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with the EU without Being a Member?**

by

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What Can Turkey Gain from Full Agricultural Market Integration with the EU without Being a Member?

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Abstract: Turkey established a customs union (CU) with the EU in 1996, which excludes agricultural products. This article analyses the effects of an inclusion of agriculture in the CU as well as alternative policy options on the Turkish agricultural sector. To this aim, a comparative-static, partial equilibrium model of the Turkish agricultural sector is developed. The complete liberalisation of the agricultural sector leads to significant comparative static welfare gains of about €670 million compared to the continuation of current policies. For most products an inclusion of agriculture in the CU leads to similar results as the complete liberalisation of agricultural trade.

Keywords: Turkey, Customs Union, CAP, Agricultural Sector Model

1. Introduction

Turkey and the EU established a CU in January 1996. This CU, however, is limited to industrial products; agricultural products are not included. But a significant part of agricultural trade between Turkey and the EU is subject to preferential trade rules which have been extended in various negotiation rounds since the Association Agreement in 1963.

The Customs Union Decision states "The Community and Turkey shall progressively improve, on a mutually advantageous basis, the preferential arrangements which they grant each other for their trade in agricultural products" (Art. 24, Customs Union Decision).² No time schedule is foreseen for this process, and Turkey's commitment to "...adjust its policy in such a way as to adopt the Common Agricultural Policy measures required to establish freedom of movement of agricultural products" remains rather nebulous as nothing is said about any specific measures or a timetable for adoption.

Therefore, no specific commitments with regard to the further liberalisation of agricultural trade between Turkey and the EU follow from the Customs Union Decision. This leads to the question of at which speed Turkey should engage in agricultural trade liberalisation with the EU. The basis for such a discussion must be a thorough analysis of the effects of such an integration of agricultural markets between Turkey and the EU on the most affected groups in

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² OJ L35, 13.02.1996.

Turkey. Accordingly an analysis is performed in this study which assesses effects of including agricultural products in the CU on Turkish agricultural producers, consumers, and the Turkish budget.

This research topic is different from the analysis of full EU membership of Turkey on the Turkish agricultural sector. In case of full membership the Common Agricultural Policy (CAP) would be applied to Turkey and be paid from the EU budget, not only the external trade regime as in a CU. As Turkey is a relatively poor country and would therefore contribute little to the EU budget, high net transfers to Turkey would result from such a scenario.³

Full membership, however, seems distant even after the Copenhagen summit in 2002. The start of accession negotiations in 2005 seems possible if Turkey proceeds to fulfil the Copenhagen criteria which are a prerequisite for the start of negotiations. But accession negotiations could take many years, due to issues currently more at the forefront than agricultural policies, and most observers believe Turkey will not become a full member before 2014. If one looks at the speed of change in the CAP since the MacSharry-Reform in the early nineties, it seems probable that the CAP will have changed significantly in 2014 compared to today for a variety of reasons. Therefore, this study concentrates on the effects of full agricultural market integration without the CAP being applied in Turkey. Agricultural policies would be harmonised only to the degree necessary for the technical functionality of a CU. But agricultural policy in Turkey would be financed from the Turkish budget.

The understanding of current characteristics of the agricultural sectors in Turkey and the EU, and especially the various agricultural policies applied, is a necessary basis for the analysis of market integration. Therefore, Sections 2 and 3 compare agricultural sectors, markets, and policies, and give an overview of current agricultural trade and trade policies between Turkey and the EU. Subsequently, the methodological approach for the analysis of market integration, a partial equilibrium model of the Turkish agricultural sector, and simulation scenarios are presented in Section 4. Results are presented and discussed in Section 5. Finally, some summarising conclusions are drawn in Section 5.

³ After Turkey's application for full membership in 1987, several studies analysed the budgetary effects of applying the CAP to Turkey (Akder et al., 1990; Manegold, 1988). Based on the reasoning above, they all found significant net transfers under the CAP to Turkey. Findings in newer studies (Quaisser and Repegather, 2004; Grethe, 2004a) are similar, although quantitative results vary strongly due to the analytical tools applied and assumptions on the design of the future CAP.

2. Current Agricultural Markets and Policies in the EU and Turkey

The agricultural sector plays a different role in the EU and Turkey, according to the state of economic development in both countries. Table 1 shows some general economic indicators as well as specific characteristics of the agricultural sectors.

