

TRADE LIBERALIZATION AND TURKISH AGRICULTURE: Threat or Opportunity^{*}

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1. Introduction

Agriculture in Turkey is in transition from a latent sector acting as the labor sink of the rural population towards a more dynamic sector responding to market signals. Several internal and international factors are in play to enforce the structural change in the agro-food sector. Food manufacturing is becoming more sensitive to the attributes of intermediate inputs rather than the cost of procurement. The increase in the concentration of retail business is decreasing the transaction costs of the consumers and hardening the competition in the market. Ongoing structural adjustment and stabilization program continues to be the driving force for the transformation of the primary agricultural production which has been suffering from the ineffective set of policies and its increasing burden on government expenditures prior to the economic crisis in 2001. The pressure from the new phase of WTO-Agreement on Agriculture has been postponed; however Turkey has started the membership negotiations with the EU. The membership negotiations will eventually require more opening in the agro-food market with the major trading partner. Hence, more liberalized trade in agro-food products should occur, at least with the major trading partner, in the near future regardless of the perception related to trade liberalization.

The organization of the paper is as follows: The first section is devoted to an overview of macro and agricultural indicators including a short discussion on the path of supports to agriculture and the recent policy developments. Recent developments on the trade in agro-food products are summarized in the third section. The modeling results on the effects of trade liberalization with the EU will be discussed in the fourth section. The last section will be reserved for the concluding remarks.

2. Overview of the Macro and Agricultural Developments in Turkey

Agriculture does not operate in a vacuum. Macroeconomic stability is necessary to improve the performance of the agricultural sector. Frequent economic crises in the last two decades and the mismanagement of the agricultural policies delayed the structural change in the agriculture. The sector still dominates the rural economy providing about 70 percent of the employment. The dualistic structure of production has all the basic traits of a developing economy with dominant share of production concentrated in small holdings, co-existing with commercial and mostly export-oriented producers. The production structures in fishing and food manufacturing are similar.

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Turkey started the new millennium with another IMF backed macroeconomic stabilization and structural adjustment program. At the beginning the program was mainly depended on fiscal austerity measures combined with pegged exchange rate regime. It was interrupted by a serious financial crisis in the early 2001. The current program, still backed by IMF, relies mainly on two pillars: fiscal austerity and contractionary monetary policy. The ratio of the public sector budget surplus excluding the interest payments to the GDP is targeted to be 6.5 percent. The independent Central Bank of Turkey has the responsibility to implement the monetary policy through inflation-targeting, aiming to maintain the price stability (Yeldan and Voyvoda, 2006).

The recent developments in the aggregate indicators are presented in Table 1. The growth performance of the economy was outstanding with back-to-back growth of above 6 percent in the last four years. The inflation slowed down to 10 percent from over 70 percent a decade ago. All budgetary targets were achieved. However, despite the increase in investments (mostly private), the economy was not able to respond to the increase in the labor force. The unemployment rate has been sticky at around 10 percent.

Table 1. Selected Macroeconomic Indicators, 1998-2005

	1998-99	2000	2001	2002	2003	2004	2005
Growth and Accumulation							
GDP (current USD billion)	192.3	199.9	145.7	184.5	241.1	302.9	363.6
Real GDP Growth (percent)	-0.8	7.4	-7.5	7.9	5.8	8.9	7.4
GDP per capita (current USD)	2,928	2,963	2,123	2,644	3,402	4,257	5,046
Real GDP per capita Growth (percent)	-2.6	5.5	-9.0	6.2	4.1	8.5	6.0
GDP per capita PPP (current USD)	6,133	6,510	6,184	6,667	7,069	7,753	n.a.
Domestic Savings/GNP (percent)	22.0	18.2	17.5	19.2	19.3	20.2	19.5
Gross fixed investments/GNP (percent)	23.2	22.8	19.0	17.3	16.1	18.4	20.3
Distribution and Budget (percent)							
Inflation – CPI	69.3	39.0	68.5	29.8	25.3	10.6	10.1
Unemployment Rate - Turkey	7.2	6.5	8.4	10.3	10.5	10.3	10.3
Budget Balance/GNP	-9.3	-10.9	-16.2	-14.3	-11.2	-7.1	-2.0
Public Sector Borrowing Requirement/GNP	12.2	12.5	16.4	12.6	9.4	4.7	0.9
Real Interest Rate on Govt. Debt Instruments	33.2	4.5	31.8	9.1	15.4	13.1	10.4
Internationalization							
Rate of Change of the USD exchange rate (percent)	-	48.5	96.5	22.9	-0.8	-4.7	-5.7
Total Exports (USD billion)	26.8	27.8	31.3	36.1	47.3	63.2	73.5
Total Imports (USD billion)	43.3	54.5	41.4	51.6	69.3	97.5	116.8
Current Account Balance (USD billion)	0.3	-9.8	3.4	-1.5	-8.0	-15.6	-23.0
Current Account Balance/GNP	0.2	-4.9	2.3	-0.8	-3.3	-5.2	-6.3
Imports/GDP	22.5	27.3	28.4	27.9	28.8	32.2	32.1
Exports/GDP	13.9	13.9	21.5	19.5	19.6	20.9	20.3
Exports/Imports	62.1	51.0	75.7	69.9	68.1	64.8	63.0
Foreign TOT (2003=100)	111.0	100.9	98.7	98.0	100.0	100.6	99.7
Stock of External Debt/GNP	63.2	63.4	92.7	77.5	57.1	50.4	46.9

Sources: TurkStat (2006a), (2006b), (2006c), CB (2006), UFT (2006a), WB (2006), SPO (2006), Yeldan and Voyvoda (2006).

