# Tariff-Rate Quotas and Agricultural Trade:

# an application to the agricultural free-trade negotiation

# between the MERCOSUR and the EU

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### Abstract

In October 2004 the European Union and the MERCOSUR tried to reach an agreement for creating what would be the world's largest free-trade area accounting for 650 millions people. But despite five years of bilateral work to strike a deal, the two parties stayed on ropes at their meeting in Portugal the 18th of October 2004. The stumbling blocks are the MERCOSUR's demand for a greater access to EU's agricultural markets and the EU's demand for expanded access for industrial goods, services and investments. Though, both partners made great efforts to comply with each other requests, it wasn't enough.

In this paper we are interested in the possible last EU's offer to enlarge access to its market through the allocation of bilateral tariff-rate quotas for some MERCOSUR's agricultural products namely corn, wheat, beef, poultry, swine and dairy products. Following the methodology of Elbehri and Pearson (Elbehri and R. 2000) we model bilateral tariff-rate quotas in GTAP using GEMPACK. We then, carry out our simulation to estimate the potential effects of expanding the MERCOSUR's access to these EU's markets.

**Keywords:** MERCOSUR, European Union, agricultural trade, TRQ, GTAP.

**JEL Classification:** D58, F17, F15.

# 1   Introduction

The negotiations between the European Union and the MERCOSUR (i.e. the free trade area Argentina, Brazil, Uruguay, Paraguay also called MERCOSUL) which have started in 2000, aim at the creation of the greatest zone of regional trade integration in the world, gathering 650 million people. Within this zone, trade would be liberalized in a reciprocal way, at least partially. In these negotiations, the agricultural file holds an important paper, as the offer in term of access to the agricultural market proposed by the EU is considered to be insufficient by the MERCOSUR countries. The European Union, which has similar criticisms on the MERCOSUR offer in other non agricultural fields, however estimates to have done an important step in the farm sector. A more important opening of the agricultural market would indeed be likely to put in danger the bases of the Common Agricultural Policy, and to upset the balance which was laboriously found to ensure the European producers a stable prospect, like that found with the Agenda 2000 and the agreement of 2003 for its adaptation to a widened Union.

Few European countries were opposed to reach an agreement with the MERCOSUR but France was one of the most fervent opponents. Indeed, the products involved in the negotiations are of strategic relevance for its producers. France is an important provider of beef, poultry, pork and cereals in the EU even if it is not enough competitive. This lack of competitiveness in agriculture is the primary motive of its opposition to more liberalization in trade with the MERCOSUR. These countries have not only reached a level of price competitiveness that makes them able to cross the European borders despite the high level of protection but they also seem ready to compete with Europe on its traditional exporting markets.

The objective of this paper is to analyze the composition of the European agricultural proposal to the MERCOSUR during the last negotiations and its potential impact on the EU. To carry out our simulations we have used the GTAP CGE modelling framework which we have slightly modified. Following the methodology of Elbehri and Pearson (2000) (Elbehri and R. 2000) we have added equations to explicitly take into account the new TRQs defined by the European proposal. The remainder of this paper is as follow. Section 2 gives an insight of what is at stakes between the EU and the MERCOSUR in the agricultural negotiations, what is the actual situation concerning the EU market access for MERCOSUR farm products and what are the concessions that the European were ready to make. Section 3 is dedicated to the methodological aspects of the paper. We describe the TRQ theory and how we implement tariff-rate quotas in GTAP. Section 4 describes the aggregation and scenario and the results of the simulation. Finally section 5 concludes.

# 2 The stakes of MERCOSUR- EU free-trade agreement

## 2.1 The actual situation

Trade relationships between the MERCOSUR and the EU are characterized by a sectoral imbalance: the MERCOSUR exports especially agricultural products, and the EU exports especially manufactured goods (machinery, means of transport, chemicals agro-food exports (wines, spirits and olive oil) being very weak. This does not facilitate the negotiations on the the agricultural market access.

In 2003, exports from the MERCOSUR to the EU represented 18.6 billion US dollars whereas exports of the EU towards MERCOSUR were 14.1 billion. The trade deficit of the EU appeared in 2002, after one decade of commercial surplus. The European Union is traditionally the principal trading partner of the MERCOSUR, with more of the quarter of total exports of the area. It is in particular a very important outlet for major agricultural exports, like soya and coffee. However, these last years, the Chinese growth was so important, that this country appears as an important outlet, which is not without weighing on the EU-MERCOSUR negotiation. Indeed, whereas Chinese market is absorbing fewer exports than the EU, they increase much more quickly. On a political economy level, this puts less pressure on the MERCOSUR diplomats to accelerate the agreement with the EU, despite the thin advances realized for an agreement with North America. Exports from the MERCOSUR towards the EU have indeed decreased since 1999, the phenomenon has been amplified by the Argentinean recession in 2002. The depreciation of the currencies of the MERCOSUR countries, for two years, has reinforced the price competitiveness of their products.

The EU absorbs 35% of the MERCOSUR's agricultural exports. Agro-food exports from the MERCOSUR, half of its total exports to the EU, consist principally in oilseeds and derived (40%), fruits and derived (16%), coffee, cocoa and spices (12%). This structure of exports does not correspond to the one towards the rest of the world. The reasons are the very high EU's customs duties on certain products of interest for the MERCOSUR, in particular sugar and meats. Thus, whereas Brazil is the first world sugar exporter, the MERCOSUR accounts for only 2.5% of the EU's imports.

The countries of the MERCOSUR deplore the obstacles their exports face on the market of the EU. Indeed, among the products for which the MERCOSUR has comparative advantages some, are products which are protected by customs duties raised on the European market. Nevertheless, large trade volumes from the MERCOSUR meet only low or zero customs duties. It is thus the case for soya or coffee. Moreover, the countries of the MERCOSUR form part of the eligible developing countries to the Generalized System of Preferences (GSP). For this reason, they can export agricultural products with reduced custom duties in the EU. It is however true that if the GSP regime is particularly generous for the least developed countries, of which the members of the MERCOSUR do not form part, it grants only very limited benefits for the other countries. Indeed, the coverage of the GSP is only partial in the case of agriculture, and the preferential margins are altogether rather weak. But, the countries of the MERCOSUR benefit significantly from this access to the market, since Argentina alone represented in 2000 more than 17% of the imports of the EU under the GSP coming from 180 eligible countries and territories.

