

## **The Necessity to Balance the Barcelona Process : Economic Integration between North Africa and the European Union**

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### **Abstract**

*The Barcelona process is an ongoing process and its first economic results are still insignificant. This study had two objectives. The first is to provide a global assessment of its impacts on the three North African countries that have already become members of this process, namely Tunisia, Morocco and Egypt. The second objective is to explore its potentials by a larger inclusion of agriculture in the Euromed partnership. The approach adopted in this paper is the use of the MIRAGE global Computable General equilibrium Model and the MacMAPS database that gives a very detailed picture of the bilateral protection between all*

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*the WTO members. This approach allowed us to consider all the economic interactions that exist between the North African countries and the European Union as well as the economic interaction between the North African countries themselves. In addition a special emphasis was given to the compute methods used to aggregate tariffs. Indeed, existing methods of aggregation are underestimating the level of tariffs applied by the European Union on agricultural products. This underestimation induces an underestimation of the effects of agriculture liberalization on North African economies. In this paper, we develop an original method of aggregation that attempts to deal with this problem and that gives a more accurate approximation of the market access barriers applied by the European countries. Our main contribution in this article is to develop an original approach of aggregation that aims to obtain a more realistic estimation of the tariffs faced by developing countries and by consequence to obtain a more realistic estimation of the economic impacts of agricultural liberalization between developed and developing countries.*

• **JEL Classification:** F13, F17, C68

• **Keywords:** Free Trade Area, Euro-Maghreb Partnership Agreement and CGM Model

## I. Introduction

In 1995, the Barcelona Conference paved the way for the creation of a free-trade zone between the European Union (EU) and its Mediterranean partners. Hence, Tunisia, Morocco, Egypt and Algeria<sup>1</sup> signed bilateral free-trade agreements (FTA) with the EU respectively in 1995, 1996, 2001 and 2002. These agreements constitute the basis for complete liberalization of industrial exchanges between the concerned parties.<sup>2</sup> The substitution of unilateral trade protocols previously granted by the European Union with the current agreements was prompted by World Trade Organization (WTO) regulations. Moreover, the objective of these agreements was to foster development in the Sub-region through trade integration. As a result of deeper integration to the European markets and the effects of internal liberalization, Northern African countries were to benefit from an economic boom, and catch up

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<sup>1</sup>As well as six other Mediterranean countries, Syria, Israel, the Lebanon, Turkey, Jordan and Palestinian Authority.

<sup>2</sup>This liberalization is immediate for the EU, gradual for the Northern African countries.

with European level of development in the long term.

The results of these agreements seem less significant than expected. The share of the European markets in the total Northern African exports has continued to grow on the same rhythm as in the previous decade, but the trade balance between these countries and the EU has remained unfavorable for the former. Furthermore, the impact of these agreements on the growth of output has been unnoticeable, as the growth rate has remained stable in these countries since the agreements were signed. The flow of Foreign Direct Investment (FDI) has not soared in North Africa, and the agreements have not displaced the flow of the European FDI from Eastern Europe to the benefit of the Mediterranean countries.

Hence, the effects of the free trade between these countries and the EU seem rather mitigated. They cannot be compared to the structural changes induced by the free-trade zones created between Canada, the US and Mexico, or between the EU and the Eastern European countries for instance. These relatively disappointing results of the “*accords d’association*” for Northern Africa raise questions on how to improve these agreements. How could the agreements achieve a more balanced trade impact? Are there sectors to be further liberalized that could help foster development and growth in the sub-region? In this perspective, the objective of this paper is to assess the potential improvements induced by a larger inclusion of agriculture in the Euromed partnership. To deal with this important question, a special emphasis was given to the compute methods used to aggregate tariffs. Indeed and as can be seen in section III of this paper, existing methods of aggregation are underestimating the level of tariffs applied by the European Union on agricultural products. This underestimation induces an underestimation of the effects of agriculture liberalization on North African economies. In this paper we develop an original method of aggregation that attempts to deal with this problem and that gives a more accurate approximation of the market access barriers applied by the European countries. This original approach of aggregation contributes to obtain a more realistic estimation of the tariffs faced by developing countries and by consequence to obtain a more realistic estimation of the economic impacts of agricultural liberalization between developed and developing countries.

Section II of this paper reviews the main features of the Euromed agreements; section III presents the methodology used in the study with particular emphasis on the original tariff aggregation method adopted. Section IV is an analysis of the results of the simulations and section V while concludes the paper.

## II. The Euromed Agreements

### A. The content of the agreements

Under the pressure of the WTO regulations, the European Union has embarked its partners from the developing world in the negotiations of free-trade agreements since the mid-nineties. While the unilateral preferences<sup>3</sup> were more and more clearly prohibited in the multilateral context, the developing countries concerned by these preferences had to choose between giving up their preferential access to the European markets and creating a quasi-reciprocal free trade zone with their European counterparts. The Mediterranean countries were among the first to opt for this second option. All the agreements signed by the EU display the same structure. The first component concerns the political and security cooperation, the second one deals with trade and covers the main commitments of the partners and the third component is related to economic and cultural cooperation. The cooperation components in the FTA between Northern African countries and the EU are general declarations of principles and do not include precise commitments. The trade component defines the modalities of the liberalization of trade between the partners with a mechanism of lists of products and a gradual dismantlement of trade barriers. The EU commits to maintain the existing preferences accorded to North African countries without any significant agricultural market access improvement. While the Northern African commit to eliminate the existing market access barriers on the majority of non-agricultural products vis-à-vis to all the European exports. All the countries have chosen to implement the tariff

**Table 1.** The mechanism of lists of products in Northern Africa

	<b>List 1</b>	<b>List 2</b>	<b>List 3</b>	<b>List 4</b>	<b>List 5</b>
<b>Tunisia (since 1996)</b>	Equip. Goods.	Raw material. Intermediary products.	Local production (competitive)	Local production (non-competitive)	Neg. list: crafts and cultural products
<b>Egypt (since 2003)</b>	Equip. Goods. Raw material.	Intermediary products.	Final goods except automotive products.	Automotive products	
<b>Morocco (since 2000)</b>	Equip. Goods.	Intermediary products. Spare parts.	Local products.	Neg. list: national security.	

*Source: ECA (2006)*

<sup>3</sup>Except if granted on a non-discriminatory basis (enabling clause of 1979).

dismantlement in a gradual manner in a maximum period of 12 years. Depending on their level of sensitivity for these countries, products are classified into four or five lists (see Table 1.). The first list is generally comprised of goods that are only imported and useful for the rest of the economy (equipment goods). Tariffs dismantlement is the fastest – instantaneous sometimes<sup>4</sup> – for these goods. For other goods, a more gradual dismantlement is planned. Some highly sensitive products are included in a “negative” list and not concerned by tariffs elimination. The FTAs specify that these negative lists are to be regularly reviewed.

The agricultural liberalization is of lesser importance. Indeed, the FTAs do not mention any calendar for tariff elimination on the whole agricultural sector. A few concessions have been included for specific products, the EU remaining firm on sensitive merchandises such as cereals, beef meats, milk, wheat, sugar, flowers and rice. These concessions deal more with quantitative restrictions than tariffs. Thus significant increases in quotas have been granted to the Northern African economies on products like olive oil and cut flowers. These new quotas are calculated on a floating basis or granted on a seasonal manner. The FTA initially mentioned that agriculture would be further liberalized five years after the agreement comes into force. The increase in quotas is still under negotiations in most Northern African economies.

In terms of services, the “*accords d’association*” generally adjust their objectives to the framework of the General Agreements on Trade and Services (GATS), and do not include precise commitments. They also refer to specific fields for the cooperation among partners, such as finance, energy and information. The FTAs also indicate that the liberalization of services shall be reviewed within three to five years after the agreements come into force. In this perspective, their liberalization has become a core objective of the current development of the Barcelona process.