Despite the overvalued domestic currency, the exports doubled from 2002 to 2005. However, the imports increased even faster. The difference was financed by mostly short-term financial flows, as it can be traced in ever increasing current account deficit.

Agriculture has suffered as much as the rest of the economy from the crisis in 2001. The agricultural value-added contracted by 6.5 percent in the same year (Table 2). The average growth rate of real agricultural value-added since late 1960's is about 1.2 percent per annum. This growth rate is achieved almost yearly wide fluctuations which point out high climate dependency of farm production. The drastic decline in 2001 shows not only the impact of the tightening budget which abruptly cut the funds for the government intervention in agriculture, but also the effects impact of a "bad" year.

Table 2. Basic Indicators of the Agro-Food Sector, 1996-2005

	1996-97	1998-99	2000	2001	2002	2003	2004	2005
Agricultural Value-Added and Productivity								
Share of Agriculture in GDP (percent)	13.9	13.9	13.4	13.6	13.4	12.4	11.6	11.4
Growth of Agricultural VA (percent)	1.0	1.7	3.9	-6.5	6.9	-2.5	2.0	5.6
Agricultural VA per employed (current USD)	3,253	3,517	3,622	2,173	2,862	3,941	4,601	5,742
Growth of Real Agricultural VA per employed (percent)	3.5	-1.2	22.8	-10.2	15.9	1.5	-1.2	20.4
Domestic TOT-Ag/Non-Ag (1987=100)	119.6	129.3	112.4	93.2	89.2	99.5	101.7	93.0
Employment								
Employment in Agriculture (million)	8.9	9.0	7.8	8.1	7.5	7.2	7.4	6.5
Share of Ag. Employment in Total (%)	44.1	41.0	36.0	37.6	34.9	33.9	34.0	29.5
Rural Unemployment Rate (percent)	3.5	3.5	3.9	4.7	5.7	6.5	5.9	6.8
Foreign Trade in Agro-food Products								
Agro-food Imports (USD billion)	3.5	2.5	3.1	2.3	3.0	4.0	4.5	4.6
Agro-food Exports (USD billion)	4.9	4.5	3.6	4.1	3.7	4.9	6.0	7.7
Agro-food Exports/Agro-food Imports	1.4	1.8	1.2	1.8	1.2	1.2	1.3	1.7
Share of Agro-food Imports in Total (%)	7.5	5.8	5.7	5.6	5.8	5.8	4.6	3.9
Share of Agro-food Exports in Total (%)	19.9	16.7	13.0	13.1	10.4	10.3	9.5	10.5

Note: Agro-food sector trade statistics include all products included in the WTO-Agreement on Agriculture (all HS 1 to 24, excluding fish, including other agricultural raw products).

Sources: TurkStat, (2006a), (2006b), (2006c), (2006d), (2004), SPO (2006).

Employment in agriculture is declining both in absolute and relative terms. The high rate of increase in labor productivity in 2005 was due to the sudden decline in agricultural employment. Jumps in the rural unemployment rates are alarming. Agriculture is the major employment source in the rural area with about 65 percent share in total rural employment. However, the sector seems to be recuperating in the last two years. Turkey remained as a net exporter in agro-food products. The exports are increasing at a higher rate than imports in agro-food products since 2002. The ratio of exports to imports reached its highest value in 2005, setting aside the crisis year.

3. Trade Policy and Recent Developments on Trade in Agro-Food Products

Turkey accomplished significant liberalization of trade in industrial products since mid-1980's. The liberalization in agro-food sector has been proceeding at a slow pace. The liberalization of the sector follows the reduction commitments of the WTO Agreement on Agriculture. The exceptions were the primary commodities extensively used as intermediate inputs in export oriented manufacturing industries. Cotton, raw hides and skins are duty free (Table 3).

Table 3. Applied Import Tariffs on Agro-food Products, 2006 (simple averages)

