

## TURKEY: ESTIMATES OF SUPPORT TO AGRICULTURE

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### DEFINITIONS AND SOURCES

Country Total Support Estimate (TSE) and derived indicators in **Table 1** cover all agricultural production, i.e. all agricultural commodities produced in the country. Definitions of basic data sets refer to the specific programmes applied in the country. For the Producer Support Estimates (PSE) and Consumer Support Estimates (CSE), where relevant the description of policy measures indicates where the policies are related to specific commodities. "MPS commodities", which vary across countries, are those for which market price support is explicitly calculated in **Table 4**.

**Table 2** provides a breakdown of the total PSE into four categories reflecting the flexibility given to farmers regarding which commodity to produce within the various policy measures. These categories are: Single Commodity Transfers (SCT); Group Commodity Transfers (GCT); All Commodity Transfers (ACT); and Other Transfers to Producers (OTP). All data sets in Table 2 come from Tables 1 and 3 where definitions are included.

Producer Single Commodity Transfers (PSCT) by commodity in **Table 3** are calculated only for the commodities produced in the country within a common set of commodities (wheat, maize, barley, oats, rice, sorghum, soybeans, sunflower, rapeseed, sugar, milk, beef and veal, pigmeat, poultry meat, sheep meat, wool and eggs), provided that the value of production of that commodity exceeds 1% of the total value of production in the country concerned. All data sets in the calculation of PSCT by commodity come from Tables 1 and 4 where definitions are included.

Market Price Support (MPS) and Consumer Single Commodity Transfer (CSCT) by commodity in **Table 4** are calculated for the following commodities: wheat, maize, barley, sunflower, sugar, milk, beef and veal, poultry meat, sheep meat, wool, eggs, apples, tomatoes, potatoes, grapes and tobacco. Definitions are provided only for basic data sets from which all the other data sets in this table are derived, following the formula indicated in each commodity table.

Definitions of the indicators, criteria of classification of programmes included, and methods of calculation can be seen in OECD, Methodology for the measurement of support and use in policy evaluation [<http://www.oecd.org/agr/policy>].

### Abbreviations:

DPT: State Planning Organisation.

DSI: General Directorate of the State Hydraulic works

EBK: General Directorate for the Meat and Fish Organisation

GDRS: General Directorate for Rural Services

MARA: Ministry of Agriculture and Rural Affairs  
RUSF: Resource Utilisation Support Fund  
SPSF: Support and Price Stabilisation Fund  
TCZB: Turkish Bank of Agriculture or the "Agricultural Bank"(ZA)  
TEKEL: General Directorate for Tobacco and Tobacco products  
TIGEM: General Directorate for Agriculture Enterprises  
TKK: Agricultural Credit and Co-operatives  
TMO: Turkish Grain Board  
TRL: Turkish Lira  
TSFAS: Turkish Sugar Factories  
ZB: Agricultural Bank

**TABLE 1. TURKEY: Total Support Estimate**

**Definitions:**

**I. Total value of production (at farm gate):** Total agricultural production valued at farm gate prices, i.e. value (at farm gate) of all agricultural commodities produced in the country [1].

*I.1. Of which share of MPS commodities (%):* Share of commodities for which MPS is explicitly calculated (in Table 4) in the total value of agricultural production.

**II. Total value of consumption (at farm gate):** Consumption of all commodities domestically produced valued at farm gate prices, and estimated by increasing the value of consumption (at farm gate) of the MPS commodities according to their share in the total value of agricultural production [(II.1) / (I.1) x100].

*II.1. Of which MPS commodities:* Sum of the value of consumption (at farm gate prices) of the MPS commodities as indicated in Table 4.

**III.1 Producer Support Estimate (PSE):** Associated with total agricultural production, i.e. for all commodities domestically produced [Sum of A to G; when negative, the amounts represent an implicit or explicit tax on producers].

**A. Support based on commodity outputs**

*A.1. Market Price Support*

On quantities domestically produced (excluding for on-farm feed use -- excess feed cost) of all agricultural commodities, estimated by increasing the MPS for the MPS commodities (sum of the MPS for the MPS commodities listed in the rows bellow) according to their share in the total value of agricultural production  $[(\sum \text{MPS commodities}) / (I.1) \times 100]$ .

*A.2. Payments based on output*

*Cotton premium:* Per tonne payments to cotton producers.