The FTAs have been negotiated on bilateral basis, between each Northern African country and the EU. Nonetheless, the integration of the Mediterranean sub-region is one of the key objectives of the Barcelona process. Hence, the MEDA fund supports a large number of regional projects, which amount to 25% of its total expenditures. Furthermore, Tunisia, Morocco, Egypt and Jordan have signed an FTA in Agadir in 2005, fixing deadline for the complete elimination of trade barriers among themselves to 2010.

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<sup>4</sup>Tunisia anticipated the complete tariffs elimination for these goods two years before the FTA came into force.

## **B. The agricultural liberalization debate**

The first estimations on the potential impact of reciprocal free-trade agreements between the North African countries and the EU were not favorable for the former. Due to lack of competitiveness and asymmetrical initial protections, North African exporters could have far less to gain from a marginal improvement of their access to the European markets, while European companies are able to take a significant advantage of the improved access to the North African economies. This conclusion has arisen from most empirical analysis undergone on the issue, whatever methodology is used. Based on a General Equilibrium Model with oligopoly and scale economies, GTAP, Elbehri *et al.* (2004) show that an FTA is likely to have adverse effects on the Moroccan economy due to deteriorating terms of trade, reduction in output and trade diversion. On the contrary, they emphasize the potential gains associated with a multilateral trade liberalization. In the same vein, Kuiper *et al.* (2005) focus their attention on the likely implications of an FTA for North Africa, using a similar CGE methodology. They estimate that these agreements could diminish the welfare of this sub-region to the profit of the EU. They recall the importance of the employment issue in these developing countries and assess the job losses to roughly 5% and 6% in Tunisia and Morocco respectively. The conclusions of Bentabet B. (2002) for the Algerian economy are similar. The effects of an FTA are unfavorable if non-tradable goods are not concerned. Besides, the fiscal compensation of the custom revenues losses (through VAT, income taxes or oil taxes) would be efficient in terms of public resources but not for Algerian welfare.

Ten years after the Barcelona conference and the beginning of the Euromed process, different econometrical surveys have been conducted to measure the first effects of this process. Radwan *et al.* (2005) have coordinated a comprehensive study on this issue. They conclude that, at this stage, the FTAs had had a limited impact on fiscal revenues of the Mediterranean states. Trade integration was boosted, but Foreign Direct Investment and growth did not experience significant increases.

Given the limited – if not unfavorable – perspective of the current integration process, the issue of the alternatives and the necessary improvements to the existing Association Agreements has been raised. In this perspective, the effects of their systematic extension to the agriculture have been questioned. Radwan *et al.* (2003) coordinated a report on this issue, underlining that it was crucial not only

for economic reasons but for development in general. After recalling the importance of agriculture both in the EU and in North Africa, they focused their analysis on the sustainability of any agricultural liberalization, showing that this process implied a better sharing of water as well as a massive rural exodus. After describing the structure of the exchanges between North Africa and the EU, they showed that the two regions compliment themselves. No clear threat would hence emerge from agricultural liberalization. The authors also recall the results of the estimations realized by Lorca *et al.* (2003), according to which the liberalization of the European markets could boost the GDP of North Africa from 0.5% (Tunisia) to 3.9% (Egypt). Alavarez J-M-G (2002) also discusses the possible implications of the agricultural liberalization in the Euromed partnership. He suggests that the openness of the horticultural markets in the EU could bring interesting opportunities for North African exporters. He also underlines the potential welfare gain associated with the expansion of the Common Agricultural Policy to all North African countries and recommends that a new fund of the FEOGA type be put into place in the Euromed partnership. Eventually, he underscores that the agricultural integration will be possible only if the asymmetry in development among partners is taken into account, i.e. with a strong special and differentiate treatment.

### III. Methodologies

The aggregation methodology is an important issue in the discussion on trade liberalization. All aggregation methods seek to aggregate tariffs aggregate tariffs at the HS6 level to a limited number of sectors (27 GTAP sectors for example). Existing methods of aggregation are in fact not neutral with respect to the simulation results. Underestimating the market access in a specific sector will underestimate the effects of its liberalization. This point is especially very crucial when dealing with the protection faced by developing countries agricultural exports in developed country markets. Our main contribution in this paper is to develop an original approach of aggregation that aims to obtain a more realistic estimation of the tariffs faced by developing countries and by consequence to obtain a more realistic estimation of the economic impacts of agricultural liberalization between developed and developing countries.

#### A. The aggregation debate

If we suppose that we have to estimate the aggregated tariff  $T(I,R,S)$  applied by a

region  $S$  that contains  $s^1 \dots s^S$  countries to exports of sector  $I$  that contains  $i^1 \dots i^I$  HS6 lines from region  $R$  that contains  $r^1 \dots r^R$  regions. If we note  $t(i,r,s)$  the tariff applied by country  $s$  on exports of product  $i$  from county  $r$ . We have to find a relationship between the aggregated tariff  $T(I,R,S)$  and the *ad valorem* equivalent of each one of the  $t(i,r,s)$   $r \in \{r^1 \dots r^R\}$ ,  $s \in \{s^1 \dots s^S\}$  and  $i \in \{i^1 \dots i^I\}$ .

The simplest solution is to define  $T(I,R,S)$  as a weighted average of the  $t(i,r,s)$ :

$$T(I,R,S) = \sum_{r \in \{r^1 \dots r^R\}} \sum_{s \in \{s^1 \dots s^S\}} \sum_{i \in \{i^1 \dots i^I\}} W(i,r,s)t(i,r,s)$$

Where  $W(i,r,s)$  is the weight of  $t(i,r,s)$  in the total aggregate tariff. How to compute this weight constitutes the main subject of the debate on aggregation.

### 1. The trade weighted aggregation:

This is the method used, by default, in the GTAP 6 database. The weight is supposed to be equal to the part of the trade flux of  $(i,r,s)$  in the global trade of  $I,R,S$ . Mathematically, if we note  $trade(i,r,s)$  the flux of trade of product  $i$  (defined at HS6 level) between  $r$  and  $s$ , the weight is defined by:

$$W(i,r,s) = \frac{trade(i,r,s)}{\sum_{r \in \{r^1 \dots r^R\}} \sum_{s \in \{s^1 \dots s^S\}} \sum_{i \in \{i^1 \dots i^I\}} trade(i,r,s)} \quad (1)$$

This method has the advantage of simplicity and of being comprehensive, but it has the enormous disadvantage of not taking into account all tariffs where there is no trade. However, for high level of tariffs (for tariff peaks for example) trade is generally very weak or null. This is the endogeneity bias that other aggregations try to avoid.

### 2. The CEPII References Group aggregation:

To improve on the aggregation methodology, the CEPII introduced the Reference Group method. In importing countries that contain the MacMAP database is dispatched into 5 reference groups. This dispatching is based on the of GDP level and the trade structure. Each country  $s$  belongs then to Reference Group  $RG(s)$ . If we note  $EXP(i,r,s)$  the exports of country  $r$  of products  $i$  to country  $s$ , the weight is then defined by:

$$W(i, r, s) = \frac{\sum_{ss \in RG(s)} EXP(i, r, ss)}{\sum_{r \in \{r^1 \dots r^R\}} \sum_{s \in \{s^1 \dots s^S\}} \sum_{i \in \{i^1 \dots i^I\}} \sum_{ss \in RG(s)} EXP(i, r, ss)} \quad (2)$$

The idea of this method is to take into account the tariff applied in non-traded lines as long as the country  $r$  exports products  $i$  to one of the country of the reference group to whom belong country  $s$ . This method reduces notably the endogeneity bias, but the problem persist when country  $r$  does not export product  $I$  to any of the countries of the reference group of  $s$ .