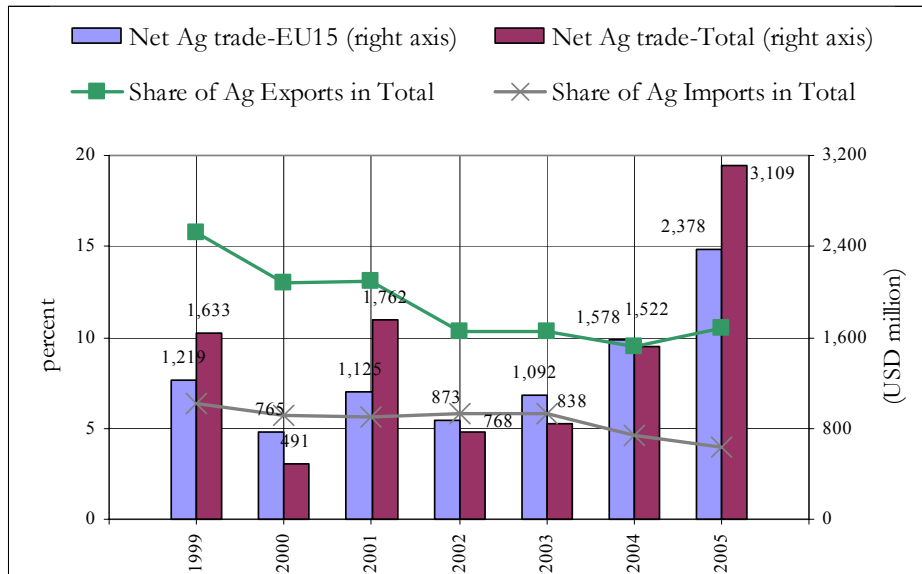
HS	Products	percent	HS	Products	percent
1	Live Animals	54	16	Preps of meat, fish, others	118
2	Meat & edible meat offal	138	17	Sugars & sugar confectionery	114
3	Fish, crustaceans, molluscs etc.	29	18	Cocoa and cocoa preps.	67
4	Dairy, eggs, honey & ed. products	119	19	Preps. of cereals, flour, starch or milk	49
5	Products of animal origin nes	3	20	Preps of vegs, fruits, nuts, etc.	55
6	Live trees, cut flowers, etc	18	21	Miscellaneous edible preps	13
7	Edible vegs & certain roots and tubers	21	22	Beverages, spirits & vinegar	41
8	Ed. fruit & nuts, peel of citrus/melon	44	23	Misc.edib.preps, res.food ind., feed	9
9	Coffee, tea, mate, spices	39	24	Tobacco & manuf. tobacco	36
10	Cereals	48		Raw hides, skins, leather, furskins	0
11	Milling industry products	40		Raw silk, wool, flax	0
12	Oil seeds/misc grains/med. plnts/straw	17		Wool and hair	0
13	Lac, gums, resins etc	4		Cotton, not carded or combed	0
14	Veg. plaiting mat.; vegs nes	0		Raw flax and hemp	0
15	Animal or vegetable fat and oils	20		Other WTO-Agricultural products	6
				All WTO-Agricultural products	49

Source: UFT (2006b).

Turkey has high levels of protection in meat, dairy products, sugar and basic cereals. These commodities are considered vital for the survival of the small farmers. Furthermore, food security, which is usually translated to self-sufficiency in all commodities in the minds of the policy makers, stems as another contributing factor to maintain rather high levels of protection in agro-food products. Export subsidies are offered for a limited number of agro-food products. Tight budgetary conditions and compliance with the commitments of WTO-Agreement on Agriculture do not allow high levels of subsidies to exports.

Overall trade performance of the agro-food sector is encouraging, despite the fact that it was deprived from taking part in the export-oriented development strategy which started in the mid-1980s. The ratio of exports to imports of the agro-food sector increased steadily since the economic crisis in 2001 crisis and reached 1.7 in 2005 (Table 2). Historically, Turkey is a net exporter in agro-food products (Figure 1). Net exports with EU and rest of the world remained positive from 1999 to 2005, while the level dwindled temporarily following the adjustment program. The sector can not keep up with the increase in the trade of non-agro-food products. Its shares in total exports and imports declined steadily from 20 percent and 7.5 percent in 1996 to 11 percent and 4 percent in 2005, respectively (Figure 1).

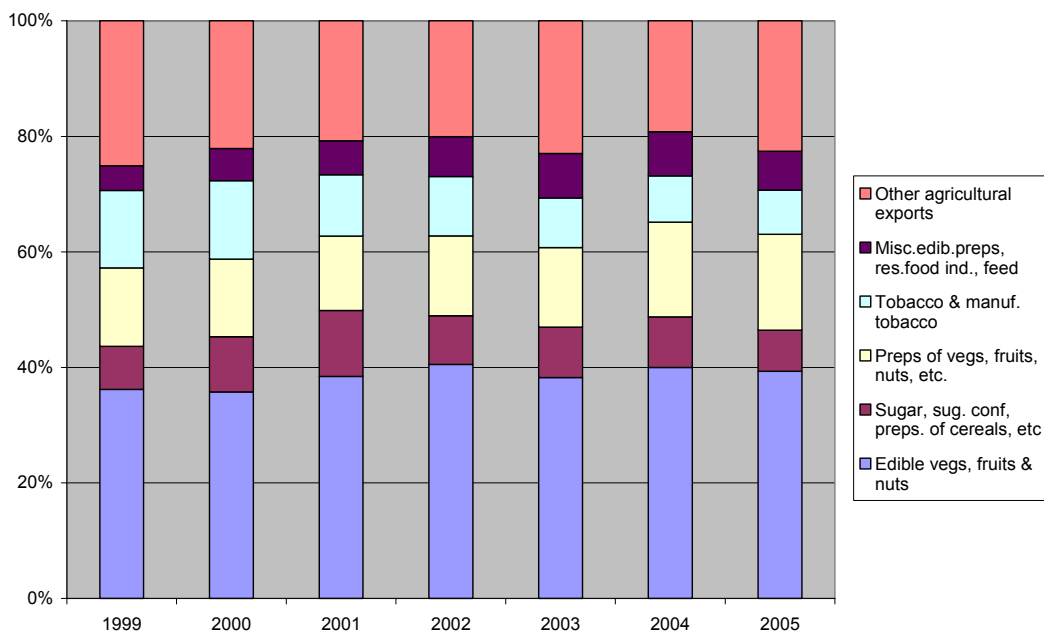
Figure 1. Trade in Agricultural Products, 1999-2005



Source: TurkStat (2006c).

Agro-food exports of Turkey are not highly diversified. Fruits, nuts, vegetables and related processed products comprise 60 percent of the agro-food exports. Another 20 percent of the exports originate from tobacco, cereals and sugar (Figure 2).