Table 1: Basic Economic and Agricultural Indicators in Turkey and the EU 25 (bill. €)

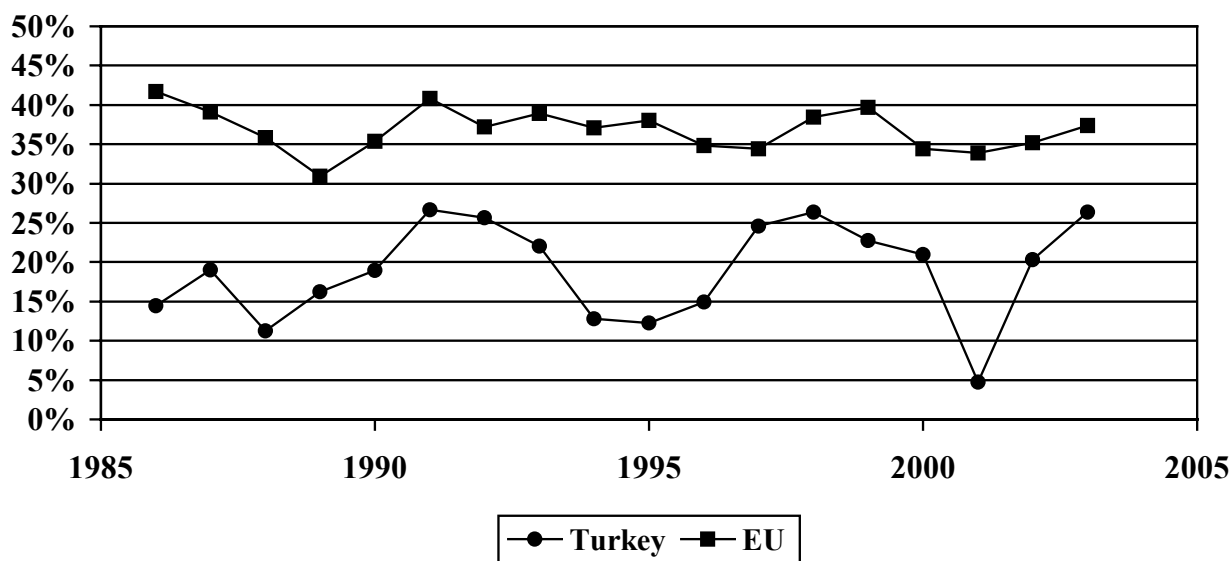
	EU-25	Turkey	Turkey/EU
Population (mill.) (2002)	453.0 ^b	70.3 ^a	15.5%
GDP (2003)^b	9,738.9	212.3	2.2%
GDP in PPS <i>per capita</i> (2003, €/year)^b	23,270	5,750	24.7%
GDP of the agricultural sector (2003)	194.8	31.4	16.1%
As a share in total GDP	2.0% ^g	14.8% ^c	
Agricultural production value (2001/02)	282.8 ^d	25.6 ^e	9.1%
of which plant products	52.0% ^d	72.0% ^e	
of which animal products	48.0% ^d	28.0% ^e	
Share of employment in agriculture. (EU 2002, Turkey 02/03)	5.4% ^d	34.4% ^f	
Agricultural exports (2001/02), EU-15 without intra trade	60.7 ^a	3.0 ^a	4.9%
compared to agricultural production	21.1%	11.7%	
Agricultural imports (2001/02), EU-15 without intra trade	56.5 ^a	4.1 ^a	7.3%
compared to agricultural production	19.6%	16.0%	
Agricultural trade balance (2001/02), EU-15	-4.2	1.1	
compared to agricultural production	-1.5%	3.4%	

Sources: ^a FAO (2004), ^b Eurostat (2004a), ^c SIS (2004a), ^d European Commission (2004a), ^e SIS (various issues): Agricultural Structure, ^f SIS (2004b), ^g European Commission (2004b), own calculations.

Table 1 shows that Turkey is a large country, in terms of population as well as size of the agricultural sector, which account for around 15% of the respective EU-25 levels. Turkey, however, is a relatively poor country: GDP in purchasing power standards (PPS) *per capita* is only about 25% of the EU-25 average, and accordingly the total GDP is only 2.2% of that of the EU. In the EU, animal products have a much higher share of the production value than in Turkey. The low development of the Turkish agricultural sector in terms of mechanisation and farm size is reflected in the high share of employment in agriculture, which is about 35% compared to 5.4% in the EU. The EU is a slight net importer of agricultural products whereas Turkey is a clear net exporter. Agricultural imports and exports as a percentage of the value of agricultural production are higher in the EU than in Turkey indicating a higher degree of integration into the international trade environment.

Both, Turkey and the EU support their agricultural producers heavily through far-reaching domestic and trade policies. Graph 1 provides an overview of the percentage producer support estimate (PSE) for Turkey and the EU.

Graph 1: Percentage PSE in Turkey and the EU 1986-2003



Source: OECD (2004).

Graph 1 shows that the PSE in the EU was between 30 and 42% of agricultural production value between 1986 and 2003. During the same period, the PSE was much more volatile in Turkey and at a significantly lower level between 11 and 27% of production value in all years except 2001.⁴ The higher volatility of the PSE in Turkey results from a higher volatility of the real exchange rate as well as more pronounced changes in agricultural policy.