Brazil benefits less from this system for two reasons. On one hand, the products on which its comparative advantages are more important are excluded from the European preferences. On the other hand, Brazil is more affected than Argentina by the system of "graduation" of the GSP. This system of graduation aims at distributing the benefits of the preferences on a broad number of developing countries. It thus excludes the countries which are particularly competitive on a given product, in order to prevent them to supply the European market alone. Thus it is nearly 800 million dollars of Brazilian exports which, although they are eligible to the GSP, do not benefit from the preferential access because of the graduation. The quantity is much weaker for Argentina. The EU took recently provisions to prevent that the graduation was applied to countries suffering from an economic crisis and which flows are lower than 1% of the European imports. This allows Argentina to keep this preferential access in spite of the high competitiveness of its exports.

The countries of the MERCOSUR profit from an access to the European markets through tariff-rate quotas (TRQ). Only very weak quotas for beef,lamb and sugar, are reserved to them, but the quantities concerned are without common measurement with the great export potential of these countries.

The countries of the MERCOSUR can also export, because of their competitiveness, in quotas which are not pre-allocated ("erga omnes") to specific countries, within the framework of the the World Trade Organization (WTO) "minimum access", particularly poultry or corn. But, the quantities remain modest.

Tariff-rate quotas are, generally, granted to the MERCOSUR's countries within the framework of the WTO. They are quotas opened within current access, to maintain historical trade flows, or within the minimal access. In this last case, they were opened to comply with the obligation to submit a 5% minimum of the domestic consumption to international competition, following the Uruguay Round Agreement on Agriculture (URAA). The tariff-rate quotas under current access include goat and sheep meat quotas for Argentina (23000 tons) and Uruguay (5800 tons), whereas the TRQs under minimal access include for example beef quotas for Argentina (17000 MT) or Uruguay, or meat offal (Argentina). A quota of garlic was allocated to Argentina but is also notified to the WTO.

The beef and lamb quotas granted to the MERCOSUR thus represent small quantities, taking into account the capacities of export suspected for these products. The MERCOSUR is able to export beef above the quota, in spite of high out-of-quota tariff rates. The quotas of beef include frozen and fresh meat they are distributed as follow.

A 50700 tons quota erga omnes of frozen beef for processing filled mainly by Brazilian's exports (although it is not pre-allocated to the MERCOSUR).

A 53000 tons quota erga omnes of frozen beef also mainly filled by the MERCOSUR's countries. A quota of Hilton beef (fresh), of 40300 tec is allocated to the MERCOSUR with 28000 tons to Argentina; 6300 tons to Uruguay and 5000 tons to Brazil and 1000 tons to Paraguay. These three quotas bear an average in-quota tariff rate of 20%.

Exports over the quota are important, despite the high level of protection. Indeed, the duty is a mixed tariff with an ad-valorem part of 10-12% and a very high specific duty between 90 euros and 300 euros per 100kg. Brazil thus exported out of quota 41000 tons of Hilton beef that is to say eight times its quota of 5000 tons. It seems that 80000 tons were imported out of quota from the MERCOSUR in 2003 (provisional estimates).

Brazil also profits from the erga omnes quotas opened under minimum access on poultry meat (and thus not specifically allocated to this country), in particular from the 15500 tons opened following the "soya" panel, Brazil covers half of the volumes. Protection on poultry meat, weak for some products, allows nevertheless important out-of-quota volumes of exports generally more than 250000 tons, in spite of recent decrease. Some export entered the European border as pickled products bearing a small tariff rate. But the EU considered that they were not enough salted to be eligible to this line and were positioned on line 02071410, which faces much higher duties.

The countries of the MERCOSUR also profit from the corn TRQ opened following the EU enlargement to Spain and Portugal (2500000 tons). With the decrease in the imports from the United States, the MERCOSUR became the principal corn supplier of the European Union inside these quotas. Argentina has thus exported 1.8 million tons of corn to the EU in 2003. Exports of Brazil, (approximately 370000 tons in 2002) have exploded in 2003 because of the dryness in Europe.

A sugar quota of 82000 tons, following the enlargement of the EU to Finland is granted to Brazil (contrary to ACP sugar, it bears a duty of 98 euros per ton).

Though, recently, the countries of the MERCOSUR because of their low production costs, as well as the depreciation of their currencies, were able to export poultry or beef without preferences, in spite of the high customs duties imposed by the EU. Then, it can be assumed that, if preferential quotas are opened by a trade agreement between the EU and the MERCOSUR, they could be bound, except perhaps for beef, as all the regions of the MERCOSUR are not free of epizooties (Paraguay thus did not fill its quotas over the recent period).

## 2.2 The last proposal

The last effort of the EU to enlarge its market's access to the MERCOSUR agro-food products gave place to the following proposal.

For beef; upholding of the current quotas and opening of a new quota of 160000 tons in two sections: a first section of 120000 tons which rate could have been fixed at 0 or 10%. The second section of 40000 tons was to be negotiated within the framework of the Doha Round. The whole of the quota was to be set up at a linear rate of 15600 tec per annum over 10 years.

For poultry; the proposal of the EU was the implementation of a quota of 275000 tons at zero duties. A first section of 237500 tons was to be negotiated during the last Summit of Lisbon, while the second section (37500 tons) was to be part of the Doha's negotiations. The whole of the quota forming a single pocket for products such as filets, pickled, cooked poultry was to be implemented at a linear rate of 27500 tons per annum over 10 years.