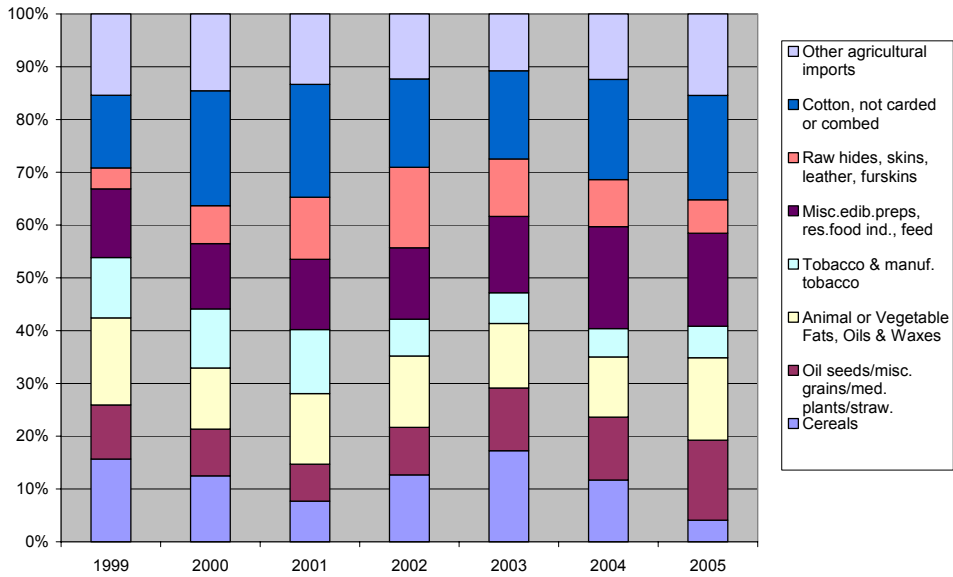
Figure 2. Structure of Agro-food Exports, 1999-2005



Source: TurkStat (2006c).

Agricultural raw materials, particularly raw hides and skins, leather and textile fibers and fiber scrap, take precedence on the import side with more than half of the total (Figure 3). Cereals and cereal products; animal feed; tobacco and tobacco products; animal and vegetable oils, fats and waxes; oilseeds and oleaginous fruits complete the agricultural imports.

Figure 3. Structure of Agro-food Imports, 1999-2005

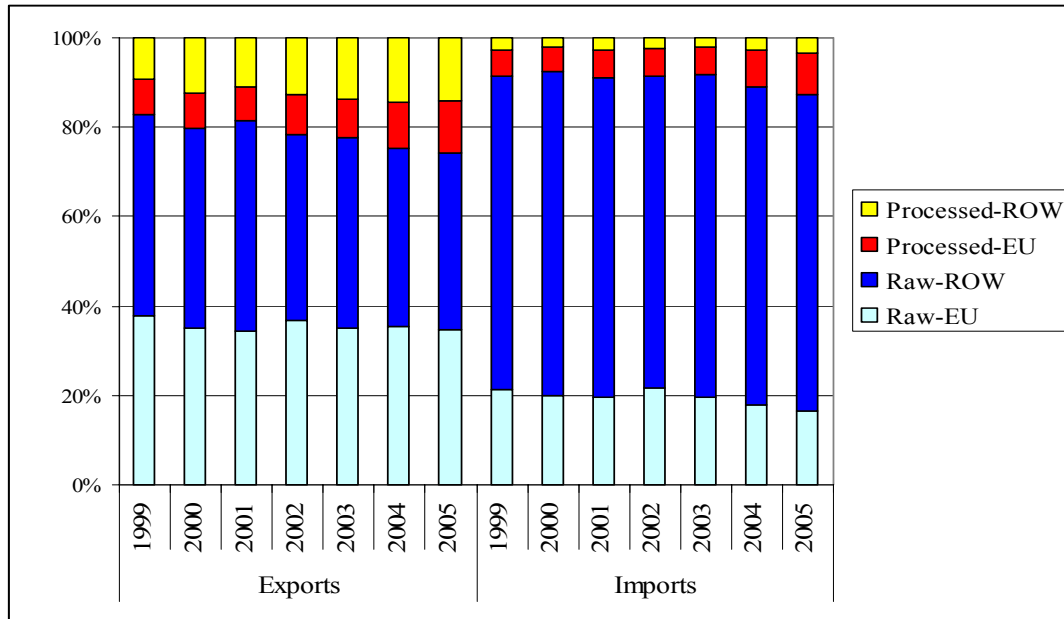


Source: TurkStat (2006c).

The total agro-food exports and imports of Turkey grew by around 80 percent in nominal US dollars from 1999 to 2005. The increase in exports to the EU (86 percent) was close, but slightly higher than the increase to the rest of the world (81 percent). The opposite is observed in the imports. The increase in imports from the rest of the world was 82 percent, whereas the imports from the EU remained at 70 percent. EU accounts about 45 percent of Turkish agro-food exports. The flow of imports from the European Union is also significant (although not as important as exports) and forms approximately 25 percent of the total. This percentage has remained more or less stable during the considered period.

Figure 4 displays the structure of trade in raw and processed agro-food products using the CN of EU. Almost 90 percent of the imports are raw products with 70 percent imported from the ROW. The share of the processed products in total agro-food trade is expanding. Increase in exports is faster than imports. The major contributor to the increase in the exports of processed products is processed fruits and vegetables.

Figure 4. Shares of Raw and Processed Products in Exports and Imports, 1999-2005



Source: TurkStat (2006c).

