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DAIRY PROCESSING CASE STUDY

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AGRICULTURAL POLICY IMPLEMENTATION PROJECT

DAIRY PROCESSING CASE STUDY

January 1990

FINAL REPORT

PREFACE

This case study of the systems for importation of powdered milk; collection of domestic raw milk; and the processing and distribution of fluid milk and other dairy products in Tunisia was requested by the Government of Tunisia (GOT), in the context of its on-going Economic Structural Adjustment Program for the agricultural sector. Complete Terms of Reference for the Dairy Processing Case Study can be found in Annex A of this report. The research was funded through the Tunisia Agricultural Policy Implementation Project -- Project No. 664-0343 -- which is jointly sponsored and funded by the GOT Ministry of Agriculture (MOA) and the United States Agency for International Development (USAID). The prime technical assistance contractor for this project is Abt Associates, Inc. of Washington, D.C. and Cambridge, Massachusetts. Sub-contractors for the project include the University of Wisconsin, Madison, Wisconsin; the Institut Superieur de Gestion (ISG), Tunis, Tunisia; and Ithaca International Limited, Ithaca, New York.

The draft Dairy Processing Case Study was researched, written and revised during the period from November 1988 to July 1989 by a team of seven agricultural and business management specialists from the Direction General du Plannification, de la Developpement et des Investissements Agricole/General Direction for Planning, Development and Agricultural Investment (DGPDIA) of the Ministry of Agriculture; and the Institut Superieur de Gestion/Higher Institute for Management (ISG), both in Tunis, Tunisia; and Ithaca International Limited of Ithaca, New York. These specialists were:

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The team's research efforts in Tunisia were facilitated by the assistance and guidance provided by the Director General and staff of the DGPDIA; and the USAID project manager, Dr. Shirley Pryor. GOT personnel from TUNISIE LAIT, the Office de l'Elevage et Paturages, the Direction des Prix et Controle Economique, and the Direction Generale Agro-Alimentaire contributed statistical data and their comments during the writing of this report, as did a number of interviewees from private dairy processing firms, local banks, government projects, and other institutions in Tunisia. Their efforts added new perspectives and information to this report.

Upon completion of the draft final report, the text and tables were professionally reviewed and critiqued by Dr. Olan Forker, Professor of Agricultural Marketing at Cornell University. Dr. Mark Newman also received the draft report on behalf of Abt Associates, Inc.. Finally, Tunisian staff from the DGPDIA and other concerned Tunisian agencies reviewed the final draft and communicated their comments to the principal authors. To the maximum extent possible, the review comments and suggested revisions as received were incorporated into this final report.

The team wishes to thank all of the specialists for their sincere efforts and assistance in the preparation of this final report.

EXECUTIVE SUMMARY

Dairy policy in Tunisia has become an increasingly contentious issue during the 1980s and the subject of protracted debate. The current dairy "policy" is a curious amalgam of socio-political aspirations, historical decision-making, estimates of technical potential, and economic necessity. The central element linking these influences is the government's policy position that fluid milk, along with a limited number of other non-dairy foods, is an essential food item for consumers. This is so despite the fact that other dairy products of comparable nutritional value -- i.e. yogurt, cheese, butter and ice cream -- are not so classified.

In order to implement the current dairy policy, the Government of Tunisia (GOT) has attempted simultaneously:

- To encourage greater national "self-sufficiency" in production of milk and dairy products;
- To provide Tunisian consumers with reconstituted fluid milk made from imported powdered milk at subsidized prices, which are artificially low, pan-territorial and fixed over time; and
- To satisfy a growing demand for dairy products -- partially stimulated by the consumer subsidies -- by importing powdered milk and dairy products -- particularly from the European Community.

Given these contradictory policy elements, the government has been criticized by various interest groups for:

- Inadequately protecting the local dairy industry against subsidized dairy imports;
- Over-protecting the local dairy industry and, thereby, limiting economic benefits to be gained from importing subsidized dairy products;
- Over-stimulating domestic demand for reconstituted fluid milk through an untargeted and open-ended consumer subsidy program;
- Sustaining a system of "double-subsidization" for imported powdered milk and, thereby, precluding production of processed fresh milk by processors; and
- Distorting the structure of the dairy processing industry by providing benefits and incentives to two parastatal dairy processing firms, while effectively excluding thirty-two private sector dairy processing firms from full and equal participation in the industry.

The objectives of this report, therefore, are:

- To review the state of the milk collection and dairy processing systems in Tunisia as of the end of 1988;
- To evaluate the strengths and weaknesses of present GOT policies governing these specific systems;
- To analyze selected policy alternatives, by making preliminary estimates of their probable effects on Tunisian milk producers, dairy processors, GOT revenues and subsidy payments, and consumers; and
- To make recommendations as to which of these alternative policies, if any, merit adoption by the government.

Since the Terms of Reference for this study precluded an in-depth analysis of farm-level milk production in Tunisia, analyses are confined to aspects of the operative collection system(s) for raw milk and those of the dairy processing industry.

Five milk collection systems were analyzed for this report. Of these, four are government-operated and/or financed. The fifth system is operated by private peddlers, who collect raw milk from dairy farms and distribute it to Tunisian consumers. Their activities -- though illegal -- dominate milk collections. Key factors which contribute to the dominance of the informal milk peddler distribution system are:

- The perishable nature of raw milk;
- The low levels of production per farm and the seasonality of much of this production;
- The incentives offered to dairy farmers by milk peddlers;
- The government's non-enforcement of existing legislation banning off-farm sales of raw milk;
- GOT policies which provide no incentives to dairy pro- cessors to produce fluid milk products from the available raw milk; and
- The consumer preference for fresh whole milk;

The second major concentration of this study is the dairy product processing system. This system involves thirty-two private and two parastatal dairy processors -- i.e. STIL and TUNISIE LAIT. Based on the our analysis for dairy processing, the following are key problems which should be targets for policy modification:

- **The Preferential Classification of Reconstituted Milk as an Essential Consumer Commodity**

The keystone of current dairy policy is the government's classification of reconstituted milk as an essential commodity. While this policy remains in effect, the GOT lacks a formal justification for dismantling the array of regulations and subsidies which controls reconstituted milk processing. Moreover, production of other dairy products -- i.e. fluid milk from local raw milk, yogurt, cheese, butter and ice cream -- is, in a sense, held hostage to the GOT's policy. Therefore, changes in this policy are seen as necessary if the industry is to be made more efficient and subject to competitive market forces.

- **The Ineffectiveness of the Untargeted Subsidy Program for Reconstituted Fluid Milk Products**

The current untargeted subsidy program for reconstituted milk provides major benefits to two groups within Tunisia: more affluent urban consumers and parastatal dairy processors. It does not materially affect milk consumption by the poorest and most disadvantaged consumer groups in Tunisia -- i.e. the stated target of the program.

- **The Unsustainable Levels of Government Support Required for the Current Policy**

Record international prices for powdered milk, high local dairy processing costs -- particularly for product packaging at STIL, and artificially low consumer prices for reconstituted milk have combined to increase government support for the parastatal dairy processors and consumers from D 8.5 million in 1985 to a probable D 22.03 million in 1988. We project that these subsidies will be well over D 30 million in 1989 under current program conditions. In the absence of policy changes which address both the processing and consumption of dairy products, this situation will continue to deteriorate in the 1990s.

- **The Inadequate Incentives Provided to Improve Processing Efficiency by Parastatal Processors and to Allow for a Greater Private Sector Role in the Dairy Industry**

The current system of fixed prices for reconstituted milk products, import controls on powdered milk, and preferential government support for the parastatal processors provides no incentives for either improving the efficiency with which fluid milk is produced and distributed or for allowing competition from private sector dairy processors.

Alternative dairy policies aimed at addressing these fundamental problems were posed for analysis in this study. Several of the policy alternatives were originally formulated by Tunisian critics of the current dairy sector program. Others were initially proposed by team members in the course of the research for this study.

The list of policy alternatives proposed is presented below without attribution.

A. **Policy Alternatives at the Input Procurement Level**

1. Achieve full self-sufficiency in dairy products by banning all imports of powdered milk and other dairy products and depending on dairy products made only from domestic raw milk.

2. Install a formula pricing system for domestic raw milk tied to world market prices for powdered milk.

3. Provide a price adjustment mechanism to allow for changes in producer prices throughout the year in response to seasonal variations in domestic milk supply.

4. Provide for equal application of all laws pertinent to the importation and use of milk powder and other dairy products across all dairy processing firms.

5. Modify existing dairy legislation to provide a positive role for "illegal" milk peddlers.

6. Utilize the receipts derived from any tariffs on imported powdered milk and other dairy products to subsidize, as necessary, the costs of collecting raw milk from domestic producers.

B. **Policy Alternatives at the Processing Level**

1. Equalize conditions for participation in any subsidy payment system across all domestic dairy processing firms.

2. Institute a freeze on the total subsidies paid to firms processing reconstituted fluid milk products.

3. Institute a progressive and phased reduction in fluid milk subsidy payments to dairy processing firms so as to eliminate all such subsidies by 1995.

4. Modify the current GOT subsidy system to subsidize <u>only</u> the raw materials needed to produce plastic milk bottles and to eliminate all entry taxes on this input.

5. Modify the current government subsidy system for reconstituted fluid milk to subsidize only <u>one type of fluid milk in one well-specified type of product packaging and limit distribution to the "poor"</u>.

C. Policy Alternatives at the Consumption Level

1. Substantially reduce the differential in retail prices between lowest priced subsidized reconstituted milk and the lowest priced processed milk from local sources such that retail prices for the former are never less than 90 percent of prices for the latter.

2. Eliminate, over the longer term, all government regulation of retail prices for fluid milk products in domestic markets.

Our analyses of the proposed alternative dairy policies indicate that the present situation would be greatly improved by a phased program of policy reforms. Although several of the proposed alternatives were found to be impractical, ineffective and/or too costly to certain sector participants, others showed considerable promise. This being the case, we have indicated below those policy reforms we believe merit consideration by the Government of Tunisia -- with a preliminary phasing schedule for such reforms.

1. Modify Existing Laws and Statutes to Declassify All Types of Fluid Milk as "Essential" Consumer Commodities

Legislation and executive actions necessary to accomplish the declassification should commence in 1989 and be completed in early 1990.

2. Install a Formula Pricing System for Domestic Raw Milk Linked to Powdered Milk Prices in International Markets

The optimal price formula in our opinion is a four year moving average of the GATT minimum band prices as shown in Annex D Scenario 1. The formula pricing system should be initated for domestic raw milk pricing in 1990 based upon price information contained in the International Dairy Arrangement's Tenth Annual Report of The World Market for Dairy Products 1989, due to be issued by the GATT in Geneva in November 1989.

3. Equalize Conditions for Importation of Dairy Products Across All Dairy Processors

This reform -- to be initiated in 1990 -- would include equalizing import permit conditions across all dairy processing firms in Tunisia -- or dropping them altogether -- and abolishing any quantitative restrictions on dairy product imports. Tariffs and taxes on imported dairy products would be retained and would apply uniformly to all importers.

4. Modify Existing Legislation to Create a Positive Role for Legal Milk Peddlers in the Dairy Industry

This reform would entail, at least, five discrete policy actions:

a. Legalizing private peddler deliveries of raw milk to fixed collection center and dairy processors;

b. Initiating specific milk peddler transport margins for farm to fixed center and farm to dairy processor milk deliveries;

c. Mounting a consumer education effort on the dangers of consuming untreated raw milk, with detailed instructions on the treatments necessary for safe consumption; and

d. Rewriting existing legislation to detail the specific health precautions which must be observed by vendors in any sales of raw milk to consumers; and

e. Vigorous government enforcement of all rewritten statutes pertaining to sales of raw milk to consumers.

These actions should be initiated in 1990.

5. **Fund Subsidization of the Public Milk Collection Systems, including the Proposed Farm to Fixed Center/Processor Transport Margins, with Funds Earmarked from Tariff Receipts on Powdered Milk Imports**

Transfer mechanisms to affect this subsidization should be put in place in 1990. Suggested levels for transport margins are D 0.010 per liter for milk deliveries from farm to fixed collection center and D 0.020 per liter for deliveries from farm to processor.

6. **Initiate Full and Equal Access of Private Dairy Processors to Whatever CGC System of Subsidies and Other Incentives is Retained for Processing and Distribution of Reconstituted Milk Beyond 1990**

Conditions governing private processor participation in the new subsidy program should be finalized and announced in 1990. Actual participation should start as of 1 January 1991.

7. **Conduct Full and Detailed Reviews of the Financial Situations of STIL and TUNISIE LAIT to Ensure that Short-Term Liquidity Problems Induced by Deficiencies in the Current CGC Subsidy Program are Rectified -- with One Time Government-Sponsored Refinancing, as Necessary -- to Ensure that the Accumulated Debts are not Carried over into any New Subsidy Program**

Reviews and necessary refinancing at STIL and TUNISIE LAIT should be completed before 31 December 1990.

8. **Install a Cap on Total Fluid Milk Processing Subsidies to be Paid in 1990 and Thereafter**

The cap -- or freeze -- on total fluid milk processing subsidies to be paid in 1990 should be based

upon the total subsidy payment incurred in 1989 --i.e. approximately Dinars 35 million. The cap should be initiated for 1990 CGC fluid milk subsidy payments.

9. **Install a Government-Operated System to Purchase, Warehouse and Distribute to Participating Processors the Plastic Granules Needed for Production of Plastic Milk Containers on Negotiated Schedules**

The necessary supply system should be designed and put in place by 31 December 1990. Reconstituted milk production levels and plastic granule supply schedules should be negotiated with all participating fluid milk processors by the same date. Full-scale subsidization and distribution of plastic granules should start as of 1 January 1991.

10. **Initiate and Fund a One Year Reconversion Program at STIL to Convert All Milk Packaging to Plastic Containers**

Plant reconversion at STIL should be completed before 31 December 1990.

11. **Split Total Annual Subsidy Payments for Processors into Two Groups:**

    A. **Funds to Provide Plastic Granules at Full Subsidization**; and

    B. **Residual Funds under the Cap to Partially Cover the Processors' Losses Induced by GOT Fixing of Retail Prices for Reconstituted Milk Products**

CGC administrative and accounting modifications to accomodate <u>both</u> reallocation of total processing subsidies into the two groups <u>and</u> inclusion of any new fluid milk processors into the subsidy program should be completed before 31 December 1990.

12. **Publicly Announce Complete Details of the New Fluid Milk Subsidy/Price Program to Induce Participation from Private Dairy Processors and Inform the Public of All Anticipated Reforms**

Public announcement(s) concerning the changed rule of new fluid milk subsidy/price program, all CGC operating conditions, and government projections of increases to be expected in retail prices for reconstituted milk products should be made in the second half of 1990.

13. **Phase out the Second Group of Subsidy Payments Over the Period 1991 to 1995 and Simultaneously Raise Retail Prices for Reconstituted Milk Products by Commensurate Amounts**

Phase out of the second group of subsidy payments should be accomplished in five stepwise reductions to be announced and implemented over the period from 1 January 1991 to 31 December 1995.

14. **Beyond 1995, Retain Only Processor Subsidy Payments on Plastic Granules for Fluid Milk Packaging and Evaluate the Implications of a Final and Complete Phase Out of All Milk Processing Subsidies**

Further actions to phase out the remaining subsidy payments for plastic granules should be considered and implemented, as appropriate, after 1 January 1996.

POSTSCRIPT

After completion of the draft report on dairy processing, the DGPDIA communicated the following information about changes adopted in the Tunisian policy for the dairy processing sector in August 1989. The information was received after our analyses were completed and, therefore, were not considered in the text of the report. The changes are included here as a postscript for the interested reader.

ANNEXE 1
PLAN D'ACTION POUR LE LAIT

I. OBJECTIFS

-- Favoriser l'industrialisation du lait frais produit localement

-- Accroitre l'efficacite de l'industrie latiere au moyen d'une plus grande maitrise des couts

-- Assurer une plus grande maitrise des circuits de compensation a l'effet d'eliminer toute source de fraude

II. NOUVELLES MODALITE D'INTERVENTION DE LA CAISSE

-- Limiter l'intervention de la Caisse Generale de Compensation au niveau de 192,000,000 Litres (40,000,000 pour TUNISIE LAIT et 152,000,000 pour la STIL), niveau retenu par la CGC pour 1989

-- Tout lait industriel fabrique dans les limites des quantites fixees sera eligible a l'intervention de la CGC abstraction faite de la matiere premiere utilisee (poudre de lait ou lait frais)

-- Instaurer une Taxe Speciale a l'importation de la poudre de lait de maniere a mettre le cout d'achat de la matiere premiere a un niveau egal a celui du prix du lait frais quai-usine refrigere

Cette taxe se fera au moyen d'un prelevement decompte au moment de l'importation de la poudre et deduite des montants compensatoires a regler par la Caisse Generale de Compensation

III. ACTIONS POUR LA MAITRISE DES COUTS

-- Instaurer une marge industrielle par litre en valeur absolue et non plus en pourcentage

-- Accelerer la substitution du berlingot au Tetrabrik pour le lait pasteurise. Cette mesure se traduira par une reduction du cout de l'emballage de 29 % soit 800,000 Dinars environ par an. Le delai de realisation serait de 12 mois

-- Etudier l'economie de la substitution de la bouteille plastique ou du berlingot au Tetrabrik utilise actuellement pour le conditionnement du lait sterilise. L'etude sera prete durant de l'annee 1990.

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3. Institute a progressive and phased reduction in fluid milk subsidy payments to dairy processing firms so as to eliminate all such subsidies by 1995 52
4. Modify the current GOT subsidy system to subsidize the raw materials needed to produce plastic milk bottles 53
5. Modify the current government subsidy system for reconstituted fluid milk to subsidize only one type of fluid milk in one well-specified type of product packaging and limit distribution to the "poor" 54
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C. Policy Alternatives at the Consumption Level 57

1. Substantially reduce the differential in retail prices between lowest priced subsidized reconstituted milk and the lowest priced processed milk from local sources such that retail prices for the former are never less than 90 percent of prices for the latter 57
2. Eliminate, over the longer term, all government regulation of retail prices for fluid milk products in domestic markets 59

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LIST OF ACRONYMS AND TRANSLATED TITLES

CF	Cost and Freight
CIF	Cost, Insurance and Freight
CGC	Caisse Generale de Compensation/Agency administering agricultural subsidies for the Goverment of Tunisia
COTUPLAST	Parastatal Plastics Supplier
D	Tunisian Dinar
DGAA	Direction Generale Agro-Alimentaire/Department of Food Industries
DGPDIA	Direction Generale du Plannification, de la Developpement, et des Investissements Agricole
DPCE	Direction des Prix et Controle Economique/Bureau for Prices and Economic Control
EC	European Community
FAO	Food and Agriculture Organization of the United Nations
FROLAINORD	The leading Tunisian cheese processing firm
GATT	General Agreement on Tariffs and Trade
GOT	Government of Tunisia
ISG	Institut Superieur de Gestion/Higher Institute for Management
LAC	Long-run Average Cost
MOA	Ministere de l'Agriculture/Ministry of Agriculture
MOF	Ministere de Finance/Ministry of Finance
MOP	Ministere du Plan/Ministry of Planning
OEP	Office de l'Elevage et Paturages/Office for Livestock and Pastures
OMV	Office de Mise en Valeur/Office for Management of a Public Irrigation Perimeter

OTD	Office des Terres Dominales/Office of State Lands
SMVDA	Societe de Mise en Valeur et de Developpement Agricole/ Organization for Management for Regional Development Programs
STIL	Societe Tunisienne d'Industrie de Lait/Tunisian Dairy Processing Company -- the larger of the two parastatal dairy processing firms in Tunisia
SWEDFARM	A Swedish Agricultural Consulting Firm
TUNISIE-LAIT	Tunisian Milk Company -- the smaller of the two parastatal dairy processing firms in Tunisia
UCP	Tunisian Farmer Cooperative Union
UHT	Ultra High Temperature processed Milk
USA	United States of America

MAIN REPORT

DAIRY PROCESSING CASE STUDY

I. INTRODUCTION

A. Background

Dairy policy in Tunisia has become an increasingly contentious issue during the 1980s and the subject of protracted debate. The current dairy "policy" is a curious amalgam of socio-political aspirations, historical decision-making, estimates of technical potential, and economic necessity. The central element linking these influences is the government's policy position that fluid milk, along with a limited number of other non-dairy foods, is an essential food item for consumers. This is so despite the fact that other dairy products of comparable nutritional value -- i.e. yogurt, cheese, butter and ice cream -- are not so classified.

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- To satisfy a growing demand for dairy products -- partially stimulated by the consumer subsidies -- by importing powdered milk and dairy products -- particularly from the European Community.

Given these contradictory policy elements, the government has been criticized by various interest groups for:

- Inadequately protecting the local dairy industry against subsidized dairy imports;
- Over-protecting the local dairy industry and, thereby, limiting economic benefits to be gained from importing subsidized dairy products;
- Over-stimulating domestic demand for reconstituted fluid milk through an untargeted and open-ended consumer subsidy program;
- Sustaining a system of "double-subsidization" for imported powdered milk and, thereby, precluding production of processed fresh milk by processors; and

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- Distorting the structure of the dairy processing industry by providing benefits and incentives to two parastatal dairy processing firms, while effectively excluding thirty-two private sector dairy processing firms from full and equal participation in the industry.

B. Report Objectives

The objectives of this report, therefore, are:

- To review the state of the milk collection and dairy processing systems in Tunisia as of the end of 1988;
- To evaluate the strengths and weaknesses of present GOT policies governing these specific systems;
- To analyze selected policy alternatives, by making preliminary estimates of their probable effects on Tunisian milk producers, dairy processors, GOT revenues and subsidy payments, and consumers; and
- To make recommendations as to which of these alternative policies, if any, merit adoption by the government.

C. An Overview of the Tunisian Dairy Industry

As points of departure, our study outlines the key characteristics of the Tunisian dairy industry and the policy objectives being pursued under Tunisia's Seventh Development Plan (1987-1991). This overview provides insights into the present state of the dairy industry and its probable evolution in the medium-term in the absence of policy reforms.

As a matter of government policy, the dairy processing industry in Tunisia is segregated into two sub-sectors along public/private and commodity lines. In the first, reconstituted fluid milk is produced by the two large parastatal dairy processors -- i.e. the Societe d'Industrie de Lait (STIL) and TUNISIE LAIT -- from imported milk powder. In the other sub-sector, thirty-two private dairy processors -- and the two parastatals -- produce yogurt, cheese and ice cream principally from local raw milk.

In 1988, reconstituted milk was sold to consumers for as low as D 0.240 per liter versus an equivalent world price of D 0.470 per liter [1], where Tunisian Dinar (D) 1.000 was approximately

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[1] Assuming an equivalent price for powdered milk CIF Tunis of D 0.280 per liter, processing and packaging costs of D 0.165 per liter, and distribution costs of D 0.025 per liter.

.72

equal to $ 1.11 at the end of 1988. Moreover, in 1988, subsidies for reconstituted milk cost the government an estimated D 22.03 million and these subsidies are projected to be well over D 30 million in 1989.

Production of processed fluid milk from local raw milk, on the other hand, was not subsidized at either the processing or consumer levels in Tunisia. And, due to the government-induced competition from subsidized reconstituted milk, no Tunisian dairy processor produced fresh milk for sale in 1988.

Similarly, other dairy products -- i.e. yogurt, cheese and ice cream -- receive no direct subsidies at either the processor or consumer levels; although, fixed product distribution margins for some dairy products may provide indirect subsidies to consumers.

Finally, dairy producer prices for raw milk in 1988 were fixed at a minimum price of D 0.240 per liter -- less certain deductions for milk collection costs.

Other key points about the dairy industry in Tunisia are listed below.

1. **Demand for Dairy Products**

- Per capita consumption of dairy products in Tunisia is commensurate with comparable middle income countries[2] at 82 kilograms of milk equivalent per year.

- Consumption is heavily oriented toward fluid milk -- both as raw milk and as reconstituted milk (62 percent of estimated total consumption) (Annex B Tables 1 and 2);

- The share of dairy products in the family food consumption budget varies <u>with levels of household expenditures</u> -- i.e. from a budget share of 4.9 percent for households with food expenditures of less than D 100 per year to a budget share of 11.4 percent for households with expenditures of more than D 800 per year (Annex B Table 3);

- The family food consumption budget shares for dairy products in Tunisia are relatively uniform <u>between regions</u> -- i.e. from 7.2 to 12.5 percent of total food expeditures -- reflecting a steady demand for these commodities among consumers (Annex B Table 3);

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[2] Compared with Egypt at 97.5 kilograms of milk equivalent per capita per year; Morocco at 50 kilograms per capita per year; and Algeria at 170 kilograms per capita.

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- Households in the northern parts of the country -- particularly in Tunis -- consume higher absolute quantities of dairy products; reflecting both their higher incomes and their better access to dairy products -- including raw milk (Annex B Table 4);

- Sixty percent of all dairy products consumed are commercially processed commodities, either imported or processed locally; the remaining 40 percent is raw milk and traditional dairy products, either consumed on the farm or sold by informal agents (Annex B, Tables 4 and 5).

2. **Supply of Dairy Products**

- Domestic milk production provided 59 percent of Tunisia's total consumption of dairy products in 1988.

- Domestic milk production comes from a core herd of about 87,500 purebred dairy cows, and an additional herd of 255,000 crossbred cows and cows of indigeneous breeding. Most of the latter have low inherent dairy potential (Annex B Tables 6,7 and 8);

- As a consequence the country imports substantial quantities of both powdered milk and processed dairy products -- incurring an import bill of between D 25 and 35 million in equivalent foreign exchange per year (Annex B Tables 9 and 10).

- Dairy farms tend to be of three types in Tunisia. The majority of farms are small farms with herds of 5 or 6 cows, either crossbreds or of indigenous breeding. Then, there is a group of small to medium-sized farms with purebred and high quality crossbred c ws. And, finally, there are the larger units with 200 to over 1,000 cows -- usually purebred -- which are the smallest group numerically but provide most of the milk processed by commercial dairy plants;

- Only about 30 percent of the raw milk available for human consumption in Tunisia enters dairy processing plants; the rest is either consumed by farm families, sold directly to local consumers as raw milk, or informally marketed through a system of "illegal" milk peddlers (Annex C, Figure 1);

3. **Government Objectives for the Dairy Sector**

Total consumption of dairy products during the Seventh Development Plan (1987-1991) was projected to rise from 606,000 tons to 697,000 tons (milk equivalent). The stated policy emphasis in the Plan is on greater self-sufficiency in overall food production and this theme is evident in the objectives set forth for the dairy sector.

- The primary objective of the Plan is to increase national self-sufficiency in dairy products from 60 to 75 percent of total consumption by 1991, while maintaining current levels of per capita consumption.

- To achieve this objective, domestic milk production is targeted to rise from 357,000 tons in 1987 to 523,000 tons in 1991 -- an increase of 46 percent in five years.

- As a consequence of this increased domestic milk production, imports of powdered milk for human consumption are targeted to decline from 20,200 metric tons in 1987 to 5,200 metric tons in 1991.

- Total self-sufficiency in butter production is also projected as a consequence of higher domestic milk production. Domestic butter production is expected to increase to 3,860 tons by 1991.

- To achieve the necessary increase in domestic milk production, the national dairy herd is projected to increase from 334,000 to 414,000 cows by 1991. Of this 80,000 cow increase, 55,000 cows will be pure-bred dairy animals and the rest will be crossbreds. To improve average production per cow, 140,000 cows are to be bred by artificial insemination by 1991, as against 67,000 cows in 1986.

- To support this development, the following government investments are envisaged:

  -- Importation of 15,000 purebred dairy heifers;

  -- The establishment of 78 new milk collection centers and the acquisition of 50 new refrigerated milk tankers to increase collection of milk. An increase from 74,000 tons collected in 1987 to 283,400 tons collected in 1991 is projected.

- Producer prices for raw milk will continue to be controlled but will be tied by a formula pricing scheme to prevailing world market prices for powdered milk.

- All other price controls for domestic livestock products are to be removed and subsidies on animal feeds will be removed at the end of 1989.

II. MILK AND OTHER DAIRY PRODUCTS FOR PROCESSING INPUTS AND CONSUMPTION

The Tunisian dairy processing industry gets its raw material inputs from two sources: domestic production and imports.