For the meat of swine the implementation of a quota of 15000 tons at 0% was planned.

Concerning cereals, the EU's offer was two 200000 tons quota of wheat and corn with no duty and a 100000 tons quota at 0% for rice.

Finally for dairy products the EU was offering three 0% tariff-rate quotas; 20000 tons for cheese, 13000 tons of milk powder and 4000 tons of butter.

For each product the out-of-quota tariff-rate remains the same before and after the implementation of the TRQs. Table 1 sums up what is the current situation, what the EU offers and a third column shows what the MERCOSUR demanded for beef, poultry, swine, wheat, corn and dairies. These products are of particular relevance for European farmers as they are highly protected by the Common Agricultural Policy (CAP) and for Latin American producers as they have reached in few years a great level of competitiveness.

Table 1: *UE-Mercosur Bilateral Negociation: Current situation, Eu's proposal and MERCOSUR's request*

| Products | Current Situation | EU's proposal | Mercosur's request |
|---|---|---|---|
| Beef TRQ | 161000 tons<br>20% in-quota tariff rate<br>- 58000 tons of Hilton<br>(fresh) beef allocated<br>- 50700 tons of frozen<br>beef erga omnes<br>- 53000 tons of frozen<br>beef erga omnes. | prorogation of the 3 quotas<br>addition of a new quota .<br>20% in-quota tariff<br>160000 tons in 2 sections | 315000 tons at 0%<br>equivalent to 5% of<br>the EU-25's consumption |
| Poultry TRQ | 15500 tons erga omnes<br>20% in-quota tariff rate | Single pocket quota 275000 tons<br>0% in-quota tariff rate | 250000 tons at 0%<br>equal to Brazil's<br>exportations in 2003 |
| Pork TRQ | No TRQ | 15000 tons<br>0% in-quota tariff rate | 40000 tons at 0%<br>equivalent to 50%<br>of EU's imports |
| Wheat TRQ | No TRQ | 200000 tons<br>0% in-quota tariff rate | 1000000 tons at 0% |
| Corn TRQ | 2500000 tons erga omnes<br>0% in-quota tariff rate | 200000 tons<br>0% in-quota tariff rate | 4000000 tons<br>0% in-quota tariff rate |
| Dairy Products TRQ | No TRQ | Cheese = 20000 tons<br>0% in-quota tariff rate<br>Milk powder = 13000 tons<br>0% in-quota tariff rate<br>Butter = 4000 tons<br>0% in-quota tariff rate | 60000 tons equivalent to<br>New Zealand's quota<br>34000 tons equivalent to<br>50% of EU's imports<br>10000 tons equivalent to<br>50% of EU's imports |

# 3 Methodology

## 3.1 TRQ theory

In the AAUR, TRQs were institutionalized to permit minimum access and at the same time convert a wide range of agricultural barriers into tariffs (Skully 1999). TRQs insure: i) a current access to the market and ii) a minimum access to some very protected markets (Mönnich 2003) [1].

The tariff-rate quota regime has three components: **a quantitative limitation (import quota volume)**, which is a commitment of the importing country to import a certain volume of a product with **an in-quota tariff**, lower than the MFN tariff, the **out-of-quota tariff**, being the MFN tariff bound in the schedules of WTO members.

Quotas in the TRQs world are expected to be easily filled. But many reasons can be found to explain why the quotas may not be filled. A low demand, a too high in-quota tariff , impediments in the quota administration or transaction costs too high, may be the reasons to explain an unfilled quota (Mönnich 2003).

In these cases, either the import quota or one of the two tariff rates (in quota or out-of-quota tariff rates) are effective i.e. constraints imports. In a TRQ when an instrument is effective the rest of the components of the TRQ are redundant(Boughner and Sheldon 2000). Boughner et al. consider that a policy instrument is effective when it determines directly the level of the domestic and world prices and is redundant when the domestic market price is determined by one of the other two instruments. This is the reason why, unless the out-of-quota tariff is prohibitive, the TRQ does not represent an absolute restriction.

To formalize the introduction of a TRQ regime we need to consider three different situations(Elbehri and R. 2000). Let the import demand 1 being determined by the difference between the domestic supply and the domestic demand(Abbott and Paarlberg 1998), which depend on the domestic price (See Figure 1).

$$M(Pd) = D(Pd) - S(Pd) \tag{1}$$
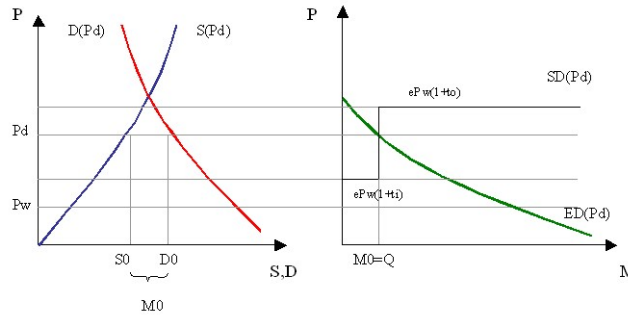


Figure 1: *Import Demand*

The first situation is when the quota (Q) is effective (see Figure 2); excess demand (ED) is equal to excess supply (ES) at the quota level (equation 2), and this intersection determines the equilibrium domestic price (equation 3). Imports are only constrained by the quota level.

$$Q = M(Pd) = D(Pd) - S(Pd) \tag{2}$$

$$ePw(1 + ti) < Pd < ePw(1 + to) \tag{3}$$

The introduction of the TRQ generates a unit rent,

$$R = Pd - ePw(1 + ti) \tag{4}$$

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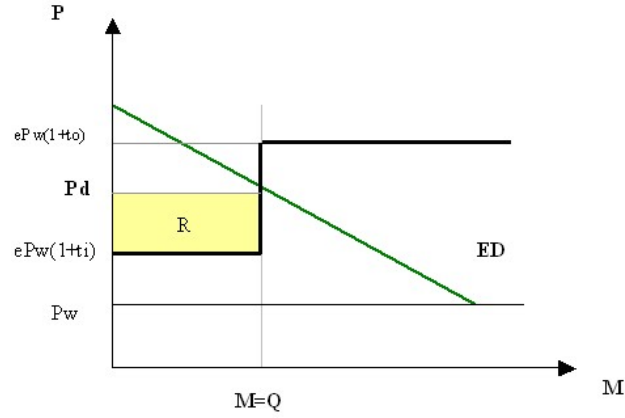
Figure 2: *TRQ with quota effective.*