Production limits (NO); Variable payment rates (NO); Input constraints (NO)

*Milk incentive premium:* Paid to farmers per litre of milk delivered to dairies to encourage the delivery of milk to certified dairies [RUSF]. This policy is also presented in the commodity SCT table and the transfers are included in the *milk* SCT.

Production limits (NO); Variable payment rates (NO); Input constraints (NO)

*Livestock incentive premium (Beef, sheepmeat and poultry):* Paid to farmers per tonne of meat to encourage the delivery of meat to certified abattoirs. Abolished in 1995. The share of each livestock category was allocated on the basis of the slaughtered quantities in abattoirs for each respective year (EBK then RUSF).

Production limits (NO); Variable payment rates (NO); Input constraints (NO)

*Tea pruning premium:* Per tonne payment to tea producers, to prune tea bushes by one fifth of licensed tea plantations, each year over five years, from 1994. This programme was extended for another 5 years till 2004. Compensatory payment, for lost revenues associated with this programme, granted at the prevailing leaf price on 70% of each grower's average harvest over the previous two years.

Production limits (NO); Variable payment rates (NO); Input constraints (NO)

*Other output premium:* Per tonne payment to producers of olive oil, oilseeds, mohair and silkworm, and as of 2005 for cereals (wheat, barley, rye, oats and paddy).

Production limits (NO); Variable payment rates (NO); Input constraints (NO)

*Tobacco premium:* Per tonne payment to tobacco producers introduced in 1994 with the implementation of a production quota. The payment applies to the difference between the last three years average quantity of tobacco sold (to TEKEL and tobacco traders) and the production quota.

Production limits (YES); Variable payment rates (NO); Input constraints (NO)

## ***B. Payments based on input use***

Production limits (NO); Variable payment rates (NO except for interest concessions.); Input constraints (NO)

### ***B.1. Variable input use***

#### ***Interest concessions***

Difference between commercial rates and rates applied to farmers multiplied by outstanding loans for the purchase of variable inputs, and including interest rates rebates, interest free debt deferral, and debt write-offs.

Value of interest rebates on loans to sugar beet growers [Sekerbank].

Value of interest rebates on loans to viticulture and viniculture: 9 years maturity with 34% interest rates, no reimbursements take place the first 3 years [no data available].

Value of interest rebates on loans for the purchase of inputs.

Value of interest rebates on interest free loans to buy seeds from TIGEM in regions damaged by disaster calculated on the basis of the purchase of specific seeds.

Value of interest rebates on loans for the purchase of inputs deferred for 3 years: 1 year without any interest and 2 years with 4 instalments as a result of natural disaster.

Value of interest rebates on loans of which recovery was deferred for 1 year: debts of livestock breeders to TCZB and TKK with maturity in 1997 and 1998 were deferred for one year without any interest, when pasture and meadows owned by the village's legal entities and individuals were damaged due to natural disaster and other reasons in 1997.

Value of outstanding debt write-off: in 1992, TRL 1.24 trillion debt owed by some crop farmers was written-off.

#### ***Feed payments***

*Compound feed subsidy:* Payment to livestock producers per kilo of industrial feed purchased, paid by TCZB from 1985 to 1988. Since 1989, payments are made to industrial feed producers to compensate for a rebate of 20% on prices paid by farmers.

*Pasture improvement:* Public expenditure on sowing and fertilisation work of meadows and pastureland in 1991 and 1992 in the framework of pastureland reclamation project.

*Sugar pulp for feed:* Total value of sugar beet pulp returned by TSFAS free of charge to beet producers and used as feed.

*Fertiliser payments* (abolished in 2001): Value of fertilisers provided free-of-charge and in kind to sugar beet growers. Payment to farmers per kilo of fertiliser purchased for crops other than sugar beet: corresponding to a 50% rebate on the purchase value of fertilisers paid by TCZB, funded by SPSF. Since 1998, payments are made to fertiliser producers, importers and distributors, compensating for a 20% rebate on the purchase price to farmers. Payments are determined according to fertiliser type (up to 40% of the fertiliser expenditure).

#### *Seed payments*

*Hybrid seed subsidy*: Payment to seed producing enterprises per kilo of hybrid seed purchased at rebate prices by farmers (paid by TCZB which is funded by SPSF).

*Seed loans*: Value of interest rebate on interest free loans to farmers for seed purchases.