The trade flows of Turkey, especially the import figures reflect the impact of rather high protection on agro-food products. The level of protection is bound to decrease if WTO-Agreement on Agriculture is renewed and with the advancement in the EU membership negotiations.

4. The Impact of Trade Liberalization with the EU on Agriculture in Turkey

EU is the major trading partner of Turkey in agricultural products. Further expansion of economic integration with the EU would imply changes in the structure of production in Turkey and trade flows with the EU and the rest of the world. The primary products and agricultural product components in the agro-food products are excluded in the current customs union agreement between EU and Turkey. The possible results of the abolition of trade barriers between EU and Turkey in agriculture have the outmost importance for the policy makers both in the EU and Turkey. The impacts of the shift in policy structure coupled with trade implications will be crucial both in determining potential changes in the production and consumption in Turkey and to a lesser extent in the EU.

The renewal of the WTO-Agreement on Agriculture has been postponed to an indefinite future. This situation helps the decision makers in Turkey in maintaining the status quo. However, Turkey will soon face at least gradual trade liberalization in agro-food products through the advancement of the membership negotiations with the EU. Hence it is necessary to evaluate the impact of trade liberalization with the major trading partner. A new and updated version of the regional and static partial equilibrium agricultural sector model for Turkey (TAGRIS) is used to assess the potential effects of trade liberalization with the EU (Cakmak and Eruygur, 2006; Eruygur, 2006).

The structure of the model permits a comprehensive analysis of the crop and livestock production. The model is a non-linear programming model. It maximizes the Marshallian surplus (consumer plus producer surplus). The basic features of the model may be summarized as: i) The production side of the model is disaggregated into four regions for the

exploration of interregional comparative advantage in policy impact analysis; ii) The crop and livestock sub-sectors are integrated endogenously; iii) Foreign trade is allowed in raw and in raw equivalent form for processed products and trade is differentiated for the EU, USA and the rest of the world (ROW). The model uses PMP (positive mathematical programming) methodology integrated with maximum entropy for the calibration purposes (Golan et al., 1996; Paris and Howitt, 1998; Howitt, 1995; Heckelevi and Britz, 1999). The base period of the model is the average of 2002, 2003 and 2004. All parameters including the deficiency payments for some selected crops, tariffs, and export subsidies reflect period averages.

The model is projected to 2015 and is used to discuss the impacts of three scenarios. First is the baseline scenario. It represents the status quo with no change in the current policy scene (EU-OUT). In the second scenario, Turkey extends the current Customs Union agreement with EU to agro-food products (EU-CU). All trade measures are removed for the EU-Turkey trade. The last scenario is the membership of Turkey to the EU in 2015 (EU-IN). The compensatory direct payments for cereals, oilseeds and protein crops and compulsory set-aside regulations of EU apply fully to Turkey. Turkey is eligible for the subsidies implemented in the EU, i.e. payments for durum wheat, tobacco, olive oil, cotton, milk, beef and sheep meat. All trade measures are removed for the EU-Turkey trade in agricultural products. EU intervention purchases and restrictions on tea, tobacco, hazelnut and sugar-beet productions are operational. There are no input subsidies and deficiency payments for Turkey. Trade measures of Turkey for the third countries are similar to the EU.

The projection of the model to 2015 required additional information on the possible path of exogenous parameters. Turkish annual population growth rate is estimated to be 1.4 percent (FAOSTAT, 2005). Using a trend regression, annual real GDP growth rate is estimated as 1.3 percent (TurkStat, 2006). Trade prices in 2015 are obtained from the estimates of FAPRI (2005) with the necessary FOB and CIF adjustments. Technological improvement in vegetal and animal product yields is estimated by a two-step procedure. In the first step, using the 1961-2005 data (FAOSTAT, 2005) for each product yields, a linear OLS trend estimation is performed. In the second stage, these large sample (1961-2005) estimates are used as a priori information in the Generalized Maximum Entropy (GME) estimation using the data of last 10 years (1996-2005). Hence, the future ten-year yield growth estimates are based on the last ten-year period, but the information contained in the long historical data from 1961 to 2005 are incorporated in the yield growth estimation of each product.

The general results, including the welfare measures, are presented in Table 4. Total, producers' and consumers' surplus measures are the aggregate measures used to evaluate the impact of the various scenarios. Producers' surplus roughly indicates the return from all production factors excluding variable costs, and consumers' surplus is the additional benefit to non marginal consumers.

Table 4. Results of the Scenarios (USD million)

	2002-04 BASE	2015			Change from EU- OUT (%)	
		EU-OUT	EU-CU	EU-IN	EU-CU	EU-IN
Total Surplus (Index)	100.0	105.1	105.2	105.2	0.1	0.1
<i>with CAP Support</i>	-	-	-	107.1		1.9
Producers' Surplus	100.0	101.7	100.8	100.8	-0.9	-0.9
<i>with CAP Support</i>	-	-	-	102.9		1.1
Consumers' Surplus	100.0	141.6	153.0	153.1	8.0	8.1
Total Production						
Volume ^a	33,997	42,951	40,795	40,461	-5.0	-5.8
Value	33,997	43,343	37,696	37,739	-13.0	-12.9
Crop Production						
Volume ^a	23,191	29,536	27,941	27,616	-5.4	-6.5
Value	23,191	28,152	26,121	26,172	-7.2	-7.0
Livestock Production						
Volume ^a	10,806	13,415	12,854	12,845	-4.2	-4.2
Value	10,806	15,192	11,575	11,568	-23.8	-23.9
Total Consumption						
Volume ^a	29,441	37,376	40,335	40,276	7.9	7.8
Value	29,441	37,870	36,222	36,079	-4.4	-4.7
Crop Consumption						
Volume ^a	18,368	23,713	23,849	23,790	0.6	0.3
Value	18,368	22,366	21,873	21,730	-2.2	-2.8
Livestock Consumption						
Volume ^a	11,073	13,663	16,486	16,486	20.7	20.7
Value	11,073	15,505	14,349	14,349	-7.5	-7.5
Net Exports	2,264	3,564	77	-306	-97.8	-108.6
Crop Products	2,537	3,909	2,889	2,633	-26.1	-35.7
Livestock Products	-273	-346	-2,811	-2,818	713.6	715.6
Price Index (Laspeyres)	100.0	102.0	91.3	91.3	-10.5	-10.5
Crop Products	100.0	94.6	92.1	92.0	-2.7	-2.7
Livestock Products	100.0	114.3	90.1	90.1	-21.2	-21.2