The composition of the total PSE varies strongly between Turkey and the EU. In the EU, the market price support component has declined significantly since the McSharry reform in 1992 and is now below 60%, with much of this support component having been replaced by direct payments. In Turkey, the market price support component was about 70-80% in this period. Before 2002, non-market price support was mainly concentrated on input and credit subsidies. In recent years, input subsidies were abolished and an increasing share of support is granted in the form of direct payments to producers under a World Bank supported agricultural policy reform programme (World Bank, 2004).

The inclusion of agricultural products in the CU would imply a complete abolishment of political trade barriers still in force between Turkey and the EU and the application of the EU tariff schedule in Turkey for imports from third countries. This would lead to an alignment of prices for agricultural products in Turkey and the EU, which are currently still subject to trade

⁴ The low level in 2001 mainly stems from the macroeconomic crisis and sudden devaluation of the Turkish Lira, which lead to a low market price component in that year.

barriers. Remaining trade barriers would be due to transportation costs, quality differences, and different transaction costs in the marketing chain. In order to get a first impression of the price changes which can be expected in case of an extended CU and of the necessary policy changes, price and protection levels for selected products are compared in the following.

Table 2 presents and compares producer prices for selected crops in Turkey and the EU for the two most recent years available.

Table 2: Farmgate Prices for Crops in Turkey and the EU (€/t)

Product and Year	Turkey	EU	Turkey/EU
Cereals			
Wheat (2002-2003)	177	119	149%
Barley (2002-2003)	117	104	113%
Corn (2002-2003)	164	132	130%
Other Crops			
Sunflower seed (2002-2003)	342	281	122%
Tobacco (2002-2003)	2559	2350	109%
Sugar (wholesale, 2001-2002)	681	715	95%

Sources: OECD (2004), SIS (various issues): *Wholesale Price Statistics*, Eurostat (2004b), European Commission (2004b), own calculations.

Table 2 shows that, in recent years, cereal prices in Turkey were significantly above those in the EU. This reflects the different level of intervention prices: In the EU the intervention price is at €101.31/t for all cereals. This is below current world market price levels and medium-term projections, and the intervention price will therefore probably be of little importance for EU market price formation in the future, at least for wheat and corn. In 2003, cereal intervention prices in Turkey were around \$200/t (USDA, 2003). This indicates that Turkey would have to lower its support prices with market integration with the EU, and cereal producers would receive much lower prices under a normal world market situation.

For oilseeds, the EU applies no tariffs. Prices are, therefore, at world market level. In contrast, Turkey applies significant tariffs for oilseeds and Table 2 shows that sunflower seed prices in Turkey are significantly above the EU level. For tobacco, both the EU and Turkey apply price support through tariffs, although Turkish tariffs and prices are slightly higher. In addition, Turkey is paying implicit export subsidies provided through budgetary losses of state trading enterprises (Grethe, 2004b: 83). For sugar, both the EU and Turkey provide high protection through an intervention price system, high tariffs, and export subsidies (implicit in the case of Turkey) and both countries apply a supply control system with production quotas at the farm level. The EU price was about three times as high as the average world market price in 2002-2003 and the Turkish price was slightly lower.

For fruit and vegetables, farmgate prices are generally below average EU level in Turkey, but a comparison is not reported here as it has little explanatory power because of quality differences. Most fruit and vegetables can currently be exported from Turkey to the EU without any tariffs or other political market barriers. Exemptions are some seasonal *ad valorem* tariffs at a level between 10 and 20%, and high specific tariffs for olive oil. For all of these products Turkey is a net exporter and abolition of remaining market barriers would probably result in slightly increasing prices in Turkey. Effects of the entry price system, which the EU fully applies to Turkey for imports of some fruit and vegetables, are difficult to assess.⁵ But Turkish exporters report that the EU entry price system does usually not act as a trade barrier due to the high domestic prices for those products of a quality which can be exported to the EU. Table 3 presents and compares prices for animal products in Turkey and the EU for the most recent years available.

Table 3: Prices for Animal Products in Turkey and the EU (€/t)

Product and Year	Turkey	EU	Turkey/EU
Meat (Farmgate prices, 2002-2003)			
Beef	3.291	2.404	137%
Sheep meat	3.642	4.166	87%
Poultry	1.109	1.000	111%
Dairy Products			
Farmgate price milk (2002-2003)	241	312	77%
Butter (wholesale/intervention price, 2001-2002)	5.009	3.282	153%
Skim milk powder (wholesale/intervention price, 1998-2000)	4.300	2.055	209%
Eggs (2002-2003)	1.234	1.064	116%

Sources: OECD (2004), AgraEurope (London) Ltd. (2004), SIS (various issues): *Wholesale Price Statistics*, skim milk powder prices from private companies, own calculations.