*Pesticide payments*: Payment to pesticide producers per kilo of pesticides purchased by farmers to compensate for a rebate on the value of pesticides purchased (paid by TCZB funded by SPSF) plus direct government expenditures on crop protection.

*Water payments (irrigation)*: Budgetary expenditure by DSI on operation and maintenance costs of irrigation structures net of farmers' fees. [Expenditure on investment amortisation and on support to irrigation associations is not available].

*Electricity payments (irrigation)*: Price rebate on electricity used for irrigation.

### *B.2 Fixed capital formation*

*Capital grants*: Budgetary expenditures on grants paid through the RUSF for livestock housing. No grants were given from 1996 onwards.

*Livestock improvement*: Budgetary expenditure to support the purchase by farmers of imported breeding stock to improve livestock (apiculture).

*Livestock replacement*: Budgetary expenditure to support the purchase by farmers of imported breeding stock to replace animals injured following natural disasters.

*On farm development work*: Budgetary expenditure on development work such as field levelling, drainage, soil improvement, soil protection and land consolidation [GDRS].

*Farmer transition payments*: A one-off payment to farmers granted under the Agricultural Reform Implementation Project (ARIP, 2001-2004) to cover the costs to divert production from crops currently over-produced (namely hazelnuts and tobacco) to other commodities.

### *B.3. Based on use of on-farm services*

*Artificial insemination*: Budgetary expenditure for public and private laboratories for insemination of cows and ewes.

*Machinery services:* Budgetary expenditure covering cost to TSFAS of machinery used for sugar beet cultivation.

*Pest and disease control:* Budgetary expenditure on measures to control animal diseases. (TCZB funded by SPSF).

*Agricultural extension and applied research project* (financed by foreign loans and reimbursed by Treasury).

### ***C. Payments based on current area planted/animal numbers/revenues/incomes***

#### ***C.1. Single commodities***

*Compensation payments (sugar, potatoes, tea and tobacco):* Payments to compensate producers for the reduction of price support. They are based on current area and prices (i.e. current area x 1000 kg x current price x 0.7).

Production limits (YES for sugar); Variable payment rates (NO); Input constraints (NO)

#### ***C.2. Specific groups of commodities***

*Insurance payments (crops and livestock):* The scheme, which was implemented in 2006, is open to all producers and covers hailstorm and frost for aquaculture, greenhouse and animal life, including poultry. The government reimburses 50% of the premium costs. In 2006, TRY 1.2 million (USD 1 million) were paid to insure crops and TRY 0.6 million (USD 0.4 million) for livestock.

Production limits (NO); Variable payment rates (YES); Input constraints (NO)

#### ***C.3. All commodities***

*Land conservation (2006):* Per hectare payments, provided under the Based Agricultural Land Utilisation” (CATAK) sub-component of the amended ARIP, to protect environmentally fragile areas by setting aside agricultural areas formerly planted to crops in excess production or subject to severe erosion and replacing harmful agricultural farm practices with more environmentally friendly such as contour tillage, reduced flow irrigation, organic agriculture, production of fodder and adoption of pasture rehabilitation measures. It would be implemented in four pilot provinces totalling approximately 5 000 hectares: Farmers in these areas would be offered annual transition payments (five to ten years) of TRY 560-1260 (USD 400-900) per hectare.

Production limits (NO); Variable payment rates (NO); Input constraints (YES)

### ***D. Payments based on non-current area planted/animal numbers/revenues/incomes – production required***

*Grubbing-up hazelnut payment:* One-off payment granted under the Agricultural Reform Implementation Project (ARIP, 2001-04) to farmers for uprooting existing hazelnut trees and switch to alternative crops such as oilseed, feed crops and maize.

### ***E. Payments based on non-current area planted/animal numbers/revenues/incomes – production not required***

### ***E.1. Variable rates***

### ***E.2. Fixed rates***

*Direct Income Support (DIS) payment:* A unified national annual payment granted under the ARIP, 2001-04 reform programme to all farmers to cover the short-term losses associated with the removal of administrative prices and input based payments. Started in 2001, DIS is granted at a flat rate payment per hectare to all farmers about EUR 92/ha), unlinked to the production of any specific crop, with a ceiling of 50 hectares per farm. All land users (owners, tenants and share-croppers) are eligible to apply for DIS, as long as they can demonstrate that their land is legally cultivated and is registered in the land registry, or that they can provide a document from the village head that they are legal users of the land.

