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This national monograph gives an overview of the agricultural and agro-food situations in Turkey.

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Food, Rural, Agricultural and Fisheries Policies in Turkey

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Turkey has embarked on an ongoing structural adjustment and stabilization program in 1999. Agricultural policies have been selected to undergo heavy adjustments due to the ineffective set of tools and their ever increasing burden on government expenditures.

Even without the macroeconomic stabilization program, several additional factors would have forced Turkey to enter into a phase of agricultural policy reform. New round of negotiations for the renewal of the WTO-Agreement on Agriculture is expected to be a challenging process. Despite recent changes in the policy framework in Turkey, the issue of alternative policy tools in agriculture will remain as a major item in the agricultural agenda. Turkey's candidacy for membership to EU has also added a new dimension to the deliberations on agriculture and related policies.

This paper aims to assess recent developments in the agro-food sector and related policy changes. Next section is devoted to a broad overview of macroeconomic and agricultural developments in Turkey. More detailed analyses of the recent progress in the agro-food sector encompassing production, consumption and trade are presented in the second section. This section includes the structure and characteristics of the food and beverage industry. The third section provides the basics of fishing in Turkey, together with fishing fleet structure, total catches and trade in fisheries. The fourth section covers all agriculture related policies. A quick overview of rural, trade, price and environmental policies can be found in this section. Finally, the last section is reserved for concluding remarks.

I – Macroeconomic and Agricultural Developments

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.

1. Overview of the Turkish Economy

Turkey started the new millennium with another IMF backed macroeconomic stabilization and structural adjustment program. At the start, 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 tendency of 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, 1980-2005

	1980	1985	1990	1998-99	2000	2001	2002	2003	2004	2005
Growth and Accumulation										
GDP (current USD billion)	70.9	67.2	150.6	192.3	199.9	145.7	184.5	241.1	302.9	363.6
Real GDP Growth (percent)	-2.4	4.2	9.3	-0.8	7.4	-7.5	7.9	5.8	8.9	7.4
GDP per capita (current USD)	1,518	1,320	2,655	3,012	2,941	2,146	2,622	3,412	4,187	5,016
Real GDP per capita Growth (percent)	-4.6	1.7	6.8	-2.6	5.5	-9.0	6.2	4.1	8.5	6.0
GDP per capita PPP (current USD)	2,319	3,365	4,628	6,269	6,814	6,153	6,550	6,808	7,629	8,141
Domestic Savings/GNP (percent)	16.0	18.9	22.0	22.0	18.2	17.5	19.2	19.3	20.2	19.5
Gross fixed investments/GNP (percent)	21.8	20.1	22.6	23.2	22.8	19.0	17.3	16.1	18.4	20.3
Distribution and Budget (percent)										
Inflation – CPI	93.7	44.2	60.4	69.3	39.0	68.5	29.8	25.3	10.6	10.1
Unemployment Rate – Turkey	8.3	7.3	8.2	7.2	6.5	8.4	10.3	10.5	10.3	10.3
Budget Balance/GNP	-3.1	-2.3	-3.0	-9.3	-10.9	-16.2	-14.3	-11.2	-7.1	-2.0
Public Sector Borrowing Requirement/GNP	8.7	3.5	7.3	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)	144.3	42.6	22.9	66.3	48.5	96.5	22.9	-0.8	-4.7	-5.7
Total Exports (USD billion)	2.9	8.0	13.0	26.8	27.8	31.3	36.1	47.3	63.2	73.5
Total Imports (USD billion)	7.9	11.3	22.3	43.3	54.5	41.4	51.6	69.3	97.5	116.8
Current Account Balance (USD billion)	-3.4	-1.0	-2.6	0.3	-9.8	3.4	-1.5	-8.0	-15.6	-23.0
Current Account Balance/GNP	4.9	1.5	-1.7	0.2	-4.9	2.3	-0.8	-3.3	-5.2	-6.3
Imports/GDP	11.2	16.9	14.8	22.5	27.3	28.4	27.9	28.8	32.2	32.1
Exports/GDP	4.1	11.8	8.6	13.9	13.9	21.5	19.5	19.6	20.9	20.3
Exports/Imports (percent)	36.8	70.2	58.1	62.1	51.0	75.7	69.9	68.1	64.8	63.0
Foreign TOT (2003=100)	92.2*	86.3	104.7	113.3	103.0	100.7	100.1	100.0	101.0	99.7
Stock of External Debt, DOD/GNP (percent)	27.4	38.1	34.7	51.2	59.3	78.0	71.7	60.3	53.7	46.8

Note: * for 1982.

Sources: TurkStat (2006a),(2006c), (2006d), CB (2006), UT (2006), 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.

2. Basic Characteristics of the Agriculture

The share of agricultural value-added in GDP declined faster in the 1980s and 1990s compared to recent decade (Table 2). However, the growth rates of value-added per employed displayed wide fluctuations during the considered period.

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. 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. Value-added and Employment in Agriculture, 1980-2005

	1980	1985	1990	1996-97	1998-99	2000	2001	2002	2003	2004	2005
Agricultural Value-Added and Productivity											
Share of Agriculture in GDP (percent)	25.1	19.9	17.0	13.9	13.9	13.4	13.6	13.4	12.4	11.6	11.4
Growth of Agricultural VA (percent)	1.1	-0.5	6.8	1.0	1.7	3.9	-6.5	6.9	-2.5	2.0	5.6
Agricultural VA per employed (current USD)	2,152	1,617	3,031	3,253	3,517	3,622	2,173	2,862	3,941	4,601	5,742
Growth of Real Agricultural VA per employed (percent)	1.2	-0.1	6.2	3.5	-1.2	22.8	-10.2	15.9	1.5	-1.2	20.4
Domestic TOT-Ag/Non-Ag (1987=100)	109.8	98.5	107.8	119.6	129.3	112.4	93.2	89.2	99.5	101.7	93.0
Employment											
Employment in Agriculture (million)	8.4	8.2	8.7	8.9	9.0	7.8	8.1	7.5	7.2	7.4	6.5
Share of Ag. Employment in Total (%)	50.6	47.0	46.9	44.1	41.0	36.0	37.6	34.9	33.9	34.0	29.5
Rural Unemployment Rate (percent)		5.0*	4.9	3.5	3.5	3.9	4.7	5.7	6.5	5.9	6.8

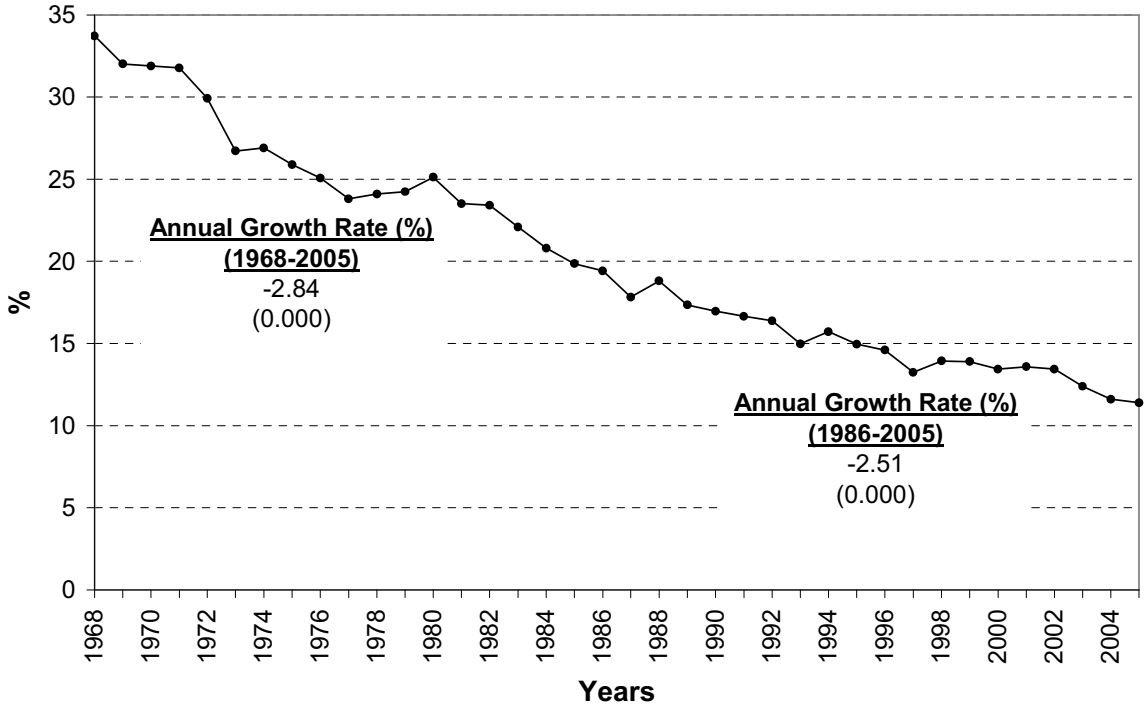
Note: * for 1988.

Sources: TurkStat, (2006a),(2006b), (2006c), 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.

The long term trend of the *shares of agricultural value added in real GDP* are shown in Figure 1. The average annual growth rate of the share of agricultural value added in GDP between 1986 and 2005 is -*2.51 percent.* In the last four decades the share of agriculture declined faster at -2.84 percent per year. The growth rates do not seem too much volatile. Using the growth rate for the last twenty years, the ternd esteimates of the share of agricultural value added in GDP in 2015, 2025 and 2035 are obtained as 9.1, 7.1 and 5.5 percents, respectively.

Figure 1. Share of Agricultural Value Added in GDP, 1968-2005



Notes: (1) The annual growth rates have been estimated as log-linear trends by ordinary least squares regression.

(2) The figures in brackets represent the statistical level of significance of annual growth rate estimates.

Source: SPO (2007).

Turkey remained as a net exporter in agro-food products. The exports are increasing at a higher rates than imports in agro-food products since 2002. The ratio of exports to imports has reached the highest value in 2005, setting aside the crisis year (Table 3).

Table 3. Foreign Trade in Agro-food Products, 1996-2005

	1996-97	1998-99	2000	2001	2002	2003	2004	2005
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), SPO (2006).

The share of agro-food exports in total exports seems to be stabilized at around 10 percent, but the proportion of the processed products are increasing (Cakmak and Akder, 2005).

II – Agro-food Production, Consumption and Trade

The availability, quality, and distribution of the basic factors of production determine the structure of production in agriculture. The available statistics enable us a thorough analysis in land and labor, but they are short on capital stock and investment in agriculture. This section will start with a quick overview of land and labor in agriculture, ending with the structure af production and recent developments in trade.

1. Land Labor and Production

The structure of the agricultural production in Turkey has all the characteristics of a developing economy. The share of agriculture in total employment is still around 30 percent. The average land and herd size per farm household are small. Despite the relatively low share in value compared to area, cereal production dominates the policy scene, whereas horticultural products dominate the agro-food exports.

A. Land Distribution and Use

Farms in Turkey are generally family-owned, small, and fragmented. The average cultivated area per holding was about 5.2 ha in 1991, and it increased to about 6 ha in 2001. About 85 percent of holdings, on 41 percent of the land, were smaller than 10 ha. Fifteen percent of holdings were from 10 to 50 ha, and they cultivated almost half of the cultivated land (Table 4). The average size increases from west toward southeast, due to the climate and fertility differences. The proportion of the irrigated land increased from 14 percent in 1991, to 20 percent in 2001. The share of irrigated land is much higher in the west than elsewhere in Turkey. A third of the holdings smaller than 1 ha are irrigated.

Table 4. Size Distribution of Land, 1991 and 2001 (percent)

	1991		2001	
Size of Holdings (ha)	**Farm HH's**	**Cultivated Area**	**Farm HH's**	**Cultivated Area**
No Land	2.50		1.77	
< 0.5	6.19	0.29	5.78	0.26
0.5 - 0.9	9.37	1.08	9.44	1.02
1 - 1.9	18.49	4.28	17.54	3.82
2 - 4.9	**31.33**	**16.28**	**30.91**	**15.48**
5 - 9.9	17.53	19.80	18.21	20.41
10 - 19.9	**9.42**	**21.21**	**10.64**	**24.05**
20 - 49.9	4.27	20.23	5.00	23.69
50 - 99.9	0.59	6.49	0.57	6.32
100 - 249.9	0.25	5.63	0.14	3.07
250 - 499.9	0.05	2.88	0.01	0.40
500 +	0.01	1.83	0.00	1.50
Total	100.00	100.00	100.00	100.00
Gini Coefficient[a]		**0.60**		**0.59**
	(1000 HH's)	**(1000 ha)**	**(1000 HH's)**	**(1000 ha)**
Village Head Census	4,092	21,103	3,698	22,156
HH Survey	4,068	21,449	3,076	17,164

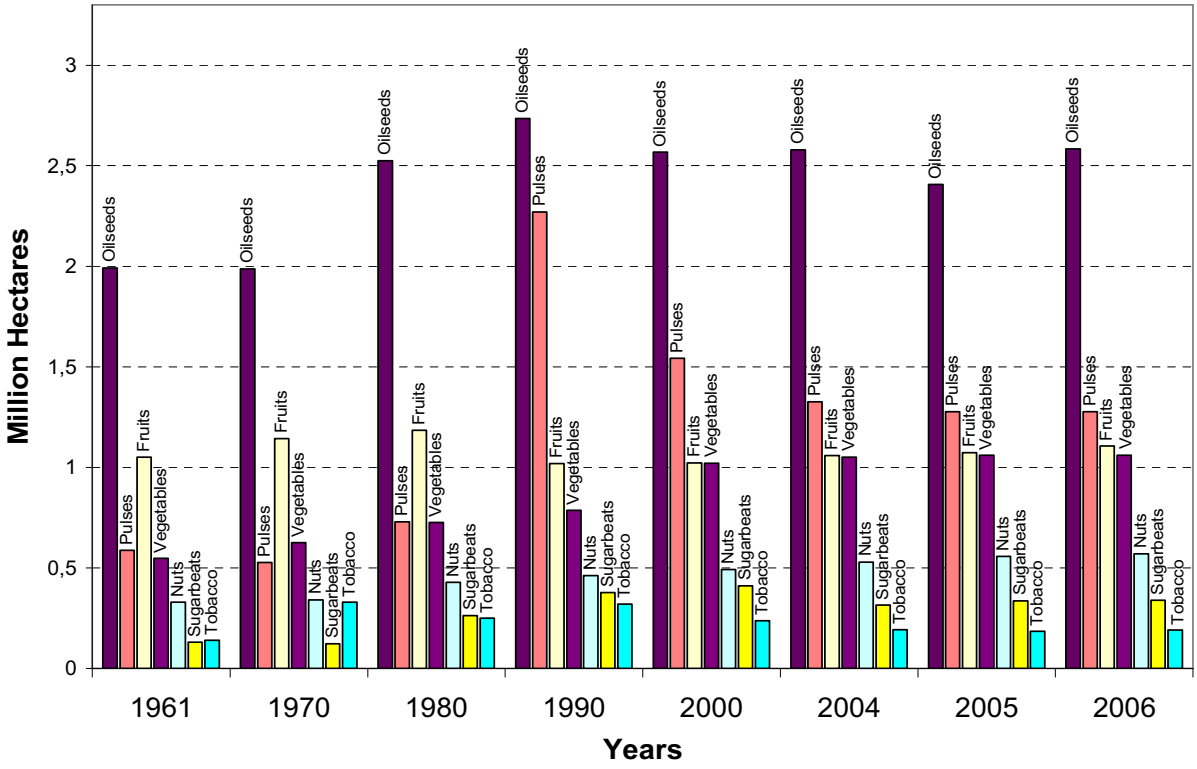
Note: [a] calculated by the authors from grouped data.