### 3. The ITC/UNECA references group aggregation:

A new method of aggregation is developed in this paper. It conserves the philosophy of the CEPII method, and attempts to avoid the problem created by the case of no exports to all reference group members. Thus, we consider as weight the imports of the reference group from the entire world. Mathematically, the considered weight here is given by:

$$W(i, r, s) = \frac{\sum_{rr} \sum_{ss \in RG(s)} EXP(i, rr, ss)}{\sum_{rr} \sum_{s \in \{s^1 \dots s^S\}} \sum_{i \in \{i^1 \dots i^I\}} \sum_{ss \in RG(s)} EXP(i, rr, ss)} \delta(i, r, s) \quad (3)$$

Where  $\delta(i, r, s)$  is parameter equal to 0 when country  $r$  does not export product  $I$  to  $s$  during the last 10 observed years.

Table 2 gives a global picture of the differences between the three methods of aggregation. The first observation is that there is a substantial difference in the results produced by the three methods. This confirms the importance of the choice of aggregation method for a study as this affects the outcome of the exercise

The second observation is that the differences in results are not systemic in the sense that one method could give the highest tariff for one sector and the lowest for another. For example, ITC/ECA method gives the highest tariff for meat production but the same method gives the lowest tariff for vegetables oils and fat sector. For non-agro food industrial sectors, differences are insignificant given the fact that the tariffs applied by the European Union on North African products are quasi null. Meanwhile, differences are huge if one compares the tariffs applied on agricultural and agro food sectors. Nevertheless, the ITC/ECA method takes into account tariffs that are not taken into account by the two others method. Indeed,

**Table 2.** A comparison between the three aggregations methods

	Tunisia			Morocco			Rest of North Africa			Sub-Saharan Africa		
	ITC/ ECA	CEPII	GTAP	ITC/ ECA	CEPII	GTAP	ITC/ ECA	CEPII	GTAP	ITC/ ECA	CEPII	GTAP
<b>Agricultural sectors</b>												
Paddy rice	9.07	0	0	9.07	0	0	9.39	65.64	57.6	7.28	27.92	0
Wheat	10.77	0	0	10.69	0	0	10.77	1.76	0.99	1.98	5.04	0.01
Cereal grains nec	20.77	21.55	0.34	20.83	1.52	0	20.77	18.79	1.64	5.77	21.69	1.78
Vegetables. Fruit. Nuts	9.75	3.85	3.92	9.27	10.52	11.2	10.15	11.52	12.9	3.52	10.65	11.3
Other agricultural products	0.03	0.06	0.04	0.03	0.08	0.01	0.03	0.05	0.05	0.02	0	0.02
Plant-based fibers	0	0	0	0	0	0	0	0	0.02	0	0	0
Crops nec	1.84	1.75	1.66	1.01	1.57	1.95	1.96	0.69	0.93	0	0.06	0.67
Animal	4.45	0.04	0.09	5.11	0.14	0.34	5.19	0.4	0.11	0.97	0.09	0.07
Fishing	0.41	0	0	0.41	0	0.03	3.25	2.83	6.49	0.5	3.34	3.31
<b>Agro food industries</b>												
Meat	29.27	15.24	6.93	29.95	6.76	92.3	29.73	96.13	124	9.41	60.08	54
Vegetable oils and fats	4.45	74.94	74.7	3.71	90.3	47.6	4.47	36.69	15	0.87	0.17	0.12
Dairy products	28.3	53.94	14.6	28.22	33.76	11	27.6	40.78	18.3	8.78	37.93	14
Processed rice	5.09	192.1	0	5.09	0	0	5.5	116.7	70.1	17.44	44.49	12.2
Sugar	30.6	88.04	18.6	30.32	4.32	11.7	30.68	5.4	5.98	27.5	98.13	113
Food products nec	9.19	1.35	1.66	9	1	1.12	9.94	8.19	6.9	2.99	2.73	1.21
Beverages and tobacco	0.04	4.58	9.2	0.04	15.54	14.9	7.67	9.1	11.3	0.01	10.01	6.57
<b>Non Agro food industries</b>												
Coal, Oil, Gas, Minerals nec	0	0	0.03	0	0	0	0.01	0	0.01	0	0	0.01
Textiles	0.07	0	0.19	0.07	0	0.14	3.09	0	0.13	0.09	0.63	0.42
Wearing apparel	0	0	0.09	0	0	0.08	2.86	0	0.22	0.01	0.67	0.45
Leather products	0	0	0.04	0	0	0.1	2.05	0	0.15	0	0.06	0.08
Paper products. Publishing	0	0	0.02	0	0	0.03	0	0	0.45	0	0	0.01
Petroleum. Coal products	0	0	0	0	0	0	0	0.51	0.89	0	0	0.26
Chemical. Rubber. Plastic prods	0.02	0	0.04	0.02	0	0.02	0.05	0.63	1.03	0.02	0.18	0.16
Metals	0.01	0	0.02	0.01	0	0.02	0.54	0.2	4	0.01	0.44	0.51
Motor vehicles and parts	0	0	0	0	0	0.04	1.88	0.26	0.77	0.09	4.92	4.49
Transport equipment nec	0.01	0	0	0.01	0	0.11	0.16	0	1.59	0.01	0	0.86
Electronic equip- ment	0.12	0	0.17	0.12	0	0.15	0.32	0	0.08	0.12	0.21	0.23
Other industrial products	0	0	0.16	0	0	0.04	0.02	0	0.15	0	0	0.04

Authors compute from GTAP6 and MacMAP.

sectors like Paddy Rice, and Wheat are considered as duty free by the CEPII and the GTAP method whereas they face non-null tariffs in the ITC /ECA method. This information is consistent with the non-null HS6 applied tariffs that can be observed using the MACMap database. The null aggregated tariffs are in fact due to null weight and not to null tariffs.

## **B. The Mirage model**

This section provides a short description of the MIRAGE model. This model has been built in order to assess the impact of globalisation on the individual regions of the global economy. The model is a relatively standard neo-classical model of economic activity. It is based on the latest release of the GTAP data set, version 6.0, and designed for analysing dynamic scenarios. The scenarios are solved as a sequence of static equilibrium, with the periods being linked by dynamic variables—population and labour growth, capital accumulation, and productivity. Policy scenarios are compared to a baseline, or business-as-usual, scenario.

### **1. The theoretical structure of MIRAGE**

**i) Demand.** The demand side is modelled in each region through a representative agent, whose utility function is intra-temporal, with a fixed share of the regional income allocated to savings, the rest used to purchase final consumption.<sup>5</sup> Below this first-tier Cobb-Douglas function, consumption trade-off across sectors is represented through a LES-CES function. Each sectoral sub-utility function is a nesting of CES functions, comparable to the standard nested Armington – Dixit-Stiglitz function (see e.g. Harrison *et al.*, 1997), with two exceptions. Firstly, domestic products are assumed to benefit from a specific status for consumers, making them less substitutable to foreign products than foreign products between each other. Secondly, products originating in developing countries and in developed countries are assumed to belong to different quality ranges.<sup>6</sup>

**ii) Supply.** Production makes use of five factors: capital, labor (skilled and unskilled), land and natural resources. The first three are generic factors; the last

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<sup>5</sup>The structure of the demand function is shown in Appendix 6.

