,6	5164,3	5041,0
from ACP non LDC	1541,5	1427,5	1649,2	771,2	1537,7	1515,0	1542,1
from MFN non LDC	3624,2	3329,4	3795,0	4237,6	3549,9	3649,3	3499,0
from LDC	0	0	0	0	0	0	0
EU-27 tariff revenue (mill €)	413,2	379,5	432,6	483,1	404,7	416,0	398,9
USA imports (000 t)	4433,1	4457,1	4419,3	4211,3	4439,2	4431,1	4339,0
Rest of the world net imports (000 t)	4538,0	4585,1	4510,7	5421,7	4549,9	4534,0	4244,8
ACP non LDC, total exports (000 t)	1541,5	1427,5	1649,2	771,2	1537,7	1515,0	1542,1
ACP non LDC, export revenue (mill \$)	918,4	793,9	1044,1	509,2	914,1	902,1	919,9
MFN non LDC, total exports (000 t)	12595,3	12371,5	12725,0	13870,6	12538,9	12614,4	12082,7
MFN non LDC, export revenue (mill \$)	4573,6	4428,3	4658,8	5732,0	4536,7	4586,0	4267,4
LDC, total exports (000 t)	0	0	0	0	0	0	0

Table 9 - Sensitivity analysis of simulation results to the assumptions made with respect to factors affecting shifts over time of demand and supply functions: simulation results assuming all policy changes considered in the 2016 scenarios occur in 2005.

	Base 2005 ²	Base (EU-27, EU "tariff only" import regime, EBA, reform of EU CMO for bananas, euro/\$ exchange rate = 1.5)	EPAs		
			no Doha round agreement		Doha round agreement
			no EU-MFN countries agreement	EU-MFN countries "tentative" agreement (Geneva, July 2008)	EU-MFN countries "tentative" agreement (Geneva, July 2008)
			EU tMFN=176 €/t US t=0.5% ROW t=18.9% [1]	EU tMFN=114 €/t US t=0.5% ROW t=18.9% [2]	EU tMFN= 114 €/t US t=0% ROW t=0% [3]
EU-27 consumption (000 t)	4586,0	4917,0	4925,7	5163,5	5135,3
EU-27 production (000 t)	723,0	575,7	576,1	573,6	573,9
EU-15 border price (€/t, tariff inclusive)	565,1	493,0	490,4	433,6	440,3
EU-27 imports (000 t)	3863,0	4341,3	4349,6	4589,8	4561,4
<i>from ACP non LDC</i>	741,9	775,0	1000,9	827,7	848,3
<i>from MFN non LDC</i>	3113,0	3428,1	3211,7	3647,7	3596,0
<i>from LDC countries</i>	8,1	138,2	137,1	114,4	117,1
EU-27 tariff revenue (mill €)	233,5	603,4	565,3	415,8	409,9
USA imports (000 t)	3843,2	3852,9	3867,5	3838,0	3807,9
Rest of the world net imports (000 t)	4580,4	4488,3	4519,7	4456,5	4980,9
ACP non LDC, total exports (000 t)	741,9	775	1000,9	827,7	848,3
ACP non LDC, export revenue (mill \$) ¹	350,6	387,5	609,5	434,8	454,0
MFN non LDC, total exports (000 t)	11489,5	11769,3	11598,8	11942,2	12384,8
MFN non LDC, export revenue (mill \$)	3677,1	3850,8	3751,1	3953,2	4221,8
LDC, total exports (000 t)	69,0	138,2	137,1	114,4	117,1
LDC, export revenue (mill \$)	18,4	71,6	70,6	49,1	51,5

¹: in the Base scenarios it does not include quota rents.

²: all EU data refer to EU-25.

Table 10 - A comparative assessment of the alternative policy scenarios considered with respect to the conclusion of on-going WTO multilateral and "bilateral" negotiations (EPAs in place in all scenarios).

	EPAs											
	no Doha round agreement			Doha round agreement								
	no EU-MFN countries agreement		EU-MFN countries "tentative" agreement (Geneva, July 2008)		EU-MFN countries "tentative" agreement (Geneva, July 2008)		all t = 0		tariff reduction: t ≤ 20% → 0% t > 20% → . 80% and EU current bound t = 680 €/t		tariff reduction: t ≤ 20% → 0% t > 20% → . 80% and EU current bound t = 176 €/t	
	EU t _{MFN} =176 €/t US t=0.5% ROW t=18.9%		EU t _{MFN} =114 €/t US t=0.5% ROW t=18.9%		EU t _{MFN} = 114 €/t US t=0% ROW t=0%		EU t _{MFN} = 0 €/t US t=0% ROW t=0%		EU t _{MFN} = 136 €/t US t = 0% ROW t = 0%		EU t _{MFN} = 35.2 €/t US t = 0% ROW t = 0%	
	[1]		[2]		[3]		[4]		[5]		[6]	
	Ranking	Impact	Ranking	Impact	Ranking	Impact	Ranking	Impact	Ranking	Impact	Ranking	
EU producers	1	-	4	-	3	-	6	-	2	-	5	
EU consumers	6	+	3	+	4	+	1	+	5	+	2	
US consumers	1	-	2	-	4	-	6	-	3	-	5	
Rest of the world net importers, producers	2	+	1	-	5	-	3	-	6	-	4	
Rest of the world net importers, consumers	5	-	6	+	2	+	4	+	1	+	3	
MFN non LDC countries, producers	6	+	5	+	3	+	1	+	4	+	2	
ACP non LDC countries, producers	1	-	4	-	3	-	6	-	2	-	5	
LDC countries, producers	1	-	2	-	4	-	6	-	3	-	5	