Sources: TurkStat 1994, 2004b.

The distribution of agricultural land remained skewed, with a slight tendency towards the medium ranges from smaller sizes in the considered decade. Irrigated land is distributed slightly more evenly than cultivated land.

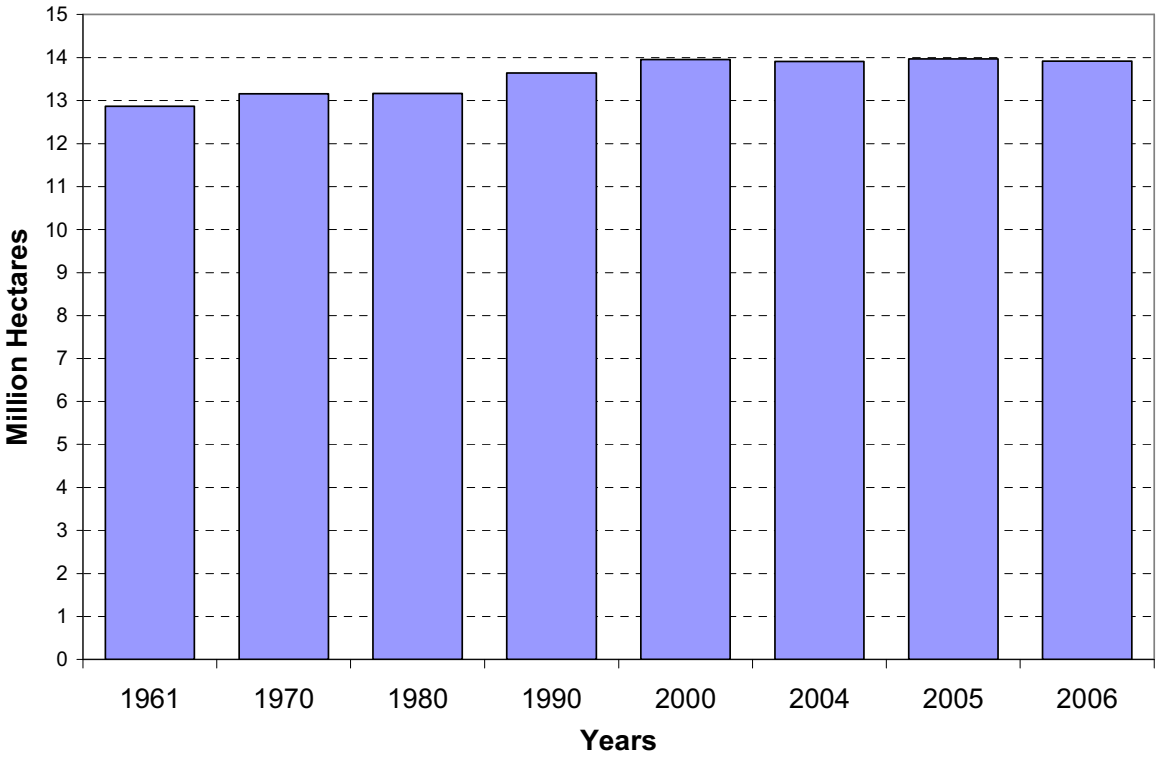
The use of the land for major crops are shown in Figures 2 and 3. The area of cereals remained almost the same with a slight tendency to increase. In the other crops major changed occurred in pulses. Pulses area reached peak level area because of the follow land reduction, then declined due to the decrease in the world prices of pulses. The lack of government intervention after 2001 caused significant decrease in the tobacco area.

Figure 2. Area of Major Products Excluding Cereals, 1961-2006



Source: FAOSTAT (2006).

Figure 3. Area of Cereals, 1961-2006



Source: FAOSTAT (2006).

Turkey has about 26 million of cultivated land according to the yearly statistical data (TurkStat, 2006). Field crops have occupied slightly over 85 percent of cultivated area since 1985. The share of vegetable area is about 3 percent, but it has been increasing steadily. Orchards occupy 10 percent of the cultivated land. Land left to fallow is about 5 million hectares.

B. Labor in Agriculture

The recent mid-year estimate of population of Turkey is 72 million for 2005 (TurkStat, 2006e). The growth rate of population is 1.3 percent. Two thirds of the population live in urban locations defined as the cities with 20,000 or more inhabitants. Tunali (2003) estimated the growth rate of urban population as 2.68 percent, whereas the same rate for the rural population is only 0.42 percent. The large difference between the two is attributable to the migration from rural to urban area.

Recent figures about the labor force participation of the population and unemployment can be observed in Table 5. The labor force participation rates (LFPR) in the rural areas are higher than urban areas. In addition, the female LFPSs are significantly higher than the urban. The dominant role of agriculture in the rural economy combined with different working conditions facilitates the participation of women in the labor force. LFPRs in the rural areas have been declining in the recent years and accompanied by higher growth in unemployment. This may be due to the adjustment efforts of the labor force in the rural areas to the new conditions shaping the agricultural sector.

The employment creation capacity of the economy has been always problematic, mainly because of the rather rapid expansion of the labor force. Despite improvements in economic indicators since 2002, the unemployment rate stayed stagnant at around 10 percent. The rural unemployment rates, both male and female, are the major contributing factors in the stickiness of the overall unemployment rate. The declining trends in rural LFPRs and the share of agriculture in rural employment (Table 6), combined with increasing rural unemployment, rates signal the start of a major transformation in the use of labor in agriculture.

Table 5. Labor Force Participation and Unemployment, 2000-05 (percent)

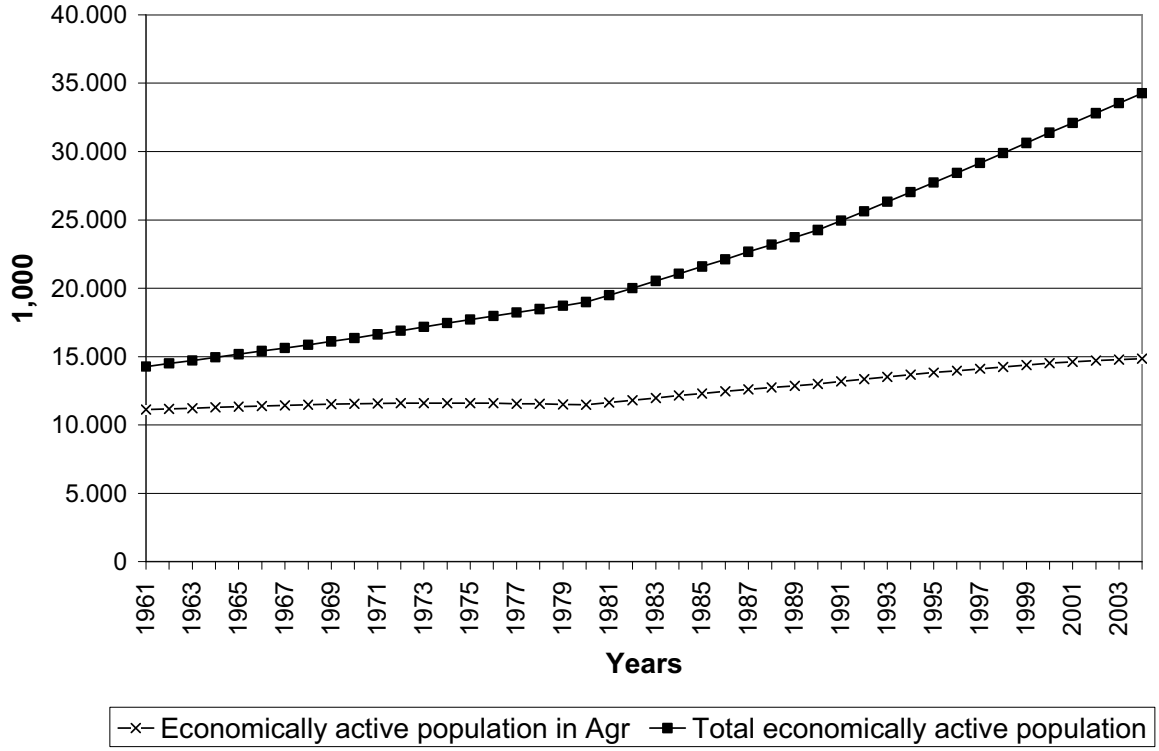
	Labor Force Participation Rate					Unemployment Rate				
	2000-01	**2002**	**2003**	**2004**	**2005**	**2000-01**	**2002**	**2003**	**2004**	**2005**
Turkey	**49.9**	**49.6**	**48.3**	**48.7**	**48.3**	**7.4**	**10.3**	**10.5**	**10.3**	**10.3**
Male	73.3	71.6	70.4	72.3	72.2	7.6	10.7	10.7	10.5	10.3
Female	26.9	27.9	26.6	25.4	24.8	6.9	9.4	10.1	9.7	10.3
Rural	**58.7**	**57.6**	**55.5**	**55.4**	**53.1**	**4.3**	**5.7**	**6.5**	**5.9**	**6.8**
Male	77.1	74.5	72.9	74.7	73.5	5.7	7.3	7.9	7.3	8.1
Female	41.0	41.4	39.0	36.7	33.7	1.9	2.9	4.1	3.2	4.1
Urban	**44.0**	**44.4**	**43.8**	**44.5**	**45.5**	**10.2**	**14.2**	**13.8**	**13.6**	**12.7**
Male	70.8	69.8	68.9	70.8	71.5	9.0	13.0	12.6	12.5	11.6
Female	17.3	19.1	18.5	18.3	19.3	14.8	18.7	18.3	17.9	17.0

Sources: TurkStat 2004a, 2006c.

More general picture of the active population in agriculture can be obtained by using the FAO data shown in Figure 4. FAO estimates the economically active population in agriculture by using a specific methodology. According to FAO estimates economically active population in agriculture increased in the last four decades. Although the rate of growth declined in the recent years, the absolute number of economically active population is increasing and reached about 15 million. As it can be seen below, we

prefer to use the official household labor force survey figures for the tendency of labor use in rural areas and agricultural sector.

Figure 4. Economically Active Population for Agriculture and Total, 1961-2005



Source: FAOSTAT (2006).

Recent trends in the agricultural employment are presented in Table 6. As it is expected from the average farm size, agricultural employment has still relatively large share in the total employment. The sector provides employment for almost all females in the rural areas with almost 85 percent share in the rural employment. The share of employment in agriculture is steadily declining, accompanied by the decline in absolute employment from the early 1990's. In the early 1990's the agricultural employment was around 9 million compared to the 6.5 million in 2005.

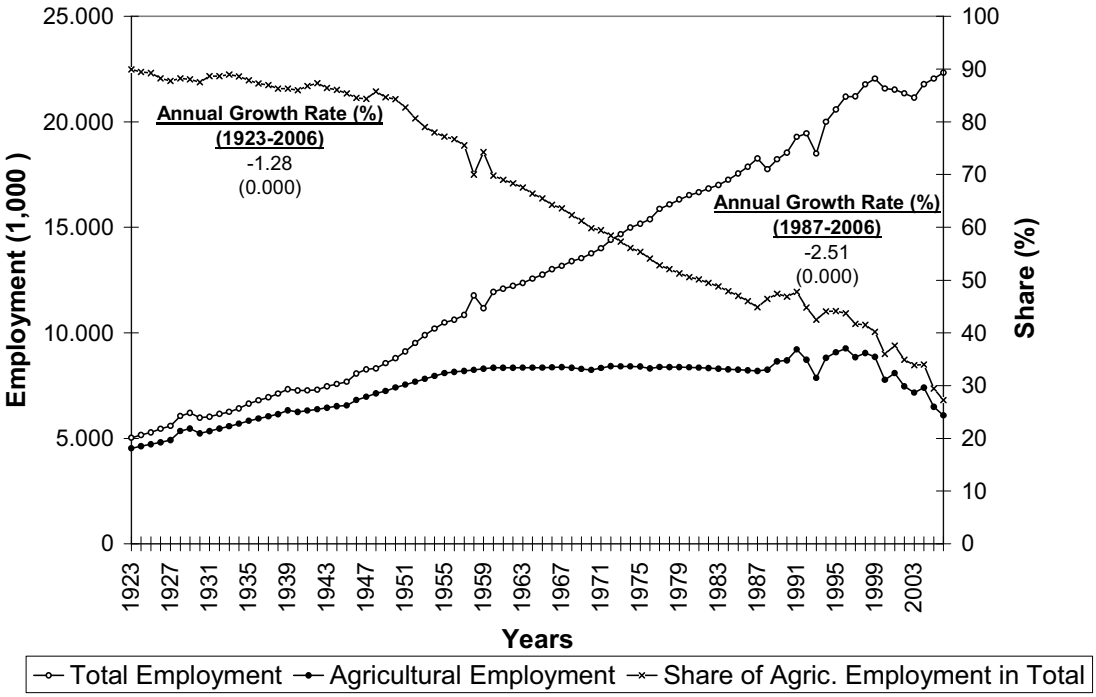
Table 6. Agricultural Employment, 1988-05

	Employment (1,000)								
	1988	**1990**	**1995**	**2000-01**	**2002**	**2003**	**2004**	**2005**	**2006**
Turkey	**8,249**	**8,691**	**9,080**	**7,929**	**7,458**	**7,165**	**7,400**	**6,493**	**6,088**
Male	4,231	4,372	4,811	4,285	3,784	3,718	4,101	3,550	3,272
Female	4,019	4,319	4,270	3,644	3,674	3,447	3,299	2,943	2,816
Rural	**7,831**	**8,308**	**8,636**	**7,478**	**6,973**	**6,687**	**6,716**	**5,821**	**5,466**
Male	3,966	4,146	4,518	4,038	3,530	3,455	3,698	3,158	2,909
Female	3,866	4,162	4,117	3,440	3,443	3,232	3,018	2,663	2,557
	Shares in Total (percent)								
	1988	**1990**	**1995**	**2000-01**	**2002**	**2003**	**2004**	**2005**	**2006**
Turkey	**46.5**	**46.9**	**44.1**	**36.8**	**34.9**	**33.9**	**34.0**	**29.5**	**27.3**
Male	33.8	33.9	32.9	27.4	24.8	24.4	25.6	21.7	19.8
Female	76.8	76.6	71.7	61.9	60.0	58.5	57.2	51.6	48.5
Rural	**74.4**	**75.8**	**76.3**	**71.5**	**68.1**	**67.8**	**67.5**	**61.4**	**59.1**
Male	62.3	64.9	66.0	60.7	55.3	55.4	56.8	50.1	47.3
Female	93.1	93.9	94.8	90.2	89.3	89.0	87.7	83.9	82.5

Sources: TurkStat 2004a, 2006c.