<sup>6</sup>This is motivated by the fact that, following Abd-El-Rahman (1991), several empirical works have shown that, even at the most detailed level of classification (Combined Nomenclature, 10 digits, including more than 10,000 products), unit values differences are able to reveal quality differences (see e.g. Fontagne *et al.*, 1998; Greenaway and Torstensson, 2000).

two are specific factors. The production function assumes perfect complementarity between value added and intermediate consumption. The sectoral composition of the intermediate consumption aggregate stems from a CES function. For each sector of origin, the nesting is the same as for final consumption, meaning that the sector bundle has the same structure for final and intermediate consumption. The structure of value added is intended to take into account the well-documented skill-capital relative complementarity. These two factors are thus bundled separately, with a lower elasticity of substitution (0.6), while a higher substitutability (elasticity 1.1) is assumed between this bundle and other factors. Constant returns to scale and perfect competition are assumed to hold in agricultural sectors.

**iii) Capital, markets clearing and macroeconomic closure.** The capital good is the same whatever the use sector, and capital is assumed to be perfectly mobile across sectors within each region. At the region-wide level, capital stock is assumed to be constant in the core simulations of this paper. Natural resources are also perfectly immobile and may not be accumulated. Both types of labor, as well as land, are assumed to be perfectly mobile across sectors. Production factors are assumed to be fully employed. All production factors are immobile internationally. As to macroeconomic closure, the current balance is assumed to be exogenous (and equal to its initial value in real terms), while real exchange rates are endogenous.

**iv) Dynamics.** In a typical recursive dynamic framework, the time path of the model is solved as a sequence of static equilibrium in each year. In other words, the solution in any given year is not a function of forward looking variables, though it may be an explicit function of past variables, though known and therefore exogenous. While there are drawbacks in the recursive dynamic framework, particularly in the modeling of saving and investment behavior, its one key advantage is that it is much easier to set up and solve (van der Mensbrugge, 1998). There are several backward linkages linking one period to another: population growth, productivity increases, and capital accumulation. Most of these linkages can be resolved outside of the modeling framework, or in other words, in between solution periods. One of the exceptions is the capital accumulation function. Before running any policy simulations in a dynamic framework, it is often required to define some sort of reference scenario, or as it is sometimes called, a business-as-usual scenario (BaU). The BaU scenario makes some assumptions about a broad range of dynamic variables —population and labor supply growth rates, the growth rate of factor productivity, and other exogenous variables. If all productivity

**Table 3.** Results of Dispatching Domestic Support

	EU25	USA	Japan
<b>Output Subsidies</b>			
Amber	96.1	92.9	30.1
Blue	0.0	0.0	33.9
Green	3.9	7.1	36.0
<b>Intermediate subsidies</b>			
Amber	89.7	90.5	74.3
Blue	1.8	0.0	0.0
Green	8.5	9.5	25.7
<b>Land-based Payments</b>			
Amber	0.5	3.1	93.1
Blue	79.8	0.0	0.0
Green	19.7	96.9	6.9
<b>Capital-based Payments</b>			
Amber	6.5	91.6	84.6
Blue	51	0	0
Green	42.5	8.4	15.4

Source Walsh *et al.* (2004)

Note: data are in percentage of distribution of domestic support among the three components for each county and each category.

variables are pre-determined, as well as the population growth rates, the growth rate of real GDP is endogenous. However, the path trend in real GDP growth may be unrealistic, or at least inconsistent with the assumed trend from other studies or prospective outlooks. One way to resolve this dilemma is to make the growth of real GDP exogenous in the reference scenario, and to allow some other variable pick up the slack. In subsequent simulations, i.e. in simulations with policy shocks, the growth rate of capital and labor productivity, are exogenous, and it is the growth of real GDP and the capital-labor ratio, which are endogenous.

## 2. Implementation of the domestic support mechanisms

While an agricultural version of MIRAGE was developed by Bouet *et al.* (2004), which integrates a detailed modeling of the instruments of domestic support applied by the European and US, we opted to use a more simple way of modeling domestic support given the non-linearity of Bouet *et al.*'s version. This non-linearity did not permit running the dynamic version of MIRAGE. The approach used here for modeling domestic support follows the one developed by

Walsh *et al.* (2004).<sup>7</sup> The results of the dispatching of PSE are presented Table 3.

To perform reduction in domestic support in the alternative scenarios, three major steps were used. The first step consist of computing the new bound of domestic support level and then the level of applied support, which is defined as the minimum between the new bound level and the current applied level. This step is justified by the fact that cut formula have to be applied on the bound support. The second step consists of taking into account the differences existing between the 2001 domestic support level, which is notified to WTO, and the level of support existing in the GTAP database. In order to address this issue, we simply computed the rate of increase of applied support as notified in the WTO and then applied the rate of cut to the support level figured in the GTAP database. Finally, the implementation of the cut is done through endogenizing domestic support and exogenizing the new level of support.

### **C. Presentation of the scenarios**

This has two components. The first is an assessment of the impacts of existing agreements. Indeed, the Barcelona tariff dismantling mechanisms are ongoing processes. None of the contracting parties has completely implemented its engagements. Tunisia, the most advanced country in the process, will complete the implementation in 2008 but Egyptbegan its implementation in 2005 and is expected to complete implementing its engagements in 2019. In this light, we start with a forecast of the impacts of these agreements before assessing the proposed scenarios for the Barcelonare-equilibration. This can be seen as a redundant given that several studies to assess the effects of the Euromed agreements have been undertaken. However, to the best of our knowledge, this is the first study to adopt an original method of assessment. The originality comes from:

- First, it is a global approach. We take into account the Tunisian, Moroccan and Egyptian agreements simultaneously. While the majority of the precedent studies try to capture the effects of each agreement in a single manner using single country models. The global approach allows us to take into account the competition effects between the three contracting countries in the European market.

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<sup>7</sup>In the GTAP database, the direct payments reported in the GTAP model are allocated to four different categories: output subsidies, intermediate input subsidies, land-based payments and capital-based payments. The source of the agricultural support data for non-market price support protection in industrialized countries is based on the estimation of the Producer Support Equivalent (PSE) carried out by the OECD (2002a). Walsh *et al.* (2004) dispatch the amount allocated to each category of subsidies among the three Boxes defined by the WTO.

- Second, the implementation of the agreements at the HS6 level, allows for an accurate assessment of the dynamics of the dismantling process.
- Third, the dynamic structure of MIRAGE gives us the opportunity to capture the dynamic effects of the dismantling and to take into account the time lag between the three agreements.

The second part of the study assesses the effects of implementing some European concession agricultural policies and the resultant impacts on concerned North African economies.

### **1. Implementing the Euro-med Agreements in MacMAP**

ITC has developed two versions of MacMAP. The first version is MacMAP 2001. It measures the bilateral protection in 2001. This version is currently used by the CEPII and was implemented in the GTAP database. The second version is MacMAP 2005 that measures the bilateral protection in 2005. The ITC has improved the quality of the 2001 database by taking into account many of the bilateral trade agreements and a more efficient control of quality of the source data. That is why the ITC team recommended the use of MacMAP 2005 instead of MacMAP 2001. Meanwhile, the GTAP database is a 2001 database, which requires us to begin our simulations from the year 2001.

Given these constraints we have developed a method that uses both versions of MacMAP. Between 2001 and 2004 Mirage is fed by the 2001 version and after 2005 data are provided by the 2005 version. The detailed presentation of the implementation of each of the Euro-med agreements is given in the Appendix 1.

The evolutions of aggregated tariff for every North African region of our aggregation are presented in Annexes 2, 3 and 4. Aggregated tariffs on industrial products are thus almost completely eliminated as only marginal tariffs on textiles in Tunisia, motor parts in Morocco and chemical products in the rest of Northern Africa are maintained. On agriculture, which is highly protected in these countries, the level of protection is roughly similar in 2020 and 2005, with slight tariff cuts on food products in Morocco and fishing, vegetable oils and food products in Tunisia.