In the second situation, the equilibrium level of imports is lower than the quota (Figure 3). Here, ED is equal to ES and they determine the level of imports.

$$M = D(Pd) - S(Pd) < Q \tag{5}$$

and

$$Pd = ePw(1 + ti) \tag{6}$$

In this case the trade barrier to imports is the in-quota tariff (ti) and as the quota is not filled, there is no rent generation.

$$R = 0 \tag{7}$$
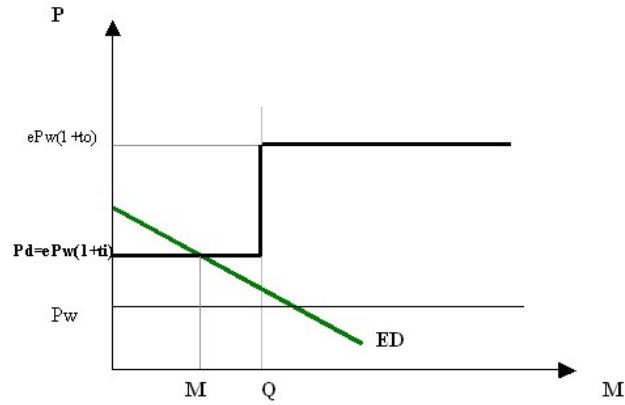


Figure 3: *TRQ with effective in-quota tariff .*

The third situation is presented in Figure 4. Here, the out-of-quota tariff (to) is the policy instrument which restricts the imports level. The intersection of ED and ES determines:

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$$M = D(Pd) - S(Pd) > Q \tag{8}$$

and

$$Pd = ePw(1 + to) \tag{9}$$

.

In this situation the unit rent, R, is maximal:

$$R = ePw[(1 + to) - (1 + ti)] \tag{10}$$

.



Figure 4: *TRQ out-of-quota tariff effective.*

## 3.2 Introducing bilateral tariff rate quotas in GTAP

In this section we present the new variables and equations we need, to model tariff-rate quotas in GTAP. We use the version 4 of the model. Following Bach and Pearson (Bach and Pearson 1996), we introduce the TRQs using a block of four new equations. Another block of equations allows us to take quota rents into account. For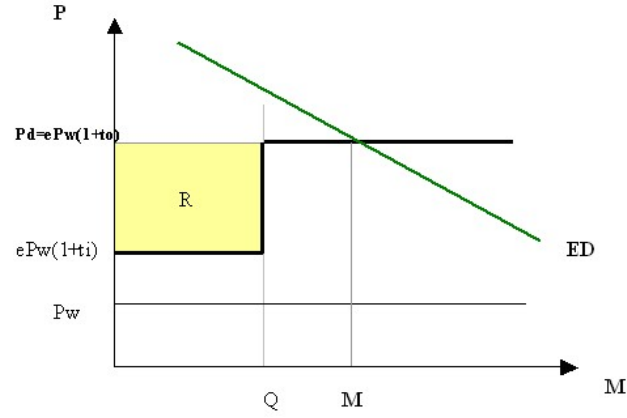 a description of the theoretical aspects of implementing TRQs in a global Computable General Equilibrium model, see Appendix A in Van der Mensbrugghe et al.(Van der Mensbrugghe and Mitche 2003). These new equations must describe the TRQ behavior as presented in the former section and summarized above.

If bilateral TRQ are implemented, the domestic price is equal to the border price times a premium. This premium is equal to the difference between the out-of-quota tariff-rate and the in-quota tariff-rate. This leads to three cases.

i) If the level of imports is less than the quota level, the out-of-quota tariff-rate does not hold and the premium is equal to zero. In this case the domestic price is equal to the border price times 1 plus the in-quota tariff-rate.
ii) If the level of imports is equal to the quota (the quota is binding), demand is constrained to the quota level and the import premium will be endogenous.

iii) If the level of imports exceeds the quota level, the appropriate tariff-rate is the out-of-quota tariff-rate and in this case the domestic price is equal to the border price times 1 plus the out-of-quota tariff-rate.

Quota rents are determined as the revenue generated by the premium accorded to the holders of the quotas.

In terms of GTAP equations and following the notation of Elbehri and Pearson (Elbehri and R. 2000) these conditions can be written (definition of the variables are to be found in Table 2):

$$TMS(i,r,s) = TMSINQ(i,r,s) * TMSTRQ(i,r,s) \tag{11}$$

$$TMSOVQ(i,r,s) = TMSINQ(i,r,s) * TMSTRQOVQ(i,r,s) \tag{12}$$

$$TMSINQ(i,r,s) = VIMSINQTRQ(i,r,s)/VIWSTRQ(i,r,s) \tag{13}$$

$$QXSTRQRATIO(i,r,s) = VIWS(i,r,s)/VIWSTRQ(i,r,s) \tag{14}$$

Two conditions are required to describe the TRQ behavior:

If

$$QXS(i,r,s) \leq QMSTRQ(i,r,s)$$

then

$$TMSTRQ(i,r,s) \geq 1 \; ;$$
$$QXSTRQRATIO(i,r,s) \leq 1 \text{ and}$$
$$QUOTARENT(i,r,s) = (TMSTRQ(i,r,s) - 1) * QXS(i,r,s).$$