The long term trend of the share of agricultural employment in total are presented in Figure 5. The average annual growth rate of the share agricultural employment in total employment is -2.51 percent in the last two decades. For the period of 1923-2006, the same figure is -1.28 percent. Using the growth rate for the last twenty years, the share agricultural employment in total employment in 2015, 2025 and 2035 can be forecasted as 25.1, 19.6 and 15.2 percents, respectively.

Figure 5. Total and Agricultural Employment in Turkey , 1923-2006



Notes: (1) The annual growth rates have been estimated as log-linear trends by ordinary least squares regression.
(2) The figures in brackets represent the statistical level of significance of annual growth rate estimates.
Source: SPO (2007).

Job status of the agricultural employment provides further clues about the structure of employed labor force in the sector (Table 7). Salaried workers in agriculture make up only about 8 percent of the employment despite faster increase in the last two years. Slightly less than half of the labor force shares the household income as “unpaid family labor”. The absolute figures are more relevant in case of Turkey: Employment in agriculture is 6.5 millions; out of this 3.0 million are females, and 2.3 million of females work as unpaid family labor. The proximity of work and home environment allows about 50 percent of the employed labor force to be kept occupied in agriculture and deprived from the urban living conditions.

Table 7. Job Status in Agricultural Employment, 2000-05 (percent)

	2000-01	2002	2003	2004	2005
Total	**100**	**100**	**100**	**100**	**100**
Wage Earner	5.0	5.3	5.4	6.7	8.0
Employer or Self Employed	41.8	42.3	43.7	42.4	45.7
Unpaid Family Labor	53.3	52.4	50.9	50.8	46.3
Male	**100**	**100**	**100**	**100**	**100**
Wage Earner	6.4	6.3	7.2	8.2	9.6
Employer or Self Employed	64.1	66.6	68.6	66.0	67.9
Unpaid Family Labor	29.5	27.1	24.2	25.8	22.5
Female	**100**	**100**	**100**	**100**	**100**
Wage Earner	3.3	4.2	3.5	4.9	6.2
Employer or Self Employed	15.5	17.3	16.8	13.2	18.8
Unpaid Family Labor	81.2	78.4	79.7	81.9	75.0

Sources: TurkStat 2004a, 2006c.

Agriculture in Turkey is still helping to overcome the chronic nature of unemployment in Turkey. It eases the detrimental effect of the lack of human capital on the growth rates of the labor force. The illiteracy in the agricultural employment is significantly higher than the rest of the economy (Cakmak and Akder, 2005). The mismatch of the demand and supply conditions in the labor markets becomes amplified in the agricultural and non-agricultural comparisons. Despite significant decline in the last two decades, illiteracy in agricultural employment remains as high as 18 percent, compared to 7 percent for the total employment (TurkStat, 2004). Major contributor to this rate is employed females with 60 percent share in agricultural employment where 28.5 percent are illiterate. It is clear that the “push” factor will be the main force in the rural-urban migration rather than the “pull” factor (Cakmak, 2004).

Another structural imbalance compared to non-agriculture is observed in the social security coverage in agriculture. The social security coverage in the sector is the lowest in all sectors with only 9 percent (TurkStat, 2004). Considering nearly non-existent agricultural insurance schemes, the agricultural workers are fully dependent on returns from production activities and almost completely deprived from the state supported health services. This situation seems to be compensated by the relatively young agricultural workers (Cakmak, 2004).

The overall picture presented above about the land and labor hides the interesting regional dualistic structure. Western regions are more market oriented compared to the Central and the Eastern Regions. The difference is not only due to the availability and quality of natural resources, but also to the access of basic public services and regional development programs. The abrupt increase in the labor productivity in agriculture in 2005 is caused by a sudden decline in the employment which coincided with favorable climatic conditions. More sustainable and less painful increase in labor productivity can be achieved by upgrading human capital which will provide higher adjustment ability to the labor force both in and out of agriculture.

C. Agricultural Production and Recent Progress

The weight of crop production has been dominant in Turkish Agriculture. The value of crop production amounts to EURO 24 billion out of EURO 32 billion of all agriculture (Table 8). The share of the animal sector forms about one quarter of the total value.

The structure of production is far from reflecting the policy weights in agriculture. The policies are generally targeted towards cereals and industrial crops, whereas vegetables and fruits have relatively smaller importance apart from some specialty products. However, the share of fruits of vegetables in total value is 42 percent. High protection coupled with domestic intervention schemes in cereals gains precedence with negative repercussions in the production of the animal sector. High protection in the animal products has not been enough so far to increase the share of animal products in agriculture due to the high costs of feed products. The consumers end up paying higher prices even compared to the average prices in the EU.

Table 8. Value and Structure of Agricultural Production, 2002-04 average

	Value of production (million Euros)	Share in total (percent)
Total	**31,735**	
Crop production	**24,212**	**76.3**
Field crops	10,945	34.5
Cereals	5,718	18.0
Industrial crops	2,292	7.2
Other field crops	2,936	9.3
Vegetables	5,810	18.3
Fruits,olive,tea	7,456	23.5
Livestock and Poultry Products	**7,523**	**23.7**
Meat	3,042	9.6
Cattle	1,504	4.7
Sheep, goat	374	1.2
Poultry	1,164	3.7
Milk	3,104	9.8
Cattle	2,695	8.5
Sheep, goat	408	1.3
Eggs	949	3.0
Other livestock products	428	1.3

Source: calculated from TurkStat (2006b) and CB (2006).

Table 9 displays the recent crop specific developments in the crop production. Even three years are enough to display the climate dependency of agricultural production in Turkey. Historical data for the 1980s and 1990s presented in the Annex Table A1 confirms that there has not been drastic changes in the production structure of the crop production.

The production of the basic stable, wheat, follows the historical trend. Heavy emphasis of government policy on increasing the production of oilseeds has not been successful so far. The restriction on the production of sugar beet has been effective. Significant increase has been observed in the production of corn accompanied by increase in yields. As one of the major exportable, the area of fruits are expending.

Table 9. Crop Production, 2002-04

	2002			2003			2004		
	Area 1000ha	Production 1000 tons	Value mil. $	Area 1000ha	Production 1000 tons	Value mil. $	Area 1000ha	Production 1000 tons	Value mil. $
Total	**26,579**	**97,867**	**21,426**	**26,014**	**93,710**	**27,263**	**26,593**	**95,796**	**32,780**
Cereals	**13,786**	**30,687**	**4,751**	**13,414**	**30,658**	**6,338**	**13,833**	**33,958**	**8,255**
Wheat	9,300	19,500	3,247	9,100	19,000	4,248	9,300	21,000	5,348
Barley	3,600	8,300	996	3,400	8,100	1,293	3,600	9,000	1,872
Maize	500	2,100	356	560	2,800	605	545	3,000	747
Rice	60	216	82	65	223	100	70	294	151
Pulses	**1,595**	**1,640**	**889**	**1,514**	**1,558**	**987**	**1,326**	**1,584**	**1,148**
Chick-peas	660	650	363	630	600	387	606	620	466
Lentils	492	565	260	442	540	283	439	540	323
Industrial Crops	**1,426**	**17,777**	**2,180**	**1,299**	**13,798**	**2,461**	**1,238**	**14,668**	**3,036**
Tobacco	191	153	363	191	153	427	193	133	439
Sugar beet	372	16,523	855	315	12,623	727	315	13,517	1,030
Cotton	721	2,542	930	630	2,295	1,205	640	2,455	1,528
Oilseeds	**657**	**2,515**	**499**	**647**	**2,359**	**563**	**635**	**2,501**	**681**
Sunflower	550	850	390	545	800	417	550	900	541
Tuber crops	**300**	**7,485**	**1,356**	**292**	**7,308**	**1,735**	**272**	**7,084**	**1,981**
Potatoes	198	5,200	916	195	5,300	1,169	179	4,800	1,232
Vegetables	**831**	**23,699**	**5,085**	**818**	**24,019**	**6,801**	**805**	**23,036**	**7,655**
Tomatoes		9,450	1,820		9,820	2,424		9,440	2,993
Melons (all)		6,395	1,060		5,950	1,279		5,575	1,319
Peppers		1,750	501		1,790	640		1,700	762
Fruits,olive,tea	**2,585**	**14,065**	**6,668**	**2,656**	**14,010**	**8,378**	**2,722**	**12,965**	**10,024**
Apples		2,200	756		2,600	1,095		2,100	1,034
Olives		1,800	1,348		850	885		1,600	1,753
Citrus		2,493	575		2,488	789		2,708	1,126
Hazelnuts		600	618		480	609		350	578
Grapes		3,500	1,529		3,600	2,007		3,500	2,409
Tea (green)		792	168		869	233		1,105	311
Fallow land	5,040			4,991			4,956		

Source: TurkStat (2006b).

The value of the animal production is worth EURO 8 billion. Meat and milk production have equal shares in total production with 10 percent. The meat production is underestimated since it includes only the animals slaughtered under the municipal control augmented by the animal slaughtered for religious reasons. The development of the animal production in the 1980s and 1990s is presented in the Annex Table A2.

Recent expansion in the production of cattle and sheep milk is worth to note (Table 10). With the increase in the stock of poultry, the white meat production is expanding rapidly, whereas the egg production fluctuates.

Table 10. Livestock and Poultry Production, 2002-04

	2002			2003			2004		
	Head (1000)	Production 1000 tons	Value mil. $	Head (1000)	Production 1000 tons	Value mil. $	Head (1000)	Production 1000 tons	Value mil. $
Total			6,242			8,996			10,151
Cattle	9,925		3,300	9,901		5,067	10,173		5,972
Meat		329	1,218		292	1,646		367	2,236
Milk		7,542	2,051		9,563	3,390		9,649	3,697
Sheep, goat	31,954		714	32,203		970	31,811		1,076
Meat		91	353		74	416		80	484
Milk		867	290		1,048	463		1,031	493
Poultry	251,101		1,895	283,674		2,554	302,799		2,637
Meat		727	991		899	1,391		914	1,540
Eggs		722	904		792	1,163		691	1,097

Notes: 2004 values are provisional estimates.
Source: TurkStat (2006b).

2. Food Industry: Structure and Progress

Data related to the food and beverage industry (defined as sector D-15 in ISIC, Rev.3) is scanty. TurkStat ceased the publication “Annual Manufacturing Industry Statistics” in 2001. We have tried to combine various statistics to display the overall progress in the food and beverage industry and its share in total manufacturing. The sub-sectoral characteristics will be provided using the latest available data.

A. Food Industry and Manufacturing

The output value of the food and beverage industry reached Euro 25 billion in 2005 (Table 11). The growth rate of food and beverage industry was not able to keep up with the manufacturing industry in general. The manufacturing industry grew by about 40 percent from 1997 to 2005, whereas the growth rate of food and beverages was 22 percent. As a result, the share of food and beverages in total manufacturing dwindled from 15 percent in 1997 to 12 percent in 2005.

Another indicator necessary to determine the role of food and beverage industry in the economy is its share in GDP. Unfortunately, the available statistics prohibits a direct estimate of the share of the industry. The latest recent available input/output and supply/use tables date back to 1998. Furthermore the necessary link between input/output tables and national accounts seems to be broken. We decided to combine the proportions provided by the national accounts (TurkStat, 2006a) and manufacturing industry statistics (TurkStat, 2004c) to obtain an approximation of the contribution of food and beverage industry to GDP. Similar approach is used to obtain an estimate of the contribution of the sector to total employment (Table 12).