A. Domestic Milk Supply and Regional Distribution

Tunisia produced 388,000 metric tons of milk for human consumption in 1988. Cows contributed an estimated 93.8 percent of this milk. An estimated 190,000 ewes and 627,000 does were also milked by local herdsmen. They are estimated to have contributed 22,200 tons of milk mostly for on-farm consumption and/or use in production of local cheeses.

Dairy production is based primarily on a core herd of approximately 87,500 head of purebred cows -- i.e. Pied Noire, Holstein, Brown Swiss and other breeds. The importation of purebred animals began in the 1960s with the objective of intensifying dairy production and increasing average milk production per cow. According to a recent report, purebred cows average 3,300 kilograms of milk per lactation under Tunisian conditions (Programme de Cooperation Technique, 22 Juin 1988, Annexe 1).

The rest of the local herd is crossbred cows (85,000 head) and cows of indigeneous breeds (170,000 head). These animals are considerably less productive than the purebred animals. Crossbred cows average only 950 kilograms of milk per lactation and local cows yield about 200 kilograms. The majority of these cows are dual-purpose animals maintained under less intensive conditions of feeding and husbandry.

Eighty-nine percent of all cattle in Tunisia are found in the humid, sub-humid and semi-arid bioclimatic zones north of the Dorsal ridge, which bisects the middle of the country from west to east. Most of the true dairy animals are found on farms in the Northwest and Northeast regions of Tunisia -- i.e. in a broad crescent immediately south and west of Tunis.

B. Importation of Powdered Milk and Other Dairy Products

In 1988, Tunisia imported approximately 41 percent of its total consumption of dairy products. These imports amounted to 259,000 metric tons in milk equivalent.

Dairy product imports in 1987 totalled 266,917 metric tons with a total value of D 25,793,300. Non-fat powdered milk (0 percent butterfat) for human consumption accounted for 75.2 percent of total dairy imports and 79 percent of their total value.

After non-fat milk powder, butter, whole powdered milk (27 percent butterfat), and cheese -- in priority order by tonnage -- were the next leading dairy imports. When ranked by value, cheese, butter and whole powdered milk were the most important dairy commodities after non-fat powdered milk.

Imports of powdered milk have risen over the period 1982 to 1988, resulting in a 230 percent increase in import volume and a 241 percent cost increase in nominal terms. Import patterns for the two other major commodities -- cheese and butter -- have been rather erratic during the 1980s, both in terms of quantities imported and prices paid for the imports.

Tunisian importers of powdered milk must obtain import permits from the government. STIL, the largest parastatal dairy processor, has been the largest importer of powdered milk in the 1980s. Most imports appear to have been purchased from European Community (EC) suppliers or from East Bloc countries -- i.e. Poland. Powdered milk imports and utilization by STIL and TUNISIE LAIT are shown in Annex B Tables 11, 12 and 13.

III. DESCRIPTION AND ANALYSIS OF THE COLLECTION OF DOMESTIC MILK

Despite growth in domestic milk production over the last two decades, flows of raw milk from Tunisian dairy farms to commercial processing plants have remained modest. Commercial milk collections have increased significantly during the 1980s -- from 20,000 metric tons in 1981 to 116,000 metric tons in 1988 -- but still represent only about 30 percent of domestic supply. (Annex B Tables 14, 15 and 16).

Since no commercial dairy processors in Tunisia currently produce fresh fluid milk from local raw milk, the recent increases in milk collections are driven by other factors. The collection increases appear to flow from:

- Growing private dairy processor requirements for raw milk as an input into yogurt and cheese production;
- Government-financed efforts to expand the public milk collection network; and
- A GOT requirement that the two parastatal dairy processors accept any raw milk presented to them by farmers or collection agents at fixed producer prices.

The public milk collection network has been expanded by government investments in fixed milk collection centers and refrigerated milk tankers. These investments have been made under the dairy develop-ment programs sponsored by the Office de l'Elevage et Paturages (OEP) and the Offices de Mise en Valeur (OMV).

Milk collection for commercial processing has remained a minor part of the total raw milk distribution system because the GOT has not enforced existing dairy legislation prohibiting off-farm sales of raw milk to consumers. Seventy percent of raw milk produced is still consumed on the farm, sold by farmers to local clients, or distributed by "illegal" milk peddlers.

Development of the public milk collection system, nevertheless, is accorded a high priority by the GOT and is viewed by some as a major constraint in commercial dairy processing. Consequently, the present collection systems are discussed below in some detail.

A. Description of Existing Collection Systems

Four public systems of milk collection operate in Tunisia:

- Collection from fixed milk centers;
- Route collection of milk cans from smaller dairy farms by tractor and flatbed trailer;

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- Producer transport of milk directly to a processor's plant or storage facility in refrigerated tankers, after on-farm storage in refrigerated bulk tanks; and

- Direct collections from producers by dairy processors themselves.

The first two systems are government-operated and serve primarily smaller dairy farms. The third system is used by larger producers; and the fourth is available to a mix of large and small producers whose farms are in close proximity to processing plants. The last two systems are publically-regulated -- but not government-operated.

Of the 116,00 metric tons of milk collected in 1988, 22 percent was collected through the two government-sponsored systems. And, sixty-six percent was collected through direct transport by larger producers. Subsidy support for the two government systems in 1987 amounted to D 362,351 and is estimated at D 638,000 for 1988 (Annex B, Table 17).

For 1988, farmers were assessed a fee of D 0.008 per liter for milk collected at the farm by the processors or collection centers, reducing their net farmgate producer price received to D 0.232 per liter. Farmers who delivered their milk to the fixed collection centers received a net producer price at the collection center of D 0.2375 per liter (a producer price from the center of D 240.000 less a milk handling assessment of D 0.0025) but the farmer still had to absorb any private costs incurred in transporting milk to the center. Dairy producers who delivered milk directly to a processing plant -- or its storage facility -- received D 0.250 per liter from the plant -- i.e. a premium for transport of D 0.010 per liter. The processors also paid this same price for milk delivered to them from the government collection centers.

1. Fixed Collection Centers

Three factors motivated the GOT to establish the fixed milk collection centers:

- The large number of dairy farms with small quantities of milk to sell daily;

- The geographic dispersion of these farms; and

- The isolation of many of these farms, with the attendant difficulties for vehicular access, particularly during periods of winter rains.

Each fixed center is equipped with a refrigerated bulk storage tank. After testing, filtering and cooling, milk is transported by tanker to either a milk processor or a retail sales outlet in a neighboring town. Milk delivery records are kept by staff at each center and farmers are paid by check on a monthly basis.

Some collection centers serve farmers as multi-purpose farm service centers selling fertilizers, farm equipment, and other agricultural inputs. They may also provide artificial insemination and/or natural breeding services.

Of the 107 fixed collection centers planned, 71 have been constructed. Of these, only 55 were operational in 1988. Sixteen have been closed for various reasons, usually "high operating costs and poor management" (Annex B, Table 18).

Much of the existing capacity of the operating government fixed collection centers and organized truck routes is under-utilized -- e.g. assuming that collection centers are open 365 days per year, only 44 percent of existing capacity was used in 1988. In most instances, government officials attribute the pervasive under-utilization of plant and equipment to "poor management". In our opinion, however, the viability of these centers is constrained by factors more fundamental than any deficiencies in local management.

The small size of client dairy farms contributes to the under-utilization of plant and equipment. For instance, 75 percent of the farms using the fixed centers sell less than 10 liters of milk per day on average and only 6 percent sell more than 50 liters per day (Annex B, Table 19).

The distances from farms to centers are another problem. About 18 percent of small dairy farms are located more than five kilometers from a fixed center. This means high per liter milk transport costs for farmers -- particularly with the small volumes delivered.

A final problem is that the collection centers must compete with informal milk peddlers of raw milk. These peddlers appear to offer higher farm-gate prices, particularly to small producers located far from the collection centers.

Some collection centers have departed from their original government operating plans in an effort to cover operating costs. They are functioning in the retail milk market as vendors. For example, the OMV collection centers at Lakhmes, Jendouba, and Kairouan have chosen to sell a portion of their daily milk deliveries directly to consumers. Retail prices for these sales are reported to be higher than the official government price of D 0.250 per liter offered at processing plants.

2. Route Collection from Smaller Dairy Farms

In certain areas -- e.g. the lower valley of the Medjerda river -- a system of regular milk collection routes has been established. (Annex B Table 20). This system is regarded as viable where:

- Roads are negotiable throughout the year;
- Dairy farms are concentrated geographically and milk production per square kilometer is high; and
- Each participating farm has at least ten liters of milk to sell each day.

Under this system, participating farmers store their milk in standard metal milk cans. These cans

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are collected daily and transported by tractor and trailer to either a fixed milk collection center, or a dairy processor's bulk storage facility. In each case the milk is filtered, stored under refrigeration, and then transported to a dairy processing plant by refrigerated tanker.

The milk routes generally extend over a 50 kilometer radius from either a fixed collection center or a processor's bulk storage facility.

3. Direct Transport by Refrigerated Milk Tankers

Larger dairy producers -- e.g. the state farms of the Office des Terres Dominales (OTD), the cooperatives (UCP), and the farms operated by the Societes de Mise en Valeur et de Developpement Agricole (SMVDA) -- are equipped with their own bulk tanks for cooling and storage of milk. These farms deliver their milk directly to dairy processing plants in refrigerated tankers.

4. Direct Collection by Milk Processing Plants

STIL owns three large bulk storage facilities at Djedeida, Beja and Tinja. These facilities serve as intermediate collection points for milk from the fixed collection centers and direct shipments from the larger dairy farms. STIL then transports the collected milk from the bulk storage facility to any one of its three dairy processing plants in its own tankers.

Other dairy processors -- e.g. TUNISIE LAIT and FROMAT -- own refrigerated milk tankers which collect from the fixed collection centers and from large cooperatives and SMVDA farms.

B. Milk Collection Costs

No information was available on the actual milk prices paid or collection costs incurred by private dairy processors. Costs for milk collected through the two government systems include transport and handling costs from the farm to the center, operational costs at the center, and transport and handling costs from the center to processing plants. While these costs differ from center to center and system to system, the rates of reimbursement are fixed by the government and are pan-territorial.

For 1988, OEP estimated an average actual collection cost of D 0.0451 per liter broken down as shown below in Text Table 1.

In 1988, the fixed milk collection centers were reimbursed for their services from three sources:

- Dairy producers paid D 0.0025 per liter of milk handled by the center, which reduced their net producer price to D 0.2375 per liter;

- Dairy processors paid D 0.010 per liter as a transport/handling fee for milk delivered to them; and

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- Government paid D 0.025 per liter as a subsidy to cover operational costs at the center.

Text Table 1
Average Actual Costs Incurred by the Government Systems

Cost Item	Cost in Dinars/Liter
Transport/handling cost for milk from farm to collection center	0.0140
Operational costs at fixed centers	0.0195
Transport/handling costs for milk from center to dairy processing plant	0.0116
Total milk collection/handling cost	0.0451

Source: OEP, Direction Generale de la Production Animale, 19 December 1988

Together these assessments, transport/handling fees and government subsidies totaled D 0.0375 per liter of milk handled in 1988.

Under the existing system, any losses incurred by a collection center -- i.e. the estimated average loss of D 0.0075 per liter -- must be covered by that center. This is presumably accomplished through sales of agricultural inputs and services or, as noted above, through local milk sales at prices higher than those fixed by the GOT.

In our opinion, this system of uniform and fixed government rates of remuneration across all collection centers is a major reason for the "poor management" and "high operating costs" observed at the certain collection centers. While these centers incur differential costs depending on their location and throughput, the remunerations received are uniform across all situations. This factor undoubtedly contributes to the general reluctance of private sector agents to participate in any government plans to "privatize" the fixed centers.

C. The Informal Milk Peddler Distribution System

Between 150,000 to 180,000 metric tons of raw milk are collected and sold each year through the informal -- and technically illegal -- network of milk peddlers. In 1988, this flow represented 42 to 50 percent of raw milk available for human consumption and was approximately 1.5

times the volume of raw milk collected by the four "legal" milk collection systems.

A 1989 survey reported that 42 percent of dairy farmers sold their milk to informal milk peddlers (Annex B, Table 21). When asked why they preferred to sell to private milk vendors, 48 percent of respondents said that there was no government collection center in the immediate area of their farms. Another 18 percent said that an existing center was too far from their farms. These results support the view that the present public collection systems are not reaching the desired number of farmers.

The next most important reason for not selling through the collection systems (23 percent) was that farmers could receive "more interesting" prices for their milk from a milk peddler. This was true even for the area around Tunis, where 86.5 percent of dairy producers sold their milk to such vendors.

Key factors which contribute to the prevalence of the informal milk peddler distribution system are:

- The perishable nature of raw milk;
- The low levels of production per farm and the seasonality of much of this production;
- The incentives offered to dairy farmers by milk peddlers;
- The government's non-enforcement of existing legislation banning off-farm sales of raw milk;
- GOT policies which provide no incentives to dairy processors to produce fluid milk products from the available raw milk; and
- The consumer preference for fresh whole milk;

1. The Perishable Nature of Raw Milk

In the absence of on-farm equipment for cooling, raw milk begins to deteriorate within 2 to 3 hours after milking due to acidification and coagulation. Consequently, producers are obliged to either cool their milk -- which appears costly and difficult for many smaller producers -- or dispose of it immediately after milking. For small producers, who are far from a government collection center or not on an established milk collection route, milk sales to a private vendor may be the only effective marketing strategy open.

2. Low Output Per Farm and the Seasonality of Supply

Most small dairy farms in Tunisia have only 2 to 5 cows in lactation at any one time. In addition

to the inherently low dairy milk output from such farms, access to many is difficult. They are frequently spread out across the countryside away from any main road and have approaches which are impassable during parts of the year.

Milk production in Tunisia is also characterized by pronounced swings in seasonal availability (Figure 3, Annex C). Peak output occurs from April to August and falls off rapidly after September. Production is lowest from November to January. On smaller farms, there may, in fact, be no milk for sale for significant portions of each year.

These characteristics place an enormous premium on milk collection systems which:

- Are highly flexible;
- Have low fixed costs associated with investments in plant and equipment; and
- Can hire and discharge personnel as needed during the year.

To be efficient, collection systems must also be able to expand operations during "flush" milk production periods and contract them when production falls.

The private milk peddler operations appear to meet these criteria. They apparently use multi-purpose pickup trucks, bicycles and other cheap transport to collect milk from farmers and peddle it to consumers. They also use low cost, seasonal labor in their operations. By contrast, the public collection systems have higher fixed costs from investments in plant and equipment. They are operated by managers and staff on annual salaries.

3. Incentives Offered by Milk Vendors to Their Clients

Private milk vendors appear to offer several incentives to their clients which are not matched by the public systems. At the farm-level, they collect milk regularly and without explicit cost to the producer. Second, the producer price is based upon face-to-face negotiations between the seller and buyer -- and is negotiable over time and space. And third, the producer is usually paid in cash for the milk when he delivers it to the vendor.

In addition, the peddler operates at the distribution level without any of the milk processing and packaging costs incurred by the commercial dairy processors. And, finally, at the consumer level, a preferred product is delivered to the customer's door at prices which appear to be comparable to those for most subsidized reconstituted milk products.

4. Government Failure to Enforce Legislation Banning the Sales of Raw Milk

Statute No. 64 of December 24, 1964 controls the production, processing and sale of milk in Tunisia. It expressly forbids off-farm sales of raw milk to consumers. Health factors appear to

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have been the rationale for this law, particularly the risks associated with transmission of tuberculosis and brucellosis. However, the actual occurence and costs of these health problems in Tunisia and the effective linkages to consumption of raw milk have never been formally surveyed and established to our knowledge.

The provisions in Statute No. 64 concerning the sale of raw milk have never been enforced. As a result, milk peddlers collect and distribute raw milk freely and openly throughout Tunisia.

5. Government Pricing and Subsidy Policies

Current government policy for the dairy industry strongly encourages the importation and use of powdered milk to produce subsidized reconstituted fluid milk, as detailed in succeeding sections of this report. Dairy processors, therefore, have no incentives to increase the collection and use of raw milk for fluid milk products. In most other countries this is the most profitable use of this input.

Consequently, private dairy processors are only interested in collecting raw milk in the amounts needed for their production of yogurt, cheese and ice cream. All of these dairy products are produced and sold under essentially competitive market conditions.

6. Consumer Preferences for Fresh, Whole Milk

It is generally acknowledged that Tunisian consumers prefer fresh whole milk over the reconstituted fluid milk products produced by the parastatal milk processors. Fresh milk is considered to be a natural, high quality product for which households are willing to pay premium prices -- even though the consumer must treat such milk at home before use.

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IV. DESCRIPTION OF THE TUNISIAN DAIRY PROCESSING INDUSTRY[3]

A. Public and Private Dairy Processors in Tunisia

There are 38 dairy processing plants in Tunisia. STIL has three separate dairy plants -- two in Tunis and one in Sfax. The other firms are single plant operations. Sixteen dairy plants have capacity to produce both fluid milk and other dairy products. The other plants are restricted to processing a single product -- yogurt, cheese or ice cream. (Annex B Table 22). Of the 36 firms, two are parastatals. STIL was established in 1967 and TUNISIE LAIT in 1973. Most of the private dairy processing firms appear to have been established since the mid-1970s.

The parastatal processors dominate the dairy industry in Tunisia by virtue of their production capacities, their total control over fluid milk production, and the special status accorded them by the government. They account for 100 percent of fluid milk production, 64 percent of yogurt output and 10 percent of cheese output. (Annex B Table 23)

The de facto parastatal monopoly on production and sales of fluid milk in Tunisia is derived from two privileges accorded to these firms by the government. The first is that they have a de facto -- if not legal -- monopoly over importation of powdered milk due to government import licensing procedures. Second, they alone receive subsidy payments from the government to produce reconstituted fluid milk -- i.e. the GOT in effect guarantees to cover losses incurred by the parastatals in production and distribution of reconstituted fluid milk.

In theory, private dairy processors may import powdered milk for their operations since import licences can be granted on a firm by firm and order by order basis. In fact, several factors reduce these firms' interest in importing powdered milk directly. First, since they are excluded by the government from production of subsidized reconstituted fluid milk, they can only use powdered milk profitably for yogurt and cheese production. Second, in the case of yogurt, they are restricted to using not more than 5 percent reconstituted milk as input. Third, since the private firms are unable to pool their orders, obtain import licenses, and buy from the world market in quantities large enough to benefit from bulk discounts, they tend to buy their powdered milk from STIL -- at prices set by the parastatal.

In effect, then, private firms are precluded by a combination of government policies from obtaining the principle raw material needed to produce reconstituted milk and the subsidy payments associated with such production. Moreover since the subsidized reconstituted milk from the parastatals enters local markets priced at anywhere from 33 to 47 percent below the unsubsidized costs of fresh fluid milk, no dairy processors -- private or parastatal -- have any

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[3] The analytical comments in this section were adapted from the milk processing section of a 1987 report by the Institute Superieur de Gestion (ISG) of Tunis, Tunisia. This report was also sponsored by the APIP.

incentive whatsoever to use available raw milk for anything but yogurt, cheese and ice cream.

Sixteen firms have plant capacity to produce fluid milk -- using either raw milk or imported milk powder. Total fluid milk production in Tunisia in 1988 was approximately 180,000,000 liters, which was 67 percent of the estimated aggregate national processing capacity of 270 million liters of fluid milk per year. (Annex B Table 24). In essence STIL and TUNISIE LAIT produced at about 73 percent of their aggregate production capacity and the private firms produced at zero percent of their fluid milk capacity.

Nineteen local firms have equipment for yogurt production and their aggregate production capacity is estimated at 600 million pots of yogurt per year. Actual production in 1987 was 420 million pots -- or 70 percent of capacity. (Annex B Table 25).

There are 15 commercial cheese processors in Tunisia with an aggregate annual production capacity of approximately 10,650 metric tons of assorted cheeses. Production in 1987 was 3,500 metric tons or 33 percent of capacity.

Finally, there are 3 commercial butter plants -- two of which are controlled by STIL -- and six ice cream plants. Total annual butter production capacity is estimated at 2,700 metric tons; although there is capacity to package up to 4,200 metric tons of butter per year.

B. Product Range and Differentiation

Reconstituted fluid milk and yogurt are the principal processed dairy products in Tunisia and account for 90 percent of commercial production. Cheese is the third most important product followed by ice-cream. Local butter production began in 1986 and, although still limited, is growing fast[4].

Fluid milk accounts for 60 percent by volume of total commercial production and STIL produces 80 percent of this milk. Three types of reconstituted fluid milk are produced -- i.e. sterilized, Ultra High Temperature (UHT) and pasteurized milk. These products are packaged either in plastic bottles or tetrabrik and tetrahedron packages. Neither sterilized nor UHT milk require refrigeration but the former can be stored indefinitely, whereas the latter has a limited shelf life. Pasteurized milk must be refrigerated both during distribution and after purchase by the consumer.

Plastic bottles -- manufactured on site by dairy processors from imported plastic granules -- are

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[4] Butter manufacture using subsidized butter oil imported from the European Community began in 1986. The stated intention for the medium-term, is for STIL, which controls all of the active butter making capacity, to switch to use of cream from domestic raw milk.

used for sterilized milk produced by TUNISIE LAIT and pasteurized milk at STIL. At STIL, imported tetrabrik and tetrahedron packaging is used for UHT milk and tetrabriks are used for sterilized and flavored milk produced by STIL. Container sizes range from one-half to one and one-half liters, with one liter packages being the most common.

UHT milk is the dominant fluid milk product (45 percent of commercial milk sales in 1988), followed by pasteurized milk (34 percent) and sterilized milk (21 percent). The retail prices for these three products in 1988 were D 0.300, D 0.240 and D 0.260 per liter, respectively.

Limited sales of sterilized milk -- despite its having a lower price and longer shelf life -- may reflect consumer resistance to its "burnt" taste. UHT milk, on the other hand, may be preferred over pasteurized milk because it does not need refrigeration until the package is opened by the consumer. Shelf life and quality factors thus appear to be more important considerations to the consumer than price per se.

Yogurt is produced mainly from fresh milk[5]. Production is split between the parastatal and private dairy processors; with STIL being the dominant processor by sales volume. Natural and flavored yoghurts are produced in standard plastic pots containing 15.6 grams of product.

Cheese is produced by both private and public processors. It is the one dairy product which is produced predominantly by the private processors. FROLAINORD accounts for 80 percent of total production. Unlike the other private processors, FROLAINORD relies heavily on reconstituted milk in cheese production.

Of the three main dairy products, cheese and reconstituted fluid milk showed the steadiest recent growth -- 29 and 23 percent, respectively -- from 1985 to 1987. Production of yogurt grew very impressively in the early 1980s but sales growth seems to have slowed recently to about 7 percent per year. (Annex B Tables 25 and 26)

C. Procurement of Inputs

The principal inputs for dairy processing in Tunisia are milk -- either as raw milk or powdered milk -- and packaging. Of these, powdered milk is the main input. It accounted for 75 percent of all processed milk used for dairy products in 1987.

Plastic milk bottles are manufactured locally by STIL and TUNISIE LAIT from imported plastic granules. Tetrabrik and tetrahedron packaging used by STIL is imported from European suppliers under a Swiss patent.

A comparison of unit packaging costs for one liter fluid milk containers shows that imported

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[5] Reconstituted milk is sometimes used by dairy processors to improve the consistency of their yogurt. Use, however, is restricted to not more than 5 percent of total milk input.

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tetrabrik/tetrahedron packaging is approximately three times more expensive than either locally produced plastic or glass bottles (Annex B Table 27). Tetrabrik/tetrahedron packaging also expends approximately three times as much foreign exchange per liter of fluid milk produced as plastic bottles -- i.e. tetrabrik/tetrahedron packaging at D 0.0756 per liter versus D 0.0264 per liter for plastic bottles. (see Annex B Tables 28 and 29 for additional information on packaging costs).

Yoghurt containers are manufactured in Tunisia by COTUPLAST which has a monopoly on the provision of this input.

Problems of input procurement differ according to the product. For reconstituted fluid milk, the rising prices of powdered milk have become the major problem for the government and the parastatal processors, particularly since 1987 when world powdered milk prices have almost tripled. The high cost of the tetrabrik/tetrahedron packaging used at STIL is another major factor in the rising cost of government subsidy payments to this processor.

The private sector dairy processors have a different series of input procurement problems. They relate more to the quantity and quality of the raw milk they are able to collect and to the seasonality of local milk production, as discussed in Section III of this report.

D. Financial Analysis

1. Financial Structure

From 1983 to 1985, debt levels for parastatal and private dairy processors grew from 32 to 52 percent of assets. The high and growing proportion of short-term debt is the most significant characteristic of industry's financial structure. Liquidity ratios[6] in 1985 were 0.95 and 0.89 for the parastatal and private processors, respectively.

The trends reflect low profitability, lack of working capital and a high level of unrecoverable accounts receivable -- i.e. 5 to 10 percent for the parastatals and 5 to 20 percent for the private sector. Of these problems, lack of working capital is probably the most important.

In dairy processing, working capital requirements are very high. As liquidity is very low, more than 50 percent of working capital must be acquired as short-term debt. The financial structure of the industry has deteriorated as a consequence, with a growing dependence on short-term debt financing.

For STIL, this situation was improved considerably in 1988 with a refinancing of all its short-term debt by a commercial Saudi Arabian bank. Refinancing was negotiated on favorable terms -- i.e. a seven year term at an 8 percent rate of interest.

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[6] Current assets to current liabilities.

Asset growth from 1983 to 1985 averaged 7 percent, which was financed entirely from income. Growth in turnover during the same period averaged 6.4 percent; suggesting that recent investments have had lower rates of return.

2. Financial Performance

Financial performance in dairy processing has not been very impressive; but it is only slightly lower than that observed for the United States. Indicators of financial return and profitability show that there are differences between the parastatal and private processors. Average performance is slightly higher among the private processors, but there is also much greater variability between firms.

Low levels of profitability, as in Return to Total Assets, can be attributed to low operating margins, high costs of raw materials, and high levels of debt servicing, particularly for short-term debt. In addition, the slow replacement of fixed capital stock has resulted in a gradual aging of installed plant.

Both the private and parastatal dairy processing firms are highly leveraged; although the leveraging for the parastatal processors declined noticeably as equity capital grew during the period 1983 to 1985. Leverage ratios (non-equity capital/equity capital) in 1985 were 4.4 and 3.9 for the parastatal and private processors, respectively, compared to 3.1 for processors in the United States.

Text Table 2
Comparative Financial Indicators for Dairy Processors

	Public Sector	Private Sector	Whole Industry	USA
Capital Turnover Rate	1.35	1.78	1.4	3.9
Net Profit Margin (%)	2	Negative to 7	2	2
Return to Total Assets (%)	2-3	1-2	3	3-4
Return to Equity (%)	17	1-2	16	12
Return on Invested Capital (%)	11-15	16-19	13	16

Source: ISG

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3. Financial Management

The major financial management issue for all dairy processors is working capital. For the parastatals, the high demand for working capital reflects the high level of stocks -- 24 percent of total assets -- which must be carried[7], particularly as imported powdered milk and packaging materials. Working capital requirements for imported materials are increased by the normal transport delays attendant on shipping; and the fact that payments for these materials are made in advance. In Tunisia, significant delays --up to two and a half months -- also occur as a result of the complex bureaucratic procedure for importing raw materials. High prices for powdered milk and packaging have accentuated this problem and increased the total requirement for working capital.

In addition to the high working capital requirements associated with these "structural" characteristics of milk processing, a series of administrative factors are operative. These are associated with the payment of processing subsidies by the Caisse Generale de Compensation (CGC).

In order to receive subsidy payments, the Caisse administrative procedure requires that STIL and TUNISIE LAIT make biannual submissions of their reconstituted milk production, estimated processing costs, and net fluid milk sales. These submissions are then reviewed -- and often adjusted by government accountants -- to determine the actual government subsidies to be paid. The total period between submission of a biannual report and actual payment of subsidies by the CGC can be from 12 to 18 months. During this period, the parastatals must borrow equivalent funds through the banking system to compensate for the capital tied up by the CGC.