If

$$QXS(i,r,s) > QMSTRQ(i,r,s)$$

then

$$TMSTRQ(i,r,s) = TMSTRQOVQ(i,r,s) \; ;$$
$$QXSTRQRATIO(i,r,s) > 1 \text{ and}$$
$$QUOTARENT(i,r,s) = (TMSTRQ(i,r,s) - 1) * QMSTRQ(i,r,s).$$

and

The equation determining QUOTARENT is:

$$QUOTARENT(i,r,s) = (TMSTRQ(i,r,s) - 1) * QMSTRQ(i,r,s) \qquad (15)$$

Table 2: *Variables description*

| Variables | Description |
|---|---|
| TMS(i,r,s) | The actual power of the tariff |
| TMSINQ(i,r,s) | The in-quota power of the tariff (TMSINQ = 1+tin) |
| TMSTRQ(i,r,s) | The power of the premium (PIMS = PIW*TMSINQ*TMSTRQ) in terms of GTAP |
| | notation this can be re-written TMSTRQ = TMS/TMSINQ, |
| | PIMS and PIWS being the domestic and world prices |
| TMSOVQ(i,r,s) | The out-of-quota tariff rate (TMSOVQ = 1+tout) |
| TMSTRQOVQ(i,r,s) | The ratio TMSOVQ/TMSINQ |
| VIMSINQTRQ(i,r,s) | The value of the quota volume at world price plus the in-quota tariff rate. |
| VIWSTRQ(i,r,s) | The value of the quota volume at world price |
| QXSTRQRATIO(i,r,s) | The ratio of imports to TRQ volume |
| VIWS(i,r,s) | The value of imports at border price |
| QXS(i,r,s) | The volume of imports from r to s |
| QMSTRQ(i,r,s) | The TRQ quota volume (above which TRQ tariffs apply) |
| QUOTARENT(i,r,s) | The value of the total quota rent for a given bilateral flow (i,r,s) under TRQ |

# 4 Application to Agricultural Trade between the MER-COSUR and the EU.

## 4.1 Aggregation and scenario

We use a 7-region 14-sector aggregation. The regions are: EU (European Union-15), CEEC (accessing eastern European countries), NAM (North-America), MER (MERCOSUR), PMACP (Less advanced and ACP countries), ROW (The rest of the world). The sectors are: WHT (wheat), CER (Other cereals), OCR (Other crops), CTL (Cattle, sheep, goat, horse), OAP (Other animals), RMK (Raw milk), CMT (Meats: cattle, sheep, goat, horse), OMT (Other meats), MIL (Dairy products), SGR (Sugar), OFD (Other food products), ONP (Other products from agriculture and extraction), Mnfcs (Manufactures), Svces (Services).

In this section we carry out the simulation of the policy reform proposed by the EU to the MER-COSUR in the agro-food sector and summarized in table 1. We first traduce the quotas volumes in value to introduce them in GTAP. We do that multiplying the quotas volumes by the unit value of the product (data are extracted from the COMTRADE database).

The only problem we had to face is that, contrary to other experiments on TRQ implementation, (except for CMT) no quota was specifically allocated to the MERCOSUR. So the problem here is not an expansion of an existing quota but rather a creation of new quotas. We then decide to impose (for products where no TRQ was specified or allocated) pseudo initial bilateral TRQs equal to final ones but with the in-quota tariff-rates almost equal to out-of-quota tariff and simulate a decrease of the in-quota rate. We fix out-of-quota tariff-rates so that $(1+\text{tout})/(1+\text{tin}) = 1.0001$. In that case, the out-of-quota tariff-rate doesn't impede importations.

We consider only one scenario of TRQ implementation. This correspond to the EU's proposal. Our focus is on the EU and the MERCOSUR's products involved by the agreement: wheat (WHT), corn (CER), Beef (CMT), poultry and swine (OMT), Dairies (MIL). We then shock the in-quota tariff-rate of our pseudo initial TRQ to zero in order to implement our experiment and simulate the policy reform. This leads to the following experiment:

- Cut in the in-quota *ad valorem* tariff by 100 percent for (WHT,MER,EU); (CER, MER, EU); (OMT,MER,EU) and (MIL,MER,EU).

- Expansion of the beef quota (CMT,MER,EU) by 470 percent.

Results on trade, output, quota rents and welfare are described in the next section.

## 4.2 Results

We first have a look on the simulation results on the quotas themselves (See table 3). For all the products involved by our scenario namely, wheat (WHT), corn (CER), beef (CMT), poultry and swine (OMT) and dairy products (MIL) the tariff-rate quotas are bound. But the ratio of imports to quotas is very next to 1, except for CER. That is to say that the out-of quota tariff is rather a dissuasive protection or that the implementation of quotas had a poor impact on trade.

Table 3: *Impacts of the EU policy on quotas, rents and trade*

|  | WHT | CER | CMT | OMT | MIL |
|---|---|---|---|---|---|
| Quota filling rate | 1.28 | 4.52 | 1.26 | 1.18 | 1.25 |
| Unit quota rent premium | 1.43 | 1.35 | 1.43 | 1.20 | 1.68 |
| Quota value in 1997 million dollars | 33.90 | 32.97 | 1216.76 | 884.25 | 6.57 |
| Total imports in 1997 million dollars | 43.49 | 149.07 | 1533.54 | 1048.72 | 8.22 |
| Out-of quota import value in 1997 million dollars | 9.59 | 116.10 | 316.78 | 164.46 | 1.64 |

*Impacts on Trade*

We then look at the impact on trade. Table 4 resumes the figures on trade for the MERCOSUR countries. The results of implementing quotas are different depending on products. In the sectors of wheat (WHT) and corn (CER) the MERCOSUR countries face a decrease in the volume of aggregate exports of respectively 0.93 and 3.16% since CMT and OMT experiments a growing of 50.9 and 24.06% of their exports, dairy products doesn't show any change (+0.04%).

