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An Economy-wide Perspective on Euro-Mediterranean Trade Agreements, with a focus on Morocco and Tunisia

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Abstract

The stated aims of the Euro-Mediterranean Partnership in the Barcelona declaration are to encourage economic growth and stability along the southern borders of the EU, but its actual contents reflect the narrow economic interests of certain EU member states. Further, these narrow economic interests are incongruous with the interests of the EU as a whole with regard to promoting stability along its southern perimeter. Towards that objective, for the Mediterranean partner countries maintaining and possibly increasing employment is of paramount importance.

This paper analyses the current Euro-Med agreements (which are limited to trade in manufactured goods) with Morocco and Tunisia as well as scenarios involving the full liberalisation of all trade. Morocco and Tunisia show strong potential for increased earnings and employment. These benefits, however, hinge on whether or not lost tariff revenues need to be replaced through domestic taxes. If that is the case, employment and incomes will decline in these countries. Yet the impact on northern and Mediterranean EU member states would be insignificant even if agricultural trade were liberalised. This situation offers scope to realign the current Euro-Med agreements with Morocco and Tunisia to promote domestic reforms. Such realignment would enable the full potential contribution of these agreements to be reaped as envisaged by the objectives of the Barcelona process.

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1. The issues at stake

After the Barcelona conference with heads of state in 1995, the EU and its Mediterranean partner countries (MPCs) engaged in an ambitious venture of increased economic, political and social cooperation, consisting of Euro-Mediterranean agreements and financial assistance. Ambitions in terms of economic collaboration were especially high, aiming at a free trade area (FTA) by 2010. This FTA should create an area of shared prosperity, fostering peace and stability at the turbulent southern periphery of the EU. So far, Euro-Med agreements have been concluded with Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the Palestinian Authority, Syria and Tunisia. Libya was invited by the European Commission to actively participate in the Barcelona process in March 2004. Reciprocity is an important feature of the Euro-Med agreements. This characteristic contrasts with earlier agreements from the 1970s, which involved the unilateral elimination of European barriers to Mediterranean industrial goods.

The economic interests of the EU and the MPCs in the agreements diverge widely. The MPCs are of little economic interest to the EU. Imports from the MPCs account for only 2% of EU imports, while exports to the MPCs account for only 3% of total EU exports. The major share of EU imports from the MPCs consists of oil, followed at a distance by Mediterranean agricultural products. Given the limited size of the agrarian trade flows, the European Commission does not consider the MPCs a threat to European farmers (Garcia-Alvarez-Coque, 2002).

The very limited economic interests of the EU differ greatly from the clear economic interests of the MPCs: 50% of their imports and exports are with the EU, which is their largest trade partner. The MPCs have a comparative advantage in typical Mediterranean products such as fresh fruit and vegetables, citrus products, tomatoes and olive oil. Improved access to European agricultural markets could provide a positive stimulus to their economies. Such a positive stimulus is badly needed. Economic growth in the MPCs is lagging behind the growth rates attained in the rest of the world, while the MPCs combine a young population with unemployment rates of between 15 and 30%.

Given the limited economic interests of the EU in the MPCs, the Euro-Med agreements de facto mainly serve the EU's political interests in stability along its southern borders. This political interest can also be derived from explicit references to the Barcelona process in the European Security Strategy launched by the High Representative for Common Foreign and Security Policy, Javier Solana (European Council, 2003). A second indication of the EU's political interests in the Mediterranean is found in a speech by EU Commissioner Margot Wallström on the link between the European Neighborhood Policy and the Euro-Mediterranean Partnership

(Wallström, 2005).[1] Looking at the Euro-Med agreements from the political aims of stability and prosperity at the EU's southern borders, there appears to be a contradiction between the political goals of the EU as a whole and its sectoral or regional economic interests.

The EU unilaterally removed its protection on manufactured goods in the 1970s, while it still maintains high levels of protection in agriculture. The Euro-Med agreements are thus plainly geared towards opening up of the markets in the MPCs for industrial imports from the EU. Since the MPCs' industrial producers are generally not considered internationally competitive, implementation of the agreements is expected to decimate industry in the MPCs. The resulting reduction in already limited employment will not contribute to stability in the region.

Next to an expected loss of employment in the industrial sector, implementation of the agreements will decrease tariff revenues. Government expenditures in the MPCs are high owing to a bloated public sector: the share of non-military public employment in total employment is twice the world average (Bulmer, 2000). In addition, producers of grain, meat and milk are subsidised to reduce dependence on imports, while the impact on consumers is limited through subsidies on staple foods. Reduction of government revenues through trade liberalisation would thus have a direct impact on employment and consumer prices, with all its consequences in terms of social unrest.

The current agreements thus conflict with the EU's political goals of attaining stability at its southern borders by having detailed schemes for abolishing protection on manufactured goods but not for agricultural products. From the perspective of stability and given the comparative advantage of the MPCs in Mediterranean agriculture, the trade agreements should aim at relaxing the complex EU trade barriers for Mediterranean food products. Existing EU concessions in this area are marginal, since MPC producers compete directly with producers from Mediterranean EU member states. Although concessions would have an insignificant impact on the EU as a whole, a relaxation of restrictions on Mediterranean agricultural products would be noticeable in Mediterranean EU member states. The current trade agreements reflect these regional interests.

European trade barriers, however, are only one of the factors limiting economic growth in the MPCs. Next to a bloated public sector and market interventions, governments also play a direct role in MPC economies through inefficient state enterprises, which account for 30% of GDP in

[1] The speech entitled "The European Neighbourhood Policy and the Euro-Mediterranean Partnership" was delivered on 14 March in Cairo at the Euro-Mediterranean Parliamentary Assembly (available from http://europa.eu.int/).

Egypt and Tunisia for example. The region also belongs to the most protected in the world, and the competitiveness of the private sector is limited by this high level of trade protection. Furthermore, there is an inflow of foreign exchange in the MPCs through oil revenues and remittances. This inflow stimulates domestic demand for services and causes an appreciation of the exchange rate by increasing demand for imports, thus hampering exports. As a result, MPC economies are oriented towards non-trade sectors.

Trade protection distorts the structure of the economy while creating incentives to maintain levels of protection that hamper reform. An example is the industrial sector in the MPCs. Access to European markets has not led to a competitive sector, because persistent MPC trade barriers have failed to provide an incentive to restructure industries. A comparable scenario would be possible with the unconditional and unilateral reduction of European trade barriers for agricultural products. The complexity of the current protection implies that producers have invested in information and contacts to be able to export to the EU, and thus have an interest in maintaining the existing protection structure. If the MPCs retain their barriers to imports from the EU, there are no incentives for a restructuring of agricultural production.

In view of the limited economic interest of the MPCs for the EU as a whole, there is scope to support domestic reform in the MPCs through realigning trade agreements to coincide with progressive domestic policies. The aim of this study is to 1) analyse the impact of the Euro-Med agreements on northern and Mediterranean EU member states, and 2) assess the interactions between the Euro-Med agreements and domestic policies in MPCs.

The study is structured as follows. Section 2 discusses the model and data used in the study. We use a computable general equilibrium model that allows us to analyse changes in trade flows and the resulting economy-wide effects in Morocco and Tunisia (as case studies of the MPCs) and in northern and Mediterranean EU member states. Section 3 describes the scenarios analysed in this study, as well as initial tariff profiles and trade flows. To gauge the impact of assumptions on model outcomes we focus on extreme assumptions, providing the upper and lower bounds of possible outcomes. In terms of the scope of liberalisation we analyse the current Euro-Med agreements (limited to an opening of MPC economies to EU manufacturers) and a full liberalisation of all trade (including agriculture). In terms of domestic policies we analyse a case in which tariff revenues are not replaced (government expenditures are thus assumed to adjust) and a case involving the full replacement of tariff revenues by a consumption tax. Together this yields four scenarios, varying in terms of the scope of liberalisation and tariff replacement. Section 4 analyses the impact of the current Euro-Med agreements, with and without tariff replacement. Section 5 assesses whether inclusion of agriculture in the agreements would lead to different results. Section 6 concludes.

2. Model and data

The objective of this study is to analyse the economy-wide effects of the Euro-Med agreements, taking the diverging interests of EU member states into account. This undertaking poses a set of requirements on the applied methodology. Kuiper (2004) provides a review of existing general equilibrium analyses of the Euro-Med agreements in the light of these requirements. Here we focus on the main implications of this review for the modelling exercise in this study.

In order to address the diverse economic interests of EU member states a multi-regional model is required. Similarly, in order to address the prospects of South–South integration to balance the hub-and-spoke nature of the bilateral agreements between the EU and the MPCs, a multi-regional model is needed. Most existing studies, however, employ relatively standard single country models of MPCs. Version 6 of the GTAP (Global Trade Analysis Project) database includes Morocco and Tunisia as separate countries and allows the differentiation of southern and northern EU member states. Of the other MPCs, Algeria, Egypt and Libya are grouped as the rest of North Africa. The remaining MPCs (Israel, Jordan, Lebanon, the Palestinian Authority and Syria) are part of a larger aggregate region for the Middle East, which also includes countries that are not part of the Barcelona process. Use of the GTAP database thus allows construction of a multi-regional model with a focus on Morocco and Tunisia and an aggregate representation of the effects on North African MPCs.

Use of the GTAP database enables us to work with a multi-regional model, but it does not permit a detailed analysis of the myriad of restrictions on agricultural trade, such as those on seasonal imports of specific crops. While being limited in terms of sectoral detail, an economy-wide analysis with GTAP data does allow an analysis of trade-offs between agricultural and non-agricultural sectors and the employment effects of the agreements. The current Euro-Med agreements are most detailed in terms of lowering trade barriers for manufactured goods by the MPCs. We therefore feel that a more aggregated but economy-wide view of the Euro-Med agreements in the context of a multi-regional model is warranted.