This latter problem has become critical since 1986. Not only have the prices of imported raw materials and the required levels of subsidy payments increased dramatically but the delays incurred in the CGC review procedure have lengthened. From 1986 to 1988, the accumulated debt owed by the CGC to STIL grew from D 6,355,518 to D 21,395,445.

Working capital requirements are equally critical for the private sector. Payments for raw milk must be made on a daily or weekly basis; as opposed to sales receipts for processed products, which are generally received on a monthly basis. The private sector also appears to have a higher level of accounts receivable.

E. General Enterprise Management

Aside from financial management per se, the main management issues for dairy processors are quality control, product development and marketing, and labor management.

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[7] A comparable study of the United States dairy industry estimated stocks at only 18 percent of total assets.

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Quality controls at both the milk reception and processing stages were considered acceptable by the ISG for both the parastatal and private processors. Problems were seen to arise in product distribution due to the highly perishable nature of dairy products -- particularly milk and yogurt -- and the general inadequacy of existing distribution networks. The result is that significant volumes of spoiled product are returned to the processors. These problems are most prevalent in the center and south of the country.

Marketing research efforts appear to be a function of firm size. The larger processors -- both private and parastatal -- conduct formal market surveys to determine the potential for new products. Smaller operators test new products in an ad hoc manner by gauging consumer response a new product is released onto the market. The larger processors also tend to place greater emphasis on brand recognition, which is particularly important given the relative homogeneity of dairy products. They thus have a distinct advantage in terms of product marketing.

Labor in dairy processing is limited primarily to unloading of inputs, loading of processed products and controlling production activities. Labor inputs vary by product -- being highest for yogurt and cheese (85 and 55 percent of processing costs respectively) and lowest for fluid milk (10 to 12 percent of processing costs). Demand for labor also varies seasonally with fluctuations in the supply of raw milk. Personnel management thus differs significantly between the private and public sectors.

The parastatal firms have the most stable and well-trained labor forces. Staff stability stems from the fact that these firms produce reconstituted milk year-round from imported powder. It is not greatly affected by the seasonal variability in raw milk supply. More qualifed staff appear to result from the greater emphasis placed on staff training by the parastatals. Moreover, personnel management at the parastatal firms is more collegial and less hierarchical; and staff loyalty appears to be high, with strikes virtually non-existent.

Despite the more stable and better trained staffs, actual labor productivity at the parastatal firms is relatively low. This is due to high rates of staff lateness and absenteeism and the fact that labor remuneration is not tied to productivity criteria.

In the private sector, the labor situation is quite different. Most personnel are employed on a seasonal basis, skill and training are quite low, and personnel management tends to be more autocratic. Employees appear to work harder as they have a shorter period in which to earn their income. Labor productivity is low as a result of the low levels of worker skills and high accident rates.

F. Marketing Systems for Dairy Products

For fluid milk in Tunisia, one finds effectively no true milk marketing system in place. There is only a government-subsidized and regulated production and distribution system. This system is in no way affected by competitive market forces. It provides no incentives to or effective sanctions on the parastatal processors to improve their production and distribution efficiencies or

to respond to demand-side market influences.

For other dairy products -- yogurt, cheese and ice cream -- the situation is very different. These markets do appear to be driven chiefly by competitive market forces. This is particularly true for yogurt, where a large market developed essentially from nothing in the late 1970s and early 1980s. In this market, there is strong competition between firms, and processors are quick to respond to changes in consumer demand based on price and quality factors.

V. FACTORS AFFECTING PROCESSOR DEMAND FOR MILK AND OTHER INPUTS

A. Existing Government Policies and Regulations

1. Stated Policy Objectives

As discussed earlier, development of the dairy industry is accorded considerable importance within the government's agricultural sector policy. Three general objectives are particularly relevant to the processing and distribution of dairy products:

- Attaining a greater measure of self-sufficiency in food production, in order to better ensure food security for the country;
- Increasing the contribution of the agricultural sector to balanced economic growth, primarily through import substitution and reduction of food imports; and
- Developing systems for collection and transformation of local raw milk.

2. Dairy Policy Instruments in Effect

Price regulation is the government's principal instrument for intervening in the dairy industry in support of these objectives. Price regulation is now the dominant influence in the processing and distribution of reconstituted milk and butter -- both produced primarily from imported ingredients. Government price policies have had lesser impacts on the processing and distribution of yogurt, cheese and other products produced from domestic raw milk. The following regulations have the greatest impact on the industry:

a. Domestic Inputs

The GOT influences net producer price for raw milk in three ways. First, it sets minimum producer prices and transport margins for delivery of raw milk to processing plants. Second, it requires that parastatal processors purchase all raw milk presented to them by producers and/or collection agents at the official prices and transport margins. And, third, it partially subsidizes the operating costs for fixed collection centers and, thus, reduces milk delivery costs for producers.

b. Customs Taxes and Tariffs on Imported Inputs

Except where gifted commodities are involved, neither the GOT nor dairy processors have any influence over prices paid for imported powdered milk, butter oil or milk packaging materials in international markets. Volumes imported are relatively small and Tunisia is a price taker in all markets. Hence, CIF Tunis prices for dairy inputs are a function of commodity and trans-

port prices in international markets -- and any subsidies in the exporting countries.

As the government cannot affect international prices directly, it does so indirectly at the port of entry. Processor input prices are modified by tariff and tax assessments and quantities are limited by an import permit system. The schedule of tariffs and taxes for imports of powdered milk are shown in Text Table 3.

Text Table 3
Tariffs, Taxes and Fees Affecting Tunisian Powdered Milk Imports

Tariff/Tax/Fee	Level
Customs Duty	15 % of cost & freight(CF), Tunis
Value Added Tax	17 % on the price CF Tunis
Customs Administrative Tax	1.5% (15 % + 17%) = 0.48 %
Insurance Cost	0.28% on the price CF Tunis
Port Fee on Merchandise Imports	D 0.605 per ton
Inspection and Unloading Fee	D 8.355 per ton

c. Fixed Margins on Processed Dairy Products

Cost margins for reconstituted milk and butter are subject to government controls at all stages of processing and distribution. Margins for 1988 are presented in Text Table 4 below.

Government controls on processor margins for yogurt and cheese --with the sole exception of soft cheeses (fromage fondu) -- were totally removed in September 1988. Transport, wholesaler and retailer margins on butter, yogurt and cheese, if any, remain unclear.

d. Government Subsidization of Dairy Processing

The government subsidizes dairy processing in two ways. First, domestic milk collection by the government collection centers is subsidized by the OEP. As noted above, these subsidies amounted to D 362,351 in 1987 and an estimated D 638,000 in 1988 -- i.e. D 0.025 per liter of raw milk delivered to the center.

Second, subsidies are paid to parastatal dairy processors for production of reconstituted fluid milk. These subsidies effectively reimburse the processor for the difference between its costs of production and the government's calculation of the processor ex-plant pre-tax subsidized sales price for the reconstituted milk. (Annex B Tables 29 and 30).

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Text Table 4
Fixed Margins on Dairy Products in Tunisia

Dairy Product	Processor Gross Margin[1]	Transport Margin	Wholesaler Margin	Retailer Margin
	%		Dinars per Liter	
Fluid Milk	15	0.008	0.006	0.012
Butter	15	-	-	-

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives, 1988

Note : [1] On pre-tax processor costs for reconstituting powdered milk, before packaging

STIL and TUNISIE LAIT are required to submit detailed estimates of their production costs by product type to the CGC/Direction des Prix et du Controle Economique (DPCE) at six month intervals. Cost estimates are then reviewed by government auditors to determine the dairy processor's final pre-tax cost price per liter of reconstituted milk.

The subsidy payment due per liter of reconstituted milk produced is then determined as follows:

GOT Subsidy To Be Paid Per Liter of Reconstituted Milk = Processor Pre-tax Cost Price Per Liter - Official Government Retail Price Per Liter for Reconstituted Milk - [Authorized Transport, Wholesaler and Retailer Margins] - [Loss Factor to Account for the Difference Between the Liters of Reconstituted Milk Produced and the Liters of Reconstituted Milk Sold].

The processor subsidies, once calculated, are then paid to the two parastatals by the Caisse Generale de Compensation (CGC).

Growing consumption of reconstituted milk and rising input costs, coupled with essentially constant nominal consumer prices for these products, resulted in large increases in milk processing subsidies paid by the CGC from 1981 to 1988. Total subsidy payments in the period grew by 290 percent from D 5.12 million in 1981 to D 14.84 million in 1987. Provisional subsidy figures for 1988 total D 22.03 million (D 18.41 million for STIL and D 3.62 million for TUNISIE LAIT). Projected subsidy payments to STIL alone in 1989 are D 29.33 million and

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the total payments will almost certainly be well over D 30 million.

e. Indirect Taxation

Since June 1988, reconstituted milk, yogurt (natural and flavored), butter and cheese sales are subject to value-added tax of 17 percent. Butter, cheese and yogurt are also subject to additional consumer taxes. These high levels of taxation are a significant factor in increasing the retail prices of yogurt and cheese.

3. Statutes Affecting the Dairy Industry

Three statutes define the legal basis for the dairy industry. Law No. 64-69 of 24 December 1964, which pertains specifically to public management of the dairy industry, is most important. This law sets the requirements for all facets of milk production, processing and marketing -- whether the milk is produced in Tunisia or reconstituted from imported powdered milk. Law No. 70-26 of 19 May 1970 describes the system to be applied to the domestic pricing of all marketed commodities and services. Decree No. 83-134 of 27 January 1982 updates the price classification system for commodities and services originally presented in Law No. 70-26. (Annex C contains the full French texts of these statutes).

The relevant sections of these statutes are as follows:

a. Law No. 64-69 of December 24, 1969: Control of the Production, Processing and Marketing of Milk

Under Article 9 of this law, it is forbidden to sell fluid milk for human consumption unless it meets one or more of the following conditions:

- The milk has been pasteurized or sterilized;
- The milk is sold directly to consumers at the point of production; and/or
- The milk is produced, transported and sold as Milk from an Officially Controlled Dairy.

Under other provisions of this law, it is also forbidden to retain without a legitimate motive, to transport, to process, to display and/or to sell:

- Unhygienic milk intended for human consumption containing pathogenic micro-organisms and/or having abnormal color, taste, or odor; or milk obtained from a stressed or malnourished animal; or milk obtained from an animal being treated for illness ... (Article 3);

- Milk obtained by mixing different categories of milk such as fresh raw milk, sterilized milk and/or pasteurized milk ... (Article 4);

- Milk which has partially separated and which is not properly described as such (Article 4).

The addition of water or other substances is considered a falsification of the milk product, unless it is conducted in accordance with conditions specified by the Ministries of Planning, Economics and Health (Article 5).

Informal milk vending is forbidden, except in sealed bottles (Article 27).

The sale of milk to the public may only take place in shops authorized by the Municipal Hygiene Service or the Public Health Service (Article 27).

It is forbidden to manufacture, transport, retain for the purposes of sale, offer for sale, or sell reconstituted milk. However, this product may be distributed free of charge by schools and hospitals, public services, and national organizations (Article 1, para. 4).

In the event of insufficient levels of domestic milk production, reconstitution of powdered milk can be authorized by the Ministry of Planning on the advice of the Technical Commission on Milk. This authorization must also specify the procedure for implementing and controlling this process.

Reconstituted milk is to be sold only in sealed bottles with the words Reconstituted Milk written on the bottle (Article 33).

There are clear inconsistencies between the provisions of this statute and the current state of affairs in the dairy industry. In fact, according to this law, two major sectors of the industry are operating illegally.

First, as discussed above, off-farm sales of raw milk by informal milk peddlers are expressly forbidden but proceed unabated.

Second, production and distribution of reconstituted milk is also forbidden in the absence of an authorization to the contrary by the Ministry of Planning. We have found no evidence that such an authorization exists. Moreover, at least one parastatal dairy processor -- TUNISIE LAIT -- appears from its own records to be producing and distributing reconstituted milk which is illegal in that different categories of milk are being mixed to produce a single fluid milk product.

b. Law No.70-26 of 19 May 1970 as the Basis for Fixing and Controlling Prices

This law provides an economy-wide basis for government regulation of commodity prices and

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processing margins. It lists five cate- gories of control, with varying degrees of government regulation over commodity prices and distribution margins. They are:

- **Fixed Prices (La Taxation du Prix)**

Minimum or maximum prices for a commodity or service are fixed by government. These fixed prices may apply to the entire country -- i.e. be pan-territorial -- or may vary by region. Essential food commodities -- i.e. bread, pasta, edible oils, and milk -- are included in this category.

- **Controlled Cost Pricing (Homologation)**

Prices are fixed by the government across an industry based upon averges of enterprise accounting costs of production submitted by representative firms.

- **Enterprise Cost-Pricing (Auto-Homologation)**

Prices are fixed by an enterprise based on its internal costs of production. The government imposes a maximum gross profit margin for the enterprise.

- **Controlled Pricing (Liberte Controlee)**

Pricing is at the discretion of an enterprise but with notification of any anticipated price changes required to the Ministry of Eco-nomic Affairs. The Ministry is then responsible for determining the conditions under which this system of pricing will operate.

- **Free Pricing (Liberte Totale)**

Pricing at the complete discretion of an enterprise.

Based on the preceding classification system -- and subsequent amendments by Decree No. 83-134 in 1982 -- dairy products fall within the following price categories:

B. Prices for Products at the Plant, Wholesale and Retail Levels

For reconstituted milk, the combination of government subsidies and fixed retail prices drives a wedge between actual milk processing costs and subsidized retail prices. This wedge insulates parastatal processors from competitive market forces. With the recent increase in world prices for powdered milk, financing this price/subsidy wedge has grown enormously expensive for the government.

The size of the wedge is evident in Text Table 6 below, which presents an array of pre-tax cost and sales prices, and levels of subsidization for different types of reconstituted milk produced by STIL. The table also shows why UHT milk has the highest market share of STIL fluid milk

products -- i.e. 45 percent of total fluid milk sales -- despite the fact that it is STIL's most expensive fluid milk product.

Text Table 5
Classification of Dairy Products in Tunisia

Category	Production Level	Processing and Distribution Levels
Fixed Pricing	--	Reconstituted Milk
Controlled Pricing	Raw Milk sold to Processors	--
Enterprise Cost Pricing	--	Commercial yoghurt
Free Pricing	Raw milk sold to consumers at the farm-gate	Cheese; traditional yoghurt

Due to the higher retail price for UHT milk and the resultant higher pre-tax sales price, the level of the subsidy payment required to cover STIL's costs for this product is reduced. This being the case, STIL can recover a greater proportion of its UHT processing costs directly from Tunisian consumers. Consequently, its reliance on the CGC -- with its cumbersome and lengthy repayment system -- is reduced. There is, therefore, a powerful incentive for STIL to produce the most expensive reconstituted milk product. Conversely, production of pasteurized reconstituted milk is probably inhibited by its low retail price and, consequently, the high level of subsidy payments required from the CGC system.

Yoghurt and cheese are currently free of price controls at all stages and are classified under the Enterprise Cost-Pricing regulations. Retail prices for yogurt in 1988 were approximately D 0.100 per pot. Cheese retail prices vary according to the type of cheese. There were no data for these commodities on price margins at the wholesale and retail levels.

C. Costs of Processing

Actual fluid milk production costs for STIL and TUNISIE LAIT and projected costs for production of pasteurized milk in alternative packaging by a new private producer are shown in Annex B, Tables 31 to 41. Because there are so few operating milk plants and each produces slightly different products, it is difficult to make an effective comparative analysis of processing costs. However some comparisons with American dairy plants of comparable capacity -- i.e. 200,000 to 300,000 liters per day total capacity, operating at 65 to 90 percent of capacity -- can

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Text Table 6
Processing, Wholesale and Retail Prices for Reconstituted Milk at STIL 1985-1988

	1985	1986	1987	1988	1989
STERILIZED MILK					
Processing Price					
Pre-Tax Cost Price	0.308[1]	0.287[1]	0.347[2]	0.385[2]	0.471[3]
Pre-Tax Sales Price	0.200	0.200	0.241	0.248	0.242
Subsidy Paid	0.108	0.087	0.106	0.137	0.229
Wholesale Price	0.248	0.248	0.248	0.248	0.248
Retail Price	0.260	0.260	0.260	0.260	0.260
PASTEURIZED MILK					
Processing Price					
Pre-Tax Cost Price	0.311	0.362	0.362[4]	0.404[4]	0.444
Pre-Tax Sales Price	0.183	0.183	0.212	0.215	0.219
Subsidy Paid	0.128	0.179	0.150	0.189	0.225
Wholesale Price	0.228	0.228	0.228	0.228	0.228
Retail Price	0.240	0.240	0.240	0.240	0.240
UHT MILK					
Processing Price					
Pre-Tax Cost Price	0.268	0.290	0.307	0.340	0.435
Pre-Tax Sales Price	0.234	0.234	0.234	0.242	0.249
Subsidy Paid	0.034	0.056	0.073	0.098	0.186
Wholesale Price	0.288	0.288	0.288	0.288	0.288
Retail Price	0.300	0.300	0.300	0.300	0.300

Sources : Annex B Table 31, Table 38 and Tables

Notes :
[1] Figures from Annex B Table 31
[2] Figures for sterilized milk at STIL Sfax only
[3] Figures are weighted average for sterilized milk at STIL Sfax and STIL Bab Saadoun
[4] Figures from Annex B Table 38

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be made based on a recent study. (Thraen, Hahn and Roof, 1987).

On average, processing costs for fluid milk in Tunisian plants are three to four times the costs for American dairy plants of compar-able scale. There are also significant differences in their respective cost structures [8]. Generally, the Tunisian dairy plants have higher packaging costs and lower labor costs than their American counterparts. Packaging in the American plants accounted for 40 percent of total costs and labor for 35 percent. For Tunisian plants, costs were 67 to 88 percent for packaging and 10 to 14 percent for labor. Installation of less costly systems for product packaging at STIL, therefore, appears to offer considerable cost advantages for the government in paying subsidies.

A long-run average cost (LAC) curve calculated for the surveyed American dairy plants suggests that there are modest economies of scale in dairy processing -- at least under conditions in the United States. The estimated scale elasticity is - 0.2, which means that a 10 percent increase in plant capacity size will be accompanied by a 2 percent decline in average processing costs per liter of milk produced. Tunisia's largest plants -- i.e. STIL's plants at Bab Saadoun and Tunis Port and TUNISIE LAIT, which account for 95 percent of current fluid milk production -- fall within the mid-range of this LAC curve. This may suggest that, if any similar scale economies were to be had in Tunisia, most of them have probably already been obtained. However, it is essential not to take these comparisons too far, given that equivalent processing costs are three to four times higher in Tunisia and that the LAC curve for the Tunisian dairy industry may be structured differently.

D. Seasonal Variability in Fresh Milk Supply and Quality

In the medium-term, seasonal variability in the availability of local fresh milk may prove to be a more pertinent processing constraint than overall processing capacity. From 1986 to 1988, deviations from the mean monthly level of raw milk received at the parastatal plants were up to (+ or -) 30 percent. Peak milk receptions occurred from April to August. This period accounts for 50 percent of total milk received. (Annex C Figure 3).

Current GOT plans to increase milk collections for processing to 283,000 tons by 1991 apparently take no account of the seasonal trends in production. Unless seasonal fluctuations in supply can be reduced, dairy plants would have to switch to multiple shifts during peak production periods in order to process the available milk. This would be true especially for yogurt and cheese producers. But, unless these producers could actually sell their increased -- and highly perishable -- outputs in local markets, they would have no real incentives to make additional milk purchases or to take exceptional steps to increase their production levels.

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[8] Costs used for the comparison were those for labor, repairs and maintenance, packaging, depreciation and insurance. Costs of raw and/or powdered milk, interest, and other financial charges were excluded.

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Based on our field interviews with dairy producers, it appears that, as peak raw milk receptions in April and May follow the peak months of the winter rainy season, most of the variability in milk supply reflects differences in feeding programs among milk producers. Small producers' production is more apt to be a function of seasonal patterns in natural forage availability; whereas the larger dairies are more likely to sustain fairly constant levels of milk production by feeding their cows more hay, silage and concentrate feeds throughout the year.

E. Consumer Demand for Milk and Processed Products

Information on trends in consumer demand was obtained from the surveys of household consumption expenditures conducted at five year intervals from 1970 to 1985, supplemented by the 1983 SWEDFARM report on the dairy sector. A summary of the characteristics of the consumption of dairy products in Tunisia is shown in Text Table 7.

Consumption patterns are fairly stable throughout the year, apart from very high levels of consumption during the period of Ramadan.

Expenditure elasticities for dairy products are highest in the rural areas as would be expected, given the lower average incomes of rural consumers. Across products, the expenditure elasticity for milk is lowest and those for the "luxury" consumer products -- i.e. processed cheeses and yogurt -- are the highest. Given the low budget share of dairy products as a percent of total food expenditures, however, the income effect in any consumer responses to retail price changes will be rather small.

Only one estimate of own-price elasticity is reported for Tunisia, an estimate of -0.60 to -0.65 calculated for the period 1975 to 1980. This is somewhat higher than an estimate of -0.41 for Egypt for the period 1980 to 1981 (Alderman and von Braun, IFPRI, 1982). An IFPRI study also found for Egypt that own-price elasticities were highest in the urban areas and among the poor. There are no known Tunisian estimates of cross-price elasticities for dairy products.

Processed dairy products in Tunisia are consumed mainly by higher income, urban dwellers. Households with per capita expenditures of less than D 250 spend less than D 8 annually on dairy products; while households with per capita expenditures between D 250 and D 500 spend from D 8 to D 20; and those households with per capita expenditures over D 500 spend D 20 to D 40 on dairy products. Even at the highest expenditure levels however, dairy products never exceed 10 percent of the total household food budget.

Higher income, urban consumers in Tunisia have benefitted doubly from current government dairy policies. First, they have profited from the consumer subsidies on reconstituted milk products and, second, from low real prices for these products. Text Table 8 shows trends in nominal and real subsidized reconstituted milk prices from 1980 to 1987. While real disposable income in Tunisia has shown a modest increase of 10 percent over the period, real prices for reconstituted milk have actually decreased since 1983.

Text Table 7
Estimates of Household Expenditure, Dairy Product Consumption, Food Budget Share, Expenditure and Own-Price Elasticities in Tunisia

Estimate	Urban [1]	Rural	Tunisia
Total Household Expenditures			
	(Dinars per Capita)		
1980	332	157	248
1985	619	294	471
Consumption of Dairy Products			
	(Kilograms of Milk Equivalent per Capita)		
Reconstituted Milk	-	-	21.8
Cheese	-	-	3.9
Yoghurt	-	-	8.5
Butter	-	-	14.5
Other Dairy Products [2]	-	-	33.3
Family Expeditures on All Dairy Products and Eggs in 1980			
Dinars per Capita	12.750	8.000	9.500
Food Budget Share (%)	10.1	8.4	9.2
Family Expeditures on All Dairy Products and Eggs in 1985			
Dinars per Capita	31.200	10.300	18.200
Food Budget share (%)	12.1	7.7	9.9
Estimated Expediture Elasticities			
SWEDFARM By Product 1975 to 1980			
Processed Milk	0.53	0.62	--
Cheese	1.33	1.70	--
Yoghurt	1.35	2.10	--
Butter	1.06	0.93	--

1985 Consumption Survey			
Dairy Products and Eggs By Region 1985	0.69	0.88	--
SWEDFARM Own-Price Elasticity for 1975 to 1980	-0.60 to -0.65		

Sources : SwedFarm Report, 1983 and Institut National de la Statistique, Enquete Nationale Sur le Budget et La Consommation des Menages, Tunis, Tunisie, 1980 and 1985.

Notes : [1] Urban areas considered to be Tunis, Sfax, Sousse, Bizerte and Gabes.
[2] Includes raw milk and traditional dairy products.

Text Table 8
Real and Nominal Prices for Sterilized Milk in Tunisia 1980 to 1988

Year	Nominal Price	Real Price [1]
	(Dinars per Liter)	
1980	0.126	0.126
1981	0.126	0.116
1982	0.180	0.145
1983	0.200	0.148
1984	0.200	0.137
1985	0.220	0.139
1986	0.220	0.132
1987	0.240	0.134
1988	0.260	-

Note : [1] Deflated by the Consumer Price Index used in International Financial Statistics.

VI. KEY PROBLEMS FOR POLICY RESOLUTION

Based on the preceding analysis the following key problems emerge as targets for policy changes:

- **The Preferential Classification of Reconstituted Milk as an Essential Consumer Commodity**

The keystone of current dairy policy is the government's classification of reconstituted milk as an essential commodity. While this policy remains in effect, the GOT lacks a formal justification for dismantling the array of regulations and subsidies which controls reconstituted milk processing. Moreover, production of other dairy products -- i.e. fluid milk from local raw milk, yogurt, cheese, butter and ice cream -- is, in a sense, held hostage to the GOT's policy. Therefore, changes in this policy are seen as necessary if the industry is to be made more efficient and subject to competitive market forces.

- **The Ineffectiveness of the Untargeted Subsidy Program for Reconstituted Fluid Milk Products**

The current untargeted subsidy program for reconstituted milk provides major benefits to two groups within Tunisia: more affluent urban consumers and parastatal dairy processors. It does not materially affect milk consumption by the poorest and most disadvantaged consumer groups in Tunisia -- i.e. the stated target of the program.

- **The Unsustainable Levels of Government Support Required for the Current Policy**

Record international prices for powdered milk, high local dairy processing costs -- particularly for product packaging at STIL, and artificially low consumer prices for reconstituted milk have combined to increase government support for the parastatal dairy processors and consumers from D 8.5 million in 1985 to a probable D 22.03 million in 1988 to well over D 30 million in 1989. In the absence of policy changes which address both the processing and consumption of dairy products, this situation will continue to deteriorate.

- **The Inadequate Incentives Provided to Improve Processing Efficiency by Parastatal Processors and to Allow for a Greater Private Sector Role in the Dairy Industry**

The current system of fixed prices for reconstituted milk products, import controls on powdered milk, and preferential government support for the parastatal processors provides no incentives for either improving the efficiency with which fluid milk is produced and distributed or for allowing competition from private sector dairy processors.

VII. POLICY ALTERNATIVES TO THE EXISTING DAIRY PROCESSING SYSTEM

The following policy alternatives have been proposed for analysis in this report. Several of the policy alternatives were originally proposed during interviews with persons concerned with the dairy sub-sector or in the documents cited in the report bibliography (Annex D). Others were proposed by team members in the course of the research for this report.

The list of policy alternatives below is presented without attribution, to preserve to the maximum degree the neutrality of the subsequent analysis.

A. Policy Alternatives at the Input Procurement Level

1. Achieve full self-sufficiency in dairy products by banning all imports of powdered milk and other dairy products and depending on dairy products made only from domestic raw milk.

2. Install a formula pricing system for domestic raw milk tied to world market prices for powdered milk.

3. Provide a price adjustment mechanism to allow for changes in producer prices throughout the year in response to seasonal variations in domestic milk supply.

4. Provide for equal application of all laws pertinent to the importation and use of milk powder and other dairy products across all dairy processing firms.

5. Modify existing dairy legislation to provide a positive role for "illegal" milk peddlers.

6. Utilize the receipts derived from any tariffs on imported powdered milk and other dairy products to subsidize, as necessary, the costs of collecting raw milk from domestic producers.

B. Policy Alternatives at the Processing Level

1. Equalize conditions for participation in any subsidy payment system across all domestic dairy processing firms.

2. Institute a freeze on the total subsidies paid to firms processing reconstituted fluid milk products.

3. Institute a progressive and phased reduction in fluid milk subsidy payments to dairy processing firms so as to eliminate all such subsidies by 1995.

4. Modify the current GOT subsidy system to subsidize only the raw materials needed to produce plastic milk bottles and to eliminate all entry taxes on this input.

5. Modify the current government subsidy system for reconstituted fluid milk to subsidize only one type of fluid milk in one well-specified type of product packaging and limit distribution to the "poor."

C. Policy Alternatives at the Consumption Level

1. Substantially reduce the differential in retail prices between lowest priced subsidized reconstituted milk and the lowest priced processed milk from local sources such that retail prices for the former are never less than 90 percent of prices for the latter.

2. Eliminate, over the longer term, all government regulation of retail prices for fluid milk products in domestic markets.