Table 11. Food and Beverage Industry and Manufacturing, 1997-2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Value of Output (TRY million)									
Total manufacturing	16,101	27,374	40,383	65,725	110,180	181,276	245,243	300,461	349,522
Manufacturing of food and beverages	2,466	4,627	6,840	9,782	15,559	24,215	32,640	36,439	40,746
Share of food and beverages in total (percent)	15.3	16.9	16.9	14.9	14.1	13.4	13.3	12.1	11.7
Output Value Index at 1994 prices									
Total manufacturing	100	102	96	100	100	111	122	134	141
Manufacturing of food and beverages	100	104	104	102	104	107	115	115	122
Value of Output (USD million)									
Total manufacturing	106,014	104,988	96,189	105,452	89,975	120,466	164,369	211,392	260,863
Manufacturing of food and beverages	16,237	17,745	16,292	15,694	12,706	16,092	21,876	25,637	30,410
Value of Output (EURO million)									
Total manufacturing	93,534	92,668	90,532	113,965	100,258	126,876	145,621	170,093	209,498
Manufacturing of food and beverages	14,326	15,662	15,334	16,961	14,158	16,948	19,381	20,629	24,422

Notes: Food and beverage industry corresponds to division 15 of ISIC rev. 3. 1997-2001 output values are obtained from TurkStat (2004c). The output values for 2002-2005 are estimated as follows: The available nominal values of output for manufacturing and food industry are converted to real by using manufacturing and food industry price indices, respectively. Then the growth rates from "Industrial Production Indices" (TurkStat, 2006f) are applied starting from 2002. The nominal values from 2002 to 2005 are estimated by using the appropriate price indices.

Sources: calculations of the authors based on TurkStat (2004c), (2006f) and CB (2006).

Table 12. Contributions of food and beverages to GDP and Employment (percent)

	1997-2001 averages	
	Shares in Value-added	**Shares in Employment**
Manufacturing in total	20.0	16.4
Food and beverages in manufacturing	12.5	13.8
Food, beverages and tobacco in manufacturing	15.5	15.5
Food and beverages in total	2.5	2.3
Food, beverages and tobacco in total	3.1	2.5

Sources: calculations of the authors based on TurkStat, (2006a), (2006c), (2004c).

The contributions of food and beverages to GDP and employment is around 2.5 percent. It is necessary to note that the manufacturing surveys covered only the manufacturing establishment with 10 or more employees. No change has been observed in the contributions of manufacturing to the GDP and employment since 2001. Accordingly, the shares of food and beverages in GDP and employment are not expected to deviate significantly from the averages displayed in Table 12.

B. Sub-sectoral Decomposition of the Food and Beverage Industry

Food and beverage industry in Turkey is dominated by two sub-sectors: Production, processing, preserving of meat, fish, fruits, vegetables, oils and fats; manufacture of bakery and sugar related products. The two sub-sectors provide about 75 percent of the employment and 65 percent of the value added in food and beverage manufacturing (Table 13).

Table 13. Sub-sectoral Structure of Food and Beverage Industry, 2001 (percent)

	ISIC Rev.3 #	Employment	Output Value	Value Added	VA/employed index[a]
Manufacture of food products	**15**	**100.0**	**100.0**	**100.0**	**100.0**
Production, processing, preserving of meat, fish, fruits, vegetables, oils and fats	**151**	**33.6**	**39.7**	**32.0**	**95.3**
Production, processing, preserving of meat and meat products	1511	10.6	9.2	6.6	62.1
Proces. and preserving of fish and fish products	1512	0.9	0.4	0.4	46.0
Proces. and preserving of fruits and vegetables	1513	16.8	18.7	14.4	85.8
Manuf. of vegetable and animal oils and fats	1514	5.3	11.3	10.6	199.6
Manufacture of dairy products	**152**	**5.6**	**5.5**	**5.7**	**101.9**
Manuf. of grain mill products, starches and starch products and prepared animal feeds	**153**	**8.8**	**11.8**	**6.1**	**69.7**
Manufacture of grain mill products	1531	5.4	7.2	3.4	64.1
Manufacture of starches and starch products	1532	0.4	0.8	0.6	144.0
Manufacture of prepared animal feeds	1533	3.0	3.8	2.0	68.5
Manufacture of other food products	**154**	**44.7**	**30.0**	**33.0**	**73.8**
Manufacture of bakery products	1541	11.5	4.6	5.0	43.6
Manufacture of sugar	1542	14.6	10.0	10.0	68.8
Manuf. of cocoa, chocolate and sugar confec.	1543	6.8	7.4	9.1	133.8
Manufacture of macaroni, noodles etc.	1544	1.4	1.4	1.1	80.3
Manufacture of other food products n.e.c.	1549	10.5	6.6	7.8	74.1
Manufacture of beverages	**155**	**7.4**	**13.1**	**23.2**	**314.7**
Distilling, rectifying, and blending of spirits; ethyl alcohol prod. from fermented products	1551	2.3	4.2	11.5	506.4
Manufacture of wines	1552	0.5	0.2	0.4	76.9
Manufacture of malt liquors and malt	1553	1.1	2.6	4.8	422.9
Manuf. of soft drinks; prod. of mineral waters	1554	3.5	6.0	6.5	188.9

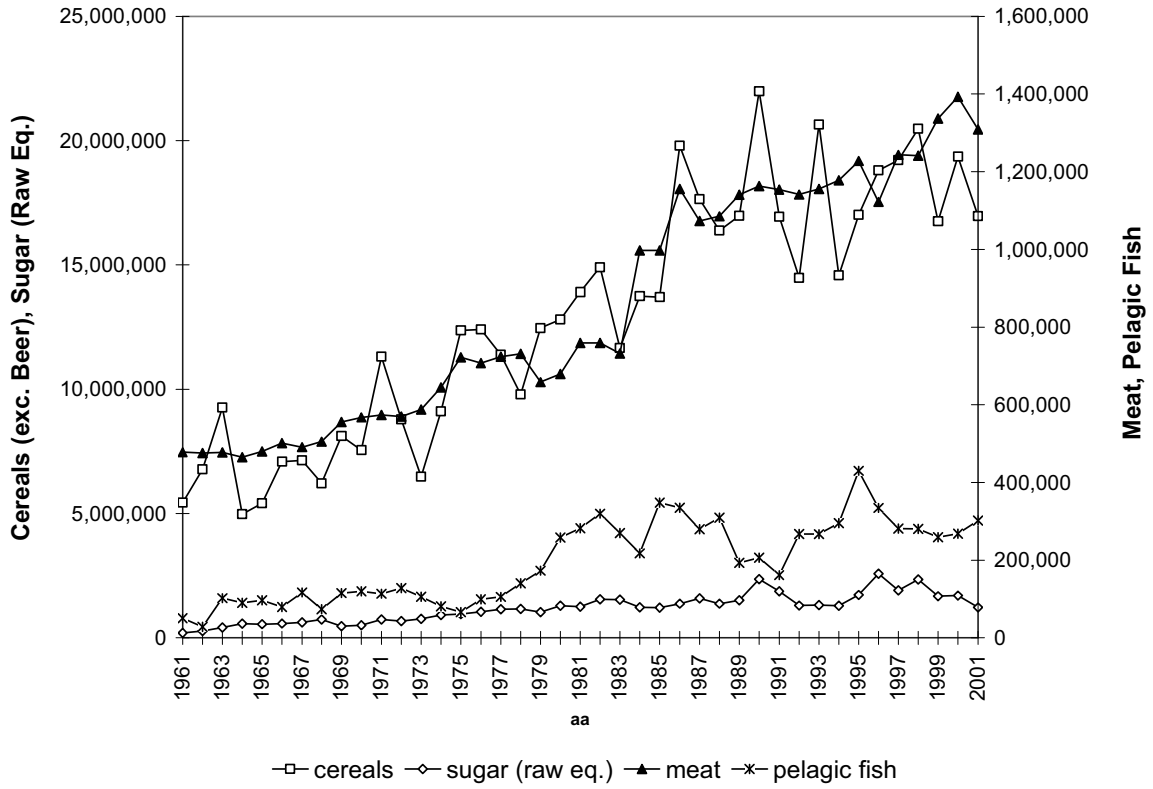
Note: [a] Value added/employed index where food manufacturing average = 100.
Source: TurkStat (2004c).

The last column of Table 13 shows the position of each food manufacturing activities in terms of labor productivity relative to the industry's average. The best relative performance is achieved by the manufacturing of beverages. This sub-sector is three times more productive compared to the overall average with the contributions of hard liqueur, alcohol and beer production. The dominating sub-sectors, on the other hand, happen to be lower than the industry's average. The dairy production is at par with the average.

3. Food Consumption

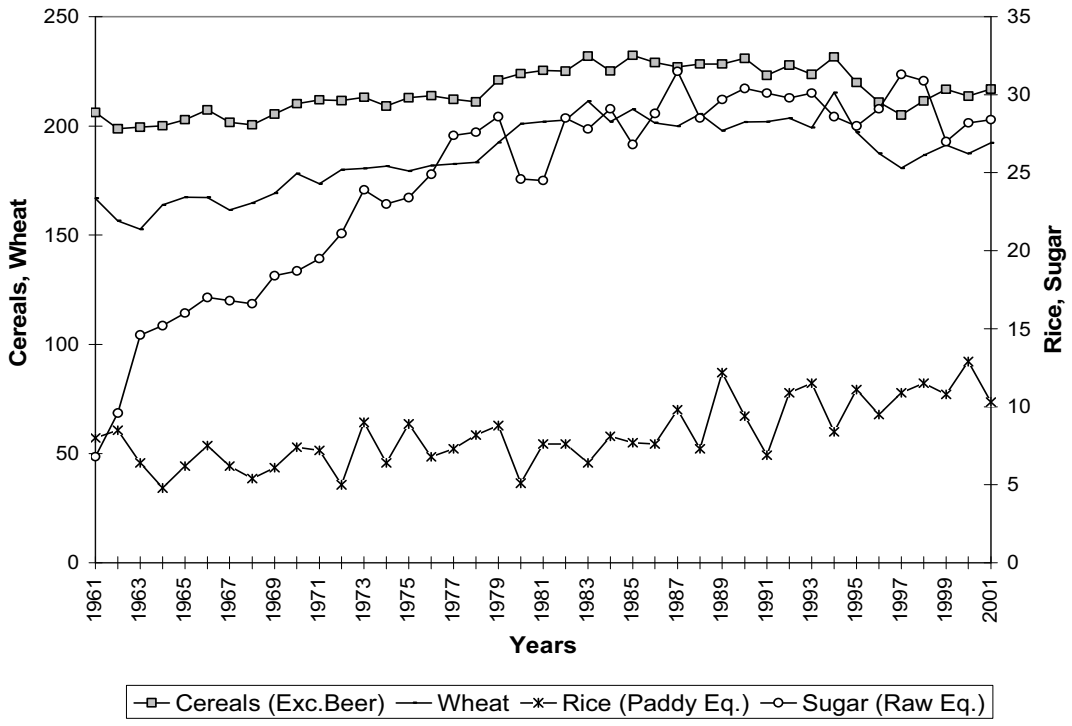
The long-run trend in total and per capita consumption (= production – export + import – seed, feed and other disappearence) of basic food products are presented in Figures 6, 7 and 8. As expected, the total consumption figures have increasing trends, whereas the per capita consumption are more stable. The only exception is the sugar consumption per capita with rather significant increase in per capita production.

Figure 6. Total Consumption of Selected Food Products, 1961-2001 (tons)



Source: FAOSTAT (2004)

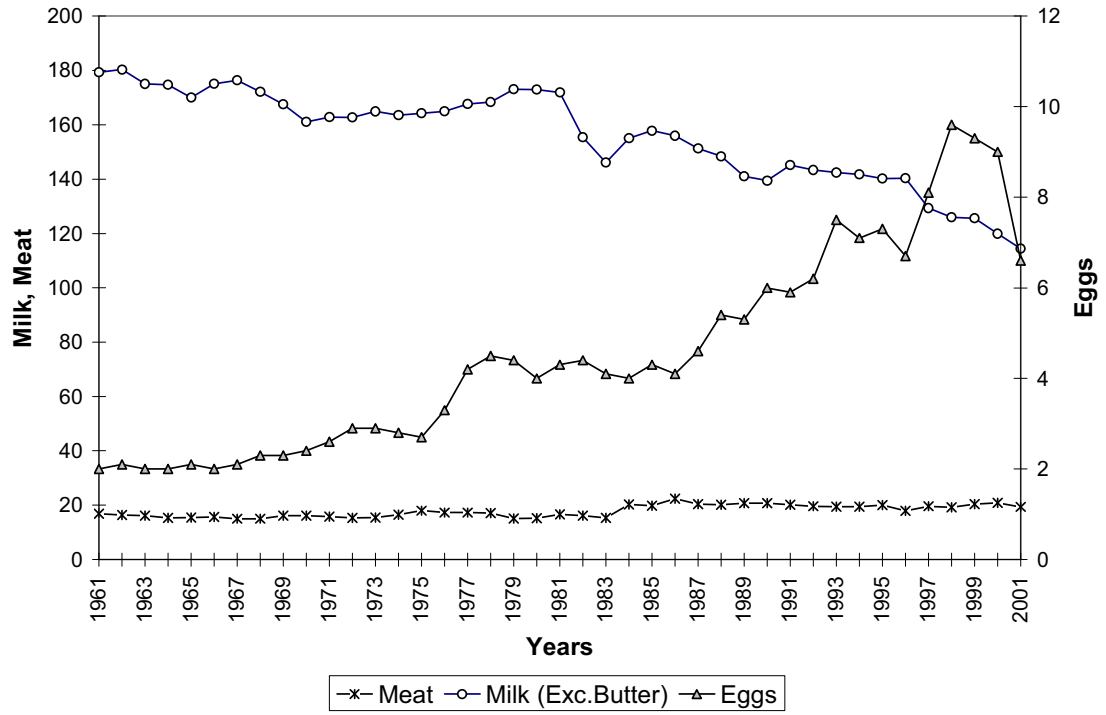
Figure 7. Per Capita Consumption for Selected Crop Products, 1961-2001 (Kg/Year)



Source: FAOSTAT (2004).

The per capita consumption of animal products in Turkey is presented in Figure 8. Meat consumption is constant. Milk consumption, on the other hand, declines gradually since 1960s, accompanied by significant increase in the per capita consumption of eggs.

Figure 8. Per Capita Consumption for Selected Livestock and Poultry Products (Kg/Year)



Source: FAOSTAT (2004).

The self-sufficiency rates of Turkey for selected crop and animal products are presented in Table 14 and 15, respectively. Self-sufficiency rate are is the proportion of net domestic production to total consumption. In other words, a self-sufficiency rate of unity for a commodity implies that the country produces enough to cover national consumption without imports.