In Turkey and the EU, meat markets are largely protected by prohibitive tariffs. In addition, Turkey applies an import ban on red meat and live animal imports; a ban officially stated to be due to the danger of a potential outbreak of foot and mouth disease, but widely considered to be primarily motivated by protectionist aims. Prices for beef and poultry, as well as eggs, are significantly higher in Turkey than in the EU. Although for poultry and eggs the high protection level for cereals and other feed components compensates, and in some years even overcompensates, for the higher protection on the output (Grethe and Uzmay, 2000). Sheep meat prices are slightly lower in Turkey than in the EU.

For cow's milk, the Turkish farmgate price is more than 20% below the EU level. Although prices for processed dairy products are much higher in Turkey. This raises the interesting question of whether this price difference can be explained by higher collection and processing

⁵ For a comprehensive analysis of the effects of the EU entry price system see Grethe and Tangermann (1999).

costs in Turkey, or is due to some kind of cartel-like behaviour of dairy processing companies in an oligopolistic market which is generally isolated from international competition (Aksoy, 2000; Grethe, 2004b: 50). Should the markets be integrated, competition would not take place at the level of raw milk, but rather for processed products like cheese, butter, and skimmed milk powder (SMP), thus Turkish prices for milk products are likely to fall with an extension of the CU.

Many other policies are applied in Turkey and the EU which potentially distort competition, e.g. direct payments to farmers, credit and input subsidies. Still, it would not be necessary to harmonise these policies from a purely technical perspective for the functionality of a CU; in the current EU-25 these policies are harmonised to a very limited degree. The level of input as well as credit subsidies varies considerably among member states and, at least for the 10-year period of phasing in direct payments for the new member states, direct payments are also applied to a very different degree. It is therefore assumed that Turkey would not adjust such policies to the EU level for this study, so that they can be ignored in the quantitative analysis presented below.

3. Current Agricultural Trade and Trade Rules between Turkey and the EU

The EU is the most important single trading partner of Turkey in total trade as well as in agricultural trade. About 58% of agricultural exports of Turkey went to the EU on average of the years 2000 and 2001. Fruit and vegetables covered more than 70% of these exports. During the same period about 26% of Turkey's agricultural imports, which were much more diversified than exports, came from the EU (SIS, various issues: *Trade Statistics*; Eurostat, various issues).

At various times since the Association Agreement, tariff preferences have been granted by the EU for agricultural products originating from Turkey. Since 1987, almost all *ad valorem* tariffs have been abolished. In some cases reduced rates are also granted for specific duties. In 2001, about 7% of Turkish agricultural exports to the EU were not subject to tariffs or the entry price system, because the EU does generally not apply any import barriers to these products on a most favoured nation (MFN) basis (for example cotton and oilseeds). More than 54% of Turkish agricultural exports to the EU were tariff/entry price system free due to trade preferences. Most of fresh as well as processed fruit and vegetables fall into this group. Furthermore, about 36% of Turkish agricultural exports to the EU were subject to a partial preferential tariff reduction, but they were still subject to a reduced tariff rate (olive oil) and/or the entry price system (some fruit and vegetables). Only for the remaining 2% Turkey paid the

MFN tariff rate. Turkey also grants preferential access for imports of cereals, oilseeds, meat and dairy from the EU, which are all limited in the form of tariff rate quotas.⁶

The above analysis shows that Turkey gains from the current preferential access to the EU market. But nothing can be said on this basis about the degree, to which potential exports to the EU are still prohibited by the remaining EU barriers. For the analysis of the complete removal of remaining barriers under a completed CU, the following analytical framework is applied.

4. Analytical Framework for the Quantitative Analysis of Full Agricultural Market Integration

The extension of the current CU between Turkey and the EU to cover agriculture would lead to multiple consumer and producer price changes. In order to depict the effect of such simultaneous price changes on consumption, production, trade, and the Turkish budget, a partial equilibrium model of the Turkish agricultural sector, the Turkish Simulation Model (TURKSIM) was developed.

As the Turkish agricultural sector is large in terms of employment as well as its share in GDP, fundamental changes in agricultural policy affect the economy as a whole, which, in turn, would have effects on the agricultural sector. A Computable General Equilibrium (CGE) approach would therefore be desirable. On the other hand, CGE models typically do not cover the agricultural sector in sufficient detail to analyse complex changes in relative prices within the sector. The choice has therefore been made to develop a partial model for this study and combine the analysis in the future with a CGE approach. With such a combination any fundamental changes in the agricultural sector revealed by the partial approach (nominal protection rates) could then be fed into a CGE model and CGE results (changes in real exchange rate, factor prices, and income) could then be fed back into the partial approach in order to adequately cover general equilibrium effects. Münch (2002) has applied such an approach for the simulation of EU Eastern enlargement.

TURKSIM depicts supply of 34 farm products, which cover more than 85% of agricultural production value in Turkey. Furthermore, processing of oilseeds, feed demand for nine feed products and human demand for 36 products is modelled.