VIII. ANALYSIS OF THE PROPOSED POLICY ALTERNATIVES

Our analyses of the policy alternatives proposed are presented below.

A. Policy Alternatives at the Input Procurement Level

1. Achieve full self-sufficiency in dairy products by banning all imports of powdered milk and other dairy products and depending on dairy products made only from domestic raw milk

The most extreme policy alternative proposed for the Tunisian dairy industry is complete self-sufficiency in dairy products. Mechanisms to realize this objective would have to include: a massive increase in domestic milk production and a ban on the importation of all dairy products. Of these mechanisms, we feel that the first is technically impossible in the medium-term and is unlikely to occur without a massive increase in producer prices for raw milk. The second mechanism is often proposed in Tunisia because it has a precedent in the dairy policy of Morocco.

The Moroccan dairy policy has been implemented by combining these three measures -- i.e. increased producer prices for raw milk; increased consumer prices for all dairy products; and a ban on importation of powdered milk. Moroccan butter imports, however, remain very high. As a result of this policy, Morocco has increased its self-sufficiency in dairy products from 38 percent of total consumption in 1970 to 68 percent in 1985. However, per capita consumption of dairy products has fallen from 66 kilograms per capita in 1970 to 50 kilograms per capita in 1985 (Bourbouze et al, 1987).

There is sound economic justification for the GOT's emphasis on <u>increasing</u> the current level of self-sufficiency in dairy products through import substitutions. The increased domestic milk product-ion -- combined with other policy changes to be discussed below -- would probably raise the total contribution of the agricultural sector to the economy by reducing foreign exchange expenditures for imports and increasing the value added for domestic production and processing. Such an evolution over time would also buttress dairy producers and consumers of dairy products against the vagaries of the world market and create additional employment. However, since Tunisia only produces about 59 percent of its total consumption of dairy products at present, <u>total</u> self-sufficiency in dairy products could only be obtained in the medium-term -- if ever -- at great cost to consumers. The increased costs would result from a large drop in the per capita consumption of dairy products[9]; a massive income transfer from consumers to milk producers through increased prices for raw milk; and increased retail prices reflecting increased processor costs, net of any subsidy payments.

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[9] Assuming no imports and the realization of the domestic production targets projected in the Seventh Development Plan, per capita consumption of dairy products would fall to 62 kilograms per capita in 1991 -- i.e. an immediate drop of 20 kilograms per capita.

Due to the fact that the terms of reference for this study exclude consideration of milk production in Tunisia, we do not have the information needed to determine the increase in producer surplus which might result from implementation of this total self-sufficiency alternative. We believe, however, that the associated loss in consumer surplus would considerably exceed the gain in producer surplus. Consequently, a high dead-weight efficiency loss would occur for the Tunisian economy. The efficiency loss would occur because more resources are likely to be needed to produce the additional milk domestically than are needed to import it as powdered milk -- even in a period of rising international prices.

2. Install a formula pricing system for domestic raw milk tied to world market prices for powdered milk

Only a small proportion of world dairy production is traded in international markets. The result is that product prices in international markets can be highly variable -- as evidenced by the past three years. These prices reflect changes in the relative efficiencies of dairy producers in exporting countries; government subsidy and tax policies in effect in those same countries; and the vagaries of weather and other events -- i.e. nuclear reactor disasters and the like.

Dairy policy in the European Community (EC) has been the major influence on world dairy prices in the 1980s. High levels of EC dairy producer subsidization in this decade lead to a saturation of world markets and a slump in world prices through 1986. This trend began to reverse itself in 1987 with the imposition of EC producer quotas. These quotas lead to a rapid draw-down of world stocks of powdered milk and other dairy products and a consequent and dramatic increase in international product prices.

A formula pricing policy, which would tie domestic milk producer prices to world prices, cannot therefore be considered wholly as an "efficiency standard" set in place to control investments in local dairy enterprises. Such a formula would necessarily reflect not only any producer efficiencies in exporting countries but also any inefficiencies induced by the dairy policies of these countries and any external "shocks" to their production and processing systems.

As a result of these factors, adoption of a formula pricing system will inevitably mean that the government would introduce some element of external instability into the process for determination of domestic milk producer prices. This external effect can be mitigated to some extent by the use of moving averages of varying lengths and by basing calculations on an accepted international average of product prices but it cannot be totally avoided.

Moreover, in adopting and adhering to a formula pricing policy, the GOT must recognize that formula pricing implies that milk producer prices in Tunisia will rise and fall with changes in the international market. If, as is currently the case, international prices for powdered milk are rising, domestic producer prices will also rise. However, if international powdered milk prices begin to fall off their current record highs as must be expected in the mid-1990s, then domestic producer prices must also fall as the government adheres to the formula pricing system.

The formula pricing policy alternative was analyzed using a computer spreadsheet (Annex D Scenario 1). The formulae were established as moving averages of varying lengths based on: the blend price for powdered milk delivered to processing plants in Tunis; an adjustment to equilibrate butterfat content with domestic raw milk; and a 15 percent tariff on the imported powdered milk. The moving averages[10] used for calculating the different formulae are shown in Text Table 9 below. In the Text Table and Annex C Figure 4, the results of the formulae are compared with actual and projected producer prices for raw milk under current dairy policy for the period 1985 to 1991, and annual General Agreement on Tariffs and Trade (GATT) blend prices for equivalent powdered milk delivered to dairy processors.

Under a formula pricing policy, producer prices would have followed trends in international prices more closely than the price adjustment projected under the current GOT milk pricing system. Had formula pricing been in effect prior to 1988, domestic milk producers would have been heavily penalized because of the effects of EC dairy policies on the international market. After 1988, domestic milk producers would have reaped the benefits induced by the changes in EC dairy policy and the general rise in international prices for powdered milk. But, in almost all years, the producer prices projected by the GOT would have given producers higher returns for their milk.

Domestic milk producers under a formula pricing system would have had to adjust to greater variability in prices than they have experienced to date under the government's current pricing regime. The magnitude of price variations are reduced under a formula pricing system by increasing the number of years used in calculating the moving average. However, as the number of years used increases, the formula pricing system yields prices that are increasingly divorced from the direct effects of current international prices -- and, hence, from any "production efficiency" criteria embodied in them.

There is, therefore, an important and explicit trade-off in selection of a formula between a desire to follow changes in international prices and production efficiencies, on the one hand, and the government's need to minimize the deleterious impacts on producers of increased price instability on the other.

3. Provide a price adjustment mechanism to allow for changes in producer prices throughout the year in response to seasonal variations in domestic milk supply

Where there is considerable seasonal variation in the costs and levels of milk production, it is common for dairy program administrators to institute a pricing system which pays higher producer prices during the low production period -- i.e. the "off season" -- and lower prices during the flush period. This is done to even milk flows to processors and to encourage increases

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[10] The moving average is calculated as the average of the preceeding year(s), the current year, and the projected price one year into the future.

in aggregate production.

Text Table 9
A Comparison of the Tunisian Producer Pricing System for Raw Milk and Alternative Formula Pricing Systems

	Year						
	1985	1986	1987	1988	1989	1990	1991
	(Current Dinars per Liter)						
Fixed Producer Prices Under Current GOT Dairy Policy	0.230	0.230	0.240	0.240	0.270	0.290	0.310
Prices Resulting from Alternate Formula Pricing Systems [1]							
Three Year Average	0.129	0.169	0.229	0.286	0.299	0.291	
Four Year Average			0.158	0.204	0.249	0.285	0.299
Five Year Average				0.188	0.244	0.256	0.264
Annual GATT Blend Price for Equivalent Powdered Milk at Processing Plant [2]	0.124	0.126	0.138	0.242	0.308	0.308	0.282

Notes : Based on a moving average of the blend price derived from GATT figures at processing plants in Tunis

[2] Calculated annual blend price for equivalent powdered milk -- i.e. with adjustment of butterfat -- delivered to the processor

The present structure of Tunisian milk production appears to largely preclude either of these benefits. Large dairy farms, which account for two-thirds of all raw milk used by local dairy processors, already appear to have staggered their calving intervals and installed feeding programs to obtain relatively even patterns of milk production throughout the year. Higher producer prices during the "off season" might encourage them to change their calving and feeding

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programs to produce more during the off-saeason and, thereby, take advantage of the higher seasonal prices. But their aggregate annual milk production would probably not change that much.

Smaller dairy farms, which currently supply one-third of the raw milk used by commercial processors, are said to exhibit more noticeable seasonal variations in their production. Higher milk prices during the "off-season" might, therefore, provide a strong incentive for them to change their calving programs and/or prolong their cows' lactation periods through better feeding programs or other means.

However, there appear to be definite limits on their capacities to increase their aggregate production. The present constraints include the following:

- Their herds appear to contain higher percentages of cross-bred cows and cows of indigenous breeding with lower genetic potential for milk production;
- They appear to be more dependent on natural forages and crop residues for the bulk of their dairy feed than the larger farms;
- Overall levels of animal husbandry and farm management skills may be lower than on the larger farms; and
- These farms appear to be less dependent on government prices than the larger farms because they sell a larger percentage of the milk they produce through informal milk peddlers.

The first three constraints can obviously be overcome through investments in cows with higher milk potential, increased use of purchased and/or grown feeds during the "off season, and better animal husbandry and general management. The small producers' greater reliance on informal milk peddlers, however, would remain unless massive changes occured in the government's dairy policy.

These realities have several implications for the success of any seasonal pricing differentials. First, the production response from the smaller producers would only occur with considerable lags as they gradually improved their production situations. Second, production responses would probably occur only if the seasonal increases in government prices exceeded the actual prices received from the milk peddlers by a considerable amount and continue only if producers were convinced that the policy change was a permanent one. And, third, if the smaller producers actually had access to the investment capital needed during the adjustment period to make the needed changes.

Based on the information available to us, we would predict that the medium-term effects of a seasonal price differential would be a slight annual increase in milk from the smaller farms during

the "off season" and a change in the production patterns on the larger farms toward higher milk production during the "off season" and lower production in the current flush period. As these latter farms dominate the supply of raw milk to milk processors, the aggregate supply response to seasonal milk pricing would probably not be that significant.

4. Provide for equal application of all laws pertinent to the importation and use of powdered milk and other dairy products across all dairy processing firms

Current government dairy policy on imports of powdered milk and butter-oil effectively excludes private dairy processors from the production of reconstituted milk and butter. Other policies also limit use of powdered milk for other dairy products. STIL and TUNISIE LAIT have preferential access to import licenses for powdered milk and butter-oil.

These policies have two principal effects on the dairy industry. First, private processors can offer no effective competition to the parastatals in production and distribution of reconstituted milk and butter; thus reducing the incentives for the parastatals to control their processing costs. And, second, these private processors operate at less than peak efficiencies during that portion of each year when they have difficulty securing raw milk -- their only available input for production of other dairy products.

Equalization of the regulations pertaining to the importation and use of powdered milk and butter-oil would certainly have potential for increasing the competition between the parastatal and private processors across a range of dairy products and reducing the current inefficiencies in the processing of reconstituted milk. Second, such a policy change would also allow private processors to make the necessary adjustments in their plant and equipment to utilize imported products to extend their operating periods during the year and increase their outputs. And, third, less a priori government regulation over the mix of components used in dairy products would allow all processors to develop and market a wider range of dairy products in response to consumer preferences and competitive market forces.

5. Modify existing dairy legislation to provide a positive role for "illegal" milk peddlers

Seventy percent of raw milk marketed in Tunisia is collected, transported and sold by "illegal" milk peddlers. This contrasts sharply with the public collection system which is underutilized, has been unable to cover its real costs, and cannot operate on a sound commercial basis without GOT subsidies.

Given these facts, there appear to be obvious advantages to be derived from integrating the milk peddlers into the formal milk collection system. First, effective integration of the peddlers could increase the supply of raw milk available to milk processors. Second, raw milk deliveries by peddlers -- at reasonable margins -- could increase dramatically the capacity utilization of the existing fixed collection centers. Increasing capacity utilization at these centers would spread

their fixed costs over higher volumes of milk and allow these centers to run more efficiently and profitably. Consumers would also have access to hygienically processed fresh milk.

We see two steps as necessary to initiating the process of peddler integration. First, the GOT must provide a specific transport margin to be paid to peddlers and/or farmers for raw milk delivered to collection centers or dairy processors. These margin payments -- initially set at D 0.010 and D 0.020 per liter for delivery to collection centers and processors respectively-- are seen as necessary to provide a specific incentive to both farmers and milk peddlers to redirect flows of raw milk to the fixed collection centers and/or dairy processors.

We believe that specific payments for transport of raw milk to collection centers and dairy processors would be superior to the principal alternative of further increasing the farmgate producer price for raw milk. This is so because, while raising official farmgate prices might force peddlers to raise their prices to farmers and thereby induce a modest, if indirect supply response, raising farmgate prices per se would do nothing to ensure a redirection in flows of raw milk to the formal collection/processing system.

At present, the GOT projects total raw milk collection (from all sources) to increase from 167 million liters in 1988 to 283 million liters in 1991 (Annex B, Table 1). Given that the present public collection system does not seem to be competitive with those of the private milk peddlers, we do not see an increase of this magnitude occuring without specific incentives being offered to redirect milk flows to that collection system.

We estimate that the cost of the proposed farm-to-collection center milk transport payments would amount to about D 283,000 by 1991, over and above current GOT subsidy support for the milk collection system. What is more difficult to estimate at present, given the available data, is, first, how much more raw milk would be drawn out of the "illegal" peddler system and into the formal collection system; and, second, what would be the efficiency savings to the latter system from the increased capacity utilization.

If one step in the integration process is to offer the carrot of transport payments to peddlers, the second step must be the stick of effective enforcement of rewritten dairy legislation outlawing off-farm sales of raw milk to consumers unless strict health precautions are observed. In this regard, GOT enforcement actions would be least costly if concentrated primarily in urban areas with the objective of significantly raising the effective costs to illegal milk peddlers of delivering raw milk to consumers. The GOT should also mount consumer education programs which point out the health hazards associated with consumption of untreated raw milk and provide detailed instructions to consumers on steps to be taken to make such milk safe for family consumption.

In suggesting this approach, we stress that implementation of either of the steps by itself will negate the intended effect. Omission of milk transport payments removes any incentive for the milk peddlers to participate in the public collection system and, conversely, continued GOT failure to enforce existing sanctions on raw milk sales leaves the peddlers free to continue their current practices without penalties for endangering public health.

6. **Utilize the receipts derived from any tariffs on imported powdered milk and other dairy products to subsidize, as necessary, the costs of collecting raw milk from domestic producers**

The formal milk collection system is currently financed by receipts from a levy on farmers delivering their milk to the fixed collection centers; receipts from dairy processors; a government subsidy; and any miscellaneous receipts from local sales of raw milk and/or agricultural inputs and services. In 1988, the GOT subsidy of system operating costs amounted to an estimated D 680,000. Despite this subsidy, the collection system was still estimated to operate at an average loss of D 0.0075 per liter of milk handled.

Operating costs for the fixed collection centers are currently estimated at D 0.0451 per liter, of which D 0.0195 per liter (43%) are fixed costs associated with management of the centers. Increased use of existing center capacity would help to spread these fixed costs and reduce total operating costs per liter of raw milk handled.

Text Table 11 below compares the projected tariff receipts from Tunisian imports of powdered milk and the projected costs of subsidizing the public milk collection system under the present system.

Given current prices for powdered milk, tariff receipts are projected to be more than enough to pay the Dinar cost of subsidies for the public collection system. With a net differential projected at approximately D 5.2 million in 1991 over and above the full costs of the current collection subsidy system, the GOT would obviously also have sufficient funds available to finance the proposed transport margins in Alternative A-5 above.

In suggesting that tariff receipts could be used to cover current and projected subsidy payments for the formal collecton system, we wish to stress that such funding should not be viewed as a permanent substitute for initiatives aimed at eliminating the underlying inefficiencies in the public collection system. There is still considerable scope for increasing efficiencies -- i.e. lowering per liter costs -- by increasing the capacity utilization of existing centers, improving management throughout the system, and making better use of tanker trucks for direct deliveries to processors.

Text Table 10
Tariff Revenues from Milk Powder versus Collection Subsidies

	Year 1989	1990	1991
Projected Tariff Receipts			
Projected Powdered Milk Imports in Metric Tons	22,000	24,000	26,000
GATT Blend Price CIF Tunis in Dinars per Metric Ton	2,123	2,123	1,927
Projected Tariff Receipts in Millions of Dinars	7.006	7.643	7.515
Projected Subsidy Costs			
Volume of Raw Milk Collected in Millions of Liters	44	65	82
GOT Subsidy in Dinars per Liter	0.026	0.026	0.029
Total Subsidy Cost in Millions of Dinars	1.144	1.690	2.378

Source : Ministere de la Production Agricole et de l'Agro-Alimentaire, Strategie Pour la Production, La Collecte, et la Commercialisation du Lait, Tunis, Tunisie, Mars 1987

B. Policy Alternatives at the Processing Level

Policy alternatives considered in this section address the form and level of subsidization needed to support the processing of reconstituted milk. The first alternative considers the general question of dairy processors' access to subsidies. The other alternatives analyze proposed policies affecting the application of specific subsidies in the future.

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1. **Equalize conditions for participation in any subsidy payment system across all domestic dairy processing firms**

As discussed earlier in this report, the current GOT dairy processing subsidies are restricted to reconstituted milk products produced by the two government parastatals. All other potential processors of fluid milk products are excluded from participation.

In our review, we have found little to recommend such an approach to dairy policy. As a result of the current policy, private dairy processors have been effectively excluded from competing with the parastatals in the fluid milk market, where such competition is essential to lowering fluid milk processing costs and achieving a higher degree of market efficiency. These private dairy processors have demonstrated that they can compete very effectively with the parastatals on quality and cost grounds in processing other dairy products -- where considerably less or no protection is afforded to processors. Over time and under equalized market conditions, we see no inherent problems in their offering effective and overdue competition to the parastatals in the fluid milk market, especially on a regional basis.

We, therefore, see no reasons -- other than bureaucratic convenience and an implicit prejudice against private sector firms by some government officials -- for maintenance of this patently discriminatory subsidy system. Private firms should be given full and equal access to whatever dairy processing support mechanisms the government deems necessary to ensure the rational and equitable production of fluid milk products. Such participation, under conditions of strict quality, inventory and cost accounting standards for all parties, would strongly encourage greater regional competition in the production and distribution of a full range of fluid milk products, where now there exists only parastatal domination of the market without effective checks on processing costs.

If such a policy change were to be adopted, however, it would first be necessary to set in place new operating conditions which would put any continuing subsidy system on a financially tenable basis. This would mean introducing specifically targeted subsidies where input use and processing costs could be easily monitored. It would mean minimizing the need for lengthy and subjective GOT reviews of accounting data from the individual firms and taking steps to guarantee that participants would received their subsidy payments in a timely manner.

In addition, the financial situations of the parastatals would have to be reviewed to ensure that any short-term liquidity problems induced by deficiencies in the previous subsidy program were not carried over into any new system. Where short-term debts have accumulated due to the parastatals' forced reliance on the CGC subsidies, they would have to be refinanced and rescheduled over a longer term with GOT assistance.

Finally, in any new dairy processing subsidy program, the GOT would have to make it clear that the program's objective would be to process fluid milk at the lowest possible cost commensurate with certain medium-term economic and social goals -- particularly those related to improving the nutritional status of the very poor. It would also have to be made clear that government support payments would not be oriented toward financing, otherwise maintaining or bailing out

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manifestly inefficient fluid milk processors -- public or private.

Establishing the Base Case Scenario for the Remaining Policy Alternatives

Analyses of the remaining policy alternatives for the dairy processing sector are based on the following key assumptions:

DEMAND ASSUMPTIONS

- Per capita consumption in 1990 of 23.5 liters of reconstituted milk based on consumption in 1989;
- Population growth as projected by the Direction Generale de l'Agro-Alimentaire until 1991 and at 2.5 percent per annum thereafter;
- Constant consumer preferences for the three reconstituted fluid milk products as reflected by actual 1988 sales -- i.e. sterilized milk at 34 percent of total reconstituted milk sales; pasteurized milk at 21 percent; and UHT milk at 45 percent; and
- An own price elasticity of demand for reconstituted milk of -0.6 across all income groups.

SUPPLY ASSUMPTIONS

- Powdered milk input prices of D 0.278 per liter of fluid milk produced in 1990; dropping to D 0.252 per liter in 1991; and remaining constant at this level through 1995 (see Annex D Scenario 1 for complete assumption statements); and
- An annual inflation rate of 8 percent over the period on the costs of reconstituted milk processing and packaging.

A "base case" scenario -- incorporating the assumptions above and predicated on no changes in current GOT subsidy policies -- is presented in Annex D Scenario 2. It shows that, assuming that the GOT chooses to finance the rising costs of fluid milk processing from CGC subsidies only, total annual subsidy payments would be an estimated D 35 million in 1989, D 51.7 million in 1990 and would continue upward to D 71.6 million by 1995 -- i.e. total subsidy payments for the period of Dinars 353.4 million.

Given no change in consumer prices -- and hence constant per capita consumption -- total consumption of reconstituted milk would increase from 190 million liters in 1989 to 220.6 million liters by 1995.

The estimated level of government subsidization for the 1989 base case scenario is used hereafter as a benchmark in the subsequent analysis of various policy alternatives. Alternative policy

scenarios for the period 1990 to 1995 were then analyzed to determine:

- The level of GOT subsidy payments required to maintain the proposed policy;
- The estimated impacts on retail prices by fluid milk product; and
- The implications of the constant consumption assumption.

Policy alternatives were first examined individually -- i.e. Alternatives B 2 to B 5 and then grouped in two combinations of policies -- B 6 and B 7. The results of these calculations are detailed in Annex D Scenario 3 to Scenario 8.

2. Institute a freeze on the total subsidies paid to firms processing reconstituted fluid milk products

This policy alternative assumes that a cap is placed on total dairy processing subsidies to be paid by the GOT. For purposes of the analysis, the cap was fixed at D 35 million -- i.e. the estimated total subsidy payments to be paid out in 1989. The operative assumption of this alternative is that any processor losses incurred over and above the government subsidy cap would be passed on directly to consumers as higher retail prices for reconstituted fluid milk products. The implications for increases in retail prices over the period 1990 to 1995 are shown in Text Table 11.

As the Text Table shows for each reconstituted milk product, there is an immediate increase of 28 to 30 percent in retail price from 1989 to 1990, followed by more gradual price increases of 5 to 6 percent per annum through 1995. Assuming an own-price elasticity of demand of -0.6, average per capita consumption of reconstituted milk falls from 23.5 liters per capita in 1990 to 17.15 liters per capita in 1995 -- i.e. a drop in consumption of 27 percent over the period.

As a second round effect, the fall in consumer demand for reconstituted milk resulting from the retail price changes reduces the actual level of reconstituted milk output required by the para-statals below that initially postulated and, therefore, reduces the actual processing subsidies paid out for 1990 and beyond.

When this drop in consumption is factored into the scenario, the total level of subsidy payments over the six year period is reduced to D 165.98 million -- versus a level of D 210 million in payments under the B-2's alternative assumption of an annual subsidy cap of D 35 million, no changes in retail prices, and <u>constant</u> per capita consumption levels.

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Text Table 11
Estimated Retail Price Changes Resulting from a Freeze on Total Subsidy Payments for Reconstituted Milk Products at the 1989 Level

	Year					
	1990	1991	1992	1993	1994	1995
Retail Price	(Dinars per Liter)					
Pasteurized Milk	.334	.322	.340	.358	.378	.398
Sterilized Milk	.358	.348	.369	.391	.415	.440
UHT Milk	.417	.408	.429	.452	.477	.503

3. **Institute a progressive and phased reduction in fluid milk subsidy payments to dairy processing firms so as to eliminate all such subsidies by 1995**

Under this policy alternative, the subsidy cap is fixed at D 35 million at the end of 1989 and a five year phase-out of government subsidy payments is initiated in 1990 -- i.e. all subsidy payments to dairy processors are phased out by the end of 1994.

The total cost to the GOT of subsidy payments under this alternative would be D 70 million, as opposed to D 210 million for the subsidy freeze alone. But, this policy alternative leads to more dramatic retail price increases for consumers over the period, as shown in Text Table 12 below. Retail prices for reconstituted milk increase by approximately 40 percent from 1989 to 1990 and, thereafter, by 10 percent per annum through 1995.

With the assumption of a consumer response to the rising retail prices, there is an estimated 42.6 percent reduction in per capita consumption from 23.5 liters in 1990 to 13.5 liters in 1995. The secondary effects of this price response are that actual reconstituted milk output falls and the required level of subsidization is reduced from D 70 million to D 49.9 million for the period.

Text Table 12
Estimated Retail Price Changes Resulting from a 1989 Subsidy Cap and Phase-Out of all Dairy Processing Subsidies over Five Years

	Year					
	1990	1991	1992	1993	1994	1995
Retail Prices	(Dinars per Liter)					
Pasteurized Milk	.370	.392	.442	.492	.551	.568
Sterilized Milk	.394	.418	.471	.525	.607	.629
UHT Milk	.453	.478	.531	.586	.625	.648

4. **Modify the current GOT subsidy system to subsidize the raw materials needed to produce plastic milk bottles**

The high costs of the tetrabrik/tetrahedron packaging used at STIL -- and, particularly, its high foreign exchange component -- have led many critics to suggest alternative policies to encourage cheaper forms of packaging. Plastic containers are the cheapest practical packaging alternative and are already being used by TUNISIE LAIT.

Under this alternative, therefore, we postulate a complete conversion of STIL processing plants to use of plastic containers. [11] Plant conversion is estimated to take one year at a capital cost of D 30 million. It is further assumed that current subsidy policies remain in effect during the conversion period -- i.e. during 1990.

In its simplest form, this policy alternative would require that the GOT import the plastic granules needed for milk containers directly, store them in bonded warehouses, and furnish them to participating dairy processors according to negotiated production levels and schedules.

Assuming that the government absorbs at full capital and subsidy costs for this alternative with no increases in retail prices, the alternative would reduce the level of government support

[11] The technical feasibility of using plastic containers for UHT milk must be fully evaluated by technical milk processing specialists. If plastic containers cannot be used, the appropriate policy principle should be that subsidy levels for this milk should be set as if it was bottled in plastic containers. The additional processing costs for higher cost packaging would then be passed on to the consumers.

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required between 1990 and 1995 from an estimated D 353.4 million under the base case scenario to D 319.8 million (including the costs of plant conversion) -- i.e. a net saving of D 33.6 million due solely to the reduced costs of milk packaging.

A variant of this policy alternative would be for the government to limit subsidy payments to the costs of the plastic granules needed for plastic containers and the one-time costs of plant conversion. All additional processing cost increases would be passed on to the consumers after 1990.

Assuming a consumer response to the increases in retail prices, this alternative policy would reduce the required level government of subsidization to D 122.13 million over the period. Long-term savings to the government are much greater than this, however, as 67 percent of this amount is incurred in the first year. These costs are incurred first as a result of costs of plant conversion (D 30 million) and, second, due to the maintenance of subsidies during the conversion period (D 51.68 million). Subsidy costs, thereafter, fall dramatically averaging only D 8.1 million per annum.

Changes in retail prices as a result of this policy are presented in Text Table 13 below. The most important characteristic of this alternative is that there is a dramatic retail price increase of from 40 to 60 percent between 1990 and 1991. Thereafter, the retail price increases average 1 to 2 percent per annum. As a result of these increases, per capita consumption of reconstituted milk falls by 34.7 percent to 15.4 liters per capita.

A large proportion of the initial costs associated with this policy alternative could be reduced by combining it with either or both of the two policy alternatives considered above -- i.e. the subsidy cap at D 35 million and/or the gradual phasing out of the subsidy over five years. In each case, this would allow a reduction of the level of government subsidy payments required during the conversion period. It would also allow for a more gradual rise in retail prices, which would obviously be more acceptable to consumers. Each of these two combinations is considered below as Alternatives B 6 and B 7.