Notes: See text for the scenarios. ^a Model results evaluated at the base period prices.

Source: Authors' calculations.

The total surplus is expected to increase by about 5 percent in 2015 independent of the relations with the EU. More than half of this increase can be attributed to the growth in income and enhancement in the agricultural productivity. The impact of extending Customs Union to agricultural products on total surplus is negligible (EU-CU). On the other hand, being a member of EU in 2015 will bring an additional 2.0 percentage point increase in total surplus. The results indicate the importance of CAP payments for the welfare of producers.

The reason of relatively higher increases in consumers' surplus in the customs union and membership scenarios is changes in price structure. In customs union and membership situations, there are sharp declines in prices of livestock products by about 20 percent accompanied by 2.7 percent drops in the overall price level of crop products (Table 4, Price

Index). These results explain rather high increases in the consumers' surplus in customs union and membership scenarios. Hence, assuming that the prevailing EU and Turkish agricultural policies remain intact, the customs union and membership will be definitely beneficial to the consumers. However, the impact on producers depends on the implementation of CAP.

The values of production and consumption in Table 4 are calculated in two different ways: First with the 2002-2004 prices, and second with the model's prices. Both values are in US dollars and the impact of inflation is limited with the depreciation of the US dollars. The volumes calculated with constant prices correspond to changes in the quantities. Both the volume and the value of agricultural production increase in all cases. However, in the case of non-membership the values of production reflect the increase in the prices of agricultural products.

In the non-member scenario (EU-OUT), due to the expansion in demand coupled with high protection, both the livestock production volume and value increase significantly by about 24 percent and 40 percent, respectively compared to the base period,. However, the volume is increased by 19 percent and the value by 7 percent compared to the base period if Turkey opens up the trade in livestock products with the EU.

Total, crop and livestock consumption increases in all cases, but more significantly in customs union and membership scenarios. Non membership brings 27 percent increase in total volume of consumption and improved relations with the EU causes a further increase of about 10 percentage points. However the impact on consumption expenditures is quite different. About 29 percent increase in total consumption expenditures in the non membership decreases down to about 23 percent in the EU scenarios. Relatively high levels of consumption are achieved at much lower costs. As expected, the impact of EU integration is quite different at the sub-sectoral level. The volume of crop consumption increases by about 30 percent in all scenarios compared to the base period. Same pattern is true for livestock consumption. In case of non membership livestock consumption volume increases by 23 percent but it almost doubles in the other scenarios. The changes in the expenditure on livestock products are just opposite. Relatively high consumption levels are achieved at much lower expenditures in membership and customs union scenarios.

It is obvious that net exports will be affected intensively from the change in production and consumption conditions (Table 4). Trade liberalization with EU combined with the expansion of demand brings about more favorable conditions for livestock products imports. In the custom union and membership scenarios, there is an important deterioration in the net exports of Turkey. Turkey is hardly a net exporter in the case of custom union, but turns to be a net importer as a result of integration with the EU. This situation basically results from the increase in the imports of livestock products.

Laspeyres price indices are calculated for all simulations using the base period production as weights. The overall price level is expected to increase by about 2 percent when Turkey is out of EU. Crop price index declines by almost 6 percent, accompanied by 15 percent increase in livestock price index. In the CU and membership scenarios overall price level declines by 10 percent.

The net exports results of different scenarios according to the commodity groups are presented in Table 5. Turkey's net exports of the products included in the model in the base period are about USD 2.3 billion, with a negligible trade in livestock products.

Table 5. Net Trade Results of the Scenarios (USD million)

	2002-04	EU-OUT (2015)		EU-CU (2015)		EU-IN (2015)	
	TOTAL	EU	TOTAL	EU	TOTAL	EU	TOTAL
<i>Crop Products</i>	2537	3042	3909	2048	2889	1659	2512
Cereals	-240	4	-187	-1054	-1229	-1284	-1464
Pulses	190	47	249	53	263	53	263
Industrial Crops	615	756	922	795	961	672	856
Oilseeds	-747	3	-922	-176	-1100	-210	-1136
Tubers	55	4	88	4	85	4	85
Vegetables	598	360	874	413	902	413	902
Fruits And Nuts	2064	1868	2885	2013	3007	2013	3007
<i>Livestock and Poultry</i>	-273	-124	-346	-2589	-2811	-2596	-2818
Meat	11	0	2	-1980	-1969	-1983	-1972
Milk	-14	1	24	-490	-466	-494	-470
Hide, Wool and Hair	-290	-250	-518	-248	-527	-248	-527
Poultry	19	125	146	129	150	129	150
<i>Total</i>	2264	2918	3564	-541	77	-936	-306

The tariffs in non-member scenario (EU-OUT) are close to the base period levels. The structure of trade in the model allows for the expansion of exports and imports. The net exports in crop products are expected to increase by more than 50 percent if Turkey stays out of the EU in 2015 with the expansion of exports in vegetables and fruits. Net imports of livestock products increase despite very high levels of applied tariffs of around 200 percent. To sum up, cereals, oilseeds and livestock products are imported but industrial crops, pulses, tubers, vegetables and fruits are exported in non membership scenarios.