2.1 Main model features

To gauge the economy-wide effects of the Euro-Med agreements we employ a computable general equilibrium (CGE) model. More specifically, we adopt the GTAP model, a comparative static, multi-sector and multi-region general equilibrium model. The GTAP model, being a CGE model, provides a complete representation of each national economy. In terms of production it covers the agricultural, manufacturing and services sectors, facilitating an analysis of the resource reallocation following policy changes. In terms of consumption it covers the use of factor income, tariff revenues and taxes for private and government expenditures. The key strength of the GTAP model is the detailed modelling of international trade, including all bilateral trade flows among regions. By distinguishing bilateral trade flows we can analyse the impact of preferential trade agreements, of which the Euro-Med agreements are an example. For a detailed discussion of the algebraic structure of GTAP see chapter 2 in Hertel (1998).

Whereas GTAP has much to offer in terms of coverage of production and trade, consumption is modelled in less detail. Consumption decisions are modelled using a single household to represent all consumption decisions in a region. As a consequence the results do not provide much in terms of the distribution of income across households, nor can an analysis of changes in poverty be made. In terms of changes in the distribution of income we can analyse the returns to land, labour (skilled and unskilled) and capital, which provides a limited indication of changes in income across different household groups.

To capture the importance of unemployment in the MPCs we use an unemployment closure to replace the standard assumption of perfect labour markets. The standard assumption implies that all labour is fully employed by adjusting the wage rate until demand and supply are balanced. By contrast the unemployment closure specifies that real wages are fixed at base levels, and the supply of labour follows demand. This is a rather stylised representation of unemployment, which does not take actual levels of unemployment into account. It does, however, provide a view of the direction of change in employment following policy changes, allowing us to assess whether employment will increase or decrease in different sectors of the economy. The model distinguishes two types of labour – skilled and unskilled. We only introduce unemployment in the model for unskilled labour. Although some unemployment occurs for skilled labour as well, it is generally not so high as to introduce large distortions in the model results (Polaski, 2006).

Tariff revenues are an important source of MPC government budgets. Elimination of tariffs implies a reduction in revenues, which either requires an adjustment in government expenditures or a tax increase to replace the lost tariff revenues. We analyse the impact of different choices regarding the loss of tariff revenues by varying assumptions on tariff replacement across scenarios. More specifically, we analyse the impact of a tax replacement scenario whereby the consumption taxes are endogenously adjusted such that total taxes are kept at a constant share of national income. This implies that when tariffs are reduced, thus reducing government tax income, consumption taxes increase to maintain the overall tax rate to the level in the base run.

2.2 Data, aggregation and baseline construction

Our model employs Version 6 (public release) of the GTAP database, representing the economy of 87 regions in 2001 (Dimaranan & McDougall, 2005). Our aggregation of regions for this study is driven by the diverging interests between northern and Mediterranean EU member states, which are two separate regions in the model. We furthermore distinguish EU accession countries in order to account for the recent accession of the new EU member states as well as the upcoming accessions of Bulgaria and Romania. MPCs are represented by Morocco, Tunisia and the rest of North Africa aggregate. We distinguish the rest of the Middle East, which includes some of the MPCs as well as other countries in the Middle East to allow future analyses of the impact of the Euro-Med agreements on South–South trade. Finally, to allow future analyses of the impact of trade agreements concluded between the MPCs and the US, we keep the US separate from the rest of the world.

The sector aggregation is based on an analysis of the scope of the current Euro-Med agreements and the expected employment effects. We linked data from Euro-Med agreements at the HS6 level to factor shares from GTAP to determine an appropriate grouping of sectors. Vegetables and fruit are kept as a separate sector because of the comparative advantage of the MPCs in agricultural products; spices and other crops are kept separate because of different patterns in the proposed elimination of protection. Tariff reductions in manufacturing show little variance across sectors, apart from different kinds of equipment, which are thus kept as a distinct sector. The remaining sectors are grouped according to the labour share in production to be able to capture differences in employment across sectors. After aggregating regions and sectors we arrive at a model with 9 regions and 17 sectors (see annex 1 for the aggregation schemes).

The GTAP data represent the state of the world economy in 2001. There are a number of ongoing policy changes (such as the phasing out of the Agreement on Textiles and Clothing) that affect the impact of the Euro-Med agreements. To account for these changes we construct a baseline, updating the 2001 data for the following policy changes in the 2001-07 period:

- *GATT/World Trade Organisation (WTO) agreements* – the implementation of the remaining Uruguay Round commitments is included (with an end date of 2005 for developing countries) along with the Agreement on Textiles and Clothing (phasing out restrictions on textile trade from 2005 onwards).

- *China's WTO accession* – the accession of China to the WTO is incorporated by equalling all import tariffs according to the most-favoured nation clause.
- *Enlargement of the EU in 2004* – the expansion of the EU is simulated as full trade liberalisation between the EU-15 and EU-25 and adoption of EU border tariffs in the Central and Eastern European countries.
- *Mid-Term Review (MTR) of the common agricultural policy (CAP)* – the GTAP data do not include the reform of the CAP under the Luxembourg Agreement of 2003. The crucial point of the MTR is the decoupling of payments from output levels. This aspect is approximated in our model by equalising subsidy payments to land and capital across crops. There is thus no gain in terms of subsidy to switch from one crop to another.

The model results after implementing the above sets of reforms are used as the reference point for the simulations in this study. This allows us to assess the impact of the Euro-Med agreements in the context of ongoing policy reforms. This study distinguishes rather aggregate sectors, ignoring for example the intricate protection structure on agricultural products. The results should thus be interpreted as an indication of the scale and direction of the anticipated effects of the Euro-Med agreements, aimed at providing input for deciding between different proposals for liberalising trade.

3. Tariff changes implied by the Euro-Med and model scenarios

The tariff reductions agreed upon in the current Euro-Med agreements focus on manufactured goods. There are a limited number of concessions for agricultural products, consisting of enlargements of quotas and reductions of some tariffs. Most of these imply changes to the complex protection on agricultural products, which we cannot adequately capture with the aggregated representation of these crops in the GTAP database. Our analysis of the current Euro-Med agreements thus centres on changes in the protection of manufactured goods, ignoring the (limited) changes in protection of agricultural goods.

The Euro-Med agreements contain detailed schemes for lowering import tariffs on manufactured goods by Morocco and Tunisia over a period of up to 12 years. Schemes for the elimination of trade barriers vary from immediate elimination of tariffs, stepwise elimination over a short period (3 to 5 years), stepwise elimination over a long period (up to 12 years or during part of a 12-year period), elimination of tariffs after 12 years and products that are exempted from tariff reductions. Specifications for reductions to be applied by the EU are much simpler: immediate elimination of all protection on manufactured goods except for protection on the agricultural component of imported goods. This reflects the previous lowering of trade barriers on manufactured imports from MPCs, signalling that a very limited number of barriers for MPC manufactured goods remain.

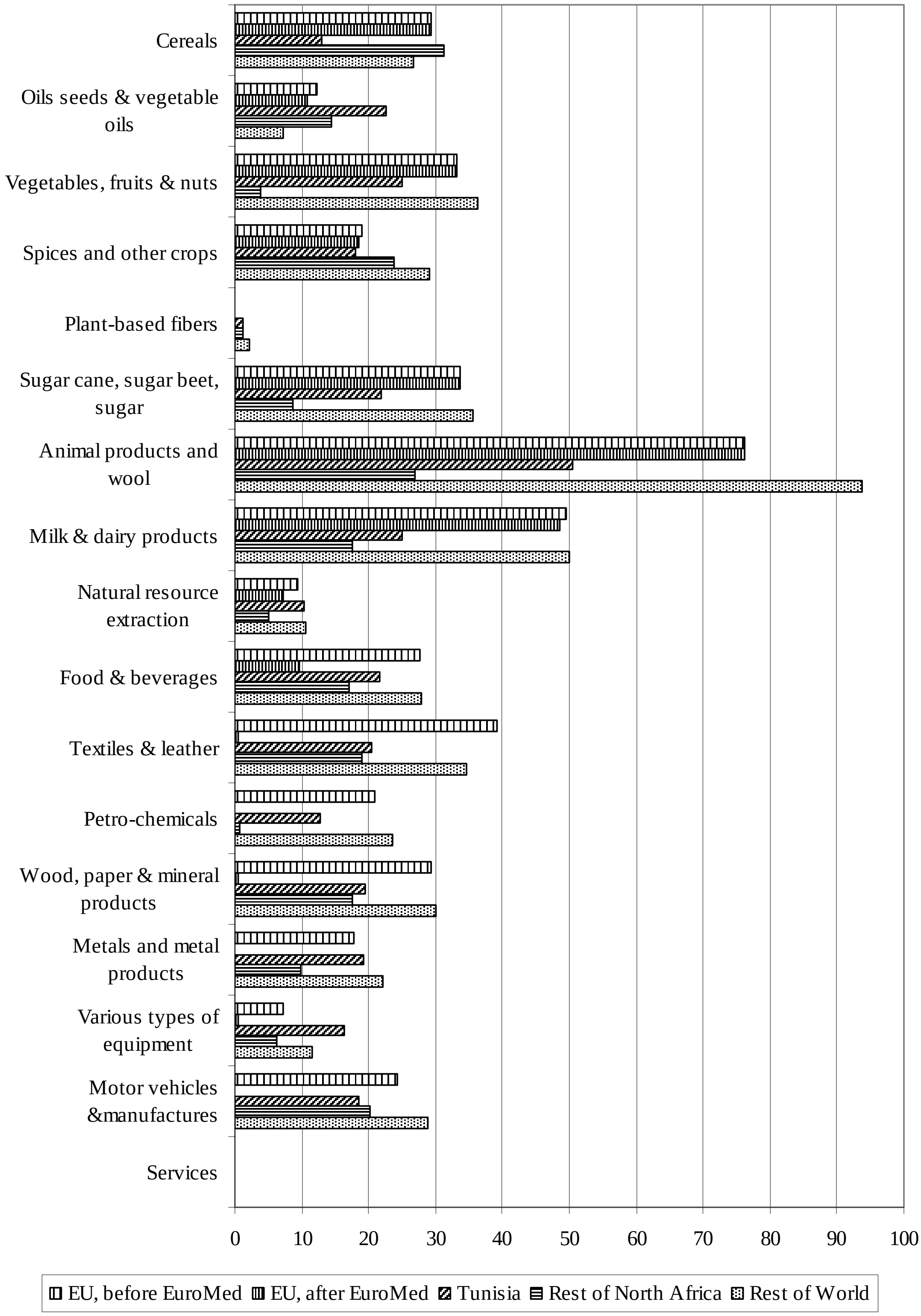
The impact of the Euro-Med agreements depends on the change in prices of EU imports compared with imports from the other regions not benefiting from the tariff reduction. Figures 1a and 1b therefore present the tariffs levied by Morocco and Tunisia by source of imports. For the EU we include the tariffs before the Euro-Med agreements as well as after.