Self sufficiency in cereals declined in 1971-2001 as domestic production lagged behind increasing demand. The self sufficiency rate dropped from 1.45 in 1971-1973 to 1.17 in 1999-2001, however Turkey is still self-sufficient in total cereals producing 17 percent more than its consumption needs. The self sufficiency of wheat declined between 1971 and 1981 and since then Turkey is just self-sufficient in wheat. There is a substantial gradual decrease in the self sufficiency of rice (paddy equivalent) since 1970s, dropping to 0.44 in 1999-2001 from 0.85 in 1976-1978. So, the rice imports are taking up the slack since then. Self sufficiency rate of Turkey in maize declined from 1.06 in 1989 to 0.74 in 2003-2004, hence Turkey has not been self sufficient in maize since the mid 1990s. Another substantial decline in self-sufficiency is observed in barley production.

Table 14. Self Sufficiency Rates for Selected Crop Products

Product	Self Sufficiency	Product	Self Sufficiency
Cereals [c]		**Sugar (Raw Equiv.)** [c]	
1961-1963	1.25	1962-1964	1.22
1971-1973	1.45	1974-1976	0.91
1981-1983	1.37	1984-1986	1.20
1991-1993	1.21	1994-1996	0.90
1999-2001	1.17	1999-2001	1.43
Wheat [c]		**Rice (Paddy Equiv.)** [c]	
1961-1963	0.90	1976-1978	0.85
1971-1973	1.11	1985-1987	0.59
1981-1983	1.01	1989-1991	0.45
1991-1993	0.98	1994-1996	0.36
1999-2001	1.01	1999-2001	0.44
2003-2004	1.00		
Maize		**Barley**	
1989 [a]	1.06	1989 [a]	1.48
1995 [a]	0.86	1995 [a]	1.35
1999-2000 [b]	0.69	1999-2000 [b]	1.01
2003-2004 [b]	0.74	2003-2004 [b]	1.02

Sources: [a] TurkStat (2003), [b] SGEA (2006a) , [c] FAOSTAT(2004).

It is observed that there is no persistent and remarkable change in Turkey's self sufficiency in meat for a long time (Table 15). Turkey is just self-sufficient in all types of meat. Meat is one the highly protected sector in Turkey. It seems that the domestic production can only keep up with the increase in the demand leaving the per capita consumption stagnant. Similar trade policy environment is valid for milk and dairy products. Turkey is self-sufficient in milk and dairy products, but the per capita consumption is declining.

Table 15. Self Sufficiency Rates for Selected Livestock and Poultry Products

Product	Self Sufficiency	Product	Self Sufficiency
Meat [b]		**Milk (exc. Butter)** [b]	
1965-1967	1.00	1976-1978	1.09
1984-1986	1.03	1986-1988	1.08
1994-1996	0.99	1996-1998	1.08
1999-2001	1.00	1999-2001	1.08
Bovine Meat [b]		**Butter** [b]	
1965-1967	1.00	1971-1973	0.99
1985-1987	0.93	1981-1983	1.00
1995-1997	0.94	1991-1993	0.96
1998-2000	1.00	1999-2001	0.97
2003-2004 [a]	1.00		
Mutton and Goat Meat [b]		**Eggs** [b]	
1984-1986	1.12	1982-1984	1.13
1990-1992	1.01	1992-1994	1.00
2000-2001	1.00	1999-2001	1.01
Poultry Meat [b]		**Cheese** [b]	
1981-1983	1.00	1967-1969	0.99
1991-1993	1.00	1977-1979	1.00
1999-2001	1.01	1987-1989	1.02
		1997-1999	1.02
		1999-2001	1.00

Sources: [a] SGEA (2006a) , [b] FAOSTAT (2004).

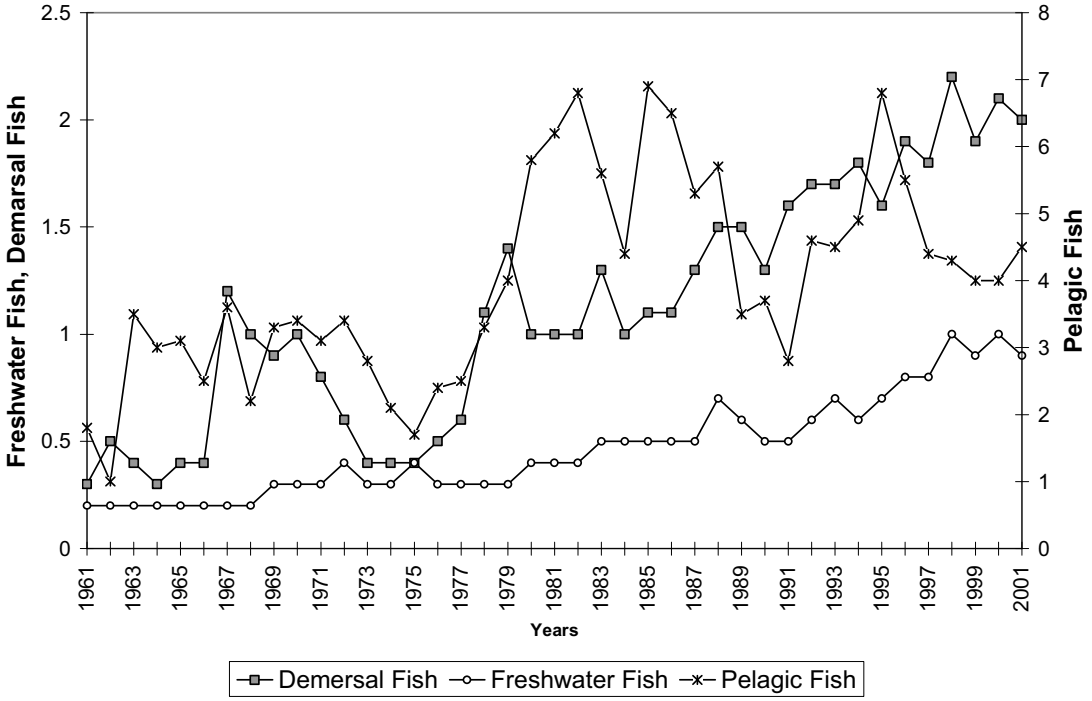
Self-sufficiency rates for different types of fish are presented in Table 16. Self sufficiency in pelagic marine fish is remarkably high. It has the largest share within the total fish production of Turkey. Turkey's net pelagic fish production was 32 percent higher than its consumption in the period of 1999-2001 (Table 16). On the other hand, Turkey is less self sufficient in the catches of other types of fish. Per capita consumption of pelagic fish consumption is highly volatile with a general increasing trend. Per capita consumption of fresh water fish shows a gradual and less volatile increasing trend since 1980s (Figure 9).

Table 16. Self Sufficiency Rates for Selected Fish Products

Product	Self Sufficiency
Demersal Fish	
1989-1991	1.02
1999-2001	1.02
Fresh Water Fish	
1995-1997	1.04
1999-2001	1.05
Pelagic Fish	
1975-1977	1.16
1985-1987	1.43
1995-1997	1.06
1999-2001	1.32

Source: FAOSTAT (2004).

Figure 9. Per Capita Consumption for Selected Fish Products, 1961-2001 (Kg/Year)



Source: FAOSTAT (2004).

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

Turkey accomplished significant liberalization of trade in industrial products starting from 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 was the primary commodities extensively used as intermediate inputs in export oriented manufacturing industries. Cotton, raw hides and skins are duty free (Table 17).

Table 17. 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	Miscelaneous 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

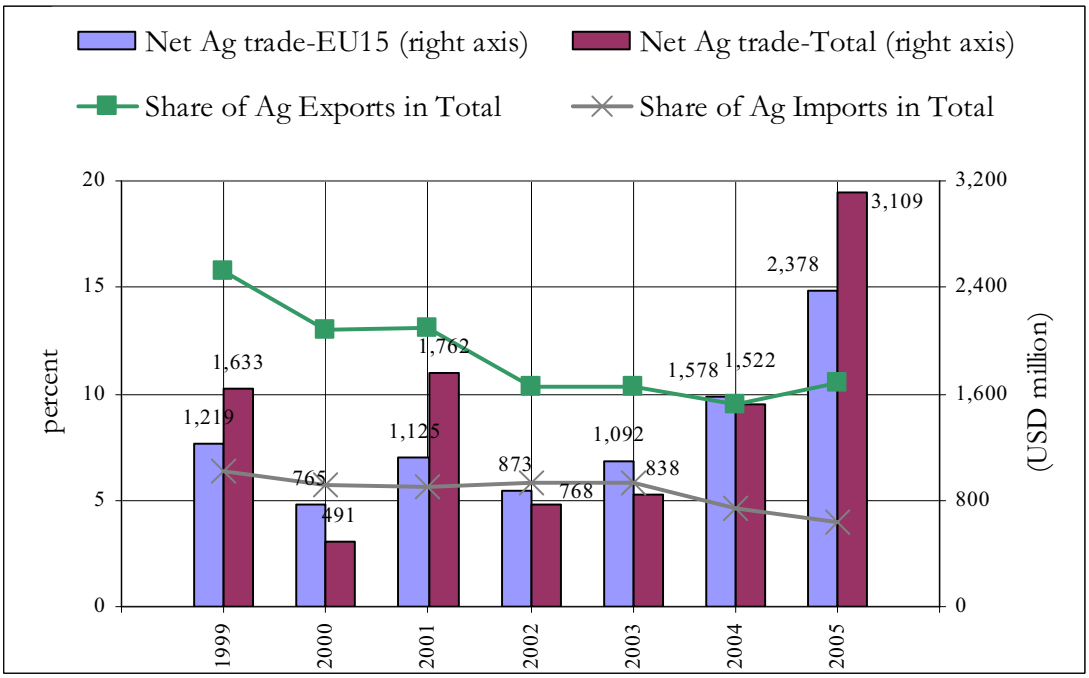
Source: UFT (2006).

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 export subsidies, hence export subsidies are not expected to have significant impact on exports. The ceiling of budgetary expenditures in the WTO-Agreement on Agriculture adds up only to about USD 50 million. Exports of processed products are helped by the “inward processing customs regime” (IPR). IPR is a customs regime that allows the manufacturing companies to benefit from import duties relief. The IPR is applicable to raw materials and intermediate inputs that are temporarily imported to Turkey in order to be processed and subsequently re-exported. IPR allows domestic manufacturing companies to face world prices for the raw materials and intermediate inputs used in the exported processed products. Occasionally, surpluses of the state intervention agencies are exported at the world prices. The difference between the export price and intervention price is financed as the “duty loss” by the Treasury.

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 3). Historically, Turkey is a net exporter in agro-food products (Figure 10). 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 10).

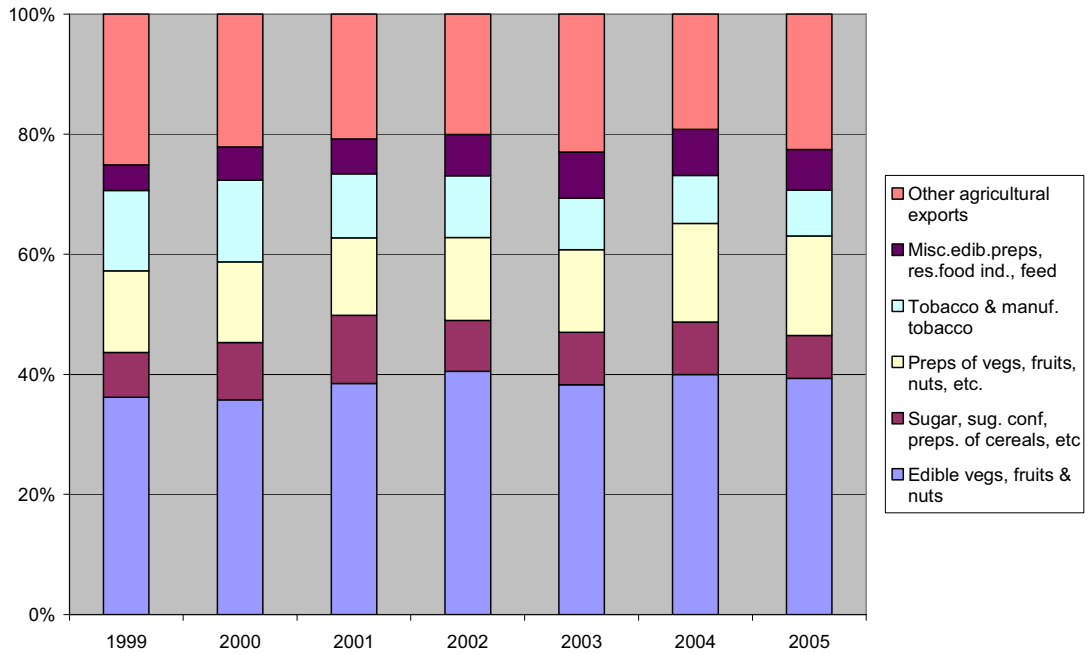
Figure 10. Trade in Agricultural Products, 1999-2005



Source: TurkStat (2006d).

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 11).