As expected the EU scenarios show drastic changes in the livestock trade. Net imports in livestock reach to USD 2.8 billion. Almost all of the livestock imports originate from the EU. Positive balances in crop products can not compensate for the expansion of net imports in livestock products.

5. Concluding Remarks

The macroeconomic structural adjustment program following the economic crisis in 2001 has changed the structure of agricultural sector subsidization. Despite few backlashes in the domestic policy, the financial discipline is bound to stay for a long time. Attempts to shift from commodity based subsidies towards more spatial based supports are encouraging. However, the protection on the agricultural sector has been declining only through the commitments requirements of the WTO-Agreement on Agriculture. The high levels of protection in agriculture have not prevented the transformation of the sector. The production statistics are not capable to point out the changes. However, drastic decline in the agricultural employment and slow but changing structure of foreign trade in agro-food products imply that further changes in intra- and inter-sectoral allocation of resources are inescapable. Even without any decrease in the protection levels, the new policy environment necessitates upgrading the adjustment ability of the sector. This in turn requires further support to the reform of agricultural subsidization in the removal of market and government failures. The

necessary domestic policy areas are best described in de Ferranti et al. (2005) as R&D provision, land, rural credit and insurance markets, infrastructure development.

Unless effective measures are taken in the areas mentioned above, even small trade liberalization will have negative effects on the contributions of the sector and may lead to social turmoil. The decision makers, on the other hand, seem to be more concerned in the sustainable persistence of the status quo. The position of Turkey in the new round of WTO negotiations is rather contradictory. Turkey supports full trade liberalization in the industrial products, whereas does not want to change anything in the agricultural products and sides with G-33 countries. Before finishing, it should be reminded that the results obtained from the modeling exercise depends heavily on the technological development around the trend and improvements in agricultural infrastructure. Otherwise, actually perceived threat for agriculture may turn to a nightmare in the future even for a slight decline in protection against the EU.

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Annex Table 1. Transfers to Agriculture in Turkey, 1986-2005 (million USD)

	1986-89	1996-99	2000	2001	2002	2003	2004	2005 ^e
Producer Support Estimate	3,413	7,955	6,901	681	5,761	11,142	11,208	12,174
Market Price Support	2,428	5,920	5,733	-47	4,192	8,906	8,660	9,431
Total Support Estimate	3,823	11,198	10,647	3,862	7,802	12,126	11,869	13,829

Note: ^e provisional estimate.

Source: OECD (2006).

Annex Table 2. Indicators of Transfers to Agriculture, 1986-2005 (percent)

	1986-89	1996-99	2000	2001	2002	2003	2004	2005 ^e
TSE/GDP	4.2	5.9	5.4	2.7	4.3	5.1	3.9	3.8
Percent PSE	17.0	22.2	20.7	3.1	20.4	28.2	25.5	24.9
Percent CSE	-16.7	-20.2	-21.4	-0.5	-17.1	-25.9	-20.9	-21.0
GSSE/TSE	10.5	29.1	35.2	82.4	26.2	8.1	5.6	12.0
R&D/TSE	1.5	0.4	0.2	0.8	0.4	0.3	0.2	0.2
Transfers to SEEs (USD mil.) ^a	188	3,078	3,626	3,078	1,923	853	524	1,489
Transfers to SEEs/TSE	4.6	27.5	34.1	79.7	24.6	7.0	4.4	10.8

Notes: ^a This consists of all transfers (duty losses, capital injections, etc.) to SEEs (TMO, TŞFAŞ, TEKEL, ÇAYKUR) and to ASCUs; ^e provisional estimate; TSE: Total Support Estimate, PSE: Producer Support Estimate, CSE: Consumer Support Estimate.

Source: OECD (2006).

Annex Table 1. Nominal Protection Coefficients, Selected Products, 1986-2005

	1986-89	1996-99	2000	2001	2002	2003	2004	2005e
Wheat	1.35	1.37	1.22	0.94	1.14	1.64	1.24	1.39
Maize	1.16	1.45	1.40	1.06	1.18	1.61	1.69	1.68
Barley	1.27	1.56	1.30	1.04	1.05	1.29	1.37	1.51
Sunflower	1.16	1.42	1.28	1.23	1.06	1.12	1.12	1.23
Sugar (refined equivalent)	1.05	2.17	2.20	1.37	1.90	2.50	2.67	2.36
Cotton	0.70	0.75	0.91	1.00	0.94	0.82	0.70	0.87
Tobacco	1.05	1.41	0.80	0.84	0.84	1.06	1.02	1.16
Potatoes	1.27	1.26	1.32	1.46	2.74	2.45	2.94	4.15
Tomatoes	1.47	0.91	0.99	0.84	0.81	1.05	0.80	0.69
Apples	0.94	1.03	1.03	0.81	0.99	0.99	1.16	1.92
Grapes	1.14	1.06	1.26	0.92	1.30	1.30	1.67	1.44
Milk	2.21	2.10	1.80	0.95	1.56	1.63	1.52	1.29
Beef	1.15	2.01	2.31	1.79	2.18	2.94	2.18	1.99
Sheep meat	1.18	1.13	1.27	0.85	1.09	1.21	1.07	1.14
Poultry meat	1.14	1.45	1.52	1.19	1.47	1.53	1.75	1.66
Eggs	1.22	1.61	1.78	1.32	1.36	1.19	1.87	2.21

Note: ^e provisional estimate.