5. Modify the current government subsidy system for reconstituted fluid milk to subsidize only one type of fluid milk in one well-specified type of product packaging and limit distribution to the "poor"

Household budget surveys have shown the vast bulk of reconstituted milk is, in fact, consumed by higher income households. This is contrary to the stated objective of the GOT's subsidy program -- i.e. subsidizing increased milk consumption by "poor" Tunisian consumers. This being the case, we examined a policy which would limit distribution of subsidized reconstituted milk <u>only</u> to "poor" households. The objective would be to ensure that <u>only</u> the truly poor have access to a specific type of subsidized milk -- i.e. sterilized reconstituted milk in plastic bottles. This alternative would better conform to the government's own definition of milk as an "essential commodity" for disadvantaged Tunisians.

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In analyzing this alternative, a "poverty line" was used to define that proportion of the population which would require access to subsidized reconstituted milk. This line was based on an equivalent measure used in the 1985 Household Expenditure survey, where 7.7 percent of the Tunisian population was found to live below this popverty line. For this analysis the poverty line was defined as total per capita expenditures on food below Dinars 150 per annum in rural areas, and below Dinars 250 per annum in urban areas.

This alternative assumes that processors would be directed to produce only that quantity of sterilized reconstituted milk in plastic bottles necessary to satisfy consumption by this "poor" population. This would require a total production of only 3.325 million liters in 1990, rising to 3.771 million liters by 1995, according to current per capita consumption levels.

Text Table 13
Estimated Price Changes Resulting from Subsidization of Plastic Granules and Plant Conversion

	Year					
	1990	1991	1992	1993	1994	1995
Retail Prices	(Dinars per Liter)					
Pasteurized Milk	.260	.425	.433	.441	.450	.459
Sterilized Milk	.280	.446	.457	.468	.481	.495
UHT Milk	.320	.451	.458	.466	.475	.485

The total cost of subsidizing the reconstituted milk needed for these households for the period from 1990 to 1995 would be a modest Dinars 5.23 million -- far below even the most conservative estimates of subsidization under the current dairy policies. Even if the government wished to subsidize milk consumption for the "poor" at double or triple current per capita consumption levels, subsidy payments would be a miniscule fraction of current outlays.

The necessary corollary of this policy alternative, however, is removal of all other subsidy payments to processors for other reconstituted milk produced -- i.e. all Tunisian consumers above the poverty line would have to pay the full costs of processing for the milk they consumed. Given an own-price elasticity of demand of -0.6 for this milk, the consumer response would lead to a 54.4 percent drop in per capita consumption from 23.5 liters per annum in 1990 to 10.7 liters per annum in 1995 among these more affluent consumers.

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6. A cap on total subsidies, combined with conversion to plastic containers and full government subsidization of plastic granule imports

Under this scenario, the level of subsidization would be frozen at the D 35 million level in 1990. Total available subsidies would then be split into two categories: the actual costs of importing, warehousing and distributing the plastic granules and all other processor losses suffered due to the GOT's retail price policy for reconstituted milk. The costs of providing the plastic granules would be fully subsidized throughout the period. The annual difference between these costs and the total cap of D 35 million would then be available to cover a portion of the processors' other actual losses.

The total costs to government for this scenario for the period 1990 to 1995 (including the costs of plant conversion) would be D 240 million under an assumption of constant per capita consumption. If one includes the impacts of the consumer response to rising retail prices, D 206.89 million would be needed in government subsidy payments. Price increases under this scenario are less extreme in both absolute and relative terms, as shown below.

From 1989 to 1990, there would be retail price increases of 18 to 20 percent. Subsequent price increases would be on the order of 5 to 6 percent per annum. This more gradual pattern of price increases reduces the total decline in per capita consumption of reconstituted milk over the period to 20.9 percent -- i.e. from 23.5 liters per capita in 1989 to 18.6 liters per capita in 1995.

7. The phasing-out of all processing subsidies on reconstituted milk except those related to plant conversion and full subsidization of plastic granules

Under this scenario, the subsidization of other actual processing costs would be phased out over a five year period, leaving only GOT subsidies needed to provide plastic granules in effect beyond 1995. During the plant conversion period, a one year cap of D 35 million would be placed on total subsidy payments. After 1990, subsidy payments for other actual processing costs would be reduced to zero in a step-wise fashion over five years.

Total cost to government of this policy alternative for the period 1990 to 1995 would be D 192.63 million, assuming no reduction in per capita consumption of reconstituted milk. With the consumer price response, D 162.06 million would be needed.

Under this scenario, however, the associated retail price increases are more pronounced as shown in Text Table 15 below. From 1989 to 1991, the pattern of price changes is identical to that for the previous policy alternative but after 1991 retail prices increase more rapidly. The average increase during this period would be 8 to 10 percent per annum. As a result of these price increases, per capita consumption would drop to 16 liters per annum -- i.e. a total fall of 32.1 percent.

The pattern for changes in consumption could be modified easily by program administrators by manipulation of two key variables: i.e. the size of the initial subsidy cap selected for 1990 and

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the pattern of stepwise reductions in phasing out subsidy payments for all other processor losses between 1991 and 1995. A higher subsidy cap in 1990 and lower percentage reductions in subsidy payments in 1991 and 1992 would tend to even out retail price rises in the early years and, hence, reduce the annual demand contractions for reconstituted milk.

Text Table 14
Estimated Price Changes Resulting from a Subsidy Cap Plus Subsidization of Plastic Granule Imports

	Year					
	1990	1991	1992	1993	1994	1995
Retail Prices	(Dinars per Liter)					
Pasteurized Milk	.334	.299	.315	.331	.349	.367
Sterilized Milk	.358	.320	.339	.358	.380	.403
UHT Milk	.417	.325	.340	.356	.374	.393

C. Policy Alternatives at the Consumption Level

Most of the policy alternatives analyzed above have direct implications for consumers in that they involve changes in retail prices for reconstituted milk. In the previous section, however, these implications were shown as secondary to policy effects on the government and fluid milk processors. By contrast, this section addresses policy alternatives concerning consumers more directly.

1. Substantially reduce the differential in retail prices between lowest priced subsidized reconstituted milk and the lowest priced processed milk from local sources such that retail prices for the former are never less than 90 percent of prices for the latter

Judging by the prevalence of the milk peddler system in Tunisian, there is a substantial local demand for fresh milk. All persons interviewed for this study agreed that Tunisian consumers prefer local milk -- even in unprocessed raw form -- to the reconstituted milk products now produced. Most contended that, if local fresh processed milk were available, Tunisians would certainly be willing to pay a premium of, at least, 10 percent over the reconstituted milk prices to obtain it.

The current GOT dairy program, however, despite subsidizing the collection of local raw milk, provides no real incentives to dairy processors for production of fresh milk from local sources. Fresh processed milk cannot presently compete with reconstituted milk at the fixed retail prices

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set by the government. This is a very strange anomaly in Tunisian dairy policy, since processing of raw milk for fluid milk is generally considered to be the most profitable end-use for raw milk in most countries with significant dairy production.

A change in policy to allow for greater parity between fresh milk processed from local milk and reconstituted milk made from imported powdered milk could be justified for a number of reasons. Higher retail prices for reconstituted milk would reduce the level of subsidization needed. Legitimization of fresh processed milk would also provide greater incentives for the private processors to engage in fluid milk production, thus increasing the degree of competition in the processing sector. Local employment would be generated by increased dairy production and processing. Reducing use of increasingly costly imported powdered milk would save foreign exchange. Consumers would have access to a greater range of processed fluid milk products. And, finally, the government's dairy policy would have the internal logical economic consistency that it lacks at present.

Text Table 15
Estimated Price Changes Resulting from a Subsidy Cap, Subsidization of Plastic Granules and a Phasing Out of Other Processing Subsidies Subsidization of Plastic Granules

	Year					
	1990	1991	1992	1993	1994	1995
Retail Prices	(Dinars per Liter)					
Pasteurised Milk	.334	.290	.335	.377	.419	.459
Sterilized Milk	.358	.311	.359	.404	.450	.495
UHT Milk	.417	.316	.360	.402	.444	.485

To reflect known consumer preferences for fresh milk, analysis of this policy alternative assumes that subsidy support for reconstituted milk is limited to the lowest priced reconstituted milk product -- i.e. pasteurized milk. And, that the level of subsidization is set to ensure that retail prices for pasteurized reconstituted milk are never less than 90 percent of the full cost retail prices for processed fresh milk.

A comparison of unsubsidized retail prices for fresh sterilized and reconstituted pasteurized milk under Alternatives C 1, B 6 and B 7 is shown in Text Table 16. Given rising prices for imported powdered milk -- this condition would be met for the period 1990 to 1995 under Alternative C 1 in every year except 1990, as shown in Text Figure 1. A reduction of the retail price for pasteurized reconstituted milk to the requisite 90 percent level for 1990 would cost the government an estimated Dinars 1.5 million in subsidies.

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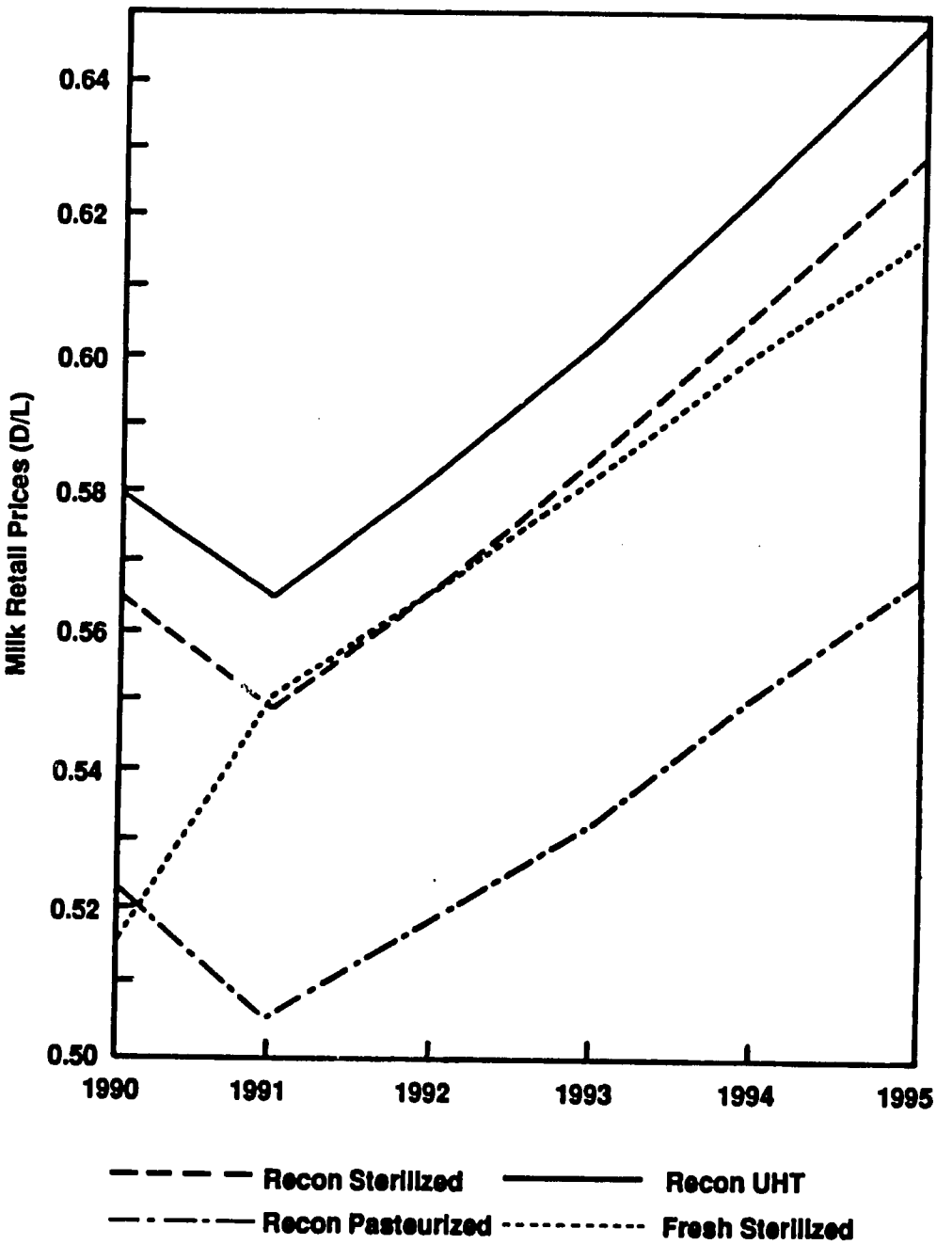
TEXT FIGURE 1
UNSUBSIDIZED RETAIL PRICES FOR PROCESSED FLUID MILK



The higher prices for reconstituted milk would lead to a reduction in the consumption of these products. The decline is estimated to be a substantial 54.4 percent over the period -- i.e. a decline to 10.7 liters per capita by 1995.

The 90 percent parity condition would not be met under Alternatives B 6 or B 7. Alternative B 7, however, comes closer to the target differential throughout the period and narrows the differential to about 25 percent by 1995 -- i.e. the lowest priced reconstituted milk would be priced at approximately 75 percent of the lowest priced fresh milk product.

Text Table 16
Estimated Retail Prices for Fresh and Reconstituted Milk Without Government Subsidies

	Year					
	1990	1991	1992	1993	1994	1995
Retail Prices	(Dinars per Liter)					
Fresh Sterilized Milk	.513	.551	.566	.581	.599	.617
90 Percent Target Level	.462	.496	.509	.522	.539	.555
Reconstituted Pasteurized Milk						
Under Alternative C 1	.523	.505	.519	.533	.551	.568
Under Alternative B 6	.334	.299	.315	.331	.349	.367
Under Alternative B 7	.334	.290	.335	.377	.419	.459

2. **Eliminate, over the longer term, all government regulation of retail prices for fluid milk products in domestic markets**

Complete deregulation of retail prices -- and abolition of GOT processing subsidies -- for all types of fluid milk would certainly open the dairy processing industry to greater competition between private and public dairy processors and between local and foreign suppliers of dairy products. Sales in local markets would be based on a product's cost and quality and on the retail services offered to the consumer. Consumers would benefit from a wider choice of fluid milk products and local processors would be forced to respond to consumer preferences in order to remain viable in the market. They would also have to be much more cost-conscious in their processing and marketing activities. Finally, the GOT would cut its disbursements for subsidy payments to zero over time.

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In sum, then, this policy would overcome many of the major deficiencies of the dairy policy by removing the present separation between dairy processors and consumers. Milk processing and distribution by parastatal monopolies -- whose operations respond only to bureaucratic regulations -- would be replaced by a system driven by competitive market forces.

In principle, then, we favor full deregulation of prices in the fluid milk market as the ultimate policy objective. Given Tunisia's current dairy situation, however, the phasing and timing of policy changes to achieve this objective is critical. Too sudden deregulation of reconstituted milk prices would certainly mean purchasing the anticipated benefits at high costs to consumers, dairy processors and the government.

Rapid price increases, reflecting full deregulation over a one or two year period, would lead to sharply reduced reconstituted milk consumption and heightened consumer discontent. Vulnerable consumer groups would be hard hit but the biggest problem would be that the largest drop in reconstituted milk consumption in absolute terms would occur among more affluent, urban consumers. And, these consumers are in an excellent position to mount effective political resistance to changes which, in their opinions, are too rapid and too personally costly.

Moreover, deregulation without a carefully thought out tariff policy would certainly introduce a greater degree of price variability for reconstituted milk products in local markets, directly mirroring current instability in world markets for powdered milk. Such variability would not only disrupt local markets, it would also introduce greater risks and uncertainties into plans for further development of dairy production in Tunisia.

Without an adjustment period, moreover, most Tunisian dairy processors would find themselves ill-prepared to offer the public a full range of fresh and reconstituted fluid milk for lack of adequate input supply systems, plant and fluid milk processing equipment, and/or product marketing systems.

In sum, then, we favor full deregulation of fluid milk market in Tunisia, given an appropriate period for market participants to react to the policy adjustments. We see the period from 1989 to 1995 as long enough to facilitate most of the necessary transition activities by milk producers, dairy processors, consumers, and government.

IX. SUMMARY CONCLUSIONS AND RECOMMENDATIONS FOR DAIRY POLICY MODIFICATION

A. Summary Conclusions

Key parameters of the policy alternatives are summarized in Text Table 17 below. These results are accompanied by Text Figure 2 which shows the pattern of retail price changes resulting from each policy alternative. Our analyses only cover the period from 1989 to 1995 because this would be the time of greatest policy adjustments.

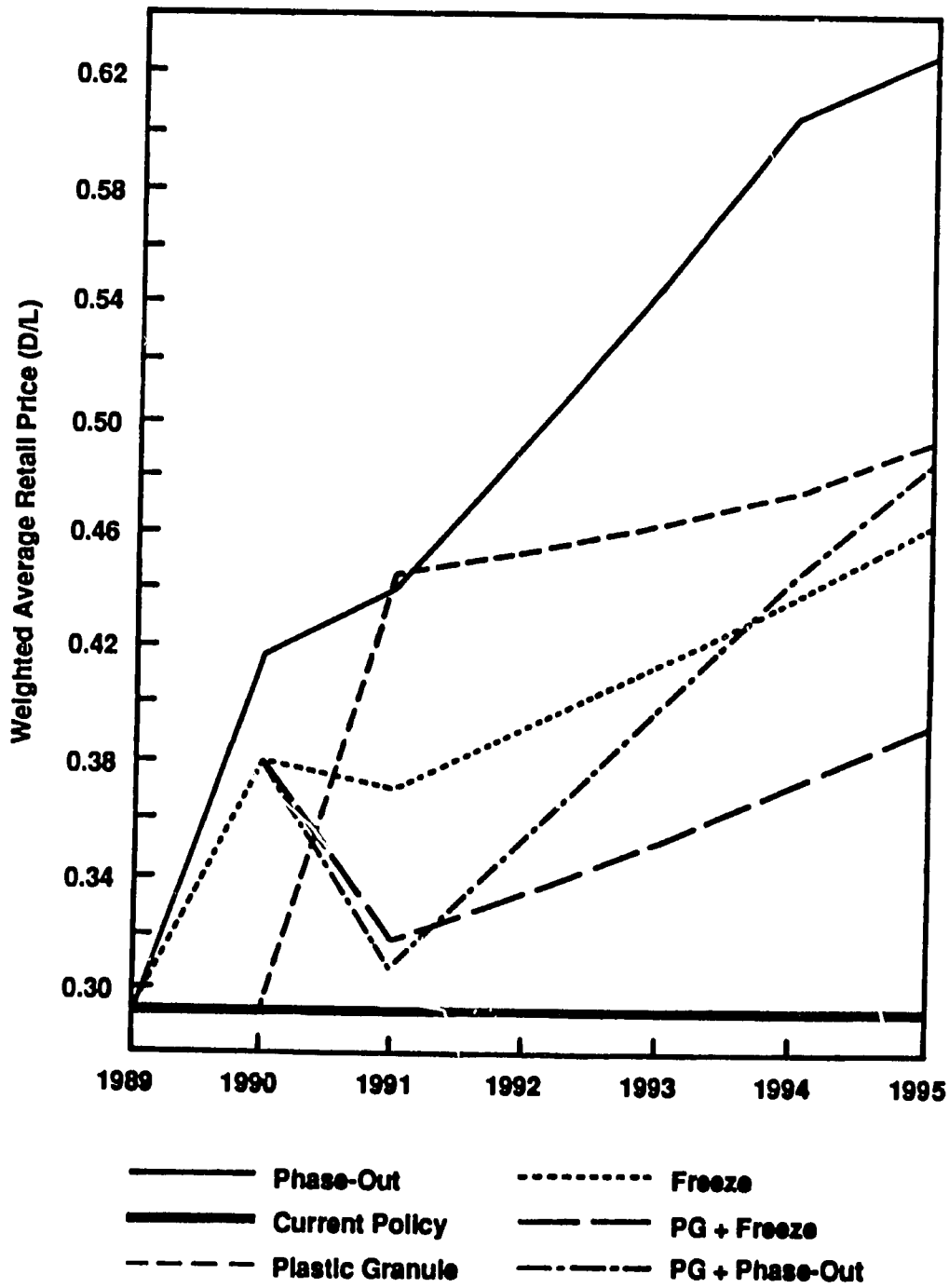
Between the extremes of continuing the GOT's present policy and phasing out all subsidies for reconstituted milk, there is a range of options which permit policy makers to choose between reducing the level of government subsidy payments and increasing retail prices to consumers. These options basically combine the conversion of all fluid milk packaging to plastic bottles with either capping or phasing out of all other subsidies to fluid milk processors. Beyond 1995, the cost of these "combinations" would be even lower as they would not include the initial costs of conversion.

An attempt to examine the impacts of increased prices on various socio-economic groups was thwarted by lack of detailed data on consumption patterns and price elasticities. Some crude comparisons were possible however based on the most recent Household Expenditure Survey conducted in 1985. However, while this survey reports household expenditures on eggs and dairy products, unfortunately there is no means of determining the proportion of this expenditure which is allocated to fluid milk in general and reconstituted milk in particular.

Nevertheless examined in aggregate it is apparent that these expenditures increase dramatically by income group, and from rural to urban areas. Within income groups these expenditures increase from 2.4 Dinars/capita/annum for households with annual expenditures below 100 Dinars/capita/annum to 43.4 Dinars/capita/annum for households which spend more than 800 Dinars/capita/annum. Across regions expenditures increase from 10.3 Dinars/capita/annum in rural areas to 31.2 Dinars/capita/annum in the larger urban centers.

Assuming that all socio-economic groups allocate a constant proportion of their household expenditures to reconstituted milk these data show that consumption of reconstituted milk increases significantly with income. The impact of increased prices on consumption is thus likely to be highest among the higher income groups since the change in demand starts from a much higher base -- despite the fact that own-price elasticities are likely to be higher among lower income groups. On this basis, we concluded that low income groups would not be unduly disadvantaged by the price increases envisaged in these policy scenarios.

TEXT FIGURE 2
PRICE RESPONSE TO POLICY CHANGES



Text Table 17
A Comparision of Policy Alternatives for the Tunisian Dairy Sector

Policy Alternative	Total Cost 1990 to 1995 [a]	Percent Increase in Retail Prices [b]	Percent Fall in in Per Capita Consumption [c]
		(million Dinars)	
No Policy Change	353.37	0	0
Subsidy Cap at Dinars 35 Million	165.98	56.5	27.0
Phase Out of Subsidies Over Five Years	49.92	112.6	42.6
Conversion to Plastic Containers with GOT Subsidizing Only Plastic Granules	122.13 [d] [e]	64.3	34.7
Subsidy Cap Plus Conversion to Plastic Containers	206.89 [e]	33.0	20.9
Subsidy Cap, Phase Out and Conversion to Plastic Containers	162.05 [e]	64.3	32.1

Footnotes :

[a] Assumes a fall in consumption as consumer response to rising retail prices

[b] Based on the weighted average price over the period 1989 to 1995

[c] Over the period 1989 to 1995

[d] Conversion to plastic containers with no other policy changes would reduce total subsidy costs to Dinars 319.8 and would result in no changes in retail prices or consumption

[e] Costs include Dinars 30 million for plant conversion

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B. Recommendations

Our analyses of the proposed alternative dairy policies indicate that the present situation would be greatly improved by a phased program of policy reforms. Below we have indicated those reform components we believe merit consideration by the Government of Tunisia -- and a preliminary phasing schedule for such reforms.

1. Modify Existing Laws and Statutes to Declassify All Types of Fluid Milk as "Essential" Consumer Commodities

Legislation and executive actions necessary to accomplish the declassification should commence in 1989 and be completed in early 1990.

2. Install a Formula Pricing System for Domestic Raw Milk Linked to Powdered Milk Prices in International Markets

The optimal price formula in our opinion is a four year moving average of the GATT minimum band prices as shown in Annex D Scenario 1. The formula pricing system should be initiated for domestic raw milk pricing in 1990 based upon price information contained in the International Dairy Arrangement's Tenth Annual Report of The World Market for Dairy Products 1989, due to be issued by the GATT in Geneva in November 1989.

3. Equalize Conditions for Importation of Dairy Products Across All Dairy Processors

This reform -- to be initiated in 1990 -- would include equalizing import permit conditions across all dairy processing firms in Tunisia -- or dropping them altogether -- and abolishing any quantitative restrictions on dairy product imports. Tariffs and taxes on imported dairy products would be retained and would apply uniformly to all importers.

4. Modify Existing Legislation to Create a Positive Role for Legal Milk Peddlers in the Dairy Industry

This reform would entail, at least, five discrete policy actions:

a. Legalizing private peddler deliveries of raw milk to fixed collection center and dairy processors;

b. Initiating specific milk peddler transport margins for farm to fixed center and farm to dairy processor milk deliveries;

c. Mounting a consumer education effort on the dangers of consuming untreated raw milk, with detailed instructions on the treatments necessary for safe consumption; and

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d. Rewriting existing legislation to detail the specific health precautions which must be observed by vendors in any sales of raw milk to consumers; and

e. Vigorous government enforcement of all rewritten statutes pertaining to sales of raw milk to consumers.

These actions should be initiated in 1990.

5. **Fund Subsidization of the Public Milk Collection Systems, including the Proposed Farm to Fixed Center/Processor Transport Margins, with Funds Earmarked from Tariff Receipts on Powdered Milk Imports**

Transfer mechanisms to affect this subsidization should be put in place in 1990. Suggested levels for transport margins are D 0.010 per liter for milk deliveries from farm to fixed collection center and D 0.020 per liter for deliveries from farm to processor.

6. **Initiate Full and Equal Access of Private Dairy Processors to Whatever CGC System of Subsidies and Other Incentives is Retained for Processing and Distribution of Reconstituted Milk Beyond 1990**

Conditions governing private processor participation in the new subsidy program should be finalized and announced in 1990. Actual participation should start as of 1 January 1991.

7. **Conduct Full and Detailed Reviews of the Financial Situations of STIL and TUNISIE LAIT to Ensure that Short-Term Liquidity Problems Induced by Deficiencies in the Current CGC Subsidy Program are Rectified -- with One Time Government-Sponsored Refinancing, as Necessary -- to Ensure that the Accumulated Debts are not Carried over into any New Subsidy Program**

Reviews and necessary refinancing at STIL and TUNISIE LAIT should be completed before 31 December 1990.

8. **Install a Cap on Total Fluid Milk Processing Subsidies to be Paid in 1990 and Thereafter**

The cap -- or freeze -- on total fluid milk processing subsidies to be paid in 1990 should be based upon the total subsidy payment incurred in 1989 --i.e. approximately Dinars 35 million. The cap should be initiated for 1990 CGC fluid milk subsidy payments.

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9. **Install a Government-Operated System to Purchase, Warehouse and Distribute to Participating Processors the Plastic Granules Needed for Production of Plastic Milk Containers on Negotiated Schedules**

The necessary supply system should be designed and put in place by 31 December 1990. Reconstituted milk production levels and plastic granule supply schedules should be negotiated with all participating fluid milk processors by the same date. Full-scale subsidization and distribution of plastic granules should start as of 1 January 1991.

10. **Initiate and Fund a One Year Reconversion Program at STIL to Convert All Milk Packaging to Plastic Containers**

Plant reconversion at STIL should be completed before 31 December 1990.

11. **Split Total Annual Subsidy Payments for Processors into Two Groups:**

    A. **Funds to Provide Plastic Granules at Full Subsidization**; and

    B. **Residual Funds under the Cap to Partially Cover the Processors' Losses Induced by GOT Fixing of Retail Prices for Reconstituted Milk Products**

CGC administrative and accounting modifications to accomodate both reallocation of total processing subsidies into the two groups and inclusion of any new fluid milk processors into the subsidy program should be completed before 31 December 1990.

12. **Publicly Announce Complete Details of the New Fluid Milk Subsidy/Price Program to Induce Participation from Private Dairy Processors and Inform the Public of All Anticipated Reforms**

Public announcement(s) concerning the changed rule of new fluid milk subsidy/price program, all CGC operating conditions, and government projections of increases to be expected in retail prices for reconstituted milk products should be made in the second half of 1990.

13. **Phase out the Second Group of Subsidy Payments Over the Period 1991 to 1995 and Simultaneously Raise Retail Prices for Reconstituted Milk Products by Commensurate Amounts**

Phase out of the second group of subsidy payments should be accomplished in five stepwise reductions to be announced and implemented over the period from 1 January 1991 to 31 December 1995.

14. Beyond 1995, Retain Only Processor Subsidy Payments on Plastic Granules for Fluid Milk Packaging and Evaluate the Implications of a Final and Complete Phase Out of All Milk Processing Subsidies

Further actions to phase out the remaining subsidy payments for plastic granules should be considered and implemented, as appropriate, after 1 January 1996.