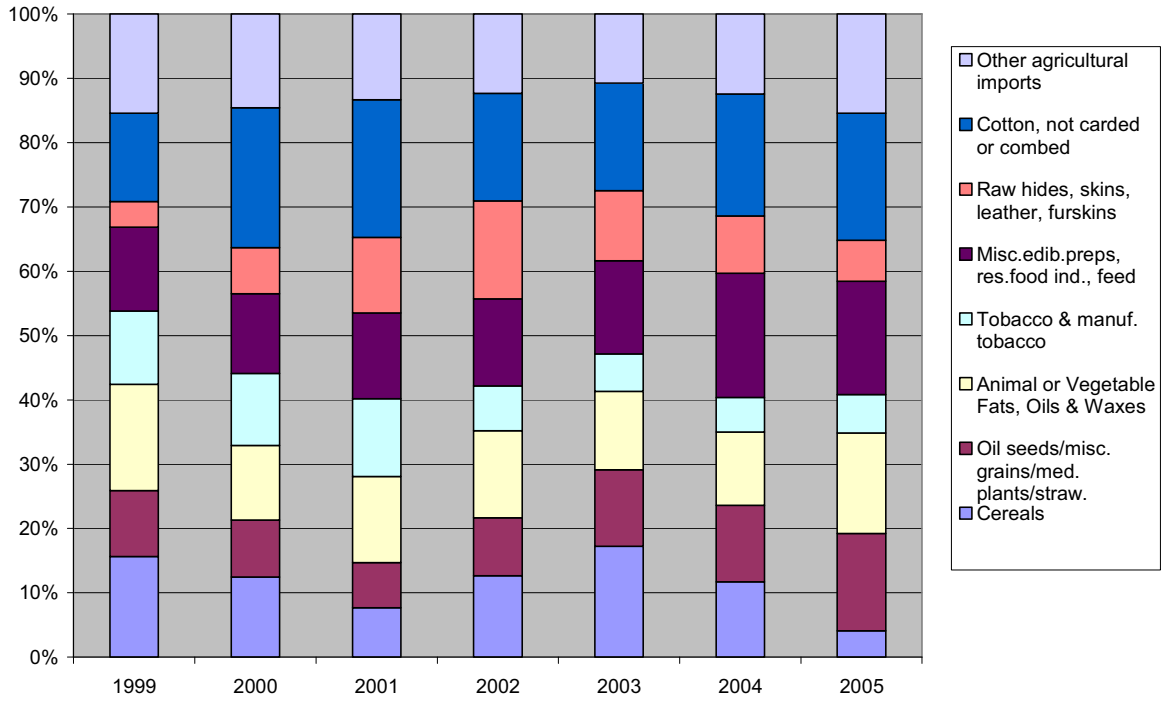
Figure 11. Structure of Agricultural Exports, 1999-2005



Source: TurkStat (2006d).

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 12). 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 12. Structure of Agricultural Imports, 1999-2005



Source: TurkStat (2006d).

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.

III – Fisheries: Fishing Fleet, Production and Trade

Turkey is surrounded by the sea, yet the contribution of fisheries to the Turkish economy is rather limited with less than 0.5 percent share in GDP during the last decade (TurkStat, 2006a). This situation can only be explained by the dominant continental diet of the population based on cereals.

1. Structure of the Fishing Fleet

The structure of the fishing fleet indicates that the scale of operation is rather small. Almost three quarters of the vessels have registered gross tonnage (GRT) of less than 5 tons, 60 percent have engines with less than 20 HP, 85 percent are smaller than 10 meters, and almost all are made of wood (Table 18).

Table 18. Structure of the Fishing Fleet, 2004

Gross Tonnage			Engine power		
GRT	**Number**	**percent**	**HP**	**Number**	**percent**
< 5	14,062	74.7	< 10	6,280	33.3
5 – 9	2,320	12.3	10 - 19	4,904	26.0
10 - 17	1,116	5.9	20 - 49	3,119	16.6
18 - 29	189	1.0	50 - 99	1,656	8.8
30-49	446	2.4	100 - 199	1,635	8.7
50 - 99	362	1.9	200 - 499	866	4.6
100 -199	243	1.3	500 - 999	238	1.3
200+	98	0.5	1000+	138	0.7
Total	18,836	100	Total	18,836	100
Construction Material			**Vessel length**		
Materials	**Number**	**percent**	**Meters**	**Number**	**percent**
Wood	17,754	94.3	< 5	1,006	5.3
Sheetiron	954	5.1	5 - 9	15,021	79.7
Fiber	128	0.7	10 - 14	1,564	8.3
			15 - 19	517	2.7
			20 - 29	552	2.9
			30+	176	0.9
Total	18,836	100		18,836	100

Source: MARA, Water Products Services (2006).

Eastern Black Sea and Aegean Regions shares almost equally 25 percent of the vessels. The remaining vessels are equally distributed to remaining Mediterranean, Marmara and Western Black Sea regions. However most of the large vessels are in the Western Black Sea and Marmara regions.

2. Fish and Aquaculture Production

The total catches of the Turkish fishing fleet amount to about 500 thousand tons in 2004 (Table 19). Sea fish landings are almost stagnant at around 450 thousand tons. The catches of crustaceans and molloscs almost doubled since 2003.

Table 19. Fish and Aquaculture Production, 2000-04 (tons)

	2000	2001	2002	2003	2004
Total Sea Landings	**460,521**	**484,410**	**522,744**	**463,074**	**504,897**
Sea Fish	441,690	465,180	493,446	416,126	456,752
Crustaceans, molloscs	18,831	19,230	29,298	46,948	48,145
Inland Fish	**42,824**	**43,323**	**43,938**	**44,698**	**45,585**
Aquaculture Production	**79,031**	**67,244**	**61,165**	**79,943**	**94,010**
Inland	43,385	37,514	34,297	40,217	44,115
Marine	35,646	29,730	26,868	39,726	49,895

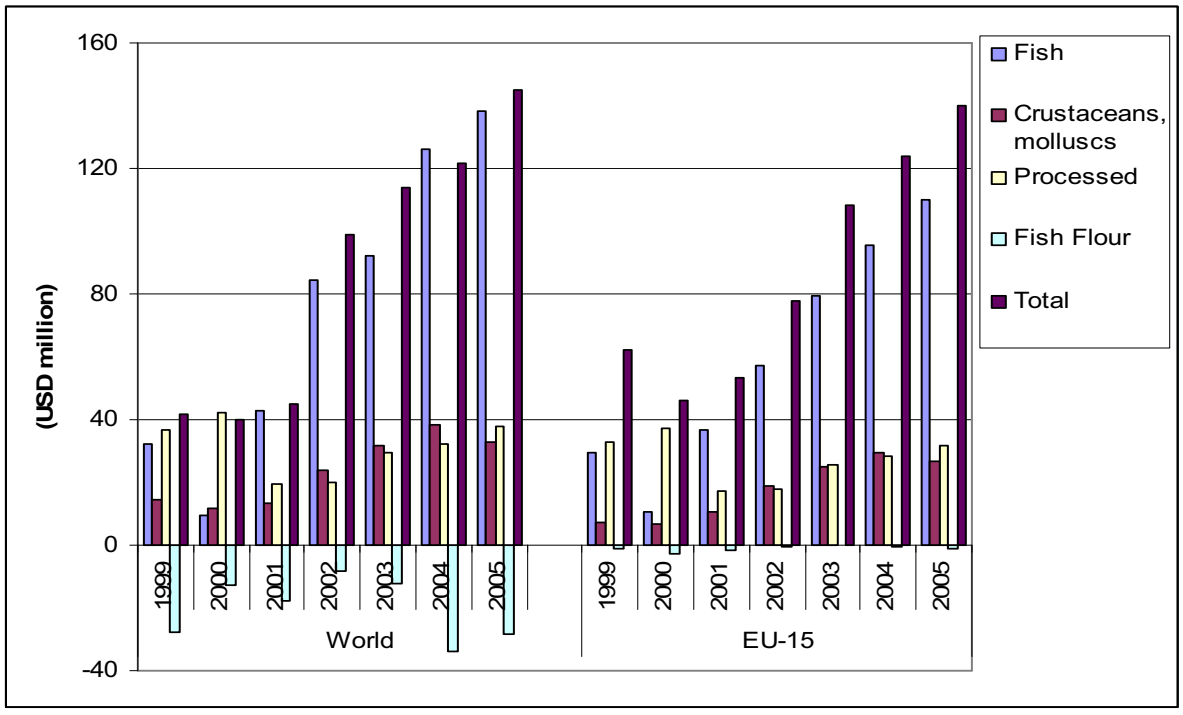
Source: TurkStat (2006e).

The aquaculture production is about to reach 100 thousand tons with the recent expansion of marine aquaculture production.

3. Trade in Fish and Fishery Products

The shares of fish and fishery product exports and imports in total are rather small. The share of fish related exports in total agro-food exports was 3 percent, same figure for the imports was 2 percent in 2005. However, the fish sector in total is a net exporter (Figure 13 and Table 20).

Figure 13. Net Exports in Major Products of Turkey with the World and EU-15, 1999-05



Source: TurkStat, 2006d.

Table 20. Net Exports of Fish and other Marine Products, 1999-05 (USD 1,000)

World							
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Fish, live	-359	-762	-195	-87	-126	-2,752	-14,334
Fish, fresh or chilled	33,300	21,068	26,218	45,835	74,034	92,569	122,414
Fish, frozen	-23,175	-29,408	-6,401	4,401	-22,291	-8,065	-15,677
Fish fillets	6,648	5,809	8,917	9,197	6,799	1,027	4,726
Fish, dried etc	1,564	842	998	1,180	2,231	4,985	8,302
Crustaceans	5,677	4,141	6,540	10,013	12,658	16,413	12,074
Molluscs	8,806	7,734	6,919	13,763	18,902	22,097	20,557
Total of Fish, Crusta. Molluscs	**32,462**	**9,424**	**42,997**	**84,302**	**92,206**	**126,274**	**138,062**
Coral, shell of molluscs etc,	1,729	786	936	1,309	1,169	544	1,316
Fish liver oils and frac.	-1,079	548	-384	1,734	3,177	-3,354	-4,020
Extracts of Meat, Fish etc	-54	-18	42	124	121	194	159
Prep or pres fish, caviar	28,696	26,203	6,634	5,032	9,887	13,387	15,232
Crustaceans molluscs prep.	8,052	16,031	12,851	14,613	19,226	18,825	22,201
Total of processed products	**36,694**	**42,217**	**19,527**	**19,769**	**29,233**	**32,406**	**37,592**
Fish Flour (Non-edible)	-27,957	-12,830	-17,826	-8,367	-12,027	-33,988	-28,166
Grand Total	**41,849**	**40,144**	**45,249**	**98,747**	**113,759**	**121,881**	**144,783**

EU-15							
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Fish, live	29	-238	24	265	324	265	-3,702
Fish, fresh or chilled	30,844	18,159	22,031	36,401	59,465	60,334	69,409
Fish, frozen	-13,191	-16,579	-333	-2,745	-10,944	-500	3,137
Fish fillets	3,361	2,319	3,859	3,429	4,048	1,850	5,934
Fish, dried etc	1,011	448	765	878	1,893	4,566	8,792
Crustaceans	4,219	4,124	6,432	9,833	12,457	16,982	14,623
Molluscs	3,019	2,290	3,893	9,104	12,316	12,272	11,859
Total of Fish, Crusta. Molluscs	**29,292**	**10,523**	**36,670**	**57,165**	**79,559**	**95,767**	**110,052**
Coral, shell of molluscs etc,	1,932	691	1,111	1,466	1,530	1,268	1,174
Fish liver oils and frac.	-744	670	-98	2,047	1,564	-1,031	-1,578
Extracts of Meat, Fish etc	-8	28	41	113	122	195	146
Prep or pres fish, caviar	25,996	22,742	5,248	4,291	7,877	11,298	12,805
Crustaceans molluscs prep.	6,857	14,318	11,856	13,365	17,434	16,737	18,766
Total of processed products	**32,846**	**37,089**	**17,145**	**17,770**	**25,434**	**28,229**	**31,717**
Fish Flour (Non-edible)	-1,080	-3,013	-1,562	-651	0	-345	-1,190
Grand Total	**62,246**	**45,962**	**53,267**	**77,797**	**108,086**	**123,889**	**140,176**

Source: TurkStat, 2006d.

The net exports in fish and fish products reached a meager USD 150 thousands in 2005. Most of the trade is with EU member countries with the only exception of fish flour. Turkey is a net-importer in only non-edible fish flour with major trading partners outside EU.

IV – Recent Changes in Agriculture Related Policies

The agricultural policies are becoming more market friendly in Turkey. As expected, the transition is slow, but proceeding. The backlash against the new policy environment is inescapable. However, change in agro-food policies is also inescapable. The agricultural "reform" program gained momentum in 2001 and targeted two major areas: to reduce the fiscal burden of support to agriculture and to move towards more efficient structure in production. The primary objective of the Agricultural Reform Implementation Project (ARIP), has been to form a detailed framework for the implementation of the reform program. It was backed by the World Bank, but also approved by the governments since its launch in 2001. At the start, the project was designed to mitigate potential short-term adverse impacts of subsidy removal, and facilitate the transition to efficient production patterns. Aside from promoting allocative efficiency, the reforms to be implemented were necessary for fiscal stabilization. Almost all input price subsidies were removed and, apart from the recent increase in cereals, the procurement activities with significant fiscal repercussions to the public sector are declining.

The developments in the policy arena can be best explained by the 3 major themes of "Agricultural Reform Implementation Project" (ARIP):

- First theme was to phase out the government intervention in the output, credit and fertilizer markets and the introduction of **direct income support** (DIS) for farmers through per hectare payment independent from the choice of crop. This leg of the support suffered heavily by the lack of public information campaign. It certainly achieved the target of forming a safety net against the removal of government intervention. The payments have been never paid by the full amount. The announced full payment per year has been made in installments. Recently enacted support for diesel and fertilizers are practically another form of direct income support. One of the most important success during the implementation of the reform program has been to discipline the budgetary transfers to the sector. The recent expansion of the payments for the open-ended crop specific deficiency payments have been made at the expense of other forms of support.

- The second theme, closely related to the output price support of the first theme, has been the commercialization and privatization of SEE's, including TURKSEKER (Turkish Sugar Company) and TEKEL (Turkish Alcohol and Tobacco Company); restructuring of TMO (Soil Products Office) and quasi-governmental Agricultural Sales Cooperative Unions (ASCUs) which in the past intervened to support certain commodity prices on behalf of the government. The fiscal burden of ASCUs declined. Cigarette and alcohol products companies of TEKEL were up for privatization. Alcohol products company was privatized, but the tenders for the privatization of the cigarette company have not been successful so far. Sugar Law, enacted in 2002, put strict quotas at the plant level. The quota classification follows the current EU structure with a slight difference in the isoglucose quota which includes glucose in the Turkish case. The privatization of the Sugar Company has not been undertaken yet. In the grain sector, after few quite years of intervention, TMO increased its volume of intervention purchases to record high in 2005 due to "good" whether conditions for cereals. The duty losses of TMO will certainly be reflected to the public sector accounts in the future.