Morocco and Tunisia both have significant protection levels across the board. Comparing their patterns of protection, we find stronger protection for agricultural sectors in Tunisia, while Morocco levies higher tariffs on non-agricultural sectors. Given that the Euro-Med agreements mostly affect the non-agricultural sectors we would thus expect a stronger impact on Morocco of the current agreements. Including agriculture in the full liberalisation scenarios, on the other hand, would affect Tunisia more strongly.

Analysing the reduction in tariff barriers on EU imports in relation to tariffs levied on imports from other sources, we find of course only minor changes in the agricultural sectors. In the non-agricultural sectors, however, there is a change in the relative barriers of the EU compared with imports originating in Tunisia or the rest of North Africa. Whereas the EU is shown to have faced higher barriers before the Euro-Med agreements, after the agreements it faces no tariffs (except for a small remaining import tariff on European equipment in Morocco and on European motor vehicles in Tunisia). The relative competitiveness of EU imports compared with imports from other North African countries improves, reflecting the hub-and-spoke structure of the agreements. This may redirect trade flows towards the EU, weakening economic integration within North Africa. These findings for manufacturing sectors are not unexpected, given the structure of the agreements. More notable is that with regard to food processing, after the Euro-Med agreements the EU also benefits from lower tariffs than those levied on other North African countries, with its tariffs reduced by more than 50% in both Morocco and Tunisia.

Figures 1a and 1b are based on our computation of the change in tariffs as foreseen by the Euro-Med agreements. Apart from a clause on maintaining the protection on the agricultural components of manufactured goods, the agreements provide for an immediate elimination of EU barriers on imports from Morocco and Tunisia. Since we lack information on the agricultural component of manufactured goods we implement this as a straightforward elimination of the remaining (low) barriers on EU imports of manufactured goods from Morocco and Tunisia. Ignoring the agricultural component implies that we overstate the effect of EU liberalisation. Given the low initial tariffs we do not expect this to significantly affect the results.

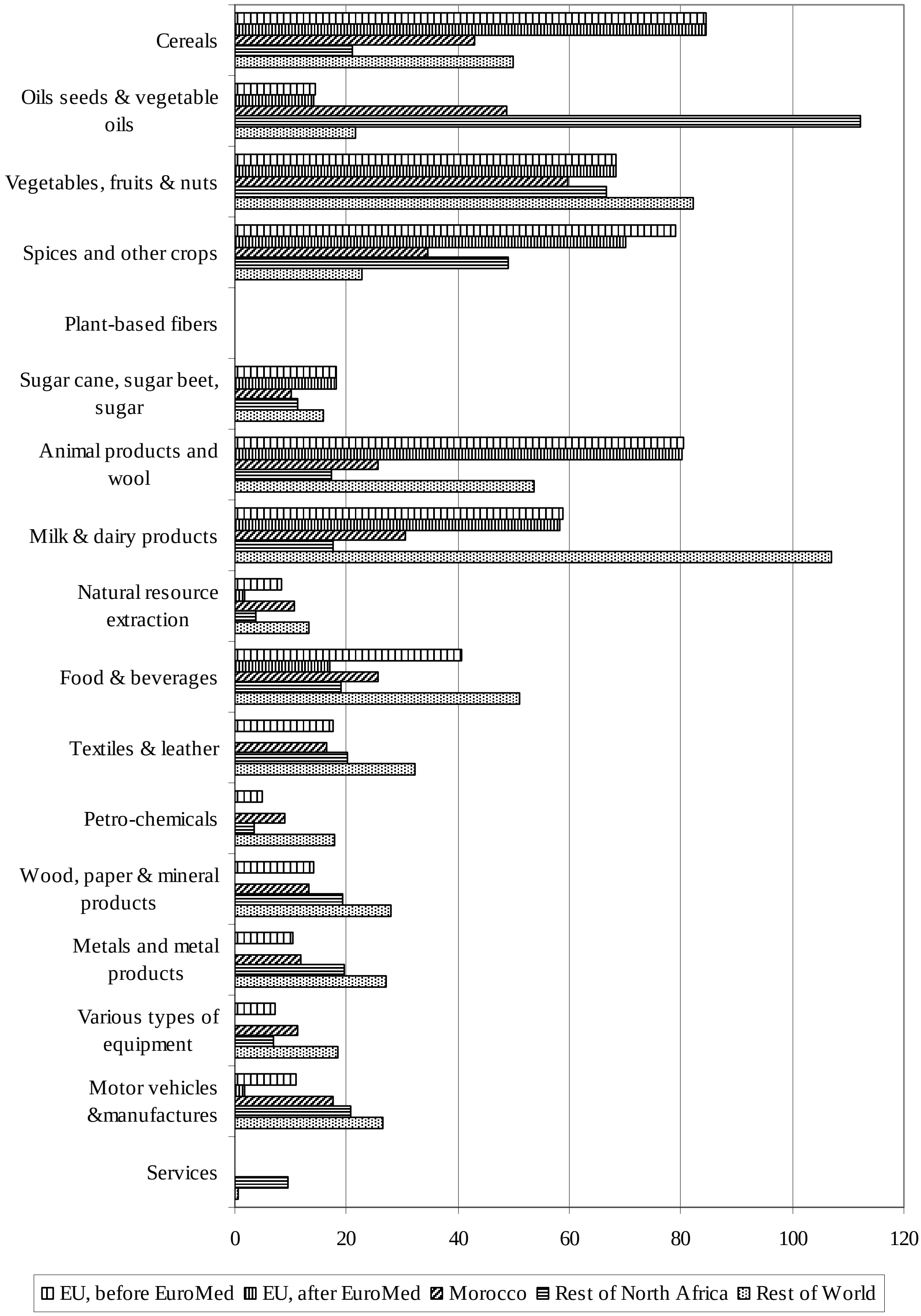
Figure 1a. Import tariffs by source of imports levied by Morocco (%)



Note: Tariffs are weighted by import flows in the baseline.

Sources: GTAP data and author's calculations.

Figure 1b. Import tariffs by source of imports levied by Tunisia (%)



Note: Tariffs are weighted by import flows in the baseline.

Sources: GTAP data and author's calculations.

Computing the tariff reductions by Morocco and Tunisia is more complicated since for these detailed schemes different time-paths are foreseen. In the current analysis we ignore differences in the speed of liberalisation. We thus develop a scenario that removes all trade barriers on imports from the EU for all industrial tariff lines (at the 6-digit level) mentioned in annexes 3 through 6 of the Euro-Med agreements (see annex 2 of this study for the procedure followed in computing the percentage changes in tariffs). Table 1 presents the tariff reductions as computed from the Euro-Med agreements.

Table 1. Euro-Med agreement scenarios by sector and region (% reduction in tariffs)

Sector	Tariffs on imports originating in the EU		EU tariffs on imports originating in the MPCs	
	Morocco	Tunisia	Morocco	Tunisia
	(1)	(2)	(3)	(4)
1. Cereals	0.0	0.0	0.0	0.0
2. Oil seeds & vegetable oils	-11.6	-2.4	0.0	-0.2
3. Vegetables, fruit & nuts	0.0	0.0	0.0	0.0
4. Spices and other crops	-3.0	-11.5	-0.4	-17.7
5. Plant-based fibres	0.0	0.0	0.0	0.0
6. Sugar cane, sugar beet, sugar	0.0	0.0	0.0	0.0
7. Animal products and wool	-0.2	-0.4	0.0	0.0
8. Milk & dairy products	-1.9	-0.9	-0.1	0.0
9. Natural resource extraction	-22.6	-81.8	0.0	0.0
10. Food & beverages	-65.5	-58.8	-60.6	-77.2
11. Textiles & leather	-100.0	-99.7	0.0	0.0
12. Petro-chemicals	-100.0	-99.9	0.0	0.0
13. Wood, paper & mineral products	-100.0	-100.0	0.0	0.0
14. Metals and metal products	-100.0	-100.0	0.0	0.0
15. Various types of equipment	-95.1	-100.0	0.0	0.0
16. Motor vehicles & manufactures	-100.0	-84.4	0.0	0.0

Sources: Annexes 3 through 6 of the Euro-Med agreements, MacMap and author's computations.