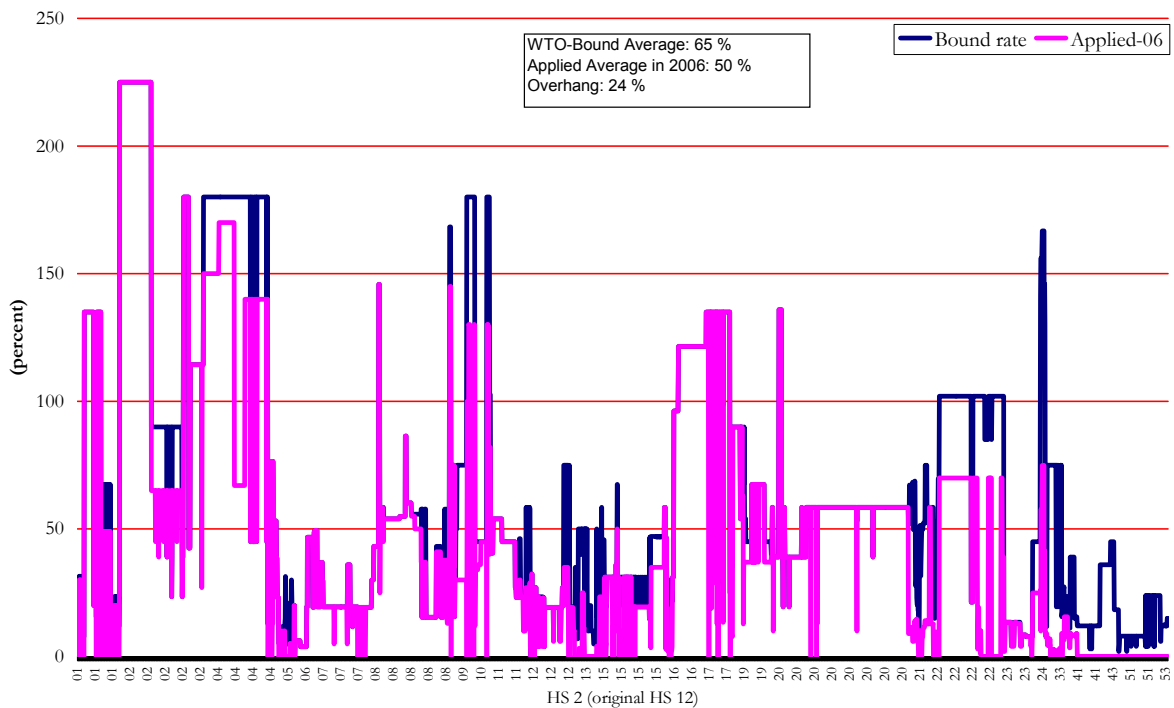
Source: OECD (2006).

Annex Table 3. GME Estimates of Annual Yield Growth Rates

	Yield Growth Rate, %	Prob. values
Common Wheat	0.69	0.011
Durum Wheat	0.69	0.011
Barley	0.81	0.015
Corn	0.78	0.016
Rice	1.56	0.010
Rye	0.90	0.019
Chick Pea	-0.08	0.010
Dry Bean	0.32	0.012
Lentil	0.78	0.015
Tobacco	-0.44	0.013
Sugarbeet	0.88	0.012
Cotton	1.77	0.016
Sesame	0.03	0.010
Sunflower	0.56	0.014
Groundnut	1.44	0.011
Soybean	0.00	-
Onion (dry)	0.94	0.015
Potato	1.05	0.010
Melon and Watermelon	0.29	0.012
Cucumber	0.62	0.018
Eggplant	0.10	0.014
Fresh Tomato	-0.04	0.011
Processing Tomato	-0.04	0.011
Green Pepper	0.60	0.010
Apple	0.32	0.011
Apricot	0.74	0.016
Peach	0.65	0.014
Table Olive	0.74	0.011
Oil Olive	0.74	0.011
Citrus	1.49	0.018
Pistachio	0.32	0.011
Hazelnut	0.79	0.012
Dry Fig	-0.16	0.010
Table Grape	0.56	0.018
Sultana Grape	0.56	0.018
Tea	1.10	0.022
Sheep Meat	0.22	0.020
Sheep Milk	1.29	0.022
Sheep Wool	0.00	-
Sheep Hide	0.00	-
Goat Meat	0.13	0.010
Goat Milk	0.34	0.010
Goat Hair	0.00	-
Goat Hide	0.00	-
Cow Meat	1.50	0.021
Cow Milk	1.78	0.010
Cow Hide	0.00	-
Poultry Meat	2.56	0.010
Hen Egg	3.27	0.010
Fodder (Vetche)	-1.46	0.011

Source: Eryugur (2006).

Annex Figure 1. WTO-Bound and Applied Tariffs of Turkey, 2006.



Source: calculated from UFT (2006b); WTO (1994).