- One-time alternative crop payments formed the third theme. It provided grants to farmers who require assistance in switching out of surplus crops to net imported products. Initially, the program intended to cover the costs of shifting from producing hazelnuts, tobacco and sugar beet to the production of oilseeds, feed crops and corn. Participation to alternative crop payments has been limited due to mixed signals from the government to the farmers. The signals from the government were not convincing enough for the hazelnuts and sugar beet farmers. Tobacco farmers have displayed highest participation due to the Tobacco Law which ceased TEKEL to be the price maker in the market, and the price formation has been left to bidding mechanism.

As a result, starting from 2005, the weight of DIS payments in the total budgetary support to agriculture has been decreased. The share of crop specific deficiency payments and support to livestock production has been increasing. The new items in the policy agenda, such as the environmental protection schemes, crop insurance support, rural development projects have not been able to have proper share in funding. Medium term policy agenda items of the government include promotion of a sustainable rural finance system; increased expenditures in rural infrastructure targeted to irrigation, storage and marketing facilities and expansion of agricultural extension activities.

1. Structural and Rural Development Policies

In Turkey, from the beginning of Planned Development Period (1963), *five-year development plans* are the basic reference policy documents for development activities including rural development.

In this period, the following various approaches and models were developed by various governments (SGEA, 2006b, pp.37-38).

The *Community Development*, which was adopted as a successful method in terms of education and organization but could not be extended to all over the country, during the First and Second Five-Year Development Plan periods which was based on the principles that the rural population would organize in a voluntary cooperation and should establish necessary cooperation with the public sector, contribute to service costs and own the services.

Model Villages, in 1963-1965 which were implemented as pilots in order to ensure coordination for the services provided to villages and cooperation between actors, and thus allow the other villages in periphery to benefit from the services.

Multi-dimensional Rural Area Planning which was implemented in 6 provinces in 1965-1970 in order to make the villages self-sufficient settlement units and diminish the village-city dichotomy.

Central Village policy was started in the period of Third Five-Year Development Plan to develop the rural society through aiming to develop a central settlement as the service station within a specific village clusters.

The success of such initiatives was limited because the participation of the stakeholders was limited, the implementation did not fit into the conditions of the country and locality, and did not respond to local needs, the priorities were not set correctly, and lack of coordination, cooperation, administrative and technical capacity were influential.

On the other hand, specific rural development projects have been implemented since 1970s. The stated objectives of the rural development projects completed or still in implementation are raising income and living standards through diversification of economic activities in underdeveloped territories. Rural development projects cover activities in such areas as development of agriculture and livestock production, irrigation, rehabilitation of wetlands, construction of village and forest roads, drinking water ponds, drinking water supply, increasing agricultural and livestock production and forestation. The success of the rural development projects might be limited due to financial and organizational problems. In addition, the impact assessment of the projects are lacking, hence without significant learning spillover for the subsequent projects.

The importance of rural development has been increasingly emphasized both in the national policy and program papers and in the documents prepared pursuant to the EU accession perspectives. Turkey

needed to prepare a rural development plan to comply with the EU accession negotiations. The national Rural Development strategy was prepared (OG, 2006) to form the base for the rural development plan.

The main target of rural development strategy has been identified as: Developing and ensuring the sustainability of living and job conditions of rural community in their territory in compatible with urban areas, on the basis of utilizing local resources and potential, and protecting the environmental and cultural assets. The *strategic objectives* are compliant with the EU's rural development objectives. They can be summarized as: i) Economic Development and Increasing Job Opportunities; ii) Strengthening Human Resources, Organization Level and Local Development Capacity; iii) Improving Rural Physical Infrastructure Services and Life Quality; iv) Protection and improvement of the rural environment.

The rural development strategy and the Law of Agriculture which describes the basic domestic agricultural policy instruments form the basis for agricultural and rural development. Both documents point out the interactions between rural and agricultural policies are becoming more clear in the minds of the policy makers. However, prioritizing structure is not clear and both documents are not based on analytical studies.

2. Price and subsidies policies

After the middle of 1980's, Turkey may be considered as a perfect example of mismanagement of agricultural policies. The governments were unable to develop any policy to improve the productivity in the agriculture and combined with frequent early elections, the only alternative they considered to implement was transfer policies. The transfers to producers mostly occurred from consumers through support purchases for major crops backed by high tariffs. The transfers to producers from the taxpayers did not reach relatively high levels, but were accompanied by huge financial costs until 2001. Prior to 2001, most of the transfers from the state, i.e. deficiency payments, were not budgeted and the funds of the state banks were utilized without paying back in due time. Another channel with an increasing effect on financial costs of support purchases cropped up through the related state economic enterprises (SEEs) and Agricultural Sales Cooperatives Unions (ASCUs). The reform program was able to decrease this effect by making the ASCUs more autonomous, and by pushing the SEEs to be more self-reliant.

Total producers' subsidy in Turkey showed a significant increase prior to the start of structural adjustment program in 1999,. The contribution of agricultural policies to the farmers' revenue increased by 2.3 folds, from USD3.4 billion to USD8.0 billion from the end of 1980s till the end of 1990s (Table 21). The general effects of ARIP were significant with a sudden drop in the support to agriculture in 2001. The state intervention in the output markets was severely restricted in 2001, coupled with the delayed implementation of direct income support. The domestic market has been adjusting fast. The market price support provided by the border measures has picked up again in 2002 and it has been high since then.

Table 21. Producer Support and Transfer 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).

The share of total support in GDP was 6 percent in the late 90's. It declined to 3.8 percent in 2005 (Table 22), but it is still one of the highest proportion among the OECD member countries. Percent indicates the major source of transfer to agriculture is consumers who are taxed through distorted domestic prices. The percent CSE is back to pre-crisis level in 2005 (21 percent).

Table 22. Indicators of Transfers to Agriculture, 1986-2995 (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 Suport Estimate.
Source: OECD (2006).

Another category in the total transfers is the General Services Support Estimate (GSSE) which consists of private or public general service provided to agriculture generally and not individually to farms. Simply put, it is just the difference between the total transfers and PSE. The most important item in this category is the financial cost of the intervention agencies. The burden of the mismanagement before 2000 had a significant share in the total budgetary transfer, amounting to more than USD3 billions. The increase in the financial cost of the intervention can be easily seen in Table 22. The share of GSSE in total transfers increased from 5 percent in 1986-89 to almost 80 percent in 2001, mainly due to the decline in the other types of transfers. It started to decline in 2002. The upward movement in 2005 is mainly due to the huge intervention purchases of the TMO.

The distribution of transfers to the producers according to the policy tools has not changed much since the 1980's, except in the crisis year. The share of market price support in PSE is around 80 percent. (Table 23). The remaining burden falls on the taxpayers. Significant shifts occurred in this item. Input price intervention diminished, instead direct income payment contributed 15 percent of the support to the producers.

Table 23. Types of Producers' Support, 1986-2005 (percent)

Type of Support	1986-89	1996-99	2000	2001	2002	2003	2004	2005e
Market Price	71	73	83	-7	73	80	77	77
Payments based on output	0	2	5	66	3	2	3	5
Payments based on area	0	0	0	0	0	0	0	0
Payments on hist. Entitlement	0	0	0	10	21	16	18	15
Payments based on input use	29	25	12	30	3	2	2	3
Total	100	100	100	100	100	100	100	100

Note: [e] provisional estimate.
Source: OECD (2006).

The nominal protection coefficients (NPC) reported in Table 24 provide major commodity distribution of the high level of protection. Only two commodities, cotton and tomatoes have NPC less than one in 2005. Except a few, almost all NPCs have increased since 2003. Cotton producers are compensated heavily through deficiency payments. In addition, cereals, oilseeds, olive oil, meat and milk producers are eligible for some form deficiency payments.

Table 24. 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).

To sum up, the agricultural subsidy reform program contributed significantly to fiscal stabilization by making the support budget transparent and establishing accountability. Agricultural policies can not change overnight. The goal of achieving allocative efficiency will take time and will request significant paradigm shift in the minds of the decision makers both in Turkey and in the developed countries.

3. Agriculture and the Environment

Turkey is highly rich in flora compared to Europe with a total of almost 9,000 species. More than 2,800 of these species are endemic, representing 32 percent of the flora in Turkey.

Until the late 1990s the environmental issues have not been adequately incorporated into economic and social decisions. National Environmental Action Plan (NEAP) was prepared in the late 1990s. In NEAP, Turkey's environmental problems are stated as the urban environment (air quality, water supply and wastewater, and solid waste management), natural resource management (water resources, soils and land, forests, biodiversity), marine and coastal resources, cultural and natural heritage, and natural as well as man-made environmental hazards.

We will concentrate on land and water resources. The environmental problems of the agricultural land in Turkey is presented in Table 25. More than 70 percent of the cultivated land and 60 percent of pasture land are subject to erosion. Combined with the other environmental problems the need for a serious

strategy and implementation plan seems to be necessary to sustain the productivity of land resources. Only 10 percent of the agricultural land is fully productive.

Table 25. Agricultural Land with Environmental Problems, 2003 (Million Hectare)

	Cultivated Land		Meadows		Pasture	
	Area	%	Area	%	Area	%
Fully Productive	4,83	20,8	0,06	8,5	0,09	0,5
Erosion problems	16,73	72,0	0,09	13,9	12,73	61,0
Wetness and drainage problems	1,08	4,6	0,42	64,1	0,42	2,0
Erosion, wetness and desertification	5,42	23,3	0,09	13,4	7,62	36,5
Total Land	23,23	100,0	0,65	100,0	20,86	100,0

Source: MEF (2005, pp. 53-55)

Another urgent problem to address is the quality of water resources. It is obvious from Table 26 that the pollution levels in the rivers are at critical levels which may even prohibit the use of water for agricultural purposes. The river basins in highly industrialized western regions are already highly polluted.

Table 26. Water Pollution on Selected Major Rivers in Turkey, 1997

River Basin	Region	Pollution	Remarks
Maritza	Thrace	Very high	low level of dissolved oxygen
Nilufer	Marmara	Very high	no dissolved oxygen measured
Gediz	North Aegean	Very high	high levels of cyanide
B.Menderes	Aegean	High	salinity
Sakarya	West Central	High	heavy metals
Yesilırmak	Central	High	
Seyhan	Mediterranean	Medium	heavy metals
Firat and Dicle	Southeast	Low	limited quality measurement
Konya (closed basin)	Central	high	heavy metals, micro polluters

Source: EFT, (1998, pp. 90-123).

Environmental concerns in general are bound to be one of the toughest area of negotiation in the integration with the EU, followed by agriculture. However, the prevailing conditions indicate that the competitiveness of agriculture is highly depended on the mitigation of environmental problems of land and water resources.

V – Concluding Remarks

Turkish primary agricultural production is in transition. The policy environment, despite some backlashes, is changing. The link between the agriculture and food manufacturing industry is developing at a slow pace. However, the change in the structure of retailing through the fast progress of supermarkets is bound to change the structure of agro-food production in Turkey, including the primary food production. The potential competition which may stem from the trade liberalization with the EU will put additional pressure on the agriculture.

The main purpose of the agricultural subsidy reform launched in 2000 was to contribute to the fiscal stabilization program. The full implementation of the reform program had to wait until the second half of 2001. The similarities in the basic objectives of the new policy framework in Turkey and the ongoing reform of the CAP are encouraging for the future accession negotiations. Emphasis on more market friendly policies, accompanied with direct income payments that compensate at least part of the transition costs to the farmers appears to be alike. In addition, Turkey has recently started to include environmental and missing markets (i.e. rural finance, agricultural insurance) issues in the rural and agricultural policy programs.

The past trends and modeling exercises indicate that Turkey have advantageous position in the trade of crop products which do not exhibit economies of scale and relatively labor intensive, i.e. fruits and vegetables, whereas the livestock and livestock based raw products are on the weak components of the sector. The trade in processed agricultural products stems as the unexplored sub-sector because of the border and non-tariff measures, despite the preferential trade arrangements. Further expansion of trade in processed agricultural products will widen the competition base together with enriching the choices offered to the consumers.

Agriculture is the dominant economic activity in the rural areas. Over-employment in agriculture necessitated by the small farm sizes increases the importance of rural development measures. The design and implementation of effective, location specific rural development projects are critical. Need and impact assessment phases, and increasing the local capability in the formulation and implementation of the projects emerge as the vital factors to ease the accession of the rural areas.

The agro-food sector offers opportunities to increase the meager flow of foreign direct investment (FDI). For instance, Turkey has the potential to satisfy ever expanding demand for labor intensive organic products. The expansion of FDI in the production side will not only increase the competition in this segment of the food market, but also enrich the span of the products offered to the consumers. Another opportunity for the FDI arises in the retail sector offered by a large consumption potential in Turkey. Although the prospects are good, poor attraction of foreign capital in the retail sector is mainly due to the supply/institutional factors (Codron et al., 2004). Further development of the large retail sector will not only increase the quality standards, but also will support the necessary structural transformation by increasing the farm size and/or the number of marketing orders.

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Annex Tables

Table A1. Area, Production and Value of Production for Selected Crops, 1980, 1990, 2000

	1980			1990			2000		
	Area 1000ha	Production 1000 tons	Value mil. $	Area 1000ha	Production 1000 tons	Value mil.$	Area 1000ha	Production 1000 tons	Value mil.$
Wheat	9 020	16 500	2,387	9 450	20 000	3,950	9 400	21 000	3,387
Barley	2 800	5 300	586	3 350	7 300	1,167	3 629	8 000	1,025
Maize	583	1 240	212	515	2 100	415	555	2 300	789
Rice	52	143	102	53	138	121	58	210	108
Chick-peas	240	275	116	890	860	412	636	548	431
Lentils	191	195	108	906	846	451	472	353	276
Tobacco	223	228	240	320	296	412	237	200	557
Sugar beet	269	6 766	144	380	13 986	601	410	18 821	1,105
Cotton	672	1 300	684	641	1 702	1,186	654	**2 261**	1,036
Sunflower	575	750	187	716	860	425	542	800	375
Potatoes	183	3 000	671	192	4 300	1,400	205	5 370	1,042
Tomatoes		3 550	794		6 000	2,280		8 890	2,098
Melons (all)		4 450	907		4 950	1,191		5 805	1,252
Peppers		580	208		900	415		1480	592
Apples		1 430	395		1 900	600		2 400	864
Olives		1 350	728		1 100	1,231		1 800	1,471
Citrus		1 158	242		1 474	524		2 222	643
Hazelnuts		250	270		375	425		470	769
Grapes		3 600	1,705		3 500	1,868		3 600	1,467
Tea (green)		476	175		608	250		**758**	197

Source: TurkStat (2006b).