The Euro-Med agreements foresee an elimination of virtually all tariffs on manufactured imports originating in the EU. This move is reflected at the level of GTAP sectors in Table 1 by the (almost) complete elimination of tariffs on manufacturing sectors. The Euro-Med agreements are very generic in character, subjecting more or less the same tariff lines to reductions in Morocco and Tunisia. Despite this generic character, Table 1 indicates rather different tariff reductions for several sectors (columns 1 and 2). The largest differences are found in the non-manufacturing sectors and result from the manner in which tariffs at the 6-digit level are aggregated at the GTAP sector level. Several manufacturing tariff lines are linked to non-manufacturing GTAP sectors. For these sectors a limited number of tariff lines are subject to tariff reductions. To calculate the tariff reductions applied in the GTAP model, we compute the tariff reduction at the sector level by computing the trade-weighted average tariffs at sector level. Having different trade patterns, the reductions at the GTAP sector level differ for Morocco and Tunisia. Basing tariff reductions on the detailed information that became available with Version 6 of the GTAP database thus results in differential tariff reductions despite referring to rather generic Euro-Med agreements.

The large number of zeros in columns 3 and 4 reflect the removal of trade barriers in the 1970s by the EU. We calculated the effects of a removal of tariffs on industrial goods (HS chapters 18 through 97) and on fishery products (chapter 3 and some additional 6-digit lines mentioned in protocol 2 of the Euro-Med agreements). As Table 1 shows, there are few tariffs remaining on trade in industrial goods. The only significant reduction in percentage terms is in food (61 and 77%). These remaining tariff barriers are probably the result of protection on the agricultural components of industrial goods as specified in annex 1 of the agreements, which we cannot isolate because of lack of data. Despite the strong reduction in percentage terms, the reduction applies to an initial tariff of only 1.5% for Morocco and 1.6% for Tunisia, thus not granting much in terms of additional market access. Overall the current agreements can be described as a significant lowering of trade barriers by Morocco and Tunisia (the percentages in Table 1 apply the levels depicted in Figures 1a and 1b), while their access to the EU market does not greatly improve.

The tariff reductions in Table 1 are used as inputs for the scenario analysing the impact of the current Euro-Med agreements. Table 2 presents a summary description of the model scenarios employed in this study. The first set of scenarios refers to the current Euro-Med agreements (EA). Given the restricted focus of the current Euro-Med agreements on industrial trade, the question arises as to what the impact would be if the agreements were to encompass agricultural trade as well. Such a full liberalisation of EU–Moroccan and EU–Tunisian trade is analysed in the second set of scenarios (FL). Both sets contain two scenarios, differing in whether or not tariffs are replaced by a (consumption) tax. As we see when assessing the results, assumptions about the way in which MPC governments deal with the change in tariff revenues markedly affects the outcomes of the simulations.

Table 2. Description of model scenarios

Code	Description	Tariffs	Employment	Tariff replacement
EA_n	Current Euro-Med agreements with unemployment, no tariff replacement	See Table 1 for reduction percentages	Unemployment	No replacement
EA_r	Current Euro-Med agreements with unemployment, with tariff replacement	See Table 1 for reduction percentages	Unemployment	Tariffs replaced with a consumption tax
FL_n	Full elimination of tariffs on EU–Moroccan trade and EU–Tunisian trade, no tariff replacement	All tariffs eliminated on EU–Moroccan and EU–Tunisian trade	Unemployment	No replacement
FL_r	Full elimination of tariffs on EU–Moroccan trade and EU–Tunisian trade, with tariff replacement	All tariffs eliminated on EU–Moroccan and EU–Tunisian trade	Unemployment	Tariffs replaced with a consumption tax

Source: Author's data.

The impact of the policy changes simulated in each of the scenarios is examined in comparison with a base run of the model that incorporates the ongoing policy changes described in section 2. Tables 3a and 3b present the main international trade indicators for Morocco and Tunisia (taken from the base run that serves as a reference point in our study). This data provides a background for understanding the changes induced by the different policy changes.

Table 3a. Basic international trade indicators for Morocco

	General indicators					Importance of Euro-Med destinations					
						Northern EU member states		*Mediterranean EU member states*		*Tunisia*	
	Share of GDP (%)	Share of exports (%)	Share of imports (%)	Trade balance ($US mn)	Self sufficiency[a)] (%)	Share exports (%)	Share imports (%)	Share exports (%)	Share imports (%)	Share exports (%)	Share imports (%)
Agricultural and mining sectors											
Cereals	5.6	0.2	5.3	-599	74	60.2	36.9	10.4	1.2	0.0	0.0
Oil seeds & vegetable oils	0.3	0.0	1.5	-179	54	30.7	7.7	25.2	8.6	0.0	0.7
Vegetables, fruit & nuts	4.6	4.2	0.4	428	127	73.2	21.2	4.0	15.9	0.0	17.1
Spices and other crops	0.3	0.6	1.3	-90	47	47.8	12.9	12.2	16.6	0.6	0.0
Plant-based fibres	0.6	0.1	0.4	-38	89	37.8	1.2	9.4	6.4	0.1	0.0
Sugar cane, sugar beet, sugar	0.8	0.1	0.5	-47	93	42.6	4.0	4.8	0.2	16.3	0.0
Animal products and wool	5.6	0.7	0.5	19	99	37.6	71.1	8.2	2.8	0.0	0.4
Milk & dairy products	1.5	0.2	1.0	-98	84	2.6	87.2	0.2	4.5	0.0	0.1
Natural resource extraction	4.0	5.4	9.6	-519	69	19.4	1.9	37.7	2.0	0.4	0.0
Food & beverages	2.1	8.0	1.8	697	119	20.9	32.3	35.4	16.1	0.5	0.5
Non-agricultural sectors											
Textiles & leather	5.8	26.3	16.6	1,035	102	70.2	59.2	19.8	27.6	0.3	0.1
Petro-chemicals	3.2	10.2	11.2	-153	90	27.7	40.0	11.8	23.4	1.1	1.2
Wood, paper & mineral products	3.7	3.0	6.5	-425	85	38.9	38.4	30.6	30.8	3.3	0.4
Metals and metal products	1.3	0.7	4.7	-480	72	23.6	35.6	38.0	35.5	5.0	0.5
Various kinds of equipment	1.8	10.8	22.8	-1,457	59	42.5	55.4	12.9	25.4	0.2	0.2
Motor vehicles &manufactures	1.0	1.2	4.8	-426	71	45.9	50.6	8.2	28.7	0.8	0.3
Services and activities NES	57.6	28.3	11.0	1,916	107	34.5	27.7	6.4	12.3	0.1	0.2
Total	100.0	100.0	100.0	-415	–	44.1	41.0	16.1	20.5	0.4	0.4

[a)] Self sufficiency is measured as the domestic share in total use.

Source: Author's model simulations, base run.

Table 3b. Basic international trade indicators for Tunisia

	General indicators					**Importance of Euro-Med destinations**					
						Northern EU member states		*Mediterranean EU member states*		*Morocco*	
	Share of GDP (%)	Share of exports (%)	Share of imports (%)	Trade balance ($US mn)	Self sufficiency[a)] (%)	Share exports (%)	Share imports (%)	Share exports (%)	Share imports (%)	Share exports (%)	Share imports (%)
Agricultural and mining sectors											
Cereals	0.7	0.3	3.6	-322	55	33.9	33.8	6.4	0.8	0.0	0.0
Oil seeds & vegetable oils	0.2	1.7	0.7	78	144	0.4	15.0	82.1	20.1	0.8	0.0
Vegetables, fruit & nuts	7.8	1.1	0.3	73	102	55.0	34.4	17.6	22.1	8.1	0.5
Spices and other crops	0.2	0.1	0.8	-66	30	56.0	8.0	11.6	28.0	0.3	0.5
Plant-based fibres	0.0	0.1	0.4	-36	21	32.2	1.5	7.1	34.4	0.2	0.0
Sugar cane, sugar beet, sugar	0.3	0.0	0.2	-22	88	7.6	9.1	0.8	2.3	0.0	9.4
Animal products and wool	2.9	0.6	0.3	24	99	31.1	67.3	40.0	9.4	0.5	0.0
Milk & dairy products	0.1	0.1	0.2	-14	89	5.5	65.5	0.4	5.4	1.8	0.0
Natural resource extraction	6.3	4.2	1.5	230	109	26.8	6.0	57.6	17.2	0.0	1.6
Food & beverages	1.9	2.1	1.7	28	93	19.0	20.3	33.1	9.6	0.5	3.0
Non-agricultural sectors											
Textiles & leather	5.3	32.8	21.0	906	110	68.7	52.7	25.9	39.3	0.1	0.4
Petro-chemicals	2.5	8.9	14.0	-559	77	20.6	46.9	16.7	31.8	2.1	1.0
Wood, paper & mineral products	2.9	3.1	7.1	-411	75	35.6	48.7	19.1	26.0	1.0	1.6
Metals and metal products	0.3	1.8	4.9	-315	53	40.1	42.5	28.6	29.3	1.8	0.8
Various types of equipment	1.2	13.7	26.2	-1,305	50	72.5	58.9	14.2	22.1	0.4	0.1
Motor vehicles &manufactures	0.7	2.7	7.6	-488	52	58.0	60.7	17.0	26.0	0.6	0.2
Services and activities NES	66.8	26.8	9.4	1,486	111	36.0	30.8	6.6	9.2	0.1	0.2
Total	100.0	100.0	100.0	-715	–	39.1	39.6	15.9	21.0	0.4	0.4

[a)] Self sufficiency is measured as the domestic share in total use.

Source: Author's model simulations, base run.

Starting with the structure of the economies we find the services sector dominates total GDP with 57.6% in Morocco and 66.8% in Tunisia. Note that services include the government (see annex 1 for the activities captured in each of the sectors). Agriculture plays a major role in both countries, respectively accounting for 25.5 and 20.4% of GDP in Morocco and Tunisia. The role of agriculture in exports is less pronounced. Here manufacturing plays a key role, especially textiles and leather (26.3% of Moroccan exports and 32.8% of Tunisian exports). Note that the baseline construction includes the accession of China to the WTO as well as the phasing out of the Agreement on Textiles and Clothing. Textiles thus remain an important source of export earnings, even with the changes in the global economy. Non-agricultural sectors dominate imports even more strongly, with the role of agricultural products limited to 22.4% in Morocco and 9.8% in Tunisia. Agricultural imports are thus more important in Morocco than in Tunisia.