World market as well as EU prices are exogenous to the simulation model because Turkey is a relatively small country compared to the world market as well as the EU market, particularly as there is a large number of institutional prices in the EU. Based on this consideration TURKSIM is a one-country model. Trade is depicted as net trade without consideration of

⁶ For a detailed description of preferential trade rules between Turkey and the EU see Grethe (2004b: 57-68).

bilateral trade flows, as the research is concentrated on effects on Turkish markets, and not EU or third countries' markets which may be affected by trade diversion. Therefore, model results do not permit conclusions on questions of, for example, whether increased tomato paste exports from Turkey in an extended CU go along with i) higher consumption in the EU, ii) lower production in the EU, iii) higher exports of the Turkey/EU CU, or iv) lower EU imports of tomato paste from third countries.

Domestic prices are not unambiguously determined by international prices in TURKSIM. They are depending on the net trade situation, i) import price determined, ii) export price determined, or iii) subject to domestic price formation with domestic market clearance in a no-net trade situation. Import price and export price determined domestic prices are fixed exogenously to the simulation model for each product and scenario. The margin between them results from i) the cif-fob spread, ii) domestic transportation cost, iii) and different levels of market policies on the import and the export side.⁷

Farm supply is modelled for nine production regions in order to be able to adapt behavioural parameters to the regional heterogeneity of production conditions as well as to derive regional results for agricultural production and income. Demand, processing, and price formation are modelled on a national level. Demand is modelled for income quintiles in order to depict effects on income distribution. This is considered crucial because income distribution in Turkey is rather unequal (The Gini coefficient of income distribution is at 0.49), distributional effects often are important when discussing policy options with different interest groups, and the reduction of income inequality is a declared policy aim (State Planning Organization, 2001: 111). Policies depicted include tariffs, export subsidies, producer subsidies, and production quotas.

Behavioural functions generally are linear in logarithms. Behavioural parameters stem from various sources and are composed "synthetically". Income elasticities of the quantity demanded are estimated econometrically for selected products with high shares in the Turkish diet: wheat, oils, milk, eggs, beef, sheep meat, and eggs. This is because they are of crucial importance in a projection model with high income growth being projected over a relatively long period, and the existing literature was scanty. Estimates of demand systems are often based on cross-section expenditure data. Income elasticities which are estimated based on such data sets include, next to the quantity component (more beef with rising income), a quality component (filet instead of sausages). The use of such income elasticities in a simulation

⁷ For a comprehensive description of the resulting price transmission see Grethe (2004b: 102-8).

model which can't depict the quality shift overestimates the effect of rising income, especially in case of a long projection horizon. Therefore, income elasticities of household demand were estimated based on cross-section quantity data of household demand for income quintiles. The a priori hypothesis of low income elasticities for basic food was supported: the estimated income elasticity for wheat is positive only in the lowest quintile whilst in higher quintiles it is below zero. Elasticities found for the medium quintile vary between -0.14 for wheat and 0.8 for poultry.⁸ Other elasticities are based on the existing literature (Kasnakoglu and Gurkan, 1986; Bayaner and Hallam, 1996; Bayaner, 1996; USDA, 2002; Koc et al., 1998) or are based on expert interviews and plausibility considerations. For supply and demand elasticity matrices, homogeneity of degree zero (in in- and output prices at the supply side, in prices and income at the demand side, and in feed component prices in feed demand per unit of animal output), symmetry of (compensated) cross-price effects and adding up of income elasticities at the demand side, which follow from economic theory, all hold locally for the base period and homogeneity holds globally.

Starting from the model base period 1997-1999, effects of three different policy scenarios are analysed for the year 2006. Exogenous shifters like population and income growth, technical progress, and additional irrigated area in the Southeast of Turkey are equal for all scenarios. Also world market price projections are equal for all scenarios. With respect to Turkish agricultural policy, though, scenarios differ significantly.

Under the status quo scenario, which serves as a benchmark, Turkish agricultural policies are changed only to the degree necessary in order to fulfil Turkey's WTO commitments. Under the liberalisation scenario, Turkey fully liberalises its agricultural markets with respect to all trading partners. Under the CU scenario, agricultural products are fully included in the CU. For this scenario, the relevant import and export prices for Turkey are derived from plausibility considerations. In some cases these are the projected institutional prices, e.g. EU intervention prices for SMP and butter. Projections are based on the full implementation of the Agenda 2000 and on the assumption derived from the past that EU support prices are fixed nominally and are not adjusted for inflation. In other cases the respective import and export prices of the status quo scenario are adjusted only to the degree, which is expected based on the abolition of existing trade barriers. For example, in the base period the Turkish farmgate price for tomatoes was only 45% of the EU price. But this difference was not due to any remaining policy barrier,

⁸ For full documentation of data, estimation and results see Grethe (2004b: 133-53).

but to quality differences and transportation costs. Therefore, a CU would have no effect on the Turkish export price of tomatoes.