Table A2. Production of Selected Livestock & Poultry Products, 1980, 1990, 2000

	1980			1990			2000		
	Head (1000)	Production 1000 tons	Value mil.$	Head (1000)	Production 1000 tons	Value mil.$	Head (1000)	Production 1000 tons	Value mil.$
Cattle	16,925		7,676	11,748		5,874	10,907		6,835
Meat		119	915		340	856		359	1,637
Milk		3,695	1,264		8,135	3,301		8,799	3,127
Sheep, goat	67,673		4,036	51,530		2,636	51,197		2,727
Meat		85	452		166	344		133	598
Milk		1,777	608		1,483	704		995	466
Poultry	64,088		246	102,441		368	145,052		1,109
Meat		250	1,664		415	904		663	1,055
Eggs		258	179		481	419		844	963

Notes: The values before 1980 are based on authors' estimates.
Source: TurkStat (2006b).

Table A3. Agricultural Exports of Turkey to the World and EU-15, 1999-2005 (million USD)

	Total	EU-15	Total	EU-15	Total	EU-15
	1999	**1999**	**2000**	**2000**	**2001**	**2001**
Live Animals	12	2	2	2	44	1
Meat & edible meat offal	14	1	11	0	17	1
Dairy, eggs, honey & ed. products	40	9	24	5	41	5
Products of Animal origin	41	39	37	36	27	25
Total Animal Products	106	51	75	42	129	32
Edible vegetables	274	99	264	95	375	106
Ed. fruits & nuts, peel of citrus/melons	1,247	804	1,030	665	1,201	762
Cereals	224	21	224	47	162	32
Milling industry products	83	32	102	26	61	21
Oil seeds/misc. grains/med. plants/straw.	61	32	43	24	54	29
Other prod. of crop orig.	76	38	72	31	72	33
Total Crop Products	1,966	1,026	1,734	888	1,926	984
Animal or Vegetable Fats, Oils & Waxes	332	131	156	15	234	98
Sugars & sugar confectionery	207	22	232	28	335	26
Preps. of cereals, flour, starch or milk	106	10	113	14	131	18
Preps of vegs, fruits, nuts, etc.	571	383	486	319	528	355
Beverages, spirits & vinegar	42	21	38	17	37	20
Tobacco & manuf. tobacco	562	187	491	153	435	96
Misc.edib.preps, res.food ind., feed	181	33	202	33	239	38
Total food, beverages, tobacco	1,668	655	1,562	564	1,706	553
Raw hides, skins, leather, furskins	9	0	26	0	30	0
Cotton, not carded or combed	114	50	60	39	64	50
Raw silk, wool, flax	6	4	6	3	8	3
Total other WTO ag. Products	130	54	92	42	102	54
Total Agricultural Exports	**4,202**	**1,917**	**3,618**	**1,551**	**4,098**	**1,720**
memo: Total Exports	26,587	14,352	27,775	14,510	31,334	16,118

Table A3 (contd.)

	Total	EU-15	Total	EU-15	Total	EU-15	Total	EU-15
	2002	**2002**	**2003**	**2003**	**2004**	**2004**	**2005**	**2005**
Live Animals	31	1	8	2	7	2	5	2
Meat & edible meat offal	14	1	19	1	22	2	36	2
Dairy, eggs, honey & ed. products	61	27	78	31	66	13	80	5
Products of Animal origin	36	33	47	40	46	41	38	35
Total Animal Products	142	62	152	74	142	58	160	44
Edible vegetables	322	125	473	169	486	197	533	219
Ed. fruits & nuts, peel of citrus/melons	1,193	718	1,392	834	1,903	1,190	2,501	1,567
Cereals	80	28	56	16	17	13	115	22
Milling industry products	76	18	140	18	235	24	484	41
Oil seeds/misc. grains/med. plants/straw.	51	29	73	33	80	35	97	41
Other prod. of crop orig.	90	40	93	47	102	51	101	47
Total Crop Products	1,812	959	2,227	1,117	2,823	1,510	3,830	1,937
Animal or Vegetable Fats, Oils & Waxes	154	31	343	108	277	69	503	204
Sugars & sugar confectionery	150	28	187	35	218	52	202	56
Preps. of cereals, flour, starch or milk	166	23	239	34	304	40	348	41
Preps of vegs, fruits, nuts, etc.	516	345	671	444	980	658	1,281	884
Beverages, spirits & vinegar	42	24	70	26	114	33	148	37
Tobacco & manuf. tobacco	385	134	419	143	478	154	590	208
Misc.edib.preps, res.food ind., feed	257	37	375	56	458	66	518	92
Total food, beverages, tobacco	1,516	591	1,961	737	2,552	1,003	3,089	1,318
Raw hides, skins, leather, furskins	33	0	31	0	28	1	23	0
Cotton, not carded or combed	68	49	145	82	125	81	92	55
Raw silk, wool, flax	15	8	17	9	26	14	22	13
Total other WTO ag. Products	115	57	193	92	179	96	136	68
Total Agricultural Exports	**3,739**	**1,701**	**4,877**	**2,127**	**5,972**	**2,735**	**7,717**	**3,571**
memo: Total Exports	36,059	18,459	47,253	24,484	63,167	32,589	73,476	35,872

Source: Authors' calculations based on TurkStat (2006d).

Table A4. Agricultural Imports of Turkey from the World and EU-15, 1999-2005 (million USD)

	Total	EU-15	Total	EU-15	Total	EU-15
	1999	**1999**	**2000**	**2000**	**2001**	**2001**
Live Animals	24	15	33	21	23	10
Meat & edible meat offal	0	0	1	0	0	0
Dairy, eggs, honey & ed. products	36	29	36	22	22	13
Products of Animal origin	17	3	24	4	16	1
Total Animal Products	77	46	95	48	61	24
Edible vegetables	57	12	99	7	71	2
Ed. fruits & nuts, peel of citrus/melons	75	8	68	7	31	4
Cereals	403	75	390	73	180	24
Milling industry products	5	5	5	4	5	4
Oil seeds/misc. grains/med. plants/straw.	263	33	277	40	163	21
Other prod. of crop orig.	47	22	51	19	37	12
Total Crop Products	850	155	891	150	487	68
Animal or Vegetable Fats, Oils & Waxes	425	100	363	77	313	45
Sugars & sugar confectionery	16	11	15	10	12	7
Preps. of cereals, flour, starch or milk	32	30	33	29	30	26
Preps of vegs, fruits, nuts, etc.	22	16	19	13	12	8
Beverages, spirits & vinegar	15	13	15	13	13	12
Tobacco & manuf. tobacco	293	11	351	13	283	13
Misc.edib.preps, res.food ind., feed	334	134	386	152	311	134
Total food, beverages, tobacco	713	214	818	228	661	199
Raw hides, skins, leather, furskins	102	54	225	125	275	143
Cotton, not carded or combed	354	123	681	154	500	113
Raw silk, wool, flax	49	5	56	5	39	4
Total other WTO ag. products	505	182	962	284	814	260
Total Agricultural Imports	**2,569**	**697**	**3,127**	**787**	**2,336**	**595**
memo: Total Imports	40,671	21,401	54,503	26,610	41,399	18,280

Table A4 (contd.)

	Total	EU-15	Total	EU-15	Total	EU-15	Total	EU-15
	2002	**2002**	**2003**	**2003**	**2004**	**2004**	**2005**	**2005**
Live Animals	16	8	12	6	10	7	14	9
Meat & edible meat offal	0	0	0	0	0	0	0	0
Dairy, eggs, honey & ed. products	37	26	52	34	69	37	76	38
Products of Animal origin	26	1	33	1	31	1	28	2
Total Animal Products	80	36	97	40	110	45	118	49
Edible vegetables	52	7	30	7	33	9	79	9
Ed. fruits & nuts, peel of citrus/melons	65	8	80	7	99	10	154	17
Cereals	376	49	697	113	521	53	189	43
Milling industry products	9	8	10	8	12	10	15	12
Oil seeds/misc. grains/med. plants/straw.	268	30	479	36	530	46	698	56
Other prod. of crop orig.	35	13	40	17	54	24	73	34
Total Crop Products	806	116	1,337	188	1,249	152	1,208	172
Animal or Vegetable Fats, Oils & Waxes	401	62	494	72	507	60	719	76
Sugars & sugar confectionery	20	8	34	14	38	16	44	16
Preps. of cereals, flour, starch or milk	32	28	52	44	67	53	76	54
Preps of vegs, fruits, nuts, etc.	17	11	16	9	25	15	47	31
Beverages, spirits & vinegar	10	8	19	11	49	25	51	21
Tobacco & manuf. tobacco	208	28	235	46	239	75	276	108
Misc.edib.preps, res.food ind., feed	402	184	584	221	859	295	813	319
Total food, beverages, tobacco	690	268	940	344	1,277	479	1,306	549
Raw hides, skins, leather, furskins	453	228	441	249	397	238	292	166
Cotton, not carded or combed	497	112	675	133	844	173	911	172
Raw silk, wool, flax	45	6	56	8	66	10	54	9
Total other WTO ag. products	995	346	1,171	390	1,307	421	1,257	347
Total Agricultural Imports	**2,971**	**828**	**4,038**	**1,035**	**4,450**	**1,157**	**4,609**	**1,193**
memo: Total Imports	51,554	23,321	69,340	31,696	97,540	42,359	116,773	45,468

Source: Authors' calculations based on TurkStat (2006d).

Table A5. Agricultural Net Exports of Turkey to the World and EU-15, 1999-2005 (million USD)

	Total	EU-15	Total	EU-15	Total	EU-15
	1999	**1999**	**2000**	**2000**	**2001**	**2001**
Live Animals	-12	-13	-31	-20	21	-9
Meat & edible meat offal	13	1	10	0	17	1
Dairy, eggs, honey & ed. products	4	-19	-12	-18	20	-7
Products of Animal origin	23	36	13	32	11	24
Total Animal Products	29	4	-20	-5	68	8
Edible vegetables	218	88	165	89	304	104
Ed. fruits & nuts, peel of citrus/melons	1,172	796	962	659	1,170	758
Cereals	-178	-54	-166	-26	-17	8
Milling industry products	78	27	97	22	56	16
Oil seeds/misc. grains/med. plants/straw.	-202	-1	-234	-16	-109	8
Other prod. of crop orig.	29	16	20	12	35	21
Total Crop Products	1,117	872	843	739	1,439	915
Animal or Vegetable Fats, Oils & Waxes	-93	31	-207	-62	-79	53
Sugars & sugar confectionery	190	11	218	18	324	19
Preps. of cereals, flour, starch or milk	74	-20	80	-15	101	-9
Preps of vegs, fruits, nuts, etc.	549	367	467	306	516	347
Beverages, spirits & vinegar	27	8	23	4	23	8
Tobacco & manuf. tobacco	269	176	141	141	152	83
Misc.edib.preps, res.food ind., feed	-154	-101	-185	-118	-71	-95
Total food, beverages, tobacco	955	441	744	335	1,045	354
Raw hides, skins, leather, furskins	-93	-53	-199	-125	-245	-142
Cotton, not carded or combed	-240	-73	-620	-115	-436	-63
Raw silk, wool, flax	-42	-2	-50	-2	-31	0
Total other WTO ag. products	-375	-128	-870	-242	-712	-206
Total Agricultural Net Exports	**1,633**	**1,219**	**491**	**765**	**1,762**	**1,125**
memo: Total Net Exports	-14,084	-7,049	-26,728	-12,100	-10,065	-2,162

Table A5 (contd.)

	Total	EU-15	Total	EU-15	Total	EU-15	Total	EU-15
	2002	**2002**	**2003**	**2003**	**2004**	**2004**	**2005**	**2005**
Live Animals	15	-7	-4	-3	-2	-5	-9	-7
Meat & edible meat offal	14	1	19	1	22	2	36	2
Dairy, eggs, honey & ed. products	24	1	26	-3	-3	-24	4	-33
Products of Animal origin	10	31	14	39	15	40	10	34
Total Animal Products	62	27	55	34	32	13	41	-5
Edible vegetables	270	118	443	162	453	189	454	210
Ed. fruits & nuts, peel of citrus/melons	1,128	710	1,312	827	1,803	1,180	2,347	1,550
Cereals	-295	-20	-641	-97	-503	-40	-74	-21
Milling industry products	67	10	130	9	223	14	469	29
Oil seeds/misc. grains/med. plants/straw.	-217	-1	-406	-3	-450	-11	-601	-15
Other prod. of crop orig.	55	26	53	30	48	27	27	13
Total Crop Products	1,006	842	891	928	1,574	1,358	2,622	1,765
Animal or Vegetable Fats, Oils & Waxes	-248	-31	-151	36	-231	8	-216	128
Sugars & sugar confectionery	130	20	153	21	180	35	159	40
Preps. of cereals, flour, starch or milk	133	-5	187	-10	237	-13	273	-13
Preps of vegs, fruits, nuts, etc.	499	334	656	435	955	644	1,235	853
Beverages, spirits & vinegar	32	15	52	15	65	9	97	16
Tobacco & manuf. tobacco	177	106	184	97	239	79	315	100
Misc.edib.preps, res.food ind., feed	-145	-147	-210	-165	-401	-229	-295	-227
Total food, beverages, tobacco	827	323	1,022	393	1,275	524	1,783	769
Raw hides, skins, leather, furskins	-421	-227	-409	-249	-368	-237	-270	-165
Cotton, not carded or combed	-429	-63	-530	-50	-719	-91	-819	-117
Raw silk, wool, flax	-30	2	-39	1	-40	3	-33	4
Total other WTO ag. products	-880	-289	-978	-298	-1,127	-325	-1,121	-279
Total Agricultural Net Exports	**768**	**873**	**838**	**1,092**	**1,522**	**1,578**	**3,109**	**2,378**
memo: Total Net Exports	-15,495	-4,863	-22,087	-7,212	-34,373	-9,770	-43,297	-9,596

Sources: Tables A3 and A4.