In terms of the trade balance both countries have a striking similarity in qualitative terms. Both have a negative trade balance, with the value of imports exceeding exports by $415 million in Morocco and $715 million in Tunisia. The importance of textiles in exports is reflected in its positive trade balance in both countries, being the only manufacturing sector to have a positive trade balance. Among the agricultural sectors, only food and beverages, animal products, and vegetables have a positive trade balance in both countries, while for Tunisia vegetable oils (olive oil) also has a positive trade balance. The negative trade balances are further shown in the limited number of sectors where domestic production accounts exceed more than the total use of sector output (self-sufficiency).

The Euro-Med agreements are limited to liberalising trade with the EU. Their impact thus depends on the importance of the EU as a trading partner. The right panels of Tables 3a and 3b depict the share of exports or imports by sector traded with northern EU member states,[2] Mediterranean EU member states and Tunisia or Morocco. Analysing the differential importance of trade flows by trading partner provides some initial insight on the political economy aspects of the Euro-Med agreements. Since the northern EU member states encompass more countries than the four Mediterranean EU member states, trade flows with the northern EU member states are larger. Taken together, the EU accounts for 60.2% (44.1 and 16.1%) of Morocco's exports and 55.0% (39.1 and 15.9%) of Tunisia's exports. Comparable large

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[2] We added trade with the new EU member states from Eastern Europe to the northern EU member states. Given the limited amount of trade with the accession countries, this does not strongly influence the analysis.

percentages are found for EU imports to Morocco (60.2%) and Tunisia (60.6%). The EU is thus the major trading partner of both of these countries.

The lack of progress in liberalising agricultural trade flows can be traced back to the diverging interests of northern and Mediterranean EU member states. Some indication of these interests can be found in Tables 3a and 3b. Although the Mediterranean EU member states are much smaller in size (their GDP is about a third of the GDP of the northern EU region), for some sectors they do account for a larger share of exports than the northern EU countries. Most notable is the export of vegetable oil, of which 25.2% of Moroccan exports and no less than 82.1% of Tunisia exports is destined for Mediterranean EU member states. The picture in terms of vegetables is less clear, probably owing to the aggregated representation in the model. The exports to northern EU countries are about three times as large as those to the Mediterranean EU, which corresponds with the difference in their GDP levels. On the import side a clear diverging interest is found for the animal and dairy product sectors, with respectively 71.1 and 87.2% of Moroccan imports and 67.3 and 65.5% of Tunisian imports originating in the northern EU. For cereals we find a similar dominance of northern EU countries (although less pronounced because of imports from the US). Imports from the EU's Mediterranean region are limited for these 'temperate' sectors.

Despite its aggregated character the model does in fact capture the main diverging interests of northern and Mediterranean EU member states: northern members would benefit from improved access to North African markets for cereals, animal and dairy products, whereas Mediterranean EU member states would face a further increase in imports of vegetable oils. We do not find a similar pattern for vegetables, because of the aggregated nature of the vegetable sectors in GTAP, aggregating Mediterranean as well as more temperate vegetables and fruit. The data also reflect the importance of the EU as a trading partner of both Morocco and Tunisia. The Euro-Med agreements can thus be expected to have a significant impact on both economies.

4. Results of the current Euro-Med agreements

This section analyses the impact of the current Euro-Med agreements (EA). We focus on the current agreements in the first instance since these have already been signed. Although negotiations on agricultural trade liberalisation have recently re-started they are not nearing their conclusion. The next section compares the additional impact of including agriculture in the trade liberalisation (FL).

Our analysis of the policy changes focuses on the equivalent variation (EV), a concise measure of the macroeconomic impact of a (policy) change. The EV measures the change in income equivalent to the proposed policy change. It thus measures the amount of income that should be given to (or taken away from) households to attain a welfare equivalent to the welfare occurring with (policy) change coming into effect. If a policy change results in a positive EV, this number represents the additional income that could be generated if the policy were implemented. If total EV is positive the winners could potentially compensate the losers. Apart from this general conclusion on the potential for compensation the EV does not take distributive issues into account.

4.1 Income effects of the Euro-Med agreements with and without tariff replacement

We first focus on the effect of implementing the Euro-Med agreements without tax replacement (left panel of Table 4). The elimination of tariffs on trade with the EU has two major effects: i) reducing distortions in the economies of mainly Morocco and Tunisia; and ii) diverting trade from the rest of the world (ROW) to the EU. The first effect is strongest for Morocco, which levied higher tariffs on European manufactured goods than Tunisia before the Euro-Med agreements (see the discussion on tariff profiles with Figures 1a and 1b). In absolute terms the gains for Morocco are highest (an annually recurring $1,645 million or 4.84% of GDP in the base run). Since northern EU member states account for a larger share of trade (in both Morocco and Tunisia), they gain more from the lowering of tariff barriers ($768 million). Because of the limited economic importance of Morocco and Tunisia in total EU trade, the impact assessed in terms of base GDP is an insignificant 0.01% for the northern EU and 0.02% for the Mediterranean EU regions.

Table 4. Income effects of current Euro-Med agreements ($US millions, 2001)

	No tax replacement (EA_n)			**With tax replacement (EA_r)**		
	Total	Share of base GDP (%)	Share of total gains (%)	Total	Share of base GDP (%)	Share of total gains (%)
Morocco	1,645	4.84	63.95	-892	-2.63	97.82
Tunisia	512	2.63	19.89	-318	-1.64	34.83
Northern EU	768	0.01	29.87	649	0.01	-71.12
Mediterranean EU	350	0.02	13.59	295	0.02	-32.33
ROW	-702	0.00	-27.30	-646	0.00	70.79
Total	2,572	0.01	100.00	-912	0.00	100.00

Note: Computed from equivalent variation (EV).

Source: Author’s calculations based on model simulations.

The lowering of trade barriers on trade with the EU gives European producers an edge on producers in the rest of the world. The EU already has lower tariffs on manufactured goods (see

Figures 1a and 1b) and the Euro-Med agreements further increase this advantage. This results in a decrease of trade with the rest of the world, shown in Table 4 as a welfare loss for the ROW of $702 million.

If we then turn to the right panel in Table 4 we find the results for a scenario with tax replacement (EA_r) giving a radically different picture of the income effects of the Euro-Med agreements. Although effects for the EU are comparable to the first scenario, we now find a decline in welfare in both Morocco ($-892 million or -2.63% of base GDP) and Tunisia ($-318 or -1.64% of base GDP). This radical change in the assessment of the agreements is driven by a different assumption on the need for replacing the tariff revenues. The second scenario assumes that the government replaces tariff revenues by a consumption tax to sustain its expenditures. This indicates that the distortions of an import tax are replaced by a distorting consumption tax. As shown by the total income loss of $912 million, the distortions of the consumption tax exceed the reduced distortions of the import tax.

An import tariff introduces distortions in the region where imports originate (the EU) and in the domestic markets (of Morocco and Tunisia) by raising the price of imports. This implies that European exporters receive less for their products and Moroccan and Tunisian consumers or producers (in the case of intermediate inputs) need to pay more for the goods. If we then replace the import tax with a domestic consumption tax the domestic markets carry the full cost of the introduced distortion. The benefits for the EU of removing the import tariff, on the other hand, are minimal since the overall lack of importance of trade with Morocco and Tunisia limits the impact on the production structure in the EU. Yet the significance of the tariff revenues for Morocco and Tunisia implies a substantial rise in consumer taxes with respective increases of 9.6 and 8.5%. In the case of Morocco, cereals, oil crops and sugar are initially subsidised while becoming taxed with the tariff replacement. In the case of Tunisia, initially very small or zero consumption taxes are increased to around 8.5%. Although designed not to distort demand by applying a uniform tax rate across commodities, the taxes depress domestic demand. The reduced demand generates negative feedback effects resulting in an income loss.

Next to general income effects, employment is a major concern in both Morocco and Tunisia. Changes in employment are closely linked to the overall impact on income, with employment increasing in the first scenario and decreasing in the case of tariff replacement (Table 5). With a single representative household we cannot address issues of income distribution across households. Changes in factor prices, however, provide some insight into the distributive effects of the agreements. Poor households tend to have only unskilled labour and possibly some land (if located in rural areas). Comparing the impact on skilled versus unskilled labour we find that (in percentage terms) the employment of unskilled labourers is more responsive to the policy changes than changes in the real wages of skilled labourers. Unskilled labourers thus benefit more from the reduced tariffs as well as being harmed more by an increased consumption tax. Note that the way in which we have modelled the labour market the real wages of unskilled labour are fixed while employment adjusts. With regard to skilled labour there is always full employment and real wages adjust.

Table 5. Employment and factor prices with Euro-Med agreements (% change to base)

	No tax replacement (EA_n)		**With tax replacement (EA_r)**	
	Morocco	Tunisia	Morocco	Tunisia
Employment				
Unskilled labour	12.3	9.5	-5.6	-4.3
Factor prices				
Land	17.6	6.3	-11.4	-17.0
Unskilled labour	0.0	0.0	0.0	0.0
Skilled labour	9.7	7.5	-5.4	-3.9
Capital	9.8	8.2	-6.0	-3.6

Source: Author's calculations based on model simulations.