The aggregated tariffs evolution between 2005 and 2020 is presented in Appendix 2 to Appendix 4.

### **2. Scenarios for re-equilibrating Barcelona**

In order to re-equilibrate the Barcelona process, we suggest a reduction of the

**Table 4.** Variation of Euro-Mediterranean bilateral trade

	Tunisia				Morocco				Rest of North Africa				EU25			
Importer	2005	2010	2015	2020	2005	2010	2015	2020	2005	2010	2015	2020	2005	2010	2015	2020
<b>Tunisia</b>	0	0	0	0	-0.1	-6.2	-2.4	-3.6	0.27	-6.7	-4.1	-3.7	0.44	12.4	12.9	13.3
<b>Morocco</b>	0.01	-23	-31	-31	0	0	0	0	0.06	-14	-16	-16	0.15	44.7	72.2	75.2
<b>Rest of North Africa</b>	-0.2	-3.1	-14	-15	-0.1	121	112	106	-0	30.3	22.7	21.1	0.01	4.34	19.5	24.5
<b>EU25</b>	0.7	11.2	13	13.4	0.2	24.5	44.7	46.2	0	2.62	5.09	6.02	0	0	0	0

Source: Authors compute from MIRAGE and MacMAP

European protection on agricultural sectors in this paper. This re-equilibrating process will affect the three pillars of the European protection. We simulate:

- The elimination of the exports subsidies in 2013;
- A 50% reduction of the European domestic support; and
- A reduction of the market access pillar using the formula suggested by the EU in the WTO ministerial conference in Hong Kong.

These scenarios are largely inspired from the Honk Kong ministerial declaration. For these reasons they are realistic and acceptable from a European point of view.

## IV. Presentation and Discussion of the Results

In this section the results of simulations are presented. The first part deals uniquely with the effects of the three agreements. The second part focuses on the implications of the European agriculture liberalization vis-à-vis to North African countries.

### A. The effects of the Barcelona Agreements

Seen from North African countries point of view, the Barcelona Agreements are simple unilateral tariffs dismantlement without any concession from the European side. Thus, the first implication of this agreement is a dramatic increase of European exports to all the North African countries. Table 4 shows that Tunisian imports from Europe increase by 13%, Moroccan imports increase by more than 72% and the imports of rest of North Africa increase by more than 24%.

At the exports level, Table 4 shows that all North African countries will increase their volumes of exports to all non North African regions. The increase to Europe

will be larger as the North-African countries benefit from preferential access compared to competing developing countries.

The Free trade area imposes a significant resources reallocation to North African countries. Table 13 shows that all North African economies will undergo a large variation of sectoral added value. Broadly speaking, North African countries will increase their specialization in labor-intensive sectors. Two major forces will drive this specialization. The first is the European products competition in their domestic market. This explains the decrease of capital-intensive sectors added value throughout the North African region (Paper products, Publishing, Petroleum, Coal products, Chemical, Rubber, Plastic prods, Metals and Motor vehicles and parts). The second driving force is the competition among North African economies. Indeed and as can be seen in Table 13, in the majority of the cases, an increase in the added value in North African countries is accompanied by a decrease of the same sectors in the two other regions. This specialisation is occurs essentially in labour intensive sectors (Agricultural and Agro food industries and textile and wearing).

To sum up, the Barcelona Agreements will lead to an increase in the level of trade between the two Mediterranean rivers with a stronger specialization of the North African countries in labor-intensive products. The reallocation effects, could lead to an increase in the **volume** of productions but not in the **value** and thus not in the equivalent variation of welfare. As can be seen in Table 14, Morocco will see its GDP in volume increasing by 1.49% but register welfare loss of 0.44%. The two others regions will undergo a GDP loss and a welfare loss. The free trade agreements will also result in a decrease in all the factors prices wages, rate of returns of capital and natural resources. Only the rate of returns of land in Morocco will increase as the agricultural production in this country will increase.

## **B. Re-equilibrating Barcelona three proposed ways**

In this second part of simulations we explored three scenarios of European concession in order to re-equilibrate the Barcelona process. The first simulation leads to the elimination of the subsidies applied by Europe on its exports to North African countries (Exports subsidies scenario), the second one is the elimination of the bounded European domestic support by 50% (Domestic support scenario) and the third one is a decrease of the level of tariffs applied by the European Union on North African agricultural exports. The tariff reduction formula chosen in this scenario is the same as proposed by the EU in the Hong Kong ministerial summit

but will be applied to the North African countries only, on the applied tariffs and not on the bound tariff. This separation of the tree pillars in each scenario is undertaken in order to weight their differentiated impacts in these agreements.

Table 5 gives an overall description of the impacts of each one of these three scenarios and allows a comparison with the effects of the Barcelona process (Barcelona scenario). Simulations show that none of this European concession could re-equilibrate the negative impacts of the Barcelona process. The two first scenarios even worsen the situation with a highest welfare loss. The only scenario that improves the situation is the market access scenario.

The first simulation considers the elimination European subsidies on its exports to North African regions and not to others markets. The analysis of the results demonstrates that this policy implies a decrease of the volume of European agricultural exports but dose not improve neither the trade position of North African regions nor the welfare of their consumers as the price of European imports increase sensibly. If one considers exports subsidies as a transfer from the European Union to the North African consumers, their elimination generates an increase of the consumer price index in these regions and thus welfare loss in the three North African regions. At the same time, the North African agricultural and agro-food producers seem to be the greatest winner of this scenario. Table 6 shows that the production in agricultural sectors increases sensibly notably sectors that are highly subventioned by Europe.<sup>8</sup> This is an import substitution effects. For example the wheat production increases by 3.3% where it was decreasing by 1% in the Barcelonascenario. This increase of agricultural production induces an increase of land real rate of return (0.24% compared to 0.11 in the Barcelona scenario).

The elimination of European domestic supports does not improve the situation of North African region. Meanwhile the situation is better than the exports subsidies elimination scenario. Indeed, the elimination of domestic support affects negatively the European agricultural competitiveness and allows North African farmers to export more to the European market. Moroccan agricultural exports increase by 4.1%, compared to 2.2% in the Barcelona scenario and to 1.3% in the

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<sup>8</sup>According to the GTAP 6 database, the European exports to North African countries subsidies are applied exclusively on agricultural and agro-food industries. The rate of exports subvention in the North African market are the following:

- For agricultural sectors: Wheat 8%, Cereal grains nec 23%, Other agricultural products 2%, and Animals 1%.
- For agro-food sectors: Meat 29%, Dairy products 22%, Processed rice 31%, Sugar 37%, Food products nec 3% and Beverages and tobacco 1%