ANNEX A

TERMS OF REFERENCE FOR THE DAIRY PROCESSING CASE STUDY

TERMS OF REFERENCE FOR THE DAIRY PROCESSING CASE STUDY

I. BACKGROUND INFORMATION

The APIP project is undertaken in order to serve as a basis of support for the conception of policies and putting into operation appropriate policies. It does so by undertaking economic studies and by reinforcing the capacity of analysis for concerned government organizations.

The milk industry, dominated by two large parastatal organizations (STIL, Societe Tunisienne d'Industrie de Lait is the number one, followed by TUNISIELAIT) is now of specific concern. Tunisia is seriously dependent upon imported milk and the importation is controlled and in the hands of these two parastatals. Many documents and much descriptive material already exists on the milk industry. Agricultural Structural Adjustment documents call for a reexamination of the role of these two parastatals and an examination of the possibility of an expanded role for the private sector in many aspects of the milk and milk products industry. Therefore, this study was called for.

II. OBJECTIVES OF THE STUDY

A. Sectoral Review and Principal Policy Questions

As a general policy, Government is in favor of encouraging milk production and milk processing within Tunisia, but on an economic and rational basis. Government is in favor of strengthening protectionist measures against dumping (the importation of heavily subsidized powdered milk). This as a way of encouraging local production.

It is obvious that milk costs a lot of money to the Caisse de Compensation, though powdered milk is subsidized before arriving to Tunisia. Researchers must describe the entire subsidy system and analyse the incentives to better production and local consumption.

Government is now requiring "restructuring plans for the key industries and their subsequent implementation". The following are the key policy points under review, and which must be considered by the team undertaking this analysis:

1. Progressive, gradual, smooth elimination of milk subsidies. The current practice is a "pass through" of subsidies on imported, donor-supplied, milk powder to the two main parastatals. In spite of all, the cost price needs to be subsidized. How to reduce processing cost?

2. Reducing the difference in levels of protection of industry relative to agriculture by submitting imports of milk to a variable tariff (to counter the low dumping price) and maintaining effective protection at a level of at least 25 percent. Researchers must compare such prices with local production costs.

3. Elimination of the quantitative restrictions on importation of powdered milk destined for industries producing derived products. A timing must be proposed.

4. Reducing taxes on cheese.

B. **Specific Questions to be Addressed Concerning the Various Stages of Processing**

1. **Processing**

The focus must be on processing, not on milk production.

-- Processing appears to be very costly in Tunisia. Why?

-- Are the two parastatals' processing costs out of line? Compared to other countries in the region? Due to what inefficiencies? Finance? Management? Outdated technology? Researchers must examine cost structures.

-- Why are private companies not doing the majority of the processing? What role does subsidized imported powdered milk (available only to the two parastatals) play in determining the entry and profitability of private processors? What are the laws and regulations surrounding this issue and how should they be changed?

2. **Powder**

Both STIL and TUNISIELAIT process imported powdered milk. This powdered milk is heavily subsidized by various donors before arriving in Tunisia. After it is reconstituted (regenere) another subsidy is applied by the Caisse de Compensation.

-- One question is "Why is no (unsubsidized) powdered milk for sale in Tunisia?"

-- Are these two the only companies permitted to import powdered milk and reconstitute it? Should others be permitted?

-- Some new milk processing establishments are under construction, but it appears they will be obliged to process only local, fresh milk. They must be at a considerable disadvantage. What should be done about this?

3. **Milk Collection**

There exist many government operated collection points around the country. Are they well managed? Should they be turned over to private companies or milk coops? How? Sold? Rented? To whom and on what basis? How does the parallel market (non-government channels) for milk operate?

4. **Packaging**

The packaging material Tetrapak (paper carton) costs almost one third of the consumption price of a liter of reconstituted milk. Why? Would greater competition bring down this cost? What other packaging options might be explored?

5. **Subsidies**

The powdered milk comes in subsidized below production cost in Europe (difficult for local producers to compete with this). Then the final reconstituted milk is subsidized. Double subsidy. What should be done about all this? What might be the consequences for consumers of a decrease in subsidies?

III. REPORTS AND DELIVERABLES

Timing of the study: three months, beginning in November 1, and ending in late January.

Consultants must submit a provisional report before leaving Tunisia, not to exceed 50 pages and containing findings, conclusions and recommendations, this must be during the last week.

This report must contain an executive summary, concise and precise, covering the principal findings, conclusions and recommendations.

The provisional report will be reviewed by administrative offices within the period of one month since the French version of the executive summary has been received.

The provisional or draft report will also be reviewed by Abt Associates.

Clarifications and additions to the report are to be completed by the team conducting the study within one month following.

Before departing Tunisia, the experts are to debrief the DGPDIA and, if requested, the USAID, presenting their principal conclusions and recommendations.

IV. TASKS

A. At the beginning of the activity:

1. The elaboration of a plan of implementation covering the entire period of the study with details about the tasks of each individual; and,

2. Review and synthesis of previous studies, if such previous studies exist, as well as the collection and analysis of available statistics.

B. Meet with DG and USAID upon arrival.

C. Brief DG and USAID on preliminary findings before departure.

APPENDIX

V. STAFFING REQUIREMENTS

A. Staff Requirements

TWO AGRICULTURAL ECONOMISTS: (FOREIGN) with experience in the livestock or dairy sector. Experienced at undertaking case studies of agro-industrial enterprises. Familiar with financial analysis, thorough understanding of the role and impact of taxes and subsidies. Must possess an understanding of marketing chains and channels. Experience with international trade in livestock/dairy products and current policies and practices in the EEC in particular. Ph.D. level required.

Time Required: approximately one to two months for both.

Abt Associates proposes Drs. John Eriksen and Greg Sullivan of Ithaca International Limited, one of its subcontractors.

ONE BUSINESS MANAGEMENT/BUSINESS ECONOMICS EXPERT: (TUNISIAN): Formal training and professional experience at using the classic Case Study method of analysis. Experience with conducting case studies, especially in the area of processed agricultural products would be highly desirable but not required. Understanding of banking, finance, analysis of cash-flows and other financial ratios necessary. Ability to write reports quickly and accurately. Facility with English would be highly desirable but not required. Experience with privatisation questions would be desirable but not required. A thorough understanding of the laws and regulations surrounding parastatal organizations in Tunisia is desirable. Ability to interpret legal framework in the context of policy recommendations for government is desired. Ph.D. or equivalent required.

Time Required: Approximately one to two months.

Abt Associates proposes that its subcontractor, the Institut Superieur de Gestion, supply this business management expert. The specific proposal is for Mr. Mehri Boubaker.

ONE RESEARCH ASSISTANT: This position is for a Master's level assistant to help gather, interpret and analyze data for the two more senior researchers. The position could be filled by an economist, an agricultural economist, or a business administration expert. The person needed should have previous experience with rapid analysis using standard tools of economics and business management. Ability with English would be desirable but not necessary. French speaking, reading and writing required.

Time Required: two months.

DGPDIA staff involved will include:

-- Chef de File

-- Members of Working Group: X, Y, Z

All persons performing work under this TOR must be able to read and understand French at the FSI 3 level.

B. Roles and Responsibilities

1. Role of the DGPDIA

While the Director General of the DGPDIA is the overall project director (for this and all other studies) he has many other functions to manage within and outside of his organization.

2. Role of Abt Associates

The members of the short term team will be under the direct technical supervision of the Resident Advisor of Abt Associates, Dr. Roger Montgomery.

3. The Role of USAID

The role of USAID is an advisory and support one. As the prime contract is with the USAID, however, there will be continuous coordination with the USAID including an initial briefing and a final debriefing.

4. Relationships with Other Institutions

This project is in support of Agricultural Structural Adjustment and as such will benefit from close collaboration with the World Bank. Tunisian institutions concerned/implicated in the study: STIL, TUNISIE LAIT,

OFFICE DE L'ELEVAGE, DIRECTION DES PRIX ET CONTROLE ECONOMIQUE, MINISTERE DU PLAN, MINISTERE DES FINANCES, DIRECTION GENERAL AGRO-ALIMENTAIRE.

C. Logistics

Logistical support will consist of a vehicle and driver for local travel (one of the project vehicles), subject to availability.

The team responsible for undertaking this study will need to provide their own computers, software/diskettes until such date as project computers become available.

The duty post is Tunis, Tunisia.

D. Level of Effort

Agricultural Economist	:	1.5 months (approximately)
Business Management Expert	:	1.5 months (approximately)
Research Assistant	:	2 months.

ANNEX B

STATISTICAL AND OTHER TABLES

ANNEX B TABLE 1
NATIONAL DAIRY SITUATION AS PROJECTED IN THE VII ECONOMIC AND SOCIAL DEVELOPMENT PLAN FOR TUNISIA
1988-1991

	Year			
	1988	1989	1990	1991
	(Metric Tons)			
Domestic Milk Production	388,000	428,000	471,000	523,000
Milk Collection :				
-- From Collection Centers and Organized Truck Routes	25,000	44,000	65,000	82,000
-- From Large Dairy Farms	73,000	98,000	114,000	145,000
-- By Other Means of Collection	18,000	25,000	41,000	56,000
-- Total Milk Collected	116,000	167,000	220,000	283,000
Milk Collected as a Percent of Total Supply	29.9	39.0	4[illegible].7	54.1
Projected Dairy Product Consumption:				
Population of Tunisia in Millions	7879	8075	8276	8503
Projected Annual Per Capita Consumption of Dairy Products in Kilograms of Milk Equivalent	82	82	82	82
Total Consumption in Metric Tons of Milk Equivalent	647,000	662,200	678,700	697,000
Of Which:				
Consumption of Fluid Milk in Metric Tons of Milk Equivalent	422,028	425,217	428,626	431,555
Fluid Milk as a Percent of Total Consumption	64.5	63.6	62.9	61.9
Consumption of Yogurt in Metric Tons of Milk Equivalent	5[illegible],132	55,783	58,554	61,445
Yogurt as a Percent of Total Consumption	8.2	8.4	8.6	8.8
Consumption of Cheese in Metric Tons of Milk Equivalent	42,240	45,120	48,960	52,800
Cheese as a Percent of Total Consumption	6.7	7.0	7.3	7.6
Consumption of Butter in Metric Tons of Milk Equivalent	129,600	136,080	142,560	151,200
Butter as a Percent of Total Consumption	20.6	21.0	21.2	21.7
Projected Imports of Dairy Products in Metric Tons of Milk Equivalent	259,000	234,200	207,700	174,000
Projected Percent of Total Consumption from Domestic Milk Production	59	64	69	75

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

ANNEX B TABLE 2
ESTIMATED PER CAPITA CONSUMPTION OF DAIRY PRODUCTS IN TUNISIA
1982-1987

Product	Year 1982	1983	1984	1985	1986	1987
			(Kilograms per Year)			
Fluid Milk	14.4	16.6	17.7	18.8	20.4	21.8
Cheese	0.54	0.48	0.47	0.40	0.47	0.63
Butter	0.45	0.69	0.71	0.45	0.63	0.66
			(Pots per Year)			
Yogurt	44.8	51.1	53.0	54.2	54.3	55.2
			(Kilograms of Milk Equivalent per Year)			
Total Processed Dairy Products	36.1	42.4	43.9	38.9	44.9	48.7
Total Dairy Products From Sources Other Than Dairy Processors	36.9	32.6	33.1	40.1	36.1	33.3
Total Dairy Products	73.0	75.0	77.0	79.0	81.0	82.0 [1]

Source: Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

Note : [1] According to the Direction Generale de l'Agro-Alimentaire, this implies a total 1987 national consumption level for dairy products of 630,000 metric tons in milk equivalent. The statement is also made in the source material that the above figures indicate a 2.5 percent annual rate of growth in consumption per capita over the period 1982 to 1987.

ANNEX B TABLE 3

TUNISIAN PER CAPITA EXPENDITURES ON FOOD PRODUCTS BY REGION FOR 1980 AND EXPENDITURE CLASS FOR 1985

Food Product	Northeast Region			Northwest Region	Central Region		
	Governorat of Tunis	Other Governorats	Northeast Regional Total	Northwest Regional Total	Center East	Center West	Central Regional Total
	(Dinars per Capita)						
Cereals	21.5	21.1	21.3	18.7	21.3	20.8	21.0
Beans, Peas and Lentils	4.8	3.5	4.1	2.3	4.2	2.5	3.3
Vegetables	22.5	17.1	19.9	13.6	19.4	11.2	15.0
Fruits and Nuts	10.2	6.7	8.5	5.0	6.0	4.7	5.3
Meat and Poultry	31.0	19.5	25.5	16.6	20.6	15.4	17.8
Fish	3.9	1.8	2.9	0.3	5.9	0.5	3.0
Milk, Dairy Products and Eggs	16.5	10.0	13.4	7.2	8.5	6.2	7.3
Sugar and Sugar Products	5.6	4.3	5.0	3.9	4.0	3.4	3.6
Fats and Oils	7.1	6.9	7.0	5.2	11.2	6.1	8.5
Food and Drinks Outside the Home	19.0	11.0	15.2	9.3	11.3	6.7	8.9
Total Per Capita Expenditures	142.1	101.9	122.8	82.1	112.4	77.5	93.7

Food Product	Northeast Region			Northwest Region	Central Region		
	Governorat of Tunis	Other Governorats	Northeast Regional Total	Northwest Regional Total	Center East	Center West	Central Regional Total
	(Percent)						
Cereals	15.1	20.7	17.3	22.8	19.0	26.8	22.4
Beans, Peas and Lentils	3.4	3.4	3.3	2.8	3.7	3.2	3.5
Vegetables	15.8	16.8	16.2	16.6	17.3	14.5	16.0
Fruits and Nuts	7.2	6.6	6.9	6.1	5.3	6.1	5.7
Meat and Poultry	21.8	19.1	20.8	20.2	18.3	19.9	19.0
Fish	2.7	1.8	2.4	0.4	5.2	0.6	3.2
Milk, Dairy Products and Eggs	11.6	9.8	10.9	8.8	7.6	8.0	7.8
Sugar and Sugar Products	4.0	4.2	4.1	4.7	3.6	4.4	3.8
Fats and Oils	5.0	6.8	5.7	6.3	10.0	7.9	9.1
Food and Drinks Outside the Home	13.4	10.8	12.4	11.3	10.0	8.6	9.5
Total Per Capita Expenditures	100.0	100.0	100.0	100.0	100.0	100.0	100.0

ANNEX B TABLE 3 (Continued)

Southern Region

Food Product	Governorat of Sfax	Other Governorats	Southern Regional Total
	(Kilograms per Capita)		
Cereals	16.8	21.5	19.7
Beans, Peas and Lentils	3.7	3.8	3.7
Vegetables	14.3	15.1	14.8
Fruits and Nuts	6.5	5.1	5.7
Meat and Poultry	23.2	23.1	23.1
Fish	7.6	1.9	4.0
Milk, Dairy Products and Eggs	9.0	7.4	8.0
Sugar and Sugar Products	4.3	4.7	4.6
Fats and Oils	8.1	9.2	8.8
Food and Drinks Outside the Home	11.5	10.1	10.6
Total Per Capita Expenditures	105.0	101.9	103.0

Southern Region

Food Product	Governorat of Sfax	Other Governorats	Southern Regional Total
	(Percent)		
Cereals	16.0	21.1	19.1
Beans, Peas and Lentils	3.5	3.7	3.6
Vegetables	13.6	14.8	14.4
Fruits and Nuts	6.2	5.0	5.5
Meat and Poultry	22.1	22.7	22.4
Fish	7.2	1.9	3.9
Milk, Dairy Products and Eggs	8.6	7.3	7.8
Sugar and Sugar Products	4.1	4.6	4.5
Fats and Oils	7.7	9.0	8.5
Food and Drinks Outside the Home	11.0	9.9	10.3
Total Per Capita Expenditures	100.0	100.0	100.0

Source : Enquete Nationale sur le Budget et la Consommation des Menages, 1985

ANNEX B TABLE 3 (Continued)

TUNISIAN PER CAPITA EXPENDITURES ON FOOD BY HOUSEHOLD EXPENDITURE GROUP
1985

Food Product	Household Expenditure Group by Dinars Spent on Food per Capita per Year						
	< D 100	D 100-150	D 150-250	D 250-350	D 350-500	D 500-800	> D 800
	(in Dinars)						
Cereals	15.8	20.3	24.8	28.0	30.6	33.5	39.7
Beans, Peas and Lentils	1.3	2.2	3.7	5.3	7.1	9.5	11.6
Vegetables	10.8	15.2	21.3	27.6	34.8	43.6	55.5
Fruits and Nuts	1.8	3.1	4.9	7.5	10.0	15.6	27.1
Meat and Poultry	6.2	12.3	20.9	31.8	43.9	60.9	89.7
Fish	0.1	0.5	1.4	3.2	5.2	8.9	18.5
Milk, Dairy Products and Eggs	2.4	4.6	8.3	13.5	19.2	28.0	43.4
Sugar and Sugar Products	2.2	2.7	3.5	4.4	5.3	6.5	8.7
Fats and Oils	4.1	5.5	7.7	9.3	11.6	14.4	18.7
Food and Drinks Outside the Home	3.9	6.1	10.9	18.2	27.3	36.7	67.7
Total Per Capita Expenditures	48.6	72.5	107.4	148.8	195.0	257.6	380.6

Food Product	Household Expenditure Group by Dinars Spent on Food per Capita per Year						
	< D 100	D 100-150	D 150-250	D 250-350	D 350-500	D 500-800	> D 800
	(in Percent)						
Cereals	32.6	28.0	23.1	18.8	15.7	13.0	10.4
Beans, Peas and Lentils	2.6	3.1	3.5	3.5	3.7	3.7	3.0
Vegetables	22.2	21.0	19.9	18.5	17.8	16.9	14.6
Fruits and Nuts	3.7	4.3	4.6	5.0	5.0	6.1	7.1
Meat and Poultry	12.9	16.9	19.4	21.4	22.5	23.6	23.6
Fish	0.3	0.7	1.3	2.1	2.7	3.5	4.9
Milk, Dairy Products and Eggs	4.9	6.3	7.6	9.1	9.9	10.9	11.4
Sugar and Sugar Products	4.4	3.8	3.3	3.0	2.7	2.5	2.3
Fats and Oils	8.4	7.5	7.2	6.3	6.0	5.6	4.9
Food and Drinks Outside the Home	8.0	8.4	10.1	12.3	14.0	14.2	17.8
Total Per Capita Expenditures	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent of Population by Expenditure Group	4.0	9.1	21.7	18.5	18.2	16.1	12.4

Sources: Institut National de la Statistique, Enquete Nationale sur le Budget et la Consommation des Menages, Ministere du Plan, Tunis, Tunisia, 1980 and 1985

ANNEX B TABLE 4
TUNISIAN PER CAPITA CONSUMPTION OF DAIRY PRODUCTS BY REGION
1980

Dairy Product	Northeast Region: Governorat of Tunis	Northeast Region: Other Governorats	Northeast Region: Northeast Regional Total	Northwest Region: Northwest Regional Total	Central Region: Center East	Central Region: Center West	Central Region: Central Regional Total
	(Kilograms per Capita)						
Fluid Milk [1]	60.9	42.5	52.1	52.1	26.9	38.7	33.1
Condensed Milk	0.6	0.9	0.7	0.4	0.3	0.7	0.5
	(1.5) [2]	(2.3)	(1.9)	(1.1)	(0.8)	(1.7)	(1.3)
Powdered Milk	0.15	0.09	0.12	0.06	0.06	0.13	0.10
	(1.3)	(0.8)	(1.1)	(0.6)	(0.6)	(1.2)	(0.9)
Yogurt	4.1	1.7	2.9	0.9	1.5	0.7	1.1
	(4.3)	(1.8)	(3.1)	(1.0)	(1.6)	(0.7)	(1.2)
Cheese	0.23	0.08	0.16	0.02	0.06	0.06	0.06
	(1.4)	(0.5)	(1.0)	(0.1)	(0.3)	(0.3)	(0.3)
Butter, Smen and Other Products	1.4	0.8	1.1	0.5	0.6	0.4	0.5
	(30.7)	(17.6)	(24.5)	(10.6)	(12.3)	(9.0)	(10.6)
Total Consumption in Milk Equivalent	100.1	65.5	83.7	65.5	42.5	51.6	47.4

Dairy Product	Southern Region: Governorat of Sfax	Southern Region: Other Governorats	Southern Region: Southern Regional Total
	(Kilograms per Capita)		
Fluid Milk [1]	24.5	22.6	23.3
Condensed Milk	0.5	1.0	0.8
	(1.3) [2]	(2.4)	(2.0)
Powdered Milk	0.12	0.14	0.13
	(1.1)	(1.3)	(1.2)
Yogurt	2.4	1.5	1.9
	(2.5)	(1.6)	(2.0)
Cheese	0.05	0.20	0.14
	(0.3)	(1.2)	(0.8)
Butter, Smen and Other Products	0.3	0.5	0.5
	(7.0)	(11.8)	(9.9)
Total Consumption in Milk Equivalent	36.7	40.9	39.2

Source : Enquete Nationale sur le Budget et la Consommation des Menages, 1985

Notes : [1] Included both reconstituted and domestic whole milk products.

[2] Quantities in parentheses are in milk equivalents.

ANNEX B TABLE 5
ESTIMATED ON-FARM CONSUMPTION OF DAIRY PRODUCTS FROM DOMESTIC RAW MILK IN TUNISIA

	Northeast Region	Northwest Region	Central Region	Southern Region
Fluid Milk				
-- Total Consumption	52.1	52.1	33.1	23.3
-- % On-Farm Consumption	15.4	59.7	50.0	19.4
-- On-Farm Consumption	8.0	31.1	16.6	4.5
Butter, Smen and Other Traditonal Dairy Products				
-- Total Consumption	24.5	10.6	10.6	9.9
-- % On-Farm Consumption	6.3	52.5	24.9	11.1
-- On-Farm Consumption	1.5	5.6	2.6	1.1

Source : Enquete Nationale sur le Budget et la Consommation des Menages, 1985

ANNEX B TABLE 6
INVENTORY OF FEMALE ANIMALS IN MILK PRODUCTION BY SPECIES
1976-1987

	Lactating Females			Milk Production		
Year	Cows	Sheep	Goats	Cows	Sheep/Goats	Total Available Domestic Milk
	(Thousands of Head)			(Thousands of Tons)		(Thousands of Tons)
1976	455	3,709	750	222	36	258
1977	478	3,738	762	240	39	279
1978	428	3,383	664	241	35	276
1979	345	2,594	489	191	31	222
1980	350	2,977	559	212	33	245
1981	324	2,672	455	236	28	263
1982	321	2,889	514	212	32	244
1983	337	2,895	556	245	32	277
1984	342	-	-	268	22	290
1985	354	-	-	290	25	315
1986	334	3,182	564	303	22	325
1987	343	3,322	627	335	22	327

Source : DGPDIA, Ministry of Agriculture

ANNEX B TABLE 7
ESTIMATED NUMBERS OF DAIRY ANIMALS IN TUNISIA
1985-1987

	Year		
	1985	1986	1987
		(Head)	
Cows :			
-- Purebred Cows and First Calf Heifers	74,000	80,000	87,500
-- Crossbred and Local Cows and First Calf Heifers	280,000	254,000	255,000
-- Total Cows in Lactation	354,000	334,000	342,500
Sheep :			
-- Ewes in Lactation	179,000	187,000	190,000
Goats :			
-- Does in Lactation	620,000	564,000	627,000

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

ANNEX B TABLE 8
ESTIMATED DOMESTIC MILK PRODUCTION IN TUNISIA BY SOURCE
1985-1987

	Year		
Source	1985	1986	1987
		(Metric Tons)	
Cattle	295,000	303,000	335,000
Sheep	16,000	13,100	13,300
Goats	9,300	8,500	8,900
Total Domestic Milk Production	320,300	324,600	357,200 [1]

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

Note : [1] In 1987, figures imply 93.8 percent of domestic milk is obtained from cattle; 3.7 percent from sheep; and 2.5 percent from goats.