The current Euro-Med agreements only entail changes in import tariffs on manufactured goods. Manufacturing sectors do not use land. The changes in returns to land in Table 5 indicate that agricultural sectors are indirectly affected by the tariff reductions. Without tax replacement the improved allocative efficiency raises incomes, increasing demand for (agricultural) consumption goods. Increasing the consumption tax to replace tariffs reduces demand, which translates into a reduced return to land. In terms of income distribution this implies that not only poor households in urban areas are affected by the agreements, but poor households in rural areas as well. General equilibrium effects transmit the policy changes in the manufacturing sector to rural areas by changing the demand for agricultural goods. Rural wage labourers and small farmers thus benefit from the reduced import tariffs while being harmed by the consumption tax.

4.2 Drivers of the aggregate income effects

We found considerable differences in the income effects of the Euro-Med agreements, depending on whether or not tariffs are replaced by a consumption tax. Some general explanations of the underlying mechanisms were provided. We now examine in more detail the adjustments induced by the agreements.

The EV provides summary statistics of the total impact of different drivers of welfare changes. Table 6 presents the contribution of four main drivers to the total income gains expressed in terms of base GDP: allocative efficiency, employment, terms of trade and price of investment and savings. Note that in the case of a loss in income, i.e. a negative income effect, a negative sign for a driver indicates a positive income effect. For example, with tax replacement Morocco faces a 2.63% income loss. Despite this loss allocative efficiency improves, reducing the loss by 6%. In other words, in the absence of the improved allocative efficiency the loss would have been higher. We now turn to discussing the major drivers of the income changes.

Table 6. Income effects of Euro-Med agreements by source

	Share of base GDP	**Source (% of gain or loss)**				
	(%)	Allocative efficiency	Employment	Terms of trade	Investment & savings prices	Total
No tax replacement (EA_n)						
Morocco	4.84	37	87	-23	-1	100
Tunisia	2.63	50	78	-27	-1	100
Northern EU	0.01	3	0	100	-3	100
Mediterranean EU	0.02	3	0	92	5	100
ROW	0.00	16	5	83	-4	100
With tax replacement (EA_r)						
Morocco	-2.63	-6	74	31	1	100
Tunisia	-1.64	16	58	25	0	100
Northern EU	0.01	5	0	98	-3	100
Mediterranean EU	0.02	2	0	93	5	100
ROW	0.00	13	5	84	-3	100

Source: Author's calculations based on model simulations.

The **allocative efficiency** effects relate to distortions induced by taxes. The removal of import tariffs reduces distortions, allowing factors of production (land, labour and capital) to move to their most efficient use. Increased efficiency translates into lower prices, promoting expansion of supply and demand. Increasing the consumer tax to replace tariff revenues introduces distortions into the Moroccan and Tunisian economies, working in the opposite direction of the import tariff reductions.

Focusing on the top part of Table 6 we find large allocative efficiency effects for Morocco (37% of net gains) and Tunisia (50% of net gains). Contributions to the EU regions are minimal, reflecting the low initial tariffs and limited importance of imports from Morocco and Tunisia. With Morocco and Tunisia having the highest initial tariffs and the EU being a major trading partner, they are also benefiting most from removal of the tariffs. The flip side is that they are also affected most by the distortions induced by an increased consumption tax replacing tariff revenues (see the bottom part of Table 6). With tax replacement there are two opposing forces: the removal of import tariffs improves efficiency while the increase in consumption taxes reduces it. For Morocco a net efficiency gain remains (reducing the loss of income by 6%), while for Tunisia a net efficiency loss results (contributing 16% to the total income loss). This qualitative difference between the two countries is the result of efficiency gains remaining in the manufacturing sectors of Morocco after the increase in consumption tax. This is related to the higher initial tariffs on manufactured imports in Morocco (see the discussions with Figures 1a and 1b), which creates more scope for improving efficiency by reducing tariffs than in Tunisia.

The **employment effect** is the most important factor determining the net income effects, both in terms of gains with only tariff removal (87% for Morocco and 78% for Tunisia) and in terms of losses (74% for Morocco and 58% for Tunisia). The large role of changes in employment is a direct result of the modelling of the labour market. In the unemployment closure we fix the real wage while allowing the number of labourers in the economy to match demand. This implies that sectors can expand production without facing an increase in production costs, thus increasing their competitiveness. The additional labourers in turn increase consumption demand, stimulating production further. A contraction of the economy has a similar strong but opposite effect: with labourers becoming unemployed the reduction in expenditures reduces demand, further contracting production.

The changes in tariffs and in consumption tax affect sectors differently. Table 7 presents the change in demand for unskilled labour by sector. The general equilibrium effects of the reduction in import tariffs on manufactured goods are clearly indicated by the changes in demand for unskilled labour in agricultural sectors when only tariffs on manufactured goods are removed (see the left panel of Table 7). Increased employment in the manufacturing sectors is transmitted to the agricultural sectors by an increased demand for consumption goods. The agricultural sectors are thus not shielded from the current Euro-Med agreements, despite the focus of the agreements on manufactured goods.

The textile sector exhibits the largest increase in demand for unskilled labour. Note that there is no change in tariffs faced by textile exports to the EU since these had already been eliminated in the 1970s (see the changes in tariffs in Table 1). Textiles benefit from a rationalisation of the manufacturing sectors when the protection from EU imports is removed. As a result, production factors – including unskilled labour – move to their most efficient use.

Table 7. Demand for unskilled labour by sector with Euro-Med agreements (% change)

	No tax replacement (EA_n)		**With tax replacement (EA_r)**	
	Morocco	Tunisia	Morocco	Tunisia
Agricultural sectors				
Cereals	3	0	-8	-9
Oil seeds & vegetable oils	5	-8	-9	-17
Vegetables, fruit & nuts	2	1	-6	-5
Spices and other crops	-5	-7	-13	-17
Plant-based fibres	5	6	-6	0
Sugar cane, sugar beet, sugar	8	5	-7	-7
Animal products and wool	18	6	1	-5
Milk & dairy products	6	6	-10	-7
Natural resource extraction	-4	-2	-7	-5
Food & beverages	9	5	-6	-9
Non-agricultural sectors				
Textiles & leather	50	44	24	25
Petro-chemicals	1	6	-16	-8
Wood, paper & mineral products	-6	-1	-22	-15
Metals and metal products	-5	5	-21	-7
Various types of equipment	12	5	-5	-9
Motor vehicles & manufactures	-6	4	-21	-11
Services	13	10	-8	-6

Source: Author's calculations based on model simulations.

Overall the impact of the Euro-Med agreements on employment in manufacturing is not as devastating as one might have expected given their relatively high initial protection, especially in Morocco. There are two major explanations. First, tariffs on imported intermediate inputs are removed as well, which reduces production costs in sectors using EU imports in their production. Second, by accounting for unemployment we fixed the real wage rate. This implies that unskilled labour becomes relatively more attractive compared with other factors of production for which prices rise (see Table 5). Sectors thus adjust their input mix, employing more unskilled labour, which contributes to increased employment.

As discussed above, the presence of unemployment may also lead to a stronger contraction of the economy. This is reflected in the large reductions in employment in the right panel of Table 7, presenting results for the scenario with tariffs replaced. The only major exception is textiles, which retains its increased demand for unskilled labour. Our reference point is a base run that includes the phasing out of the Agreement on Textiles and Clothing as well as the WTO accession of China, a major competitor in the textiles market. Despite these ongoing changes serious distortions in the global textile markets remain, signalling that preferential access to European textile markets remains important for Morocco and Tunisia. A side-effect of the remaining protection on agricultural production is that in Morocco employment increases in the animal products sector, even when consumption taxes are increased. This sector, however, is the most protected one in Morocco (see Figure 1a). This shift of labour to such a highly protected sector may increase the costs of a future agreement liberalising agricultural trade.

Returning to Table 6 we find that the third major driver of changes in income is the **terms of trade effect**. The terms of trade are a summary measure indicating the ratio of prices received for exports to prices paid for imports. We find declining terms of trade for Morocco and Tunisia in both scenarios, accounting for 25 to 31% of the income changes. The terms of trade effect is a macroeconomic phenomenon related to the balance of payments. The balance of payments measures the inflow of money from exports and investments and the outflow of money through imports and savings. Although some adjustments occur in savings and investments, the major adjustments occur in imports and exports.

By removing import tariffs the Euro-Med agreements increase imports in Morocco and Tunisia. In order to maintain the equilibrium in the balance of payments, this implies that exports need to increase as well. A rise in exports requires the exports of Morocco and Tunisia to become cheaper than their competitors' products. Usually the prices of production factors are reduced in order to cut the price of exports. If we look at Table 5, however, we find that in the case of Morocco and Tunisia factor prices rise when tariffs are not replaced. The origin of their relatively cheaper exports thus lies not in lower factor prices, but instead is found in lower costs of imported intermediate inputs. The drop in prices of intermediate inputs allows an expansion of exports by lowering relative prices despite an increase in factor prices. This is an illustration of the so-called 'Lerner symmetry': shielding the economy from imports ultimately reduces exports. Reducing import protection boosts exports while allowing incomes to rise.

The fourth and last driver of the income changes is the **price of investment and saving.** These effects relate to global lending and saving, which have a limited effect on the total income changes and are therefore not discussed further.

4.3 A summary of the impact of the current Euro-Med agreements

Summarising we find that the current Euro-Med agreements have the potential to benefit Morocco and Tunisia. The direction of the impact, however, strongly depends on domestic policies. If tariff revenues are replaced by a consumption tax then income effects are negative, unemployment rises and returns to land decline. For poor households relying on unskilled labour and possibly land (in the case of the rural poor) changes in domestic policies following trade liberalisation are thus essential.