Table 4: *Impacts of the EU policy on the MERCOSUR trade by sector in 1997 million dollars*

| Poducts | Pre | Post | Change in % | Change in absolute value (AV) |
|---|---|---|---|---|
| WHT | 1549.08 | 1534.59 | -0.93 | -14.49 |
| CER | 1596.24 | 1545.64 | -3.16 | -50.59 |
| OCR | 8128.11 | 7829.19 | -3.67 | -298.92 |
| CTL | 74.52 | 70.97 | -4.77 | -3.55 |
| OAP | 351.39 | 332.30 | -5.43 | -19.09 |
| RMK | 0.81 | 0.76 | -6.41 | -0.05 |
| CMT | 1424.74 | 2150.04 | 50.90 | 725.30 |
| OMT | 1779.09 | 2207.22 | 24.06 | 428.13 |
| MIL | 382.94 | 383.12 | 0.04 | 0.18 |
| SGR | 1745.98 | 1686.12 | -3.42 | -59.86 |
| OFD | 10732.13 | 10573.89 | -1.47 | -158.23 |
| ONP | 6704.66 | 6604.23 | -1.49 | -100.42 |
| Mnfcs | 43648.79 | 42878.49 | -1.76 | -770.30 |
| Svces | 14056.52 | 13861.92 | -1.38 | -194.59 |

Looking at the repartition by countries of these exports (Table 5), the results show us that the decrease of exports in wheat and cereals affects all destinations except the EU for WHT and the MERCOSUR for CER. The effects of the implementation of quotas are more important for the cattle sector, augmenting trade of respectively 97, 108 and 86% for CMT, OMT and MIL for Europe.

These results could seem odd in particular concerning wheat and cereals where a quota on imports (with attractive in-quota tariff-rate) has a negative effect on trade. But it can be explained by the fact that factors are translated from crop to cattle.

Table 5: *Impacts of the EU policy on the MERCOSUR exports by sector and country*

| | EU | | CEEC | | NAM | | MER | | AUSNZ | | PMACP | | ROW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Change in | % | AV | % | AV | % | AV | % | AV | % | AV | % | AV | % | AV |
| WHT | 107.11 | 21.58 | -4.51 | -1.09 | -4.50 | 0.00 | -0.17 | -1.31 | -4.66 | 0.00 | -4.33 | -2.89 | -4.21 | -29.06 |
| CER | -4.40 | -5.81 | -3.85 | -0.79 | -3.66 | -0.75 | 0.24 | 0.50 | -4.53 | 0.00 | -3.94 | -1.58 | -3.58 | -41.96 |
| OCR | -4.24 | -153.46 | -4.26 | -4.75 | -3.90 | -40.57 | 0.13 | 1.02 | -4.14 | -1.11 | -4.09 | -0.87 | -3.89 | -58.34 |
| CTL | -10.24 | -0.35 | -8.46 | 0.00 | -7.49 | -0.53 | -1.33 | -0.42 | -8.25 | 0.00 | -8.00 | -0.02 | -7.54 | -2.14 |
| OAP | -6.34 | -7.51 | -5.90 | -0.16 | -5.37 | -5.56 | -0.35 | -0.07 | -5.73 | -0.01 | -5.65 | -0.16 | -5.43 | -4.04 |
| RMK | -7.05 | -0.02 | -6.49 | 0.00 | -6.23 | -0.01 | 0.09 | 0.00 | -6.39 | 0.00 | -6.31 | 0.00 | -6.20 | -0.02 |
| CMT | 97.92 | 669.26 | -5.66 | -0.35 | -5.34 | -3.21 | 1.37 | 2.64 | -6.23 | -0.01 | -5.78 | -0.51 | -5.50 | -23.16 |
| OMT | 108.91 | 512.68 | -5.19 | -0.05 | -4.93 | -9.59 | 0.42 | 0.57 | -5.18 | -0.01 | -5.02 | -1.61 | -4.79 | -44.52 |
| MIL | 86.92 | 3.73 | -5.08 | 0.00 | -3.67 | -0.85 | 0.48 | 1.39 | -4.97 | -0.01 | -3.35 | -0.01 | -3.99 | -3.02 |
| SGR | -4.05 | -1.11 | -3.58 | -1.13 | -3.52 | -5.57 | 0.21 | 0.08 | -4.05 | 0.00 | -3.41 | -8.65 | -3.54 | -35.72 |
| OFD | -1.65 | -45.02 | -1.50 | -3.11 | -1.64 | -13.69 | -0.50 | -5.21 | -1.68 | -0.98 | -1.59 | -6.49 | -1.54 | -74.82 |
| ONP | -1.58 | -22.27 | -1.54 | -0.71 | -1.65 | -12.19 | -0.96 | -11.26 | -1.59 | -0.33 | -1.83 | -0.27 | -1.62 | -48.09 |
| Mnfcs | -2.10 | -135.24 | -2.12 | -4.66 | -2.00 | -195.60 | -1.10 | -136.45 | -2.02 | -5.07 | -2.06 | -14.09 | -2.02 | -263.80 |
| Svces | -1.58 | -64.61 | -1.54 | -2.53 | -1.52 | -33.84 | -0.75 | -0.69 | -1.53 | -2.61 | -1.52 | -4.00 | -1.52 | -78.16 |

We now turn to the impacts on the EU's trade. Table 6 shows us the changes in percentage in the

volume of EU's imports. The participation of the MERCOSUR in the imports of the EU decrease for all products except for WHT, CMT, OMT and MIL which increase as we have already noticed by 107, 97, 108 and 86%. Looking at the results in percentage for the other EU's providers we see that they all lose market shares but in a comparatively small amounts (no more than -3.62% for CMT from NAM). Even the EU doesn't lose too much intra-zone trade. Indeed, MERCOSUR's exports to the EU were not very high so the impact in percentage terms is greater for the MERCOSUR than for the other providers of the EU.