*“Diesel payment”:* Farmers who are eligible for DIS payments are also eligible for per hectare payment (to a maximum of 50 ha) to cover 35% of the country average of farmers’ consumption of fuel (80 litre per hectare).

### ***F. Payments based on non-commodity criteria***

#### ***F.1. Long-term resource retirement***

#### ***F.2. Specific non-commodity output***

#### ***F.3. Other non-commodity criteria***

### ***G. Miscellaneous payments***

**III.2 Percentage PSE**  $[100 \times (\text{III.1}) / ((\text{I}) + (\text{Sum of A2 to G}))]$

**III.3 Producer NPC:** For all agricultural commodities the Producer NPC is estimated as a weighted average of the producer NPC calculated for the individual MPS commodities and shown in Table 4. For each commodity Producer NPC = [domestic price received by producers (at the farm gate) + unit payments based on output] / border price (also at the farm gate).

**III.4 Producer NAC**  $[1 / (100 - (\text{III.2})) \times 100]$

**IV. General Services Support Estimate (GSSE):** total budgetary expenditure to support general services provided to agriculture [Sum of H to N].

### ***H. Research and development***

Budgetary expenditure for the Crop Production Development Project, the first and second TYUA Projects and the Bingol and Mus Rural Development Projects (TUGEM figures), plus research projects financed by the World Bank and IFAD and reimbursed by treasury, plus expenditure under the Agricultural Reform Implementation Project (ARIP, 2001-2004) to establish the Farmer Registration System on the basis of which DIS payments are granted.

***I. Agricultural schools:*** Budgetary expenditure on professional schools.

### ***J. Inspection services***

Budgetary expenditures by MARA, GDRS, and TSFAS.

[No data available on other government and foreign expenditure, such as expenditure on imports inspection by the General Directorate for Protection and Control, and food inspection services: benefiting from an EC grant starting 1998 for improving existing laboratories, increasing the capacity of existing staff and establishing a computer network or the inspection of agricultural products for exports paid by the Under secretariat for Foreign trade.]

### ***K. Infrastructure***

Budgetary expenditure on interest rate concessions on loans for agricultural villages development co-operatives provided by TCZB; for the improvement of infrastructures provided by TSFAS, TEKEL and ÇAYKUR; and for the construction, maintenance and repair of road, water and electricity mains and sewage facilities.

### ***L. Marketing and promotion***

Budgetary expenditure for covering losses of government agencies (TMO, TSFAS, TEKEL) associated with market intervention procedures plus debt write-off of loans of those agencies.

*Duty loss (TMO, TSFAS, TEKEL, ASCUs, EBK)*

*Debt write-off (TMO, TSFAS, TEKEL, ÇAYKUR)*

*Equity injections from Treasury to TMO, TSFAS, TEKEL, ÇAYKUR*

*Transfer to ASCUs from support and price stabilisation fund*

*ASC/ASCU restructuring under the Agricultural Reform Implementation Project (ARIP, 2001-04).*

***M. Public stockholding:*** Operation and maintenance cost of public stockholding, including TMO, EBK, TEKEL, ÇAYKUR.

### ***N. Miscellaneous***

**V.1 Consumer Support Estimate (CSE):** Associated with agricultural production, i.e. for the quantities of commodities domestically produced, excluding the quantities used on-farm as feed -- excess feed cost. [Sum of O to R; when negative, the amounts represent an implicit tax on consumers].

***O. Transfers to producers from consumers:*** Associated with market price support on all domestically produced commodities, estimated by increasing the transfers calculated for the MPS commodities according to their share in the total value of production  $[(O.1) / (I.1) \times 100]$ .

*O.1. Of which MPS commodities:* Sum of the values of transfers from consumers to producers associated with market price support for the MPS commodities as calculated in Table 4.

***P. Other transfers from consumers:*** Transfers to the budget associated with market price support on the quantities imported of domestically produced commodities, estimated by increasing the transfers calculated for the MPS commodities according to their share in the total value of production  $[(P.1) / (I.1) \times 100]$ .

*P.1. Of which MPS commodities:* Sum of the transfers to the budget associated with market price support on the quantities imported of the MPS commodities as calculated in Table 4.