**Table 5.** A global view of the implications of the Barcelona Agreements on North Africans economies in 2020

	Tunisia				Morocco				Rest of North Africa			
	Barce- lona	Exports subsidies	Domestic support	Market access	Barcelona	Exports subsidies	Domestic support	Market access	Barcelona	Exports subsidies	Domestic support	Market access
<b>Macroeconomic variables</b>												
GDP (volume)	-0.08	-0.46	-0.1	0.16	1.49	1.01	1.4	1.95	-0.88	-0.98	-0.89	-0.86
Welfare	-1.11	-1.32	-1.17	-0.97	-0.44	-0.74	-0.46	-0.21	-0.54	-0.66	-0.54	-0.53
Real effective exchange rate	-1.06	-0.96	-1.04	-0.89	-2.69	-2.53	-2.63	-2.35	-1.77	-1.6	-1.74	-1.75
<b>Trade related variables</b>												
Exports (volume)	8.06	7.91	8.07	8.36	31.48	30.8	31.45	32.48	5.79	5.31	5.79	5.84
Imports (volume)	7.24	7.11	7.25	7.51	28.21	27.6	28.18	29.1	5.56	5.09	5.55	5.6
Industrial exports (volume)	10.85	10.78	10.88	11.22	52.45	51.57	52.28	53.44	6.06	5.59	6	6.1
Industrial imports (volume)	9.14	8.89	9.15	9.28	36.22	35.81	36.3	36.88	8.88	8.26	8.94	8.92
Agricultural exports (volume)	-0.35	-2.33	0.82	8.95	2.21	1.31	4.12	13.36	6.63	5.8	9.86	7.95
Agricultural imports (volume)	-1.6	-1.01	-1.63	-0.45	-2.31	-6.13	-3.66	0.72	3.03	1.77	2.13	3.15
<b>Factors prices</b>												
Skilled real wages	-2.46	-2.77	-2.56	-2.36	-1.99	-2.56	-2.1	-1.87	-1.08	-1.25	-1.11	-1.08
Unskilled real wages	-1.38	-1.51	-1.4	-1.09	-0.16	-0.38	-0.15	0.19	-1.02	-1.03	-1	-1.01
Real return to capital	-0.31	-0.54	-0.38	-0.34	-0.5	-0.76	-0.54	-0.52	-0.05	-0.24	-0.08	-0.06
Real return to land	-1.72	-1.43	-1.57	-0.86	0.11	0.24	0.27	0.87	-0.34	-0.23	-0.25	-0.31
Real return to natural resources	-3.41	-3.79	-3.47	-3.45	-4.22	-5.03	-4.08	-4.84	1.58	1.03	1.51	1.55

Source: Authors compute from MIRAGE and MacMAP

**Table 6.** Variation of sectoral added value at 2020 for North African countries

	Tunisia				Morocco				Rest of North Africa			
	Barcelona	Exports subsidies	Domestic support	Market access	Barcelona	Exports subsidies	Domestic support	Market access	Barcelona	Exports subsidies	Domestic support	Market access
<b>Agricultural sectors</b>												
Paddy rice	-0.7	-0.62	-0.65	2.76	-2.63	-3.37	-2.06	-2.86	13.33	11.68	13.32	13.19
Wheat	-0.09	3.37	1.33	0.5	-0.97	2.25	-0.03	-0.6	1.83	3.07	2.19	1.86
Cereal grains nec	-0.86	3.58	-0.67	-0.36	-0.88	0.6	-0.81	0.23	1.35	2.08	1.39	1.39
Vegetables. Fruit. Nuts	-1.22	-0.81	-1.05	-0.06	-0.61	-0.78	-0.44	3.37	-1.11	-0.92	-1.05	-1.04
Other agricultural products	-1.54	3.82	-0.44	-0.34	19.52	19.77	19.62	19.55	-1.25	0.56	-1.06	-1.21
Plant-based fibers	0.02	-0.4	-1.45	-0.7	-1.19	-1.54	-0.72	-1.31	2	1.63	3.98	1.97
Crops nec	-3.98	-4.44	-2.27	-3.92	0.1	-0.99	2.02	-0.89	-17.68	-18.25	-16.82	-17.64
Animal	-0.97	0.38	-0.33	1.37	-1.67	-1.93	-1.62	-0.87	-2.28	-2.23	-2.23	-2.22
Fishing	-0.34	-0.38	-0.27	0.32	-0.1	-0.39	0.45	-0.2	0.01	-0.04	0.02	0.02
<b>Agro food industries</b>												
Meat	-0.94	0.84	-1.01	2.06	11.76	23.59	15.59	265.9	-8.97	-8.64	-8.96	-8.84
Vegetable oils and fats	-10.94	-12.02	-10.2	0.41	4.61	3.04	4.48	3.88	-31.64	-32.25	-31.54	-31.65
Dairy products	-5.57	18.7	-4.74	-2.76	5.45	31.59	6.46	6.76	-17.74	9.38	-16.58	-17.66
Processed rice	3.51	12.23	3.05	7.11	9.9	9.68	9.5	8.87	7.9	7.88	7.83	8.56
Sugar	-1.03	0.91	-0.98	2.83	-0.33	-0.69	-0.39	1.36	-0.83	-0.44	-0.81	-0.59
Food products nec	8.4	8.85	8.56	13.54	1.45	1.06	1.41	4.69	9.73	9.85	9.74	9.78
Beverages and tobacco	-1.54	-1.63	-1.56	-1.5	15.66	15.31	15.59	15.18	-1.83	-1.86	-1.82	-1.83
<b>Non Agro food industries</b>												
Coal, Oil, Gas, Minerals nec	-0.39	-0.53	-0.4	-0.72	-1.91	-2.47	-2.11	-3.43	2.01	1.72	1.97	1.98
Textiles	6.31	5.81	6.08	5.54	46.78	45.69	46.63	44.58	-4.36	-4.73	-4.38	-4.38
Wearing apparel	20.44	20.22	20.47	19.97	79.4	78.23	79.09	76.88	-0.88	-1.16	-0.91	-0.9
Leather products	11.86	11.26	11.9	11.04	-19.46	-19.99	-19.56	-20.91	-1.44	-1.74	-1.45	-1.45
Paper products. Publishing	-10.44	-9.68	-10.41	-10.58	-19.3	-19.52	-19.36	-19.51	-10.19	-9.86	-10.18	-10.19
Petroleum. Coal products	-2.97	-2.98	-2.99	-3.04	-4.27	-4.44	-4.32	-4.3	-1.72	-1.8	-1.74	-1.72
Chemical. Rubber. Plastic prods	-2.17	-2.22	-2.19	-2.53	-8.06	-8.26	-8.2	-8.56	-6.04	-6.13	-6.11	-6.05
Metals	-5.08	-5.18	-5.17	-5.49	-15.67	-15.94	-15.84	-16.24	-3.07	-3.33	-3.18	-3.1
Motor vehicles and parts	-2.76	-3.01	-2.87	-3.07	-12.98	-13.22	-13.1	-13.38	-5.55	-5.75	-5.63	-5.56
Transport equipment nec	0.26	-0.09	0.2	-0.35	15.26	14.83	15.12	14.29	20.96	20.34	20.87	20.91
Electronic equipment	2.23	1.87	2.14	1.56	17.24	16.55	16.96	15.31	0.3	-0.14	0.19	0.26
Other industrial products	1.74	1.36	1.68	1.09	3.06	2.63	2.9	2.18	-3.21	-3.57	-3.29	-3.24

Source: Authors compute from MIRAGE and MacMAP

exports subsidies elimination. The same conclusion is valid for rest of North African and Tunisian agricultural exports. The welfare loss in this case is also due to the increase of imported agricultural price. The model shows that the increase of agricultural exports do not compensate the loss of this transfer from as the domestic support can also be seen as a transfer from European authorities to North African consumers.

The elimination of European trade barriers seems to be to unique pillar that could improve the situation of North African countries. First this scenario gives the best results in terms of GDP and welfare variation in the three regions. Tunisia could benefit from a 0.16% increase of its GDP compared to losing 0.08% with the Barcelona process. Morocco could be the greatest winner of this policy, as its GDP will increase by 1.95% compared to 1.49% with the Barcelona process. The rest of North Africa will be the only region not to really benefit from the agricultural European market access improvement. This hybrid region contains countries like Algeria and Libya that have no competitive agricultural sectors. The effects in terms of welfare also follow the GDP evolution. The welfare loss registered in the three regions decreases (Tunisia from 1.11 to 0.97%; Morocco from 0.44 to 0.21% and in the rest of North Africa it remains stable at 0.54%). Meanwhile this welfare improvement does not compensate the welfare loss due to the Barcelona process, as the welfare variation remains negative in the three regions.