Table 6: *Impacts of the EU policy on the EU's imports by sector and country*

|           | EU    |         | CEEC  |        | NAM   |         | MER    |         | AUSNZ |        | PMACP |        | ROW   |         |
|-----------|-------|---------|-------|--------|-------|---------|--------|---------|-------|--------|-------|--------|-------|---------|
| Change in | %     | AV      | %     | AV     | %     | AV      | %      | AV      | %     | AV     | %     | AV     | %     | AV      |
| WHT       | -0.23 | -7.12   | -0.79 | -0.24  | -1.11 | -5.37   | 107.11 | 21.58   | -1.00 | -0.51  | -1.00 | 0.00   | -1.10 | -0.56   |
| CER       | 0.09  | 2.43    | -0.42 | -0.16  | -0.68 | -2.88   | -4.40  | -5.81   | -0.56 | -0.04  | -0.59 | -0.10  | -0.76 | -2.51   |
| OCR       | 0.24  | 55.70   | -0.09 | -0.48  | -0.40 | -20.12  | -4.24  | -153.46 | -0.23 | -0.89  | -0.23 | -12.05 | -0.35 | -39.73  |
| CTL       | -1.46 | -34.89  | -2.36 | -6.42  | -2.80 | -4.55   | -10.24 | -0.35   | -2.56 | -0.29  | -2.69 | -0.13  | -2.80 | -3.76   |
| OAP       | -0.18 | -6.87   | -0.57 | -1.33  | -0.87 | -2.73   | -6.34  | -7.51   | -0.72 | -1.79  | -0.78 | -1.11  | -0.89 | -12.10  |
| RMK       | -0.05 | -0.01   | -0.57 | -0.06  | -0.85 | -0.01   | -7.05  | -0.02   | -0.72 | 0.00   | -0.75 | -0.01  | -0.87 | -0.33   |
| CMT       | -2.53 | -160.95 | -3.37 | -2.98  | -3.62 | -7.93   | 97.92  | 669.26  | -3.47 | -29.95 | -3.55 | -5.40  | -3.61 | -2.89   |
| OMT       | -0.71 | -86.88  | -1.11 | -7.04  | -1.34 | -1.55   | 108.91 | 512.68  | -1.20 | -1.08  | -1.27 | -0.51  | -1.34 | -6.22   |
| MIL       | -0.03 | -4.93   | -0.35 | -0.53  | -0.52 | -0.49   | 86.92  | 3.73    | -0.44 | -1.54  | -0.47 | -0.02  | -0.50 | -4.55   |
| SGR       | 0.05  | 0.76    | -0.19 | -0.10  | -0.36 | -0.11   | -4.05  | -1.11   | -0.24 | -0.01  | -0.27 | -1.57  | -0.34 | -2.16   |
| OFD       | 0.02  | 10.42   | -0.08 | -0.71  | -0.14 | -3.90   | -1.65  | -45.02  | -0.11 | -0.17  | -0.13 | -2.75  | -0.15 | -18.80  |
| ONP       | 0.11  | 37.08   | 0.03  | 0.50   | -0.01 | -0.93   | -1.58  | -22.27  | 0.00  | -0.07  | -0.01 | -1.50  | -0.01 | -8.16   |
| Mnfcs     | 0.04  | 427.69  | -0.04 | -20.38 | -0.11 | -151.02 | -2.10  | -135.24 | -0.08 | -2.74  | -0.10 | -14.23 | -0.09 | -306.72 |
| Svces     | 0.04  | 59.36   | -0.04 | -3.78  | -0.08 | -89.61  | -1.58  | -64.61  | -0.06 | -4.58  | -0.07 | -3.53  | -0.07 | -94.20  |

In absolute value results are not very different. The sectors mostly affected by the new policy are those where the policy would be implemented. Intra-EU trade for CMT, OMT and CTL lose while MERCOSUR's CMT and OMT sectors win. Curiously the OCR sector is affected too. This wasn't so evident in percentage terms. The MERCOSUR countries see their exports of OCR to the EU decrease while the intra-EU trade increases in this sector. The main reason we can put forward is that factors are substrate to the OCR sector in the MERCOSUR and this profit to the EU.

***Impact on Output***

Concerning output, the regions most touched by the TRQs policy are the MERCOSUR, the EU and in a less extent the Rest of the World. The MERCOSUR bears a decrease of its production in all sectors except sectors linked to animal production (CTL, OAP, RMK, CMT, OMT, MIL) SVCES and CGDS. For the EU the results are rather negative as all sectors except OCR, SGR, MIL, SGR, ONP and Mnfcs show a decrease of the production.

It seems that the EU's TRQ policy would have an impact on the reallocation of factors from crop sectors to animal sectors in the MERCOSUR countries. As most of the agricultural productions are extensive in these countries there is a kind of competition for land that could explain the results we obtain. The impact of the EU is inescapable.