### ***Q. Transfers to consumers from taxpayers***

*Q.1. Commodity specific transfers to consumers:* Sum of commodity specific transfers from taxpayers to consumers (farm gate level) from commodity MPS tables (Table 4). The descriptions of policies providing commodity specific transfers are provided bellow:

*Q.2. Non-commodity specific transfers to consumers:* Sum of non-commodity specific transfers from taxpayers to consumers (farm gate level). The descriptions of policies inducing non-commodity specific transfers are provided bellow:

**R. Excess Feed Cost:** Associated with market price support on quantities domestically produced and used on-farm as feed as calculated in Table 4. [Sum of excess feed costs in the MPS tables (Table 4) for feed crops.]

**V.2 Percentage CSE**  $[100 \times (V.1) / ((II) + (Q))]$

**V.3 Consumer NPC:** For all agricultural commodities the Consumer NPC is estimated as a weighted average of the consumer NPC calculated for the individual MPS commodities and shown in Table 4. For each commodity Consumer NPC = domestic price paid by consumers (at the farm gate)/ border price (also at the farm gate). ). ).

**V.4 Consumer NAC**  $[(1 / (100 - (V.2)) \times 100]$

**VI. Total Support Estimate**  $[(III.1) + (IV) + (Q)]$  and  $[(S) + (T) - (U)]$

**S. Transfers from consumers**  $[(O)+(P)]$

**T. Transfers from taxpayers**  $[(III.1)-(O)+(IV)+(Q)]$

**U. Budget revenues**  $[(P)]$

Sources: [Information sources for data used in Table 1]

**TABLE 2. TURKEY: Breakdown of PSE by commodity specificity and other transfers**

All data sets in Table 2 come from Tables 1 and 3 where definitions are included.

**Definitions:**

**I. Single commodity transfers (SCT):** the annual monetary value of gross transfers from policies linked to the production of a single commodity such that the producer must produce the designated commodity in order to receive the payment. This includes broader policies where payments are specified on a per-commodity basis. SCT is also available by commodity. [Sum of commodity SCTs from Table 3]

**Percentage SCT:** is the commodity SCT expressed as a share of gross farm receipts for the specific commodities (including support in the denominator). This indicator can be expressed for the total SCT (Table 2), or for a specific commodity (Table 3).

$$\%SCT = 100 * SCT / (\text{value of production}_{COM} + A2_{COM} + B_{COM} + C1_{COM} + D_{COM})$$

$$\text{Share in Total PSE (\%): } SCT_{SHARE} = 100 * SCT / PSE$$

**II. Group commodity transfers (GCT):** the annual monetary value of gross transfers from policies whose payments are made on the basis that one or more of a designated list of commodities is produced. That is, a producer can choose among a set of allowable commodities to produce and receive a payment that does not vary with respect to this decision. [GCT = B<sub>GROUP</sub> + C<sub>2</sub> + D<sub>GROUP</sub>]

$$\text{Share in Total PSE (\%): } GCT_{SHARE} = 100 * GCT / PSE$$

**Transfers to specific groups of commodities:** The GCT involve to the following groups of commodities:

Six different commodity groups have been identified, based on the policies in place over the period starting in 1986. Of these, the following three are the most important:

- **Crops.** This primarily includes support for input use, such as fertiliser subsidies, pesticide subsidies, hybrid seed subsidies and support for natural disasters.
- **Livestock.** This entails transfers to livestock producers in the form of input support, such as support for feed, capital grants, livestock replacement and control of disease.
- **Milk, beef and sheepmeat.** This group includes support to producers of cattle, dairy and sheep for animal replacement due to natural disasters through the *Livestock Replacement Programme* and for pasture improvement.

**III. All commodity transfers (ACT):** the annual monetary value of gross transfers from policies that place no restrictions on the commodity produced but require the recipient to produce some commodity of their choice. [ACT = C<sub>3</sub> + B<sub>ALL</sub> + D<sub>ALL</sub>]

$$\text{Share in Total PSE (\%): } ACT_{SHARE} = 100 * ACT / PSE$$

**IV. Other Transfers to Producers (OTP):** the annual monetary value of gross transfers made under policies that do not fall in the above three cases (SCT, GCT, ACT). That is, payments that do not require any commodity production at all. [OTP = E + F + G]

$$\text{Share in Total PSE (\%): } OTP_{SHARE} = 100 * OTP / PSE$$

$$\text{V. Total PSE: } PSE = A+B+C+D+E+F+G = SCT + GCT +ACT + OTP$$

$$\text{Percentage PSE: } \%PSE = 100 * PSE / \text{value of agr. production} + A.2. + B + C + D + E + F +G)$$

### **TABLE 3. TURKEY : Producer Commodity Specific Transfers by commodity**

Tables 3.1 to 3.n, provide information on Producer Single Commodity Transfers (PSCT) for the following commodities: wheat, maize, barley, sunflower, sugar, milk, beef and veal, poultry meat, sheep meat and eggs. All data sets in the calculation SCT by commodity come from Tables 1 and 4 where definitions are included.