The agricultural sectors are the greatest winners of this scenario. Agricultural exports increases by 8.9% in Tunisia (it decreased by 0.35% in the Barcelona scenario) and by 13.36% in Morocco (it increased by 2.21% in the Barcelona scenario). The improvement of agricultural exports affects the production evolution in the three regions, especially in Morocco and Tunisia. Table 6 shows that the agricultural and agro food sectors undergo a sensible increase. Agricultural expansion results in an improvement of the rate of returns of the land and unskilled workers. In Morocco for example the land rate of return increased from 0.11% in the Barcelona scenario to 0.87% with market access improvement and unskilled workers wages increased from a loss of 0.16% to an increase of 0.19%.

Finally, this battery of simulations provides us an indication of the way forward to re-equilibrate Barcelona. It is the market access pillar on agricultural products that must be used. Meanwhile, and according to our simulations even the market access pillar does not compensate all the negative effects induced by the Euro-Mediterranean agreements.

## V. Conclusion

The Barcelona Association Agreements are an ongoing process. Based on an original approach of aggregation that aims to obtain a more realistic estimation of the tariffs faced by developing countries and by consequence to obtain a more realistic estimation of the economic impacts of agricultural liberalization between developed and developing countries, the observed effects and the forecasted ones indicate that these agreements will not attain their objectives of improving the economic situations of the North African region. This paper has proposed alternative ways to re-equilibrate these agreements.

Liberalizing the agricultural sector seems to be the easiest way to achieve this objective. We have simulated a reduction of the three pillars of the European agricultural protections and demonstrated that neither the exports subsidies pillar nor the domestic support pillar could contribute to the improvement of the North African propositions.

Economic activity in Tunisia and Egypt has been hit by recent political turmoil. One of the main economic determinants is social instability and high level of unemployment especially in the young generation. The main concern and challenges for the governments of the region is to address high unemployment. According to the last Economic Outlook released by IMF in April 2011, the macroeconomic implication of the recent political turmoil in Egypt and Tunisia are quite important. Indeed, Egypt's GDP growth will fall significantly below the 5% registered in the second half of 2010. This assumes a modest dampening effect on economic activity from the political turmoil: disruptions to tourism, capital flows, and financial markets are expected to be temporary. Tourism is a key component of Egypt's growth and the crisis in the tourism sector will negatively impact the economic growth.

Despite the fact that Tunisia has managed the consequences of the recent global crisis relatively well according to the African Development Bank, real GDP growth fell significantly to 3.1% in 2009 (from 6.3% in 2007 and 4.6% in 2008), this was partly offset by a good cereal harvest and strong activity in the mining-industry and energy sectors. The impact of the Jasmin revolution is very important and the situation quite similar to Egypt. To illustrate, according to the last forecast released by IMF, growth is projected to slow to 1% in 2011, as the expected decline in tourism and foreign direct investment harms other sectors of the economy.

Although, the World Bank's *Doing Business 2010* report ranked Tunisia among

the 10 best-ranked countries in the Arab World thanks to its significant reforms in the tax system, the current Jasmin revolution has shown the limit of the Tunisian Models. To address the economic and social challenges raised by this revolution, Tunisia needs to change its existing production structure, currently dominated by sectors that have a low rate of management staff and are unskilled-labour-intensive, to the benefit of new sectors that are structurally skilled-labour-intensive, and most of all have a high added value and could lift the national growth rate to a higher level. Tunisia and Egypt as well need to diversify its production on high valued added product. Even if Tunisia has managed to achieve horizontal diversification into higher-value exports, which means, the country has been able to see the emergence of completely new sectors both in production and exports, this trend need to be supported and developed. For the macroeconomic policies and the new economic policies to achieve optimal macroeconomic results in order to reduce income inequalities, it will be important for countries to strengthen their institutions as well.

One of the main challenges of the region is regional integration. The cost of non-Maghreb is still very high for all the countries of the region including Morocco and Algeria. The slow progress in opening the Maghreb economies to regional trade and investment is a key obstacle to achieving higher growth rates and reducing high unemployment. The markets of the Maghreb countries are relatively small and fragmented, and their best chance for development lies in openness and integration. In practice, restrictive trade regimes and cumbersome investment regulations have discouraged domestic private investment and attracted only limited amounts of foreign direct investment outside the oil sector. Throughout the region, economic growth has remained below its potential, while unemployment is still much too high, and poverty remains pervasive.

According to our simulations, the only way of re-equilibrating Barcelona is the market access pillar. Indeed if European countries decrease tariff protection on North African products, North African countries could benefit from this preferential access opportunity to limit, the negative effects induced by the Barcelona Agreements. The Jasmin revolution has put to the international agenda of the regional's leaders the importance and strategic policy necessity to accelerate the regional integration process. The new Barcelona process and the neighborhood policy of the European Union should support this orientation. The revolutions in the countries have shown that democracies and development are two parts of a same body and influence each other.

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## Appendix

### A. The implementation of the Euro-med Agreements in MacMAP

#### 1. The implementation of the EU Tunisia agreement

The UE- Tunisia agreement had entered into force in mars 1998. It has defined six lists of products, at the HS6 digit level, with a particular of dismantlement calendar for each one of these lists.

The tariffs contained in the two version of MacMAP have taken into account the dismantlement realized between 1998 and 2001 for the 2001 version and between 1998 and 2005 for the 2005 version. For this reason we

For the HS6 lines contained in Annex 3 of the agreement:

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	$0.4/0.55 * \text{TarifMM01}$	
2002	$0.25/0.55 * \text{TarifMM01}$	
2003	0	
2004	0	
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0

For the HS6 lines contained in Annex 4 of the agreement:

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	0.6/0.68*TarifMM01	
2003	0.52/0.68*TarifMM01	
2004	0.44/0.68*TarifMM01	
2005		TarifMM05
2006		0.28/0.36*TarifMM05
2007		0.20/0.36*TarifMM05
2008		0.12/0.36*TarifMM05
2009		0.04/0.36*TarifMM05
2010		0

For the HS6 lines contained in Annex 5 of the agreement:

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	0.88*TarifMM01	
2003	0.77*TarifMM01	
2004	0.66*TarifMM01	
2005		TarifMM05
2006		0.44/0.55*TarifMM05
2007		0.33/0.36*TarifMM05
2008		0.22/0.36*TarifMM05
2009		0.11/0.36*TarifMM05
2010		0

For the HS6 lines contained in Annex 6 of the agreement: No dismantlement

### **i) Implementation of the UE – Morocco agreement**

The EU-Morocco agreement had entered into force in mars 2000. It has defined six lists of products, at the HS6 digit level, with a particular of dismantlement calendar for each one of these lists.

For the products contained in the Aannex 1 and 2 we suppose that there is no dismantlement.

For the HS6 lines contained in Annex 3 of the agreement:

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	$0.5/0.75 * \text{TarifMM01}$	
2003	$0.25/0.75 * \text{TarifMM01}$	
2004	0	
2005		0
2006		0
2007		0
2008		0
2009		0
2010		0
2011		0
2012		0

For the HS6 lines contained in Annex 4 of the agreement:

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	TarifMM01	
2003	$0.9 * \text{TarifMM01}$	
2004	$0.8 * \text{TarifMM01}$	
2005		TarifMM05
2006		$0.6/0.7 * \text{TarifMM05}$
2007		$0.5/0.7 * \text{TarifMM05}$
2008		$0.4/0.7 * \text{TarifMM05}$
2009		$0.3/0.7 * \text{TarifMM05}$
2010		$0.2/0.7 * \text{TarifMM05}$
2011		$0.1/0.7 * \text{TarifMM05}$
2012		0

For the products contained in the Annex 4 and 5 we suppose that there is no dismantlement.