Table 7: *Impact of the EU policy on output by sector and country*

|  | EU | | CEEC | | NAM | | MER | | AUSNZ | | PMACP | | ROW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Change in | % | AV | % | AV | % | AV | % | AV | % | AV | % | AV | % | AV |
| WHT | -0.24 | -53.49 | 0.01 | 0.34 | 0.03 | 4.74 | -0.31 | -22.52 | 0.09 | 2.85 | 0.06 | 1.09 | 0.04 | 18.55 |
| CER | -0.18 | -39.59 | 0.01 | 0.42 | 0.01 | 5.76 | -0.36 | -52.37 | 0.04 | 0.68 | 0.01 | 1.96 | 0.03 | 45.31 |
| OCR | 0.23 | 278.38 | 0.03 | 5.16 | 0.04 | 40.00 | -0.47 | -401.80 | 0.06 | 5.83 | 0.02 | 7.00 | 0.02 | 62.78 |
| CTL | -1.64 | -860.43 | -0.17 | -7.38 | -0.01 | -9.06 | 2.94 | 332.68 | -0.15 | -8.94 | -0.04 | -3.49 | -0.01 | -7.07 |
| OAP | -0.44 | -300.25 | -0.05 | -4.83 | 0.02 | 6.64 | 1.17 | 153.04 | -0.03 | -0.81 | -0.02 | -0.93 | -0.01 | -11.17 |
| RMK | -0.15 | -92.87 | -0.01 | -0.73 | -0.01 | -2.89 | 0.88 | 211.24 | 0.02 | 0.96 | -0.01 | -0.28 | -0.01 | -6.70 |
| CMT | -2.23 | -1583.13 | -0.07 | -3.06 | -0.01 | -4.09 | 3.26 | 800.63 | -0.30 | -25.90 | -0.16 | -6.37 | 0.01 | 8.47 |
| OMT | -0.58 | -612.55 | -0.07 | -6.87 | 0.01 | 10.09 | 2.32 | 449.34 | -0.03 | -0.76 | 0.01 | 0.32 | 0.04 | 24.58 |
| MIL | 0.02 | 18.73 | -0.02 | -0.83 | -0.01 | -7.21 | -0.09 | -19.06 | 0.04 | 3.14 | -0.10 | -2.05 | -0.05 | -31.42 |
| SGR | 0.10 | 22.03 | 0.11 | 2.71 | 0.08 | 8.69 | -0.54 | -59.49 | 0.06 | 1.56 | 0.24 | 9.95 | 0.09 | 38.64 |
| OFD | -0.04 | -160.75 | 0.01 | 1.82 | 0.00 | 12.59 | -0.13 | -142.85 | 0.02 | 3.11 | 0.00 | 0.93 | 0.00 | 32.88 |
| ONP | 0.04 | 85.94 | 0.01 | 2.61 | 0.00 | 1.53 | -0.29 | -174.48 | 0.01 | 3.39 | 0.01 | 3.98 | 0.00 | 29.94 |
| Mnfcs | 0.04 | 1796.50 | -0.01 | -23.64 | 0.00 | -69.50 | -0.25 | -1753.88 | 0.00 | -1.00 | -0.02 | -23.09 | -0.01 | -333.00 |
| Svces | -0.01 | -867.00 | 0.00 | 10.19 | 0.00 | -8.00 | 0.04 | 351.50 | 0.00 | 1.06 | 0.00 | 4.06 | 0.00 | 59.00 |
| CGDS | -0.05 | -694.88 | 0.02 | 12.84 | 0.01 | 126.50 | 0.11 | 257.55 | 0.01 | 8.03 | 0.01 | 9.60 | 0.01 | 181.50 |

### Impact on welfare

Finally we have assessed the equivalent variation (see Table8). Globally the welfare decreases of 5 million dollars. But all regions are not affected in the same way. The welfare effects are very important for the EU and the MERCOSUR.

Table 8: *Impact of the EU policy on welfare: equivalent variation in million 1997 dollars*

| Welfare decomposition | Allocative effects | Terms of trade | Technical effects | Quota rent transfer | Other | TOTAL EV |
|---|---|---|---|---|---|---|
| EU | 932.86 | -381.03 | -932.86 | -819.47 | -1.22 | -1201.73 |
| CEEC | 2.31713 | 8.58 | -2.31 | 0 | -3.99 | 4.59 |
| NAM | -5.64 | 44.86 | 5.63 | 0 | -29.47 | 15.38 |
| MER | 150.33 | 301.67 | -150.33 | 817.70 | 90.68 | 1210.06 |
| AUSNZ | 0.61 | 2.44 | -0.61 | 0 | -1.99 | 0.44 |
| PMACP | -2.66 | 4.24 | 2.66 | 0 | -1.13 | 3.11 |
| ROW | -40.77 | 18.61 | 40.77 | 0 | -56.33 | -37.71 |

Welfare effects are due to changes in the terms of trade and quota rent transfers. Allocative effects are positive for the two regions but counterbalanced by the technical effects. These technical effects are the technical efficiency contribution to welfare due to input augmenting technical changes in composite value added. This means that there are losses of value added because of the reallocation of factors particularly in services and manufactures.

# 5  Conclusion

We used the GTAP model and database to model the EU's TRQ policy proposal in the last negotiations of the EU-MERCOSUR agreement. This proposal concerns TRQs opening for products such as beef, poultry, wheat, corn, and dairy products. Our objective was to assess the impact of this broader access to the EU's markets for MERCOSUR's agro-food products on the EU, on the MERCOSUR as well as on the trading partners of the EU.

Following the methodology of Elberhi and Pearson (Elbehri and R. 2000) we model the TRQ policy in the standard framework of the GTAP model. We add a new block of variables and equations to take into account this instrument of trade policy. We then carry out a simulation corresponding to the scenario of the EU's proposal.

We found that the implementation of these proposition would lead to a global welfare loss of $5 millions. As expected, the EU is the major loser and the MERCOSUR, the major winner. These gains and losses are principally due to changes in terms of trade and rent transfers. In the hypothese where all quota rents accrue to the exporters, the MERCOSUR would gain the 75% of its welfare by rents transfer.

It seems that in the MERCOSUR's countries there is a kind of sectoral competition for factors that leads to a reallocation of resources from all sectors to the poultry and beef ones. Globally, the redistribution of resources induces positive gains of welfare, but the fact that these resources are directed to few sectors induce technical inefficiencies due to value added losses in the sectors of services and manufactures. If trade liberalization would have occur in a multilateral way, the welfare gains would have certainly been broader for all parties.

Contrary to what could have been expected, there are few trade diversion, indeed impacts on the major EU's trading partners is limited mostly to the major meat providers.

A deeper integration between the EU and the MERCOSUR will certainly affect the EU's farmers particularly if this broader integration includes agro-food product among the most protected in Europe, which are also among the most competitive in the MERCOSUR. In this paper we have made the hypothesis that 100% of the quota rents would accrue to the exporters. Most of the MERCOSUR's gains are due to rent transfers in this simulation. Then the management of the quota licenses could appear as the major obstacle if some agreement would be reached on a given policy in the next EU-MERCOSUR negotiations.

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