5. Results

Table 4 shows changes in farmgate prices, production quantity, and production value under the liberalisation and the CU scenarios compared to the status quo scenario.

Table 4: Price and Production Changes at Farm Level: Liberalisation and CU Scenarios Compared to the Status Quo Scenario (2006, %)

Columns	Farmgate price (quantity weighted)		Output quantity (price weighted)		Output value	
	Lib 1	CU 2	Lib 3	CU 4	Lib 5	CU 6
Cereals	-12.2	-11.1	-4.5	-4.5	-16.0	-14.9
Other crops	-7.2	2.0	-0.6	2.4	-7.4	4.6
Fruit	-4.1	0.0	-1.1	0.5	-4.3	1.6
Vegetables	-0.8	-0.4	-1.1	-0.3	-1.9	-0.6
Total plant products	-6.4	-2.3	-1.8	-0.4	-7.7	-2.1
Animal products	-25.2	-10.6	-13.8	-4.4	-34.0	-13.7
Total products	-11.8	-4.7	-5.2	-1.5	-15.2	-5.4

Source: own calculations.

As Column 1 of Table 4 shows, farmgate prices for all product groups decline in the liberalisation scenario compared to the status quo scenario. For cereals the decline of 12.2% is the highest among plant products, whereas the fall in fruit and vegetable prices is relatively low. In the other crops product group, the average price decrease of 7.2% in a liberalisation situation results from the abolition of the export subsidy for tobacco, and the tariffs for sunflower seed and sugar. The fall of the average fruit price by 4.1% mainly results from the abolition of the tariff and a strong decline of the price for tea by 65%, which falls into this product group. On average, prices for plant products decline by 6.4% compared to the status quo scenario. For animal products the average price decline is 25.2%, mainly resulting from strongly decreasing milk and red meat prices whereas poultry meat and egg prices decline only modestly. Due to high domestic transportation cost, elasticities of price transmission between border prices and domestic market prices, which are based on econometric estimates, were applied for meat (0.66) and milk and eggs (0.8). If price transmission elasticities for red meat and milk were set to unity, as they are for other products, the average price decline for animal products would be 33.5%.

Under the CU scenario, plant prices decrease by almost the same level for cereals and vegetables whereas they remain constant for fruit, and increase by 2% for other crops. The large difference for other crops compared to the liberalisation scenario results from a much

higher sugar price and slightly higher prices for onions and potatoes. For animal products, the average decline in farmgate prices in the CU scenario is 10.6% compared to the status quo scenario, which is still about 15 percentage points above the liberalisation scenario. This is due to the protection granted for sheep meat and for milk in the CU scenario. The overall price decline for agricultural products under the CU scenario is 4.7%, less than half the level of the liberalisation scenario.

Column 3 of Table 4 shows that the farm supply quantity of all product groups falls in the liberalisation scenario which is in conformity with the decreasing price level for all products. Compared to the significant price reduction of 7.2% for other crops, the decrease in quantity of that same product group at 0.6% is surprisingly small. This is because the price reduction for other crops is mainly due to the decreasing sugar price, which has only a limited production effect because the shadow price is 31% below the farmgate price in the status quo scenario. Altogether plant production decreases by only 1.8% under the liberalisation scenario compared to the status quo scenario, which is small compared to price reductions. This is due to relatively low supply elasticities for crops, the low shadow price for sugar, and strong cross-price relationships among products. For animal products, farm production under the liberalisation scenario is 13.8% below the status quo scenario. The stronger decline in production than for plant products is due to a more distinct fall in prices as well as higher supply elasticities for animal products.

Under the CU scenario (Column 4), the overall decrease in production is smaller due to less significant price reductions. Especially in the case of animal products, the decrease is only 4.4% compared to 13.8% under the liberalisation scenario. This result is mainly due to smaller reductions for sheep meat and milk prices. In value terms (Columns 5 and 6), agricultural production decreases by 15.2% under liberalisation, and by 5.4% under the CU scenario, if compared to the status quo.

Effects of different policy scenarios differ regionally due to the strong regional heterogeneity of production conditions and the resulting differences in composition of production. Table 5 presents changes in production value compared to the status quo scenario for selected regions.

Table 5: Changes of Production Value in Selected Regions (%)

	Liberalisation/status quo			CU/status quo		
	Plant	Animal	Total	Plant	Animal	Total
National average	-7.7	-34.0	-15.2	-2.1	-13.7	-5.4
Aegean	-4.0	-29.9	-11.4	-0.1	-12.3	-3.6
Northeast	-15.6	-43.7	-32.2	-6.2	-16.6	-12.4
Black Sea	-15.4	-40.5	-22.8	-11.1	-15.3	-12.3

Source: own calculations.