ANNEX B TABLE 9
TUNISIAN IMPORTATIONS OF DAIRY PRODUCTS IN TONS OF FLUID MILK EQUIVALENT
1984-1987

Dairy Product	Year 1984	1985	1986	1987
Fresh Milk				
-- Imports in Metric Tons	1555	-	-	-
-- Value of Imports in Thousands of Dinars	271.5	-	-	-
-- Average Value per Metric Ton in Dinars 1/	174.6	-	-	-
-- Index of Product Prices (1984 = 100)	100.0	-	-	-
Unsweetened Condensed Milk				
-- Imports in Metric Tons	1658	959	1153	464
-- Value of Imports in Thousands of Dinars	351.0	216.0	309.6	112.0
-- Average Value per Metric Ton in Dinars 1/	211.7	225.3	268.5	241.4
-- Index of Product Prices (1984 = 100)	100.0	106.4	126.8	114.0
Sweetened Condensed Milk				
-- Imports in Metric Tons	8475	6287	3334	4066
-- Value of Imports in Thousands of Dinars	2132.4	1806.9	1135.0	1428.4
-- Average Value per Metric Ton in Dinars 1/	251.6	287.4	340.4	351.3
-- Index of Product Prices (1984 = 100)	100.0	114.2	135.3	139.6
Non-Fat Milk Powder for Human Consumption				
-- Imports in Metric Tons	139026	216887	214617	200843
-- Value of Imports in Thousands of Dinars	11796.9	20125.9	21386.4	20373.1
-- Average Value per Metric Ton in Dinars 1/	84.9	92.8	99.7	101.4
-- Index of Product Prices (1984 = 100)	100.0	109.3	117.4	119.4
Whole Milk Powder for Human Consumption				
-- Imports in Metric Tons	14989	27177	9192	14302
-- Value of Imports in Thousands of Dinars	533.9	699.6	415.3	500.2
-- Average Value per Metric Ton in Dinars 1/	35.6	25.7	45.2	35.0
-- Index of Product Prices (1984 = 100)	100.0	72.2	127.0	98.3
Non-Fat Milk Powder for Animal Feed				
-- Imports in Metric Tons	-	806	1530	1810
-- Value of Imports in Thousands of Dinars	-	40.3	94.3	116.1
-- Average Value per Metric Ton in Dinars 1/	-	50.1	61.7	64.1
-- Index of Product Prices (1984 = 100)	-	-	-	-
Whole Milk Powder for Animal Feed				
-- Imports in Metric Tons	4632	4040	3655	4700
-- Value of Imports in Thousands of Dinars	210.4	194.8	214.7	340.6
-- Average Value per Metric Ton in Dinars 1/	45.4	48.2	58.7	72.5
-- Index of Product Prices (1984 = 100)	100.0	106.2	129.3	159.7
Butter				
-- Imports in Metric Tons	109285	145072	102698	27905
-- Value of Imports in Thousands of Dinars	6529.6	9166.6	9468.5	1115.5
-- Average Value per Metric Ton in Dinars	59.7	63.2	92.2	40.0
-- Index of Product Prices (1984 = 100)	100.0	105.9	154.4	67.0

Cheese				
-- Imports in Metric Tons	12629	16777	18248	12827
-- Value of Imports in Thousands of Dinars	1298.8	1940.8	2544.4	1806.5
-- Average Value per Metric Ton in Dinars	102.8	115.7	139.4	140.8
-- Index of Product Prices (1984 = 100)	100.0	112.5	135.6	137.0
Total Dairy Product Imports				
-- Metric Tons of Milk Equivalent	292249	418005	354427	266917
-- Value of Imports in Thousands of Dinars	23124.5	34190.9	35568.2	25792.4

Source : DGPDIA, Ministry of Agriculture

ANNEX B TABLE 10
TUNISIAN IMPORTATIONS OF DAIRY PRODUCTS
1982-1988

	Year						
Product	1982	1983	1984	1985	1986	1987	1988 [1]
Powdered Milk							
-- Imports in Metric Tons	8800	14500	14000	17000	18000	20200	6500
-- Value of Imports in Thousands of Dinars	8537	11531	11800	20126	21895	20550	5800
-- Average Value per Metric Ton in Dinars	970	795	843	1184	1216	1017	892
Cheese							
-- Imports in Metric Tons	2495	2160	1315	1750	1900	1350	680
-- Value of Imports in Thousands of Dinars	2270	2300	1300	1940	2250	1800	960
-- Average Value per Metric Ton in Dinars	910	1065	989	1109	1184	1333	1412
Butter							
-- Imports in Metric Tons	2015	4650	4970	6600	4670	1750	3630
-- Value of Imports in Thousands of Dinars	2530	5815	6530	9166	9470	1500	3500
-- Average Value per Metric Ton in Dinars	1256	1251	1314	1389	2028	857	964

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

Note : [1] 1988 figures through 31 May 1988

ANNEX 6 TABLE 11
IMPORTATIONS OF POWDERED MILK BY STIL
1984-1988

Year/Month	Quantity in Tons	Country of Supplier	Foreign Exchange Cost Per Ton FOB		Import Cost in Dinars Per Ton
		POWDERED MILK (0 PERCENT BUTTERFAT)			
1984					
February	500	France	FF	5,500	491.370
March	500	France	FF	5,500	486.640
July	500	France	FF	5,500	493.955
August	500	France	FF	5,500	498.795
December	500	France	FF	5,685	514.436
TOTAL	2,500				499.765
1985					
February	500	France	FF	5,685	514.379
April	306	France	FF	6,000	547.560
June	500	France	FF	6,000	551.040
September	500	France	FF	6,150	591.653
November	500	France	FF	6,150	625.362
TOTAL	2,306	France			567.550
1986					
February	1,000	Netherlands	HFL	2,515	689.588
April	500	France	FF	6,100	620.522
June	399	France	FF	5,850	651.310
July	601	France	FF	5,850	657.423
August	1,000	Netherlands	HFL	1,945	723.034
September	1,000	Poland	US$	762	661.568
TOTAL	4,500				675.430
1987					
January	820	France	FF	5,850	766.467
March	40	France	FF	5,850	790.803
March	1,000	Poland	US$	890	734.250
April	1,000	Poland	US$	890	737.721
May	1,000	Poland	US$	890	744.930
June	400	Poland	US$	810	685.260
July	580	Poland	US$	810	691.740
November	1,000	Poland	US$	792	638.986
December	1,000	Poland	US$	792	626.670
TOTAL	6,840				704.387
1988					
February	1,000	Poland	US$	792	647.024
March	1,000	Netherlands	HFL	2,440	1,055.471
April	500	Netherlands	HFL	2,440	1,066.243
April	500	Netherlands	HFL	2,440	1,064.206
April	1,000	Netherlands	HFL	2,440	1,066.243
May	822	Netherlands	HFL	2,602	1,135.619
June	178	Netherlands	HFL	2,602	1,131.259
June	625	Netherlands	HFL	2,602	1,115.542

ANNEX B TABLE 11 (Continued)
IMPORTATIONS OF POWDERED MILK BY STIL
1984-1988

Year/Month	Quantity in Tons	Country of Supplier	Foreign Exchange Cost Per Ton FOB		Import Cost in Dinars Per Ton
		POWDERED MILK (0 PERCENT BUTTERFAT)			
July	375	Netherlands	HFL	2,602	1,114.359
July	1,000	Unknown	US$	1,130	1,013.780
July	558	Netherlands	HFL	2,602	1,102.259
August	442	Netherland	HFL	2,602	1,112.342
TOTAL	8,000				1,025.538
		POWDERED MILK (26 PERCENT BUTTERFAT)			
1984					
January	527	France	FF	8,200	714.056
February	500	France	FF	7,500	669.525
February	400	Poland	US$	1,070	796.080
March	600	Poland	US$	1,070	766.334
April	500	France	FF	7,500	663.600
June	260.750	France	FF	7,500	680.175
June	739.250	France	FF	7,500	680.175
August	500	France	FF	7,500	675.525
August	500	Ireland	US$	1,019	814.589
September	500	France	FF	7,500	678.750
September	850	Poland	US$	1,015	814.740
December	120	Poland	US$	1,015	870.058
December	500	France	FF	7,685	695.339
TOTAL	6,497				728.077
1985					
January	350	Poland	US$	1,015	861.532
January	680	Poland	US$	1,015	855.137
February	500	France	FF	8,400	755.580
February	500	Poland	FF	7,685	695.108
March	500	France	FF	8,400	769.020
April	500	France	FF	8,400	770.112
May	500	Poland	HFL	3,375	836.021
June	1,000	Poland	HFL	3,375	838.000
July	500	Poland	HFL	3,375	838.451
August	500	France	FF	8,400	790.944
August	475	Poland	US$	1,015	806.620
October	500	France	FF	8,580	866.613
November	500	France	FF	8,580	868.518
December	500	France	FF	8,580	846.741
TOTAL	7,505				815.820
1986					
January	1,000	Poland	FF	8,280	830.153
January	500	France	FF	8,580	859.544
February	500	Poland	FF	8,280	837.481
March	500	Poland	FF	8,280	857.932
March	500	France	FF	8,300	859.008
April	500	France	FF	8,300	856.435
April	500	Poland	US$	1,085	822.484

ANNEX B TABLE 11 (Continued)
IMPORTATIONS OF POWDERED MILK BY STIL
1984-1988

Year/Month	Quantity in Tons	Country of Supplier	Foreign Exchange Cost Per Ton FOB		Import Cost in Dinars Per Ton
		POWDERED MILK (26 PERCENT BUTTERFAT)			
April	250	Poland	US$	1,085	849.663
April	500	Poland	US$	1,085	802.900
June	498.450	France	FF	8,000	874.120
June	500	Poland	US$	1,085	858.289
July	100	Poland	US$	1,085	850.206
July	20	Poland	US$	1,085	848.361
November	1,000	France	FF	8,000	1,045.360
TOTAL	6,868.450				873.946
1987					
April	1,000	Poland	US$	995	818.885
May	1,000	Poland	US$	995	832.815
July	1,000	Poland	US$	995	849.730
December	75	Netherlands	HFL	2,440	1,048.212
December	125	Netherlands	HFL	2,440	1,054.958
December	300	Netherlands	HFL	2,440	1,061.218
December	1,000	Poland	US$	1,240	978.670
TOTAL	4,500				890.878
1988					
January	500	Netherlands	HFL	2,400	1,024.692
February	500	Poland	US$	1,265	1,033.821
February	1,000	Netherlands	US$	1,295	1,064.101
February	250	Poland	US$	1,265	1,039.830
March	250	Poland	US$	1,265	1,022.373
March	500	Switzerland	FRS	1,964	1,163.768
April	350	Switzerland	FRS	1,964	1,159.084
April	300	Switzerland	FRS	1,964	1,163.925
May	350	Switzerland	FRS	1,964	1,157.051
May	500	Switzerland	FRS	1,964	1,157.051
May	500	Switzerland	FRS	1,964	1,153.300
May	475	Switzerland	FRS	1,964	1,147.320
June	25	Switzerland	FRS	1,964	1,145.110
June	1,000	Netherlands	HFL	2,675	1,146.840
July	1,000	Netherlands	HFL	2,675	1,111.681
July	750	Poland	HFL	2,690	1,145.294
August	250	Poland	HFL	2,690	1,149.961
TOTAL [1]	8,500				1,115.809

Source : STIL

Note : [1] Partial figures for 1988

ANNEX B TABLE 12
THE NATIONAL SYSTEM OF FIXED MILK COLLECTION CENTERS

Governorat	Supervising Agency	Name of Center	Maximum Collection Capacity in Liters	Opening Date	Current Status
Ariana	OEP	Mansoura	2,000	12/1/1984	Operating
Ariana	OMVVM	Ml. Battan	2,000	6/29/1987	Operating
Ariana	OMVVM	Sidi Thabet	6,000	-	Constructed and Equipped
Ariana	OMVVM	Lezdine	6,000	-	Constructed and Equipped
Ariana	STIL	Djedeida	40,000	1968	Operating
Siliana	OEP	Gaafour	2,000	1/21/1983	Constructed and Closed
Siliana	OMIVAL	Siliana	15,000	1978	Operating
Siliana	OMIVAL	Krib	3,000	1983	Operating
Siliana	OMIVAL	Bouarada	1,500	1983	Operating
Siliana	OMIVAL	Bargou	1,500	-	Constructed and Closed
Siliana	OMIVAL	Sidi Bou Rouiss	1,500	-	Construction Incomplete
Siliana	ODESYPANO	B. El Massoudi	3,000	6/07/1983	Operating
Kef	OMIVAL	Dahmani	6,000	3/01/1983	Operating
Kef	OMIVAL	Zaafrane	6,700	-	Constructed and Closed
Kef	OMIVAL	Sidi Ahmed Salah	1,500	-	Constructed and Equipped
Kef	OMIVAL	Felta	1,500	-	Lacks Credit to Function
Kef	ODESYPANO	Tel El Gozlane	2,000	9/10/1984	Operating
Kef	ODESYPANO	Lorbous	550	4/01/1985	Operating
Kef	ODESYPANO	Bahra	-	-	Constructed Not Equipped
Kef	ODESYPANO	Oued Souani	-	-	Constructed Not Equipped
Kef	CCDA	Sers	2,000	-	Projected
Jendouba	OPPI	Ghardimaou	4,200	1972	Operating
Jendouba	OPPI	Jendouba	4,200	1972	Operating
Jendouba	OPPI	Tabarka	4,200	1972	Operating
Jendouba	OPPI	Bou-Salem	14,200	1972	Operating
Jendouba	OPPI	Sombane	2,200	2/01/1984	Operating
Jendouba	OPPI	Brahmi	1,650	2/01/1984	Operating
Jendouba	OPPI	Sidi Brahim	2,000	-	Constructed and Closed
Jendouba	OPPI	Chemtou	2,000	-	Constructed and Closed
Jendouba	OPPI	Okhalia	2,000	-	Constructed and Closed
Jendouba	OPPI	M'Rassen	2,000	-	Constructed and Closed
Jendouba	OPPI	Dourra	1,650	-	Constructed and Closed
Jendouba	OPPI	Oued Meliz	1,650	-	Constructed and Closed
Jendouba	OPPI	Zmemza	1,650	-	Constructed and Closed
Jendouba	OPPI	Ben Bechir	1,650	-	Constructed and Closed
Jendouba	OPPI	Souk Essebet	3,000	-	Constructed Not Equipped
Jendouba	OPPI	Itha	2,000	-	Constructed Not Equipped
Jendouba	OPPI	Meloua	2,000	-	Constructed Not Equipped
Jendouba	ODESYPANO	Ain El Hammam (Tabarka)	-	-	Constructed Not Equipped
Jendouba	ODESYPANO	Ain Snoussi (Tabarka)	-	-	Constructed Not Equipped
Beja	OPPI	Sidi Ismail	3,300	12/1/1986	Operating
Beja	OMVVM	Medjez El Bar	6,000	-	Constructed and Closed
Beja	STIL	Beja	20,000	1968	Operating
Beja	ODESYPANO	Munchar	5,000	6/29/1983	Operating
Beja	ODESYPANO	Amdoun	3,000	4/04/1984	Operating
Beja	ODESYPANO	Slouguia	3,000	3/01/1985	Operating
Beja	ODESYPANO	Ksar Echikh	3,000	6/10/1987	Operating
Beja	ODESYPANO	Teboursouk	3,000	6/02/1984	Operating
Beja	ODESYPANO	Rihana	2,000	4/01/1985	Operating
Beja	ODESYPANO	Sidi Ismail	-	-	Constructed Not Equipped
Beja	ODESYPANO	Mkachbia	-	-	Constructed Not Equipped
Beja	ODESYPANO	Ksar Mezouar	-	-	Constructed Not Equipped
Beja	ODESYPANO	Zeldou	-	-	Constructed Not Equipped
Beja	ODESYPANO	Jmila	2,000	4/20/1983	Operating
Beja	ODESYPANO	Oued Maaden	1,000	5/01/1985	Operating
Beja	ODESYPANO	Fathassa	-	-	Constructed Not Equipped

ANNEX B TABLE 12 (Continued)
THE NATIONAL SYSTEM OF FIXED MILK COLLECTION CENTERS

Governorat	Supervising Agency	Name of Center	Maximum Collection Capacity in Liters	Opening Date	Current Status
Bizerte	OEP	Mateur	2,000	-	Constructed Not Equipped
Bizerte	OEP	El Alia	2,000	-	Constructed Not Equipped
Bizerte	STIL	Tinja	20,000	1968	Operating
Bizerte	ODESYPANO	Magra	6,000	1979	Operating
Bizerte	ODESYPANO	Om Jenib	3,000	1981	Operating
Bizerte	ODESYPANO	Ben Yasla	3,000	1981	Operating
Bizerte	ODESYPANO	M'Sader	2,000	1982	Operating
Bizerte	ODESYPANO	Boujebla	3,000	1982	Operating
Bizerte	ODESYPANO	Sogmane	3,000	1982	Operating
Bizerte	ODESYPANO	Boufrinina	3,000	1983	Operating
Bizerte	ODESYPANO	El Hania	3,000	1983	Operating
Bizerte	ODESYPANO	Chaabet El Hout	1,000	1983	Closed
Bizerte	ODESYPANO	Sejnane	6,000	1979	Operating
Bizerte	ODESYPANO	Sidi Mechreg	400	1986	Operating
Bizerte	ODESYPANO	Oued Zen	400	1986	Operating
Bizerte	ODESYPANO	Houamlia	1,000	1986	Operating
Bizerte	ODESYPANO	Aouna	3,000	-	Constructed Not Equipped
Bizerte	ODESYPANO	Hakara	3,000	-	Constructed Not Equipped
Bizerte	ODESYPANO	Kef Abbed	500	-	Constructed Not Equipped
Bizerte	ODESYPANO	Touajinia	2,000	4/10/1985	Operating
Bizerte	ODESYPANO	Bazina	1,000	4/01/1985	Operating
Bizerte	ODESYPANO	Chenana (Joumine)	-	-	Construction Underway

Source: DGPDIA/Ministry of Agriculture

ANNEX B TABLE 13
MILK COLLECTION AT FIXED MILK COLLECTION CENTERS

Center Area	Distance Between Farm and Center (in Kilometers)			Average Quantity of Milk Collected Per Farm Per Day (in Liters)				Supervising Agency		
	< 5	5-10	> 10	< 10	10-20	20-50	>50	OMV	OEP	Other
	(Percent in Each Group)									
Ariana	0	0	100	50	0	50	0	99	0	1
Zaghouan	36	0	64	0	0	0	100	0	100	0
Bizerte	100	0	0	93	0	7	0	97	0	3
Nabeul	17	0	83	0	0	0	100	0	0	100
NORTHEAST [1]	92	0	8	89	0	10	1	97	1	2
Beja	2	75	23	0	21	31	48	0	0	100
Jendouba	0	0	100	0	0	0	100	100	0	0
Siliana	23	12	65	0	0	0	100	100	0	0
Le Kef	50	0	50	0	0	0	100	100	0	0
NORTHWEST	2	73	25	0	20	30	50	4	0	96
TOTAL NORTH	1	90	9	78	3	13	6	86	0	14
Sousse	0	0	100	0	0	0	100	0	0	100
Mahdia	0	100	0	100	0	0	0	0	0	100
Monastir	86	14	0	57	29	14	0	0	0	100
Sfax	99	0	1	99	0	0	1	0	0	100
CENTRAL EAST	83	16	1	80	13	6	1	0	0	100
Kairouan	0	0	100	0	0	0	100	0	0	100
CENTRAL WEST [2]	0	0	100	0	0	0	100	0	0	100
Gabes	100	0	0	0	100	0	0	0	0	100
SOUTH [3]	100	0	0	0	100	0	0	0	0	100
TOTAL CENTER AND SOUTH	89	10	1	49	46	4	1	0	0	100
TOTAL TUNISIA	82	9	9	76	6	12	6	78	1	21

Source: DGPDIA, Ministry of Agriculture

Notes : [1] No information available on centers in Tunis or Beni Arous

[2] No information available on centers in Kasserine and Sidi Bouzid

[3] No information available on centers in Gafsa and Medenine

ANNEX B TABLE 14
MILK COLLECTION SYSTEM IN THE LOWER MEDJERDA RIVER VALLEY

Milk Collection Center	Center Capacity in Liters	Collection Routes Serving Center	
El Bathan	9,000	Route # 1 :	Borj El Kolsi/Sidi Hadj Ali/Hathermine/Sidi Neji
		Route # 2 :	Fourna/Borj El Amri Mehrine/Mehrine Nord
		Route # 3 :	Borj Toumi/Tungar/Chouirguie
		Route # :	Nfissa/Tebourba/Zouitina
		Route # 5 :	Mansoura I, II, III and IV
Lezdine	6,000	Route # 1 :	Lezdine/Pont de Bizerte
		Route # 2 :	Zounaouine/Utique/Kalaat Landalous
Sidi Thabet	6,000	Route # 1 :	Bejaoua/Djebel Ammar/M'Barka
		Route # 2 :	Jaafar/Raoud/Borj Touil/Bou Hanech/Hassione/Douar Ben Khelifa
		Route # 3 :	Cebalet Ben Ammar/Cherfech
Khelidia	4,000	Route # 1 :	Fouchana/Naassane/Hammam/ Lif/Mornag/Kabouti/Djebel Rsass
STIL Djndaida	40,000	Route # 1 :	Mornaguia/Sidi Ali El Hattab/HabibiaSud/Habibia Centre
		Route # 2 :	Oued Ellil/Douar El Bey/Zone F Saida

Source : DGPDIA/Ministry of Agriculture

ANNEX B TABLE 15

PRODUCERS' STATED REASONS FOR SELLING THEIR MILK TO PRIVATE VENDORS OR DIRECTLY TO CONSUMERS

Governorat	Absence Of A Collection Center	Farm Too Far From A Collection Center	Can Get A Better Price For The Milk	Other Reasons
		(Percent in Each Category)		
Tunis	100	0	0	0
Ariana	1	78	1	20
Beni Arous	79	0	0	21
Zaghouan	2	31	30	37
Bizerte	76	11	5	8
Nabeul	100	0	0	0
Total Northeast	68	18	4	10
Beja	32	0	65	3
Jendouba	7	22	33	38
Siliana	0	0	58	42
Le Kef	20	20	40	20
Total Northwest	20	10	49	21
Total North	64	17	8	11
Sousse	12	2	86	0
Mahdia	0	0	0	100
Monastir	22	0	78	0
Sfax	3	32	54	11
Total Center East	12	13	67	8
Kairouan	0	99	0	1
Kasserine	100	0	0	0
Total Center West [1]	1	98	0	1
Gabes	67	0	0	33
Total South [2]	67	0	0	33
Total Center and South	21	18	50	11
Total Tunisia	48	18	23	11

Source : DGPDIA, Ministry of Agriculture

Notes : [1] No information available for Sidi Bouzid

[2] No information available for Gafsa and Medenine

ANNEX B TABLE 16
DAIRY PROCESSING FIRMS IN TUNISIA
ESTIMATED PRODUCTION CAPACITY

Processing Firm	Estimated Production Capacity				
	Fluid Milk	Yogurt	Cheese	Butter	Ice Cream
	(Liters/Day)	(Pots/Day)	(MT/Y)	(MT/Y)	(LME/D)
STIL					
-- Bab Saadoun [1]	200,000	-	300	2	-
-- Port [2]	270,000	600,000	-	2,100	-
-- Sfax [2]	50,000	-	-	-	-
TUNISIE LAIT [1]	300,000	300,000	300	-	-
CAP LAIT [3]	40,000	48,000	200	-	-
STIAL [3]	10,000	192,000	-	-	-
ULAINORD (Peldi) [3]	15,000	232,000	-	-	-
MILKA (Safi) [3]	5,000	80,000	-	-	-
SOLAINORD (Assyl) [3]	8,000	120,000	-	-	-
YOUGO-FRUIT (Yougorta) [3]	5,000	50,000	300	-	-
SAMI [3]	6,000	80,000	-	-	-
SORIL (Nafaa)	-	40,000	-	-	-
SOREPROL [3]	1,000	25,000	-	-	-
SOLEIL ET FRUIT	-	25,000	-	-	-
SGIAS	-	60,000	-	-	5,600
STE.LAITIERE SEJENANE [3]	12,000	10,000	-	-	-
STE.LAITIERE D'UTIQUE [3]	5,000	64,000	-	-	-
STE. ZED EL MEL	-	36,000	-	-	-
SAT SIDI THABET	-	25,000	1,500	-	-
FROMAGERIE DU NORD	-	-	1,500	-	-
FROMAGERIE MATEUR	-	-	1,000	-	-
SOTULAIFORM	-	-	400	-	-
CENTRE LAIT SOUANI	-	-	1,000	-	-
SOTUDEL	-	-	2,000	-	-
SAFIL	-	-	1,400	-	-
FROMAGERIE KHEMIRI (La Bergere)	-	-	150	-	-
O.T.D.	-	-	150	-	-
LE MOULIN	-	-	150	-	-
SIDPAD	-	-	-	-	1,300
SCANDI	-	-	300	-	-
O.E.P. KAIROUAN [3]	12,000	24,000	-	-	-
SIACO	-	24,000	-	-	-
SFGG	-	-	-	-	150
GIPA	-	-	-	-	3,600
MILKA	5,000	-	-	-	200
TAZAGLACE	-	-	-	-	840
SIAT	-	-	-	-	-
GIAS	-	-	-	2,100	-

Source : Direction General de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

Notes : [1] Plant has capacity to produce both fresh milk and reconstituted milk

[2] Plant has capacity to produce reconstituted milk only

[3] Plant has capacity to produce fresh milk only

(MT/Y) is metric tons per year

(LME/D) is liters of fluid milk equivalent per day

ANNEX B TABLE 17
DAIRY PROCESSING SITUATION IN TUNISIA

Dairy Processing Plant	Plant Capacity for Pasteurization or Sterilization of Milk	Average Daily Processing Capacity	Maximum Daily Processing Capacity
	(Liters per Hour)	(Liters per Day)	
STIL Bab Saadoun	25,000	200,000	350,000
STIL Tunis Port	26,000	200,000	350,000
STIL Sfax	5,000	50,000	70,000
Total STIL Plants	56,000	450,000	770,000
TUNISIE LAIT	15,000	180,000	200,000
Total Parastatal Processors	71,000	630,000	970,000
ULAINORD "Beldi"	5,000	15,000	30,000
FROLAINORD	5,000	25,000	50,000
STIAL "Delice"	5,000	10,000	15,000
MILKA "Safi"	5,000	5,000	10,000
SOLAINORD "Assyl"	5,000	8,000	15,000
YOUGO-FRUIT	1,000	5,000	5,000
SAMI	1,200	4,000	5,000
SOREPROL Gafsa	5,000	10,000	15,000
SORIL Medenine	5,000	10,000	20,000
Total Other Processors	37,200	92,000	165,000
Total Processors	108,200	722,000	1,135,000

Dairy Processing Plant	Average Quantity of Raw Milk Used	Average Quantity of Reconstituted Milk Used	Average Daily Output of Product Pasteurized Milk	Sterilized/UHT Milk
		(Liters per Day)		
STIL Bab Saadoun	40,000	160,000	100,000	60,000
STIL Tunis Port	-	200,000	-	180,000
STIL Sfax	10,000	40,000	5,000	30,000
Total STIL Plants	50,000	400,000	105,000	270,000
TUNISIE LAIT	10,000	170,000	-	170,000
Total Parastatal Processors	60,000	570,000	210,000	440,000
ULAINORD "Beldi"	14,000	1,000	3,000	-
FROLAINORD	5,000	20,000	-	-
STIAL "Delice"	9,500	500	4,000	-
MILKA "Safi"	4,900	100	2,000	-
SOLAINORD "Assyl"	7,800	200	3,000	-
YOUGO-FRUIT	4,900	100	2,000	-
SAMI	3,900	100	-	-
SOREPROL Gafsa	-	10,000	8,000	-
SORIL Medenine	-	10,000	8,000	-
Total Other Processors	50,000	42,000	30,000	-
Total Processors	110,000	612,000	135,000	440,000

Dairy Processing Plant	Average Daily Output of Product Yogurt	Cheese
	(Thousands of Pots per Day)	(Kilograms per Day)
STIL Bab Saadoun	300	300
STIL Tunis Port	200	-
STIL Sfax	120	-
Total STIL Plants	620	300
TUNISIE LAIT	200	-
Total Parastatal Plants	820	300
ULAINORD "Beldi"	200	-
FROLAINORD	-	2,500
STIAL "Delice"	100	-
MILKA "Safi"	40	-
SOLAINORD "Assyl"	50	300
YOUGO-FRUIT	28	-
SAMI	25	-
SOREPROL Gafsa	12	-
SORIL Medenine	12	-
Total Other Processors	467	2,800
Total Processors	1,287	3,100

ANNEX B TABLE 18
DAIRY PRODUCT PROCESSING CAPACITY IN TUNISIA
1987

Processed Product	Number of Firms	Estimated Daily Capacity	Estimated Annual Capacity
		(Thousand of Liters)	
Fluid Milk	15 [1]	940	270,600
		(Millions of Pots)	
Yogurt	20	1.987	600
		(Metric Tons)	
Cheese	13	-	8,850 [2]
		(Metric Tons)	
Butter			
-- Production	2	9	2,700
-- Packaging	2	14	4,200
		(Thousands of Liters)	
Ice Cream	7	12	-

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie et Derives
Notes : [1] At present, only STIL and TUNSIE LAIT actually are producing fluid milk for the domestic market. STIL has 55 percent of the national fluid milk production capacity; TUNISIE LAIT has 33 percent; and the other processing firms have 12 percent between them.
[2] In addition to this estimated total capacity, it is estimated that another 3,000 metric tons of cheese is produced annually in Tunisia by "traditional" methods.

ANNEX B TABLE 19
PRODUCTION OF DAIRY PRODUCTS IN TUNISIA
1982-1987

Product	1982	1983	1984	1985	1986	1987
			Year			
			(Millions of Liters)			
Fluid Milk	96	114	124.5	135	150	166
			(Millions of Pots)			
Yogurt	300	350	372	390	400	420
			(Metric Tons)			
Cheese	1,100	1,125	2,000	2,500	3,000	3,500
			(Metric Tons)			
Butter [1]	-	-	-	-	1,350	3,375

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives
Note : [1] Essentially all of the butter produced in 1987 was made from butter-oil provided as grant aid from the European Community. Butter production made local fresh milk is still at the "traditional" stage.

ANNEX B TABLE 20
SALES OF DAIRY PRODUCTS BY THE THREE STIL DAIRY PROCESSING PLANTS
1986-1988

	STIL Bab Sadoun			STIL Tunis Port			STIL Sfax		
Product/Size	1986	1987	1988	1986	1987	1988	1986	1987	1988
				(in thousands)					
Reconstituted Pasteurized Milk									
One Liter	9,946	12,992	11,734	-	-	-	-	-	-
One-Half Liter	24,013	27,431	25,106	-	-	-	-	-	-
Reconstituted Sterilized Milk									
One Liter	10,830	4,828	12,615	-	-	-	-	-	-
Fresh Sterilized Milk									
One Liter	-	738	-	-	-	-	-	-	-
Reconstituted UHT Milk									
One Liter	-	-	-	59,485	66,684	81,944	8,548	8,807	9,796
Yogurt									
Pot	92,760	111,715	120,156	-	-	-	39,250	45,625	56,495
Dairy Dessert									
Pot	-	-	-	6,708	14,005	20,162	-	-	-
Flavored Reconstituted Milk									
200 cc.	-	-	-	3,333	1,347	6,001	-	-	-
Lben 1/2									
One Liter	5,718	4,915	4,627	-	-	-	2,233	2,255	1,655
Cheeses									
Double Cream	14,404	15,784	12,532	-	-	-	-	-	-
Camembert	73	10	15	-	-	-	-	-	-
Creme Fraiche									
One Liter	106	126	127	-	-	-	-	-	-
Raibi 1/2									
One Liter	101	-	-	-	-	-	-	-	-

Source : STIL

ANNEX B TABLE 21
AVERAGE COST OF DAIRY PRODUCT PACKAGING BY TYPE
1986

Type of Packaging	Local Cost Component	Foreign Exchange Component	Total Unit Cost
	(Dinars)		
One Liter Glass Milk Bottles	0.0224	0.0183	0.0407
One Liter Plastic Milk Bottles	0.0131	0.0264	0.0395
One Liter Tetra-Brik	0.0434	0.0756	0.1190

Source : Direction General de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives

ANNEX B TABLE 22
STIL DAIRY PRODUCT PACKAGING COSTS
1987

Type of Packaging	Production Capacity	Foreign Exchange Cost Per Unit	Total Annual Cost of Packaging
	(Liters/Day)	(Dinars)	(Dinars)
Tetra-Brik for UHT Milk	350,000	0.0856	9,336,600
Tetrahedron for UHT Milk	30,000	0.0695	650,520
Tetra-Brik for Flavored Milk	20,000	0.243	1,516,320
Tetra-Brik for Pasteurized Milk	200,000	0.07275	4,539,600
Tetrahedron for Cream and Sour Cream	80,000	0.0445	1,110,720
Total	680,000	0.08085 [1]	17,153,760

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives
Note : [1] Weighted average cost per liter unit of packaging.