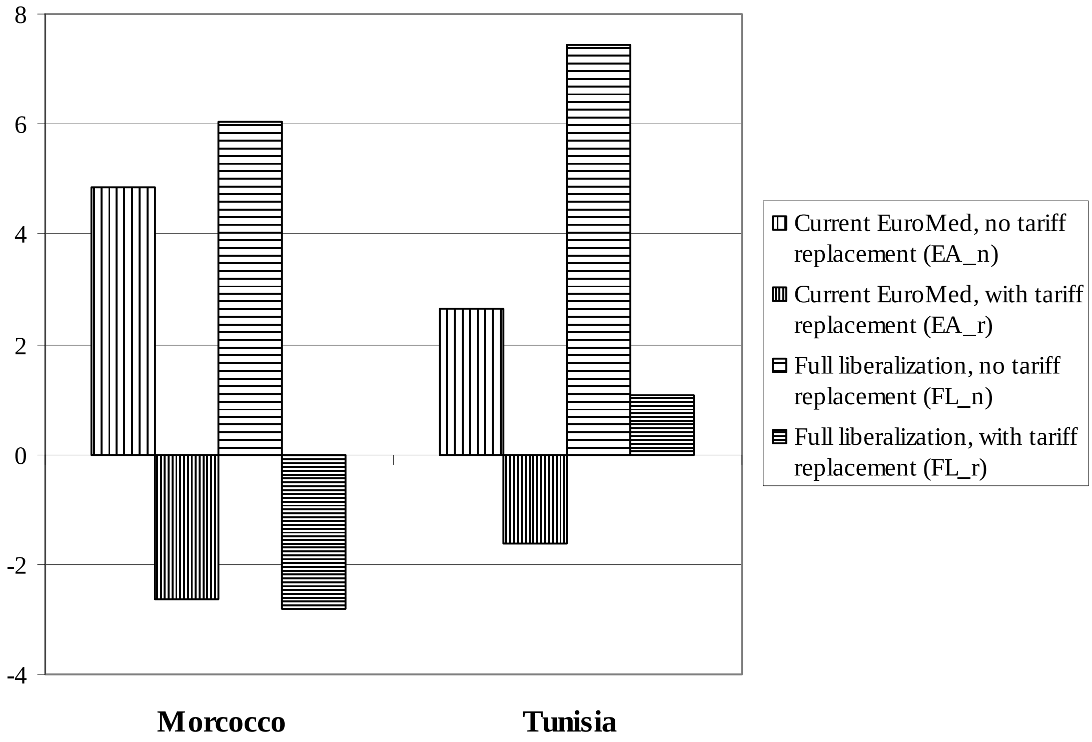
When delving a bit deeper into the drivers of the income changes we find that accounting for unemployment plays a central role in the overall impact assessment of the agreements. Unemployment strongly enhances both positive and negative effects of policy changes. As a result of these feedback mechanisms the demand-depressing impact of a consumption tax exceeds the positive impact of removing tariffs. Analysing the allocative efficiency effects we find textiles to be expanding in both scenarios. This appears because of remaining distortions in the global textile trade. These distortions imply that preferential access to EU markets remains valuable for Morocco and Tunisia. Examining the terms of trade effects we find that the removal of import barriers allows Morocco and Tunisia to increase the competitiveness of their exports through reduced costs of imported intermediate inputs. This allows factors of production, and thus households, to benefit from increased factor prices.

In this section we have focused on the current Euro-Med agreements, which are limited to manufacturing. A natural question then arises as to the impact of including agricultural sectors in the trade agreements. There appear to be two key issues related to the political economy of further reforms: i) contrasting EU interests and ii) the future costs of liberalisation. Contrasting gains for northern and Mediterranean EU member states seem to be a main factor in the current virtual absence of agricultural reform in the agreements. The analysis in this section furthermore indicates an expansion of the heavily protected animal products sector in Morocco. This suggests that the present one-sided agreements may increase the future costs of liberalising agricultural trade.

5. Results when agriculture is incorporated

The varying interests of different EU regions will come into play when agricultural trade is liberalised. Lowering tariff barriers on agricultural trade is also expected to affect the most strongly protected sectors of Morocco, which showed an expansion of its employment with the implementation of the current Euro-Med agreements. Again we analyse full liberalisation scenarios without (FL_n) and with a replacement of tariffs by a consumption tax (FL_r). In the scenarios we assume all tariffs are removed, i.e. we analyse a full liberalisation of trade with the EU for Morocco and Tunisia.

Figure 2. Effects on income in Morocco and Tunisia by scenario (% of base GDP)

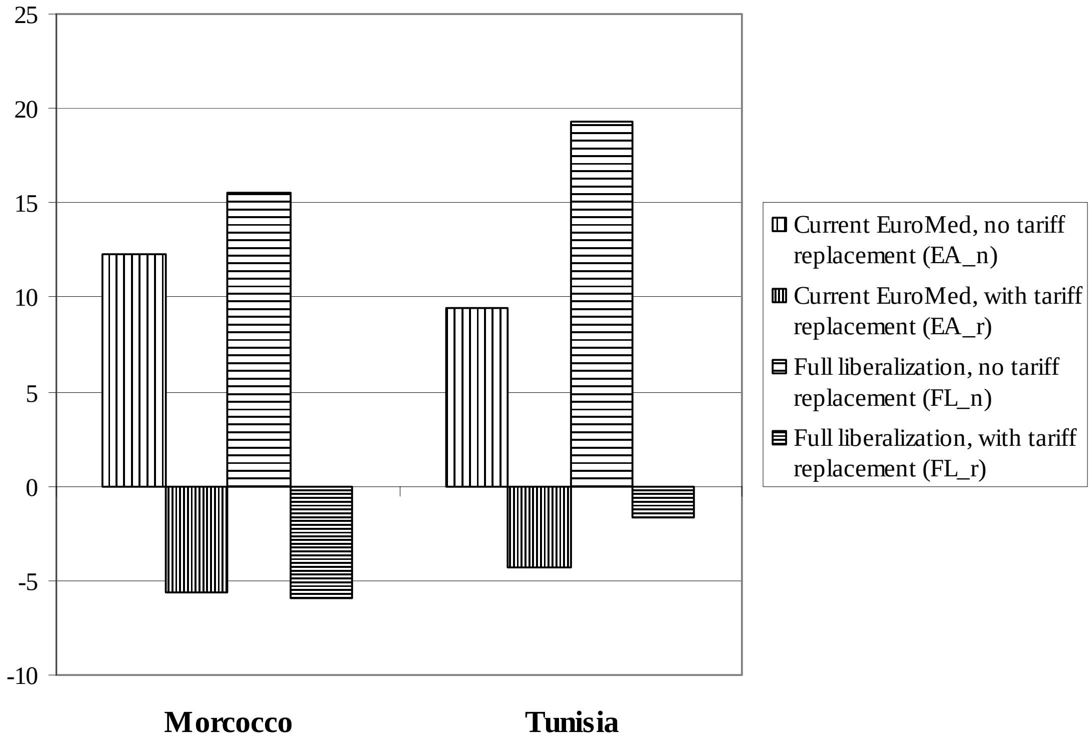


Source: Author's calculations based on model simulations.

The additional gains from liberalising agricultural trade differ for Morocco and Tunisia. In the absence of tariff replacement Morocco gains an additional 1.2 percentage points in its base GDP whereas Tunisia gains an additional 4.8 percentage points. In terms of the share of base GDP, the gains for Tunisia are now larger than for Morocco, which gained more from the liberalisation of manufactured trade. In the case of tariff replacement the inclusion of agricultural trade does not yield much difference in the overall impact for Morocco; its income loss becomes slightly deeper by an additional 0.2 percentage points. For Tunisia the inclusion of agriculture yields much more, even reversing the loss of income into an income gain of 1.1% of base GDP.

As with income, the impact on employment is stronger for Tunisia (Figure 3). The most notable difference concerning the impact on income is the reduced loss of unskilled employment with full liberalisation and tariff replacement. The net gain in income is thus not accompanied by a gain in employment when tariffs are replaced. Yet compared with the current Euro-Med agreements, with tariff replacement the inclusion of agriculture would still reduce the loss of employment.

Figure 3. Employment of unskilled labour for Morocco and Tunisia by scenario (% change)



Source: Author's calculations based on model simulations.

The differential impact of including agriculture in the agreements can in part be explained by the differences in initial tariffs (see Figures 1a and 1b). Tunisia has higher initial agricultural tariffs and therefore stands to gain more from a liberalisation of its agricultural trade in terms of improved allocative efficiency. The second important factor is a spectacular increase in vegetable oil production when access to EU agricultural markets improves. In the base run the majority of these exports (82.1%) are to the Mediterranean EU regions (see Table 3b). This implies that the Mediterranean regions are also most affected by the liberalisation of agricultural trade.

The changes in production with the two full liberalisation scenarios clearly indicate that the growth in vegetable oil production in Tunisia drives the aggregated impact (Table 8). Whether or not tariffs are replaced, vegetable oil production shows a stunning eight-fold increase. This negatively affects the Mediterranean EU regions, although compared with the major changes in Tunisia the effects are rather modest (-7% and -6% with tariff replacement).

Table 8. Output by sector and region with full liberalisation (% change)

	No tax replacement (FL_n)				With tax replacement (FL_r)			
	Morocco	Tunisia	EU north	EU Med.	Morocco	Tunisia	EU north	EU Med.
Agriculture	5	14	0	0	-5	7	0	0
Cereals	-8	-45	3	1	-17	-51	2	1
Vegetable oils	7	844	0	-7	-6	797	0	-6
Vegetables & fruit	10	13	0	0	3	5	0	0
Spices & other crops	-5	-21	0	1	-13	-29	0	0
Plant-based fibres	6	-1	-1	0	-4	-7	0	0
Sugar	7	7	0	0	-4	-2	0	0
Animal products	17	-2	0	0	3	-12	0	0
Dairy	-20	-22	0	0	-30	-30	0	0
Natural resources	-3	-4	0	0	-5	-6	0	0
Manufacturing	10	3	0	0	0	-4	0	0
Food & beverages	8	-3	0	0	-2	-10	0	0
Textiles & leather	49	23	0	0	32	15	0	0
Petro-chemicals	-5	-5	0	0	-11	-10	0	0
Wood, paper	-11	-10	0	0	-18	-17	0	0
Metal products	-9	-4	0	0	-17	-13	0	0
Equipment	9	-12	0	0	0	-19	0	0
Motor vehicles	-9	-8	0	0	-18	-15	0	0
Services	6	6	0	0	-3	-1	0	0

Source: Author's calculations based on model simulations.