## ii) Implementation of the UE – Egypt agreement

The EU-Morocco agreement had entered into force in July 2004. It has defined five lists of products, at the HS6 digit level, with a particular of dismantlement calendar for each one of these lists.

For the HS6 lines contained in Annex 1: No dismantlement

For the HS6 lines contained in Annex 2

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	TarifMM01	
2003	TarifMM01	
2004	0.85*TarifMM01	
2005		TarifMM05
2006		0.25/0.5*TarifMM05
2007		0
2008		0
2009		0
2010		0
2011		0

For the HS6 lines contained in Annex 3

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	TarifMM01	
2003	TarifMM01	
2004	TarifMM01	
2005		TarifMM05
2006		TarifMM05
2007		0.9*TarifMM05
2008		0.75*TarifMM05
2009		0.60*TarifMM05
2010		0.45*TarifMM05
2011		0.30*TarifMM05
2012		0.15*TarifMM05
2013		0
2014		0
2015		0

For the HS6 lines contained in Annex 4

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	TarifMM01	
2003	TarifMM01	
2004	TarifMM01	
2005		TarifMM05
2006		TarifMM05
2007		TarifMM05
2008		TarifMM05
2009		0.95*TarifMM05
2010		0.90*TarifMM05
2011		0.75*TarifMM05
2012		0.60*TarifMM05
2013		0.45*TarifMM05
2014		0.30*TarifMM05
2015		0.15*TarifMM05
2016		0

For the HS6 lines contained in Annex 5

Year	From the 2001 MacMAP version	From the 2005 MacMAP version
2001	TarifMM01	
2002	TarifMM01	
2003	TarifMM01	
2004	TarifMM01	
2005		TarifMM05
2006		TarifMM05
2007		TarifMM05
2008		TarifMM05
2009		TarifMM05
2010		0.90*TarifMM05
2011		0.80*TarifMM05
2012		0.70*TarifMM05
2013		0.60*TarifMM05
2014		0.50*TarifMM05
2015		0.40*TarifMM05
2016		0.30*TarifMM05
2017		0.20*TarifMM05
2018		0.10*TarifMM05
2019		0

**Annex 3.** The evolution of Tunisian tariff applied on European exports

<b>Sectors</b>	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Agricultural sectors</b>																
Paddy rice																
Wheat	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Cereal grains nec	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Vegetables. Fruit. Nuts	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6	113.6
Other agricultural products	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7
Plant-based fibers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crops nec	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3
Animal	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3
Fishing	39.9	39.7	39.9	39.6	39.3	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
<b>Agro food industries</b>																
Meat	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7	48.7
Vegetable oils and fats	8.8	8.7	8.8	8.6	8.4	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Dairy products	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Processed rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Food products nec	45.2	45.1	45.2	44.9	44.6	44.3	44.3	44.3	44.3	44.3	44.3	44.3	44.3	44.3	44.3	44.3
Beverages and tobacco	22.9	22.9	22.9	22.8	22.8	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
<b>Non Agro food industries</b>																
Coal, Oil, Gas, Minerals nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles	6.7	4.8	5.2	3.6	1.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Wearing apparel	12.7	9.9	11.3	7.5	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leather products	11.5	9.0	10.1	6.8	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper products. Publishing	8.6	5.8	6.1	4.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum. Coal products	2.0	1.2	1.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical. Rubber. Plastic prods	5.1	3.1	3.1	2.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Metals	4.0	2.5	2.5	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles and parts	3.6	2.2	2.2	1.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport equipment nec	7.3	4.6	4.7	3.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electronic equipment	0.9	0.6	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other industrial products	4.7	3.2	3.4	2.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Authors compute from MacMAP

**Annex 4.** The evolution of Moroccan tariff applied on European exports

Sectors	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Agricultural sectors</b>																
Paddy rice																
Wheat	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2	63.2
Cereal grains nec	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Vegetables. Fruit. Nuts	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2
Other agricultural products	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Plant-based fibers	1.0	0.9	0.7	0.6	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crops nec	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Animal	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
Fishing	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
<b>Agro food industries</b>																
Meat	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8	101.8
Vegetable oils and fats	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Dairy products	82.3	82.2	82.1	82.1	82.0	81.9	81.9	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8	81.8
Processed rice	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0
Sugar	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Food products nec	35.6	34.6	33.6	32.5	31.5	30.5	29.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5
Beverages and tobacco	23.5	20.2	16.8	13.4	10.1	6.7	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Non Agro food industries</b>																
Coal, Oil, Gas, Minerals nec	8.8	7.6	6.3	5.1	3.8	2.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles	44.7	38.3	31.9	25.5	19.1	12.8	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wearing apparel	46.8	40.1	33.4	26.7	20.0	13.4	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leather products	46.3	39.7	33.1	26.5	19.9	13.2	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paper products. Publishing	25.1	21.5	17.9	14.3	10.7	7.2	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum. Coal products	9.5	8.1	6.8	5.4	4.1	2.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical. Rubber. Plastic prods	18.6	16.0	13.5	10.9	8.4	5.9	3.3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Metals	21.2	18.2	15.1	12.1	9.1	6.1	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles and parts	23.7	20.9	18.1	15.3	12.5	9.7	7.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Transport equipment nec	2.5	2.2	2.0	1.8	1.5	1.3	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Electronic equipment	1.1	1.0	0.8	0.6	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other industrial products	8.6	7.4	6.3	5.1	3.9	2.7	1.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Source: Authors compute from MacMAP

**Annex 5.** The evolution of Rest of North African tariff applied on European exports

Sectors	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Agricultural sectors</b>																
Paddy rice	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Wheat	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Cereal grains nec	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Vegetables. Fruit. Nuts	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Other agricultural products	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Plant-based fibers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crops nec	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Animal	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Fishing	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3
<b>Agro food industries</b>																
Meat	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Vegetable oils and fats	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Dairy products	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
Processed rice	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Sugar	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Food products nec	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5
Beverages and tobacco	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
<b>Non Agro food industries</b>																
Coal, Oil, Gas, Minerals nec	2.3	1.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles	38.3	38.3	38.1	37.8	35.7	33.6	27.9	22.1	16.4	10.9	5.5	0.0	0.0	0.0	0.0	0.0
Wearing apparel	38.4	38.4	38.0	37.5	35.2	33.0	27.2	21.4	15.7	10.5	5.2	0.0	0.0	0.0	0.0	0.0
Leather products	31.4	31.4	28.5	24.2	19.7	15.3	10.5	5.8	1.1	0.7	0.4	0.0	0.0	0.0	0.0	0.0
Paper products. Publishing	11.0	10.4	9.5	8.9	8.1	7.3	5.8	4.3	2.8	1.9	0.9	0.0	0.0	0.0	0.0	0.0
Petroleum. Coal products	4.9	3.6	2.1	1.8	1.5	1.2	0.8	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Chemical. Rubber. Plastic prods	7.5	7.4	6.6	5.8	4.9	3.9	3.0	2.0	1.0	0.8	0.7	0.6	0.6	0.6	0.6	0.6
Metals	14.7	14.4	13.3	12.2	10.8	9.3	7.2	5.1	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles and parts	33.2	33.1	32.5	31.7	31.0	27.5	23.9	20.4	16.8	14.0	11.2	8.4	5.6	2.8	0.0	0.0
Transport equipment nec	5.4	4.8	3.8	3.2	2.5	1.9	1.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electronic equipment	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other industrial products	5.3	4.4	3.5	3.2	2.9	2.6	2.0	1.5	0.9	0.6	0.3	0.0	0.0	0.0	0.0	0.0

Source: Authors compute from MacMAP