#### ***Definitions:***

**I. Level of production:** Data from Table 4 (Market price support table)

**II. Value of production (at farm gate):** Data from Table 4 (Market price support table)

**III. Producer Single commodity transfers:** Sum of transfers to specific commodity in categories A, B, C1 and D.

#### ***A. Support based on commodity outputs***

*A1. Market Price Support* [Data from Table 4]

*A2. Payments based on output*

Data from Table 1 – see the policies providing payments based on output (A.2) to the specific PSE commodity, in the definitions in Table 1.

***B. Payments based on input use*** [B1+B2+B3]

*B1. Variable input use*

Data from Table 1 – see the policies providing payments based on variable input use (B.1) to the specific PSE commodity, in the definitions in Table 1.

*B2. Fixed capital formation*

Data from Table 1 – see the policies providing payments based on fixed capital formation (B.2) to the specific PSE commodity, in the definitions in Table 1.

*B3. On-farm services*

Data from Table 1 – see the policies providing payments based on on-farm services (B.3) to the specific PSE commodity, in the definitions in Table 1.

***C1. Payments based on current A/An/R/I, production required, single commodity"***

Data from Table 1 – see the policies providing payments based on current A/An/R/I, single commodity (C.1) to the specific PSE commodity, in the definitions in Table 1.

***D. Payments based on non-current A/An/R/I, production required***

Data from Table 1 – see the policies providing payments based on non-current A/An/R/I, production required (D) to the specific PSE commodity, in the definitions in Table 1.

**IV. Percentage SCT :** %SCT =100\*(III)/((II)+(A.2)+(B)+(C.1)+(D))

**TABLE 4. TURKEY Market Price Support and Single Commodity Transfers**

**Definitions:**

**I. Level of production**

*Cereals, sunflower, apples, tomatoes, potatoes and grapes:* Volume of Production [1].

*Sugar: white sugar:* Volumes of sugar produced from sugar beet and processed by the TSFAS each year [1].

*Cotton:* Volume of production (lint) [1].

*Tobacco:* Volume of production (leaves) [1].

*Milk:* Total production of cow's milk, calendar year [1].

*Beef and veal, poultrymeat and sheepmeat:* Total production of meat, carcass weight, calendar year [1].

*Eggs:* Edible eggs produced by commercial farms plus edible eggs obtained from small, rural farms (0.055 kg per egg) [1].

**II. Producer prices**

*Cereals:* Average purchase price of TMO, all grades [1].

*Sunflower and cotton:* TSKB (ASCUs) average purchase prices [3].

*Sugar:* TSFAS average purchase prices for sugar beet [1].

*Tobacco:* TEKEL average purchase price [1].

*Apples, tomatoes, potatoes and grapes:* SIS unit value of production [1].

*Milk:* Average TSEK purchase prices for raw milk [1].

*Meats:* Average purchase prices of the EBK [1].

*Eggs:* Average prices used in the SIS Wholesale Price Index [1].

**IV. Level of consumption**

For all commodities:

Consumption = Production + imports - exports [- feed – seed + change in stocks]

**Wheat**

Imports: Turkish Foreign Trade statistics [1]. The Conversion factors used to calculate the wheat equivalent for foreign sales of the commodities are as follows:

Flour: x 100/70;

Pasta: x 100/84;

Cakes & biscuits: x 100/77

Stocks: The figures derived by subtracting total demand from total supply.

Feed: The figure used was double the amount of wheat used by the feed industry.

Seeds: It was estimated that 200 kg of seed are sown per hectare.

Exports: Turkish Foreign Trade statistics [1]. The conversion factors used in external purchases were used in the calculation of the wheat equivalents for the foreign sales of the commodity.

*Sunflower:* Seed equivalents for traded products are estimated by dividing the volume of sunflower oil by 0.40 [1].

*Cotton:* Volumes of imports and exports are calculated by adding the following shares of imports/exports of the cotton derived products: (lint cotton x 1.00) + (cotton thread x 0.85) + (cotton cloth x 0.95 x 0.85) + (velvet x 0.66 x 0.95 x 0.85) + (fiber's knitted x 0.75 x 0.95 x 0.85) + (fiber's textile x 0.5 x 0.95 x 0.85) + (home textile 0.05 x 0.95 x 0.85) [1].

**Tobacco:** Volumes of imports and exports are calculated by adding the following shares of imports/exports of the tobacco derived products: 1 cigarette = 1 gr. of tobacco and 1 cigar = 35 gr. of tobacco [1].

**Apples:** Volumes of imports and exports are calculated by adding the following shares of imports/exports of the apple derived products: (juice / 0.70) + (concentrated / 0.50) + (puree / 0.20) + (dried / 0.25) + (canned / 0.80) [1].

**Tomatoes:** Volumes of imports and exports are calculated by adding the following shares of imports/exports of the tomatoes derived products: (juice / 0.50) + (paste / 0.25) + (dried / 0.10) + (canned / 0.80) + (frozen / 0.70) + (ketchup / .040) [1].

**Potatoes:** Volumes of imports and exports are calculated by adding the following shares of imports/exports of the potatoes derived products: (flour / 0.15) + (starch / 0.15) + (dried / 0.25) + (canned / 0.70) + (frozen / 0.70) [1].

**Grapes:** Volumes of imports and exports are calculated by adding the following shares of imports/exports of the grapes derived products: (raising / 0.25) + (wine / 0.60) + (juice / 0.80) + (concentrated / 0.50) [1].

**Beef and veal:** The meat equivalent of non-breeding live cattle imports/exports is estimated by using a yield conversion factor of 55 per cent and adding the resulting number to the meat export/import figures [1].

**Poultry:** The meat equivalent of live, non-breeding chicken imports/exports is estimated by applying a yield conversion factor of 75 per cent and adding the resulting number to the meat import/export figures [1].

**Sheepmeat:** Traded volumes include the sheepmeat equivalent of non-breeding livestock. Each kilogramme of live animal is assumed to yield 550 grammes of meat on a carcass-weight equivalent basis [1].

## VII. Reference prices

**Wheat:** Weighted average c.i.f. price of Turkish wheat imports (15% to hard wheat and 85% to soft wheat, for bread), adjusted for handling and marketing used for the European Union. [1, 2]

**Maize:** European Union's average import price of USA Yellow corn Nr 3 (c.i.f. Rotterdam), adjusted by a handling and marketing margin, using the same margin used for the European Union. [2]

**Barley:** European Union's barley export price (f.o.b. French ports), adjusted for handling and marketing margin used for the European Union.[2]

**Sunflower:** European Union's import price for sunflower seeds, c.i.f. [2].

**Sugar:** Paris Stock Exchange white sugar price, minus handling and marketing margin based on the ratio of the TSFAS's wholesale price for granulated sugar to its average purchase price for sugar beet. [3]

**Cotton, tobacco, apples, tomatoes, potatoes, and grapes:** Unit value of Turkish exports [1].

**Milk:** Border prices of butter and SMP converted into a milk equivalent border price using technical coefficients minus a processing margin, calendar year. The border prices of butter and of SMP are the unit c.i.f. import values [4]. The processing margin is calculated as a simple average of the processing margins for the four main exporting countries: Australia, EU, New Zealand and the United States.

**Beef and veal:** Unit export value in extra-EU trade of meat of bovine animal, fresh and chilled (code 0111, SITC, Rev. 3), in carcass weight equivalent, calendar year [2].

***Poultrymeat:*** European Union's f.o.b. unit export price of poultry meat.[2]

***Sheepmeat:*** Average Turkish sheepmeat export price; adjusted for handling and marketing margin, obtained by the ratio between EBK's average sheepmeat purchase prices and its sheepmeat sales prices.[1]

***Eggs:*** European Union's unit export value of poultry eggs in the shell, fresh or preserved, excluding eggs for hatching; adjusted for handling and marketing margin estimated by comparing the SIS's "Consumer Price Index" for eggs with the average of its "Wholesale Price Index" and index of "Prices Paid to Farmers" for eggs.[2,3]

***Sources:***

[1] All data are collected by MARA from different sources such as SIS, DPT, HDTM.

[2] EU PSE database

[3] NZ PSE database

[4]. Source: FAOSTAT database.