Table 5 shows that the decline of production value is heterogeneous among regions. For example, for the Aegean region the decline is significantly below the national average. For plant products this stems from the high share of fruit and vegetables for which the price decline is modest. For animal products the reason is a high share of poultry meat and eggs, for which prices decline less than for red meat and milk. In the Northeast as well as the Black Sea region, on the other hand, the decline in production value is above national average. This results from the high share of sugar production in the Northeast and the high share of tea production in the Black Sea region. An additional factor in the Northeast is the high share of animal products in total agricultural production, which results in a decline of agricultural production value in the Northeast under the liberalisation scenario, which is more than twice the national average.

Changes in production and consumption as well as international prices under different scenarios affect the net trade position of Turkey, which is shown in Table 6.

Table 6: Net Trade by Product Group under Different Scenarios (mill. €)

	Base	Status quo	Liberalisation	CU
Cereals	-35.4	-264.8	-396.6	-466.8
Other crops	364.4	66.7	-78.2	183.1
Fruit	683.9	691.4	550.1	795.2
Vegetables	364.2	313.9	142.5	204.4
Total plant products	1,377.2	807.2	217.8	715.9
Animal products	-3.9	14.0	-1,520.9	-702.0

Source: own calculations.

Turkey is a net importer of cereals under all scenarios and net imports increase by about €230 million under the status quo scenario. In case of complete liberalisation or a CU, net imports increase even more. Higher net imports of cereals under the CU scenario compared to the liberalisation scenario are mainly due to higher feed demand in a situation of significantly higher prices for milk and sheep meat. Net exports of other crops decrease under the status quo scenario, mainly due to the abolition of the export subsidy for sugar and the reduction of the export subsidy for tobacco to comply with WTO commitments. Under the liberalisation scenario, Turkey is a net importer of other crops, mainly due to the complete liberalisation of the sugar market. Under the CU scenario, Turkey is a significant net exporter of other crops as

prices for sugar, onions, and potatoes are significantly above those under the liberalisation scenario. For fruit and vegetables, as well as for the sum of all plant products, Turkey is a net exporter under all scenarios.

For animal products, Turkey's trade situation is almost balanced in the base situation as well as under the status quo scenario. Under the liberalisation scenario, Turkey becomes a net importer of about €1.5 billion of animal products, which decline to about €0.7 billion under the CU scenario due to higher prices for milk and sheep meat.

Welfare changes under the liberalisation and the CU scenario compared to the status quo scenario are presented in Table 7. Changes in producer surplus are chosen as welfare measures at the supply side and they are calculated sequentially as integrals below supply curves. At the demand side, the compensating variation is calculated sequentially as integrals below compensated demand curves.

Table 7: Welfare Changes Compared to the Status Quo Scenario in 2006 (mill. €)

	Liberalisation	CU
Change in producer surplus	-2,749	-1,036
Change in consumer welfare	3,470	1,523
Budgetary effects	-54	-5
Total	667	482

Source: own calculations.

Table 7 shows that consumer gains under both scenarios by far exceed producer losses. Budgetary effects stem from savings on export subsidies and reduced revenue from tariffs and are, on aggregate, negative and relatively small. Total welfare effects under the liberalisation scenario add up to about €670 million. This is about 2.3% of projected agricultural production value in 2006, or 0.4% of projected GDP. Under the CU scenario, total welfare gains are €185 million lower. This difference of €185 million can be decomposed as shown in Table 8.

Table 8: Disaggregation of Net Welfare Effects of the CU Compared to the Liberalisation Scenario (mill. €)

Turkey's advantage resulting from higher export prices (fruit, vegetables)	58.8
Turkey's disadvantage resulting from higher import prices (dairy products)	-47.7
Total terms of trade effect	11.1
Allocation effect	-196.1
Net welfare effect	-185.0

Source: own calculations.

First, Turkey gains from higher export prices for some fruits and vegetables compared to exports at world market prices. Second, Turkey has to pay higher import prices for dairy products from the EU than it would have to pay for imports at world market prices. These two effects together are referred to as the terms of trade effect of the CU in Table 8, and sum up to

about €11 million. The third, and most significant component of the total welfare effects of a CU, results from the fact that Turkey does not base its consumption and production decisions on world market prices, but on prices which prevail under a CU, i.e. Turkey does not fully make use of the potential gains from trade. This effect is named the allocation effect in Table 8 and amounts to about -€196 million. This allocation effect can also be described as a welfare loss for Turkey if it were to apply the protection level resulting from the CU unilaterally through tariffs and export subsidies, without any change in import and export prices, compared to the liberalisation scenario.

Finally, welfare effects of a liberalisation of the agricultural sector on different income groups are discussed. Table 9 shows the compensating variation of full liberalisation compared to the status quo scenario for all consumers as well as the first and the fifth income quintiles.