ANNEX B TABLE 23
TOTAL SUBSIDY PAYMENTS TO DAIRY PROCESSORS: 1982-1988

	Year							
	1982	1983	1984	1985	1986	1987	1988[1]	1989[2]
	(Millions of Dinars)							
Total Subsidies Paid to Processors	3.8	5.7	6.0	8.5	9.2	12.0	22.03	30.0+

Source : Direction Generale de l'Agro-Alimentaire, Plan Directeur de l'Industrie du Lait et Derives
Notes : [1] Probable total for 1988. [2] Projection for 1989.

ANNEX B TABLE 24
SUBSIDIES ON DAIRY PRODUCTS AT THE THREE STIL DAIRY PROCESSING PLANTS
1985-1988

Category	1985 CLBS	1985 CLTP	1985 CLS	1985 Total	1986 CLBS	1986 CLTP	1986 CLS	1986 Total
				(in Dinars)				
STIL COST PRICE FOR RECONSTITUTED MILK								
-- Pasteurized Milk	.315	-	-		.357	-	-	
-- Sterilized Milk	.275	-	-		.293	-	-	
-- UHT Milk	-	.281	-		-	.302	-	
Cost Price Retained By The CGC	.302	.268	.302		.330	.283	.323	
Number of Liters of Milk Sold (in thousands)	42,386	51,066	8,376	101,828	44,789	59,485	8,547	112,821
Subsidy Payment Demanded by STIL (in thousands)	3,857	1,736	762	6,356	5,419	2,855	692	8,967
Subsidy Payment Negotiated by CGC (in thousands)	3,857	1,736	762	6,356	5,419	2,855	692	8,967
Difference								
Year End Balance as of 31 December 1984 (in thousands)				4,378				-
Subsidy Payments Received During Year (in thousands)				6,500				7,000
Net Tax Rebates (in thousands)				837				458
Annual Deficit (in thousands)				3,397				1,509
Cumulative Deficit (in thousands)				-				4,907

ANNEX B TABLE 24 (Continued)
SUBSIDIES ON DAIRY PRODUCTS AT THE THREE STIL DAIRY PROCESSING PLANTS
1985-1988

Category	1987 CLBS	1987 CLTP	1987 CLS	1987 Total	1988 CLBS	1988 CLTP	1988 CLS	1988 Total
				(in Dinars)				
STIL COST PRICE FOR RECONSTITUTED MILK								
-- Pasteurized Milk	.362	-	-		.395	-	-	
-- Sterilized Milk	.317	-	-		.345	-	-	
-- UHT Milk	-	.323	.357		-	.360	-	
Cost Price Retained By The CGC	.359	.308	.347		.391	.340	.385	
Number of Liters of Milk Sold (in thousands)	45,252	66,684	8,807	120,743	49,455	81,953	9,796	141,204
Subsidy Payment Demanded by STIL (in thousands)	6,743	4,868	934	12,545	10,793	12,375	1,665	24,833
Subsidy Payment Negotiated by CGC (in thousands)	5,204	4,868	687	10,759	8,631	8,031	1,342	18,005
Difference	1,539	-	247	1,786	2,162	4,344	323	6,829
Subsidy Payments Received During Year (in thousands)				7,000				13,000
Net Tax Rebates (in thousands)				357				531
Annual Deficit (in thousands)				5,187				11,302
Cumulative Deficit (in thousands)				10,093				21,395

Source : STIL

ANNEX B TABLE 25
ESTIMATED COST STRUCTURE FOR STIL AND TUNISIE LAIT RECONSTITUTED FLUID MILK
BY TREATMENT PROCESS AND TYPE OF PRODUCT PACKAGING
1985-1987

1985

Cost Component	STIL Sterilized Milk in Plastic Bottles	STIL Pasteurized Milk in Tetra-Briks	STIL UHT Milk in Tetra-Milk	TUNISIE LAIT Sterilized Milk in Plastic Bottles
	(Dinars per Liter)			
Powdered Milk Cost	0.150	0.154	0.088	0.145
Processing Costs	0.070	0.062	0.073	0.060
INDUSTRIAL COST PRICE	0.220	0.216	0.161	0.205
Processor Margin @ 15 %	0.033	0.033	0.024	0.031
Packaging Cost	0.055	0.062	0.083	0.014
PRE-TAX COST PRICE	0.308	0.311	0.268	0.250
AVERAGE PRE-TAX SALES PRICE	0.200	0.183	0.234	0.200
ESTIMATED C.G.C. SUBSIDY PAID TO PROCESSOR	0.108	0.128	0.034	0.050

1986

Cost Component	STIL Sterilized Milk in Plastic Bottles	STIL Pasteurized Milk in Tetra-Briks	STIL UHT Milk in Tetra-Milk	TUNISIE LAIT Sterilized Milk in Plastic Bottles
	(Dinars per Liter)			
Powdered Milk Cost	0.136	0.185	0.100	0.105
Processing Costs	0.066	0.065	0.065	0.064
INDUSTRIAL COST PRICE	0.202	0.250	0.165	0.169
Processor Margin @ 15 %	0.030	0.037	0.025	0.026
Packaging Cost	0.055	0.075	0.100	0.045
PRE-TAX COST PRICE	0.287	0.362	0.290	0.240
AVERAGE PRE-TAX SALES PRICE	0.200	0.183	0.234	0.200
ESTIMATED C.G.C. SUBSIDY PAID TO PROCESSOR	0.087	0.179	0.056	0.040

Cost Component	STIL Sterilized Milk in Plastic Bottles	STIL Pasteurized Milk in Tetra-Briks	STIL UHT Milk in Tetra-Milk	TUNISIE LAIT Sterilized Milk in Plastic Bottles
		1987		
		(Dinars per Liter)		
Powdered Milk Cost	0.129	0.109	0.118	0.113
Processing Costs	0.060	0.058	0.060	0.068
INDUSTRIAL COST PRICE	0.189	0.167	0.178	0.181
Processor Margin @ 15 %	0.028	0.025	0.027	0.028
Packaging Cost	0.058	0.091	0.109	0.051
PRE-TAX COST PRICE	0.275	0.283	0.314	0.260
AVERAGE PRE-TAX SALES PRICE	0.200	0.183	0.234	0.200
ESTIMATED C.G.C. SUBSIDY PAID TO PROCESSOR	0.075	0.100	0.080	0.060

ANNEX B TABLE 26
ESTIMATED COST STRUCTURE FOR RECONSTITUTED UHT MILK IN TETRA-BRIK PACKAGING AT STIL/TUNIS PORT
1985-1987

Cost Component	Year 1985	1986	1987
	(Dinars per Liter)		
Powdered Milk	88	96	118
Costs of Milk Reconstitution and UHT Processing	73	62	60
INDUSTRIAL COST PRICE	161	158	178
Processor Margin @ 15%	24	24	27
Cost of Packaging	83	102	110
PRE-TAX COST PRICE	268	284	315
Taxes	14	17	18.5
EX-PLANT COST PRICE	282	301	333.5
Processor Transport Margin	8	8	8
Wholesaler Margin	7	7	7
Retailer Margin	12	12	12
RETAIL PRICE WITHOUT GOT SUBSIDY	309	328	361.5

ANNEX B TABLE 27
COST STRUCTURES FOR RECONSTITUTED MILK PRODUCED AT STIL PROCESSING PLANTS
1987

Cost Component	STIL/Bab Saadoun Plant STIL Account	STIL/Bab Saadoun Plant CGC Account	STIL/Sfax Plant STIL Account	STIL/Sfax Plant CGC Account	STIL/Tunis-Port STIL Account	STIL/Tunis-Port CGC Account
	(Dinars per Liter)					
Powdered Milk	0.179483	0.150538	0.124275	0.099754	0.100074	
Processing Supplies	0.011801	0.011801	0.020549	0.020549	0.012350	
T.F.S.E.	0.008992	0.008992	0.014716	0.014716	0.009661	
Personnel Costs	0.028462	0.028462	0.040568	0.040568	0.023316	
Depreciation	0.007016	0.007016	0.004210	0.004210	0.009126	
Financial Charges	0.005763	0.005763	0.005235	0.005235	0.005692	
INDUSTRIAL COST PRICE	0.241517	0.212572	0.209553	0.185032	0.160219	
Processor Margin @15%	0.036228	0.031886	0.031432	0.027755	0.024033	
Packaging Costs	0.081736	0.081736	0.105878	0.105878	0.123250	
PRE-TAX COST PRICE	0.359481	0.326194	0.346863	0.318665	0.307502	
PRE-TAX AVERAGE SALES PRICE	0.210839	0.210839	0.240899	0.240899	0.234625	
C.G.S. Subsidy Paid to STIL	0.148642	0.115355	0.105964	0.077766	0.072877	
Subsidy Per Liter of Product in Dinars	0.149	0.115	0.106	0.078	0.073	

Source: Direction des Prix et du Controle Economique, Ministere de l'Economie

ANNEX B TABLE 28
CALCULATION OF THE COST PRICE OF STERILIZED FLUID MILK IN ONE-HALF LITER CONTAINERS
STIL DAIRY PROCESSING PLANT IN SFAX
1 January - 30 June 1988

Cost Item	Total Value of Input		Average Value of Input Per One-Half Liter
	(Dinars)	(Percent)	(Dinars Per One-Half Liter)
Powdered Milk/Lait en Poudre	37,631.133	29.61	0.10359
Fluid Milk/Lait Frais	18,529.014	14.58	0.05100
Processing Supplies/Matieres Consommable	634.902	0.50	0.00174
Replacement Parts/Pieces de Rechange	6,010.887	4.73	0.01654
Maintenance Supplies/Produits d/Entretien	594.614	0.47	0.00163
Packaging/Emballages	35,601.922	28.02	0.09799
SUB-TOTAL/SOUS-TOTAL	99,002.472	77.91	0.27249
T.F.S.E.	5,693.976	4.48	0.11567
Transport/Transport et Deplacement	1,624.846	1.28	0.00447
Processing Costs/Frais Divers de Production	387.776	0.31	0.00106
Financial Costs/Frais Financiers	13.669	0.01	0.00003
Personnel Costs/Frais de Personnel	13,828.998	10.88	0.03818
Fiscal Stamps and Other Taxes/ Timbres Fiscaux et Autres Taxes	2.158	-	0.00001
Miscellaneous Plant Costs/Frais Divers d'Exploitation	2,082.046	1.64	0.00573
Interest on Loans/Interet des Emprunts	1,261.890	0.99	0.00347
Droit d/Encaissement	158.275	0.13	0.00043
Municipal Tax/Taxe Municipale	1,165.846	0.93	0.00320
Resorption des Frais d'Etablissement	1,815.856	1.44	0.00499
Pertes/Differences de Changes	1.438	-	0.00001
Pertes Exceptionnelles	8.273	-	0.00001
SUB-TOTAL/SOUS-TOTAL	28,072.294	22.09	0.07726
TOTAL COSTS ON PRODUCTION OF 363,414 LITERS OF STERILIZED MILK IN ONE-HALF LITER PACKAGING	127,074.766	100.00	0.34975
SALES RECEIPTS ON 310,082 LITERS OF STERILIZED MILK SOLD IN ONE-HALF LITER PACKAGING	72,393.667	56.97	0.23346
ESTIMATED COMPENSATORY SUBSIDY DUE TO PROCESSOR	54,681.099	43.03	0.11629

ANNEX B TABLE 29
CALCULATION OF THE COST PRICE OF RECONSTITUTED FLUID MILK IN ONE LITER TETRA-BRIKS
STIL DAIRY PROCESSING PLANT IN SFAX
1 January - 30 June 1988

Cost Item	Total Value of Input		Average Value of Input Per Liter
	(Dinars)	(Percent)	(Dinars Per Liter)
Powdered Milk/Lait en Poudre	487,282.067	26.57	0.10061
Fluid Milk/Lait Frais	251,460.032	13.71	0.05192
Processing Supplies/Matieres Consommable	9,490.394	0.52	0.00195
Replacement Parts/Pieces de Rechange	101,240.811	5.52	0.02090
Maintenance Supplies/Produits d/Entretien	11,096.497	0.61	0.00229
Packaging/Emballages	542,202.411	29.55	0.11197
SUB-TOTAL/SOUS-TOTAL	1,402,772.212	76.48	0.28964
T.F.S.E.	77,386.045	4.22	0.01580
Transport/Transport et Deplacement	21,665.426	1.18	0.00447
Processing Costs/Frais Divers de Production	5,169.045	0.28	0.00107
Financial Costs/Frais Financiers	189.562	0.01	0.00003
Personnel Costs/Frais de Personnel	226,214.184	12.33	0.04678
Fiscal Stamps and Other Taxes/ Timbres Fiscaux et Autres Taxes	44.092	-	0.00001
Miscellaneous Plant Costs/Frais Divers d'Exploitation	30,065.077	1.64	0.00620
Interest on Loans/Interet des Emprunts	16,823.966	0.92	0.00347
Droit d/Encaissement	2,161.504	0.12	0.00044
Municipal Tax/Taxe Municipale	15,543.574	0.85	0.00320
Resorption des Frais d'Etablissement	36,951.727	1.97	0.00742
Pertes/Differences de Changes	22.653	-	0.00001
Pertes Exceptionnelles	120.066	-	0.00002
SUB-TOTAL/SOUS-TOTAL	431,356.921	23.52	0.08908
TOTAL COSTS ON PRODUCTION OF 4,842,806 LITERS OF STERILIZED MILK IN ONE LITER TETRA-BRIKS	1,834,129.133	100.00	0.37872
SALES RECEIPTS ON 4,718,291 LITERS OF STERILIZED MILK SOLD IN ONE LITER TETRA-BRIKS	1,161,242.346	63.31	0.24611
ESTIMATED COMPENSATORY SUBSIDY DUE TO PROCESSOR	672,886.787	36.69	0.13261

ANNEX B TABLE 30
CALCULATION OF THE COST PRICE OF UHT FLUID MILK IN ONE LITER PACKAGING
STIL DAIRY PROCESSING PLANT IN TUNIS PORT
1 January - 30 June 1988

Cost Item	Total Value of Input		Average Value of Input Per Liter
	(Dinars)	(Percent)	(Dinars Per Liter)
Powdered Milk/Lait en Poudre	6,120,737.180	39.98	0.142667
Processing Supplies/Matieres Consommable	226,741.498	1.48	0.005285
Replacement Parts/Pieces de Rechange	27,486.255	0.18	0.000641
Maintenance Supplies/Produits d/Entretien	332,815.079	2.18	0.007758
Packaging/Emballages	5,275,730.771	34.46	0.122979
SUB-TOTAL/SOUS-TOTAL	11,983,510.780	78.28	0.279339
T.F.S.E.	501,173.791	3.27	0.011682
Transport/Transport et Deplacement	53,923.641	0.35	0.001257
Processing Costs/Frais Divers de Production	24,423.978	0.16	0.000569
Financial Costs/Frais Financiers	592,421.147	3.87	0.013809
Personnel Costs/Frais de Personnel	1,083,082.731	7.08	0.025247
Customs and Other Taxes/ Impots et Autres Taxes	102,104.311	0.67	0.002380
Miscellaneous Plant Costs/Frais Divers d'Exploitation	211,737.127	1.38	0.004936
Interest on Loans/Interet des Emprunts	141,881.671	0.93	0.003307
Direct Taxes	32,442.120	0.21	0.000756
Depreciation/Dotations aux Amortissements	326,054.697	2.13	0.007600
Pertes/Differences de Changes	-	-	-
Quote Part des Frais du Siege et du Transit	255,857.792	1.67	0.005964
SUB-TOTAL/SOUS-TOTAL	3,325,103.006	21.72	0.077507
TOTAL COSTS ON PRODUCTION OF 42,899,530 LITERS OF UHT MILK IN ONE LITER PACKAGES	15,308,613.790	100.00	0.356846
SALES RECEIPTS ON LITERS OF UHT MILK SOLD IN ONE LITER PACKAGING			
ESTIMATED COMPENSATORY SUBSIDY DUE TO PROCESSOR			

ANNEX B TABLE 31
COMPARISON OF THE COST PRICES OF UHT FLUID MILK IN ONE LITER PACKAGING
STIL DAIRY PROCESSING PLANT IN TUNIS PORT
1986, 1987 AND FIRST HALF OF 1988

	1986		1987		1988 1/	
	(Dinars)	(Percent)	(Dinars)	(Percent)	(Dinars)	(Percent)
Powdered Milk/Lait en Poudre	0.097580	32.32	0.099981	30.99	0.142667	39.98
Processing Supplies/Matieres Consommable	0.004312	1.43	0.004894	1.52	0.005285	1.48
Replacement Parts/Pieces de Rechange	0.004207	1.39	0.001039	0.32	0.000641	0.18
Maintenance Supplies/Produits d/Entretien	0.000600	0.20	0.006750	2.09	0.007758	2.18
Packaging/Emballages	0.100197	33.19	0.121504	37.66	0.122979	34.46
SUB-TOTAL/SOUS-TOTAL	0.206895	68.53	0.234168	72.58	0.279339	78.28
T.F.S.E.	0.011955	3.96	0.012212	3.78	0.011682	3.27
Transport/Transport et Deplacement	0.001353	0.45	0.001015	0.31	0.001257	0.35
Processing Costs/Frais Divers de Production	0.001240	0.41	0.000745	0.23	0.000569	0.16
Financial Costs/Frais Financiers	0.014003	4.64	0.018698	5.80	0.013809	3.87
Personnel Costs/Frais de Personnel	0.029289	9.70	0.026206	8.12	0.025247	7.8
Customs and Indirect Taxes/ Impots et Taxes Indirects	0.000002	-	0.000008	-	0.002389	0.67
Miscellaneous Plant Costs/Frais Divers d'Exploitation	-	-	0.000657	0.20	0.004936	1.38
Interest on Loans/Interet des Emprunts	0.006720	2.23	0.005830	1.81	0.003307	0.93
Direct Taxes/Impots et Taxes Directs	0.000677	0.22	0.000867	0.27	0.000756	0.21
Depreciation/Dotations aux Amortissements	0.012017	3.96	0.011051	3.43	0.007600	2.13
Losses/Pertes sur Difference de Charge	0.011685	3.84	0.002475	0.76	-	-
Quote Part des Frais du Siege et du Transit	0.006297	2.06	0.008734	2.71	0.005964	1.67
SUB-TOTAL/SOUS-TOTAL	0.095022	31.47	0.088488	27.42	0.077507	21.72
TOTAL COSTS ON PRODUCTION OF UHT MILK IN ONE LITER PACKAGING	0.301917	100.00	0.322656	100.00	0.356846	100.00

ANNEX B TABLE 32
CALCULATION OF THE COST PRICE OF PASTEURIZED MILK IN ONE LITER PACKAGING
STIL DAIRY PROCESSING PLANT IN BAB SAADOUN
1 January - 30 June 1988

Cost Item	Total Costs		Cost Price Per Liter of Milk Produced		Cost Price Per Liter of Milk Sold	
			January/ June 1988	January/ December 1987	January/ June 1988	January/ December 1987
	(Dinars)	(Percent)	(Dinars Per Liter)		(Dinars Per Liter)	
Milk	4,766,263.476	59.21	0.239450	0.195850	0.242799	0.197720
Packaging	1,736,445.969	21.57	0.087237	0.084580	0.088457	0.085390
Replacement Parts	96,546.920	1.20	0.004850	0.003320	0.004918	0.003350
Other Supplies	2,639.925	0.03	0.000133	0.000120	0.000134	0.000120
T.F.S.E.	4,427.232	0.06	0.000222	0.000290	0.000226	0.000300
Transport	2.200	-	-	-	-	-
Operating Costs	116.402	-	0.000006	0.000040	0.000006	0.000040
Financial Charges	18,637.954	2.32	0.000936	0.001560	0.000946	0.001570
Personnel Costs	79,572.625	0.99	0.003998	0.004030	0.004054	0.004070
Miscellaneous Costs	3,179.588	0.04	0.000160	0.000150	0.000162	0.000150
Depreciation	52,169.870	0.65	0.002621	0.002270	0.002658	0.002290
DIRECT COSTS	6,760,002.161	83.97	0.339613	0.292210	0.344363	0.295000
SEMI-DIRECT COSTS	863,310.097	10.72	0.043371	0.045790	0.043978	0.046220
INDIRECT COSTS	92,868.835	1.16	0.004666	0.005440	0.004731	0.005490
COST PRICE EX-PLANT	7,716,181.093	95.85	0.387650	0.343440	0.393072	0.346710
COST OF PRODUCT DISTRIBUTION	333,846.499	4.15	0.016772	0.019020	0.017007	0.019200
TOTAL PRE-TAX COST PRICE	8,050,027.592	100.00	0.404422	0.362422	0.410079	0.365910
PRE-TAX SALES RECEIPTS	4,228,426.259	52.53	0.215401	0.212110	0.215401	0.212110
NET PRE-TAX INCOME	(3,821,601.333) [1]	47.47	(0.189021)	(0.150350)	(0.194678)	(0.153800)

Notes : [1] Parentheses indicate net loss of income

Initial Stock of Milk in Liters on 1 January 1988	55,540
Milk Production in Liters from 1 January 1988 to 30 June 1988	19,905,032
Final Stock of Milk in Liters on 30 June 1988	72,780
Projected Sales of Milk in Liters from 1 January 1988 to 30 June 1988	19,887,792
Actual Sales of Milk in Liters from 1 January 1988 to 30 June 1988	19,630,448
Net Difference in Liters of Milk	257,344
Liters of Milk Returned to Processor	256,766
Liters of Milk Lost	578
Pre-Tax Milk Sales Receipts in Dinars	4,228,426.259
Unit Cost per Liter of Milk Sold in Dinars	0.251401

ANNEX B TABLE 33
CALCULATION OF THE COST PRICE OF STERILIZED MILK IN ONE LITER PACKAGING
STIL DAIRY PROCESSING PLANT IN BAB SAADOUN
1 January - 30 June 1988

Cost Item	Total Costs		Cost Price Per Liter of Milk Produced		Cost Price Per Liter of Milk Sold	
			January/ June 1988	January/ December 1987	January/ June 1988	January/ December 1987
	(Dinars)	(Percent)	(Dinars Per Liter)		(Dinars Per Liter)	
Milk	1,219,086.896	59.33	0.201193	0.142050	0.212329	0.142430
Packaging	346,564.309	16.87	0.057196	0.049110	0.060361	0.049250
Replacement Parts	18,332.453	0.89	0.003026	0.027440	0.003193	0.027520
Other Supplies	11,993.272	0.58	0.001979	0.002910	0.002089	0.002920
T.F.S.E.	5,945.107	0.29	0.000981	0.001820	0.001036	0.001820
Operating Costs	427.317	0.02	0.000071	0.000060	0.000075	0.000060
Financial Charges	7,107.487	0.35	0.001173	0.000770	0.001238	0.000770
Personnel Costs	42,313.759	2.06	0.006983	0.015360	0.007370	0.015400
Miscellaneous Costs	1,284.620	0.06	0.000212	0.000490	0.000224	0.000490
Loan Interest	5,795.668	0.28	0.000956			
Direct Taxes	-	-	-	0.008510	-	0.008530
Depreciation	18,035.345	0.88	0.002976		0.003141	
DIRECT COSTS	1,676,886.233	81.62	0.276746	0.248530	0.292065	0.249190
SEMI-DIRECT COSTS	252,784.409	12.30	0.041718	0.044370	0.044028	0.044490
INDIRECT COSTS	27,192.771	1.32	0.004488	0.005270	0.004736	0.005280
COST PRICE EX-PLANT	1,956,863.413	95.24	0.322952	0.298170	0.340829	0.298970
COST OF PRODUCT DISTRIBUTION	97,753.044	4.76	0.016133	0.018430	0.017025	0.018480
TOTAL PRE-TAX COST PRICE	2,054,616.457	100.00	0.339085	0.316600	0.357854	0.317450
PRE-TAX SALES RECEIPTS	1,149,491.685	55.95	0.200208	0.221110	0.200208	0.221110
NET PRE-TAX INCOME	(905,124.772) [1]	44.05	(0.138877)	(0.095490)	(0.157646)	(0.096340)

Notes :

Initial Stock of Milk in Liters on 1 January 1988	94,044
Milk Production in Liters from 1 January 1988 to 30 June 1988	6,059,301
Final Stock of Milk in Liters on 30 June 1988	310,576
Projected Sales of Milk in Liters from 1 January 1988 to 30 June 1988	5,842,769
Actual Sales of Milk in Liters from 1 January 1988 to 30 June 1988	5,741,487
Net Difference in Liters of Milk	101,282
Liters of Milk Returned to Processor	81,009
Liters of Milk Lost	20,273
Pre-Tax Milk Sales Receipts in Dinars	1,149,491.685
Unit Cost per Liter of Milk Sold in Dinars	0.256401

[1] Parentheses indicate net loss of income

The increase in the sales price per liter of sterilized milk in 1987 led to the sale of 737,904 liters of milk at a pre-tax sale price of 0.360000 Dinars per liter.

ANNEX B TABLE 34
COST PRICE STRUCTURES AND ESTIMATED SUBSIDIES ON STERILIZED MILK AT TUNISIE LAIT PROCESSING PLANT
1987-1988

1987

	Whole Milk 1 Liter Bottle		Whole Milk 1.5 Liter Bottle		Low Fat Milk 1 Liter Bottle	
	Cost	%	Cost	%	Cost	%
			(Dinars)			
Powdered Milk Cost	0.10061	38.7	0.15090	40.1	0.08249	34.5
Cost of Milk Reconstitution	0.08779	33.8	0.12554	33.3	0.08779	36.7
INDUSTRIAL COST PRICE	0.18840		0.27644		0.17028	
Processor Margin @ 15 %	0.02826	10.9	0.04147	11.0	0.02554	10.7
Cost of Packaging in Plastic Bottles	0.04319	16.6	0.05882	15.6	0.04319	18.1
PRE-TAX COST PRICE	0.25985	100.0	0.37673	100.0	0.23901	100.0
PRE-TAX SALES PRICE	0.20030	77.1	0.29446	78.2	0.20030	83.8
Loss Per Bottle Sold	(0.05955)	22.9	(0.08227)	21.8	(0.03871)	16.2
Annual Sales in Units Sold	32,085,380		3,582,216		2,214,108	
Percent of Total Sales in Liters	80.9		13.5		5.6	
Total Losses in Dinars	(1,910,684)		(294,709)		(85,708)	
Percent of Total Losses	83.4		12.9		3.7	
Total Subsidy on All Products in Dinars			2,291,101			

1988

	Whole Milk 1 Liter Bottle		Whole Milk 1.5 Liter Bottle		Low Fat Milk 1 Liter Bottle	
	Cost	%	Cost	%	Cost	%
Powdered Milk Cost	0.14217	47.8	0.21315	49.9	0.09540	39.1
Cost of Milk Reconstitution	0.06989	23.5	0.09785	22.9	0.06980	28.6
INDUSTRIAL COST PRICE	0.21206		0.31100		0.16530	
Processor Margin @ 15 %	0.03181	10.7	0.04665	10.9	0.02480	10.2
Cost of Packaging in Plastic Bottles	0.05371	18.0	0.06953	16.3	0.05370	22.1
PRE-TAX COST PRICE	0.29758	100.0	0.42718	100.0	0.24380	100.0
PRE-TAX SALES PRICE	0.20600	69.2	0.29400	68.8	0.20600	84.5
Loss Per Bottle