In both scenarios Morocco and Tunisia reduce the production of cereals, benefiting both northern and Mediterranean EU regions. Apart from a decline in plant-based fibres in the northern EU there are no noticeable effects on the EU agricultural sector. This finding illustrates the limited economic importance of Morocco and Tunisia for the EU.

Based on the high initial protection on animal products in Morocco we expected a decline following trade liberalisation. Apparently animal production is more competitive than expected, expanding in both scenarios (17% and 3% with tariff replacement). The labour that moved from manufacturing to animal production with the implementation of the current Euro-Med agreements (Table 7) thus does not have to move again to another sector when agricultural trade is liberalised. Textile and leather goods also maintain the expansion found with only liberalising agricultural trade. The major contraction of cereals and dairy, however, do entail a loss of employment. In the case of Morocco this results in a slightly higher loss of employment when liberalisation is expanded to include the agricultural sector and tariffs are replaced (Figure 3).

6. Conclusions

This study analyses the economic effects of the Euro-Mediterranean agreements using a multi-sector, multi-region model. Our numerical analysis, applied to those agreements with Morocco and Tunisia, is built from a detailed commodity profile (6-digit) of the provisions of the Euro-Med agreements. The current agreements turn out to be very asymmetric: the EU is essentially not offering any new concessions and maintaining its protection of agricultural sectors, while the North African countries will have to open their manufacturing markets to European competitors.

Because of the small size of the Moroccan and Tunisian economies the benefits of improved EU access to their markets for manufactured goods are insignificant at 0.01 and 0.02% of base GDP respectively for northern and Mediterranean EU countries. Being located closer to Morocco and Tunisia, the Mediterranean EU countries have greater levels of trade with them and thus gain more from the current agreements.

The impact of the current Euro-Med agreements on Morocco and Tunisia is found to depend on whether these countries need to replace reduced tariff revenues with an increased consumption tax. If such replacement is not necessary, both economies benefit from an improved allocation of production factors with the removal of distorting import tariffs. Their economies expand, increasing employment as well as factor earnings. Yet a rather different picture emerges when tariff revenues are replaced with a consumption tax. This consumption tax introduces new distortions in the economy, and for some commodities implies a shift from subsidising to taxing consumption. Apart from the political issues related to the implementation of such a tax increase, the distortions outweigh the benefits from reducing tariffs. With these kinds of domestic policy changes following in the wake of a tariff reduction, both countries experience a decline in income and a loss of employment.

The virtual absence of any agricultural liberalisation in the current agreements can be attributed to the diverging interests of northern and Mediterranean EU member states. When analysing a full liberalisation of all trade with Morocco and Tunisia, we find these diverging interests reflected in the changes in output. Northern EU countries benefit from an increase in cereal exports (as do, to a lesser extent, Mediterranean EU countries). Meanwhile, Mediterranean EU countries face a 7% reduction in their vegetable oil production owing to an eight-fold production increase in Tunisia. Despite this reduction the overall impact on the EU remains insignificant, because of the limited size of the Moroccan and Tunisian economies.

Owing to initially higher levels of agricultural protection Tunisia benefits more from an expansion of the current agreements to include this sector. In the case of Morocco, the additional benefits (and costs, if tariffs are replaced) are limited. Driven by the increase in vegetable oil production, Tunisia maintains its income gain even when tariffs are replaced. In terms of employment, however, both countries face a reduction in employment if tariffs need to be replaced, even when agriculture is included.

In conclusion, we only find a significant impact resulting from a liberalisation of EU agricultural production on cereals (positive) and vegetable oil (negative for Mediterranean EU countries). This latter finding stems from an unrealistic eight-fold increase in Tunisian production. Given biophysical limitations on the expansion of olive oil (the main vegetable oil produced in Tunisia), the large competitive advantage identified in the model simulations will not materialise when trade barriers are removed. Thus the negative impact on the Mediterranean EU region will be less than suggested by the model simulations, which are already insignificant when related to GDP. More importantly, the sizable positive effect driving an overall positive impact on income in Tunisia when agricultural trade is liberalised will not materialise.

We find that the impact of the Euro-Med agreements on incomes and employment hinges on domestic policies in Morocco and Tunisia in response to a loss of tariff revenues. If government expenditures can be reduced such that a replacement of tariffs is not required, both countries will benefit from increased factor incomes and employment. Should tariff replacement be needed a careful consideration of the economy-wide effects is needed to reduce the income and employment losses we find when increasing consumption taxes.

The results of this study underscore that the Euro-Med agreements are not economically significant to northern or Mediterranean EU member states. This finding creates scope to focus on the implementation of agreements that are in sync with domestic policy reforms in the MPCs. Such a focus would enable the agreements to reap their potential benefits to contribute to economic growth and social stability along the EU’s southern borders, as well as avoid the possible negative implications when reduced tariff revenues need to be recovered elsewhere in the MPC economies.

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Annex 1.
Aggregation Schemes

Table A.1. Aggregation of regions

Aggregate region	Code	GTAP V6 regions
1) Morocco	MOR	Morocco
2) Tunisia	TUN	Tunisia
3) Rest of North Africa	RNA	Rest of North Africa
4) Middle East	MEAST	Rest of Middle East
5) Northern EU members	EU_N	Austria Belgium Denmark Finland France Germany United Kingdom Ireland The Luxembourg Netherlands Sweden
6) Mediterranean EU members	EU_M	Greece Italy Portugal Spain
7) EU accession countries	EU_A	Bulgaria Cyprus Czech Republic Hungary Malta Poland Romania Slovakia Slovenia Estonia Latvia Lithuania
8) USA	USA	United States
9) All other regions	ROW	The remaining 55 GTAP regions

Sources: Author's data and GTAP.

Table A.2. Aggregation of sectors

Sector	Code	Sector	Code
1) Cereals	**cereal**	**11) Textiles & leather**	**tex_lea**
Wheat (wht)		Textiles (tex)	
Cereal grains nec (gro)		Wearing apparel (wap)	
Processed rice (pcr)		Leather products (lea)	
2) Oil seeds & vegetable oils	**oilcrp**	**12) Petro-chemicals**	**petchem**
Oil seeds (osd)		Petroleum, coal products (p_c)	
Vegetable oils and fats (vol)		Chemical, rubber, plastic prods (crp)	
3) Vegetables, fruit & nuts	**veg_frt**	**13) Wood, paper & mineral products**	**wd_min**
Vegetables, fruit, nuts (v_f)		Wood products (lum)	
4) Spices and other crops	**spices**	Paper products, publishing (ppp)	
Crops nec (ocr)		Mineral products nec (nmm)	
5) Plant-based fibres	**fibrecrp**	Metals nec (nfm)	
Plant-based fibres (pfb)		**14) Metals and metal products**	**metal**
6) Sugar cane, sugar beet, sugar	**sugar**	Ferrous metals (i_s)	
Sugar cane, sugar beet (c_b)		Metal products (fmp)	
Sugar (sgr)		**15) Various kinds of equipment**	**equip**
7) Animal products and wool	**anim**	Transport equipment nec (otn)	
Cattle, sheep, goats, horses (ctl)		Electronic equipment (ele)	
Animal products nec (oap)		Machinery and equipment nec (ome)	
Wool, silk-worm cocoons (wol)		**16) Motor vehicles & manufactures**	**veh_man**
Meat: cattle, sheep, goats, horse (cmt)		Motor vehicles and parts (mvh)	
Meat products nec (omt)		Manufactures nec (omf)	
8) Milk & dairy products	**dairy**	**17) Services**	**servs**
Raw milk (rmk)		Electricity (ely)	
Dairy products (mil)		Gas manufacture, distribution (gdt)	
9) Natural resource extraction	**extract**	**Water (wtr)**	
Forestry (frs)		Construction (cns)	
Fishing (fsh)		Trade (trd)	
Coal (coa)		Transport nec (otp)	
Oil (oil)		Sea transport (wtp)	
Gas (gas)		Air transport (atp)	
Minerals nec (omn)		Communication (cmn)	
10) Food & beverages	**food**	**Financial services nec (ofi)**	
Food products nec (ofd)		Insurance (isr)	
Beverages and tobacco products (b_t)		Business services nec (obs)	
		Recreation and other services (ros)	
		Pub. Admin/Defence/Health/Educ. (osg)	
		Dwellings (dwe)	

Source: Author's data.

Annex 2.
Computing Tariff Reductions

The computation of tariff reductions foreseen in the Euro-Med agreements is performed by combining 6-digit level data on the tariff lines to be removed from annexes 3 through 6 in the Euro-Med agreements with Morocco and Tunisia, with tariff and trade data from MAcMAP.

1) We first compute the trade-weighted import tariff on imports originating in northern and Mediterranean EU countries at the 6-digit level using the MacMap database (these data are from 2001 and thus cover the period before EU enlargement). We then compute the trade-weighted tariff for each of the sectors in our model.

2) We then remove tariffs in accordance with the Euro-Med agreements at the 6-digit level and re-compute the average trade-weighted tariff for imports originating in the EU for the sectors in our model.

3) We then compute the percentage change in tariffs for each of the sectors in our model, which renders the shocks to be applied to simulate the Euro-Med agreements.