Table 9: Compensating Variation by Income Quintile

	Liberalisation Compared to Status Quo		
	Mill. €	% of food expenditures^a	% of total expenditures
Total	3,470	11.2	2.5
Lowest quintile	472	11.1	3.9
Upper quintile	916	11.2	1.6

^a only expenditures for products included in TURKSIM at wholesale value.

Source: own calculations.

Table 9 shows that the change in consumer welfare which results from liberalisation of the agricultural sector in the upper quintile is almost twice as high in absolute terms as in the lower quintile. This simply reflects the fact that high income groups spend more money on food than low income groups. Furthermore, Table 9 shows that the change in consumer welfare expressed as a percentage of food expenditure differs very little between quintiles. This is, at a first glance, somewhat surprising as animal product prices decrease significantly more under the liberalisation scenario than do plant product prices (see above), and at the same time animal products cover a higher share of food expenditure in higher income quintiles than in lower ones. If one looks into the disaggregated results, however, one sees that for dairy products, which account for more than half of expenditures for animal products and for which the price reduction is high, the expenditure share is higher in low income quintiles than in higher ones. Also on some plant products, for which prices strongly decline, like wheat and sugar, low income quintiles spend a higher expenditure share than high income quintiles. Together these effects offset the distributional effect of strongly declining red meat prices which affect higher income quintiles relatively more.

If one compares welfare changes to total expenditure, the lower quintile gains more than twice as much as the upper quintile, which simply reflects the fact that the lower quintile spends a much higher share of its income on food.

6. Conclusions

To summarise this assessment how an extension of the CU to include agriculture would affect the Turkish agricultural sector, the effects of a full liberalisation of the Turkish agricultural sector are discussed first. This is because the CU would have similar effects on many products. Second, the pros and cons of a liberalisation within a CU with the EU are discussed and compared to a complete liberalisation.

The complete liberalisation of the relatively highly protected Turkish agricultural sector would lead to significant static comparative welfare gains as shown above. For the year 2006, these welfare gains are estimated at about €670 million or 2.3% of projected agricultural production value. Other effects, such as general equilibrium effects, enhanced productivity growth, and increased efficiency in marketing and processing due to higher competition, would result in additional welfare gains. TURKSIM simulations show that additional welfare gains due to increased competition resulting in marketing margins decreasing by 10% could be about €700 million.⁹ These results are relatively stable, even in the face of variation of critical exogenous parameters like the real exchange rate, the shadow price for sugar, and varying supply and demand shifters.

From a distributional point of view, a liberalisation would lead to a more equal distribution of real income of consumers in relative terms because lower income groups spend a higher share of their income on food and therefore gain relatively more from lower food prices. However the distribution from producers to consumers and thus from rural to urban areas which results from lower agricultural prices may conflict with Turkish policy interests. Although better options for poverty reduction exist than agricultural price policy which mainly accrues benefits to large farmers. Policies better aimed at social and regional development objectives include enhanced public investment in rural infrastructure such as schools, roads, medical care, and so on. People in rural areas benefit from such policies more equally, independent of their farm size or income source. Furthermore, productivity in Turkish agriculture has the potential to increase significantly through investments in education of farmers, as almost no training opportunities for farmers currently exist.

⁹ A decrease of marketing margins could also result from a loss of a former monopoly rent, if any. Such a redistribution could not be interpreted fully as welfare gains, but would include for a large part a mere redistribution from producers to consumers.

Based on the above analysis, the inclusion of agricultural products in the CU does not seem to be advantageous for Turkey compared to unilateral liberalisation. Welfare gains under a complete liberalisation of Turkish agricultural policies are higher and Turkey would have more scope to set market policies according to its specific situation. This situation may have changed somewhat with the accession of Central European countries to the EU in 2004, which could improve Turkey's formerly disadvantageous geographic location for exports of fresh products to the EU. Central European demand for fruit and vegetables is projected to increase with increasing incomes, and Central European markets may also be more suitable for somewhat lower qualities at lower prices than Northern and Western European markets.

Finally, if Turkish policy makers intend to liberalise agricultural markets with the motivations of efficiency, budgetary austerity, and income distribution, it may be easier to do so in a CU than on a MFN basis. This is because liberalisation may be easier to defend to the Turkish public if it "must be done" because of the CU. The CU could therefore have the same self-binding function for Turkish policymakers as the WTO process has had for many politicians in industrialized countries.¹⁰ Such a long-term binding of agricultural policies in a CU could also have positive effects on the disposition for domestic and foreign investments in the Turkish food processing industry.

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¹⁰ Fernández and Portes (1998) provide a structure of the mechanisms of such self-binding resulting from regional trade agreements and discuss their significance based on the example of the North American Free Trade Area and the Europe Agreements of the EU with the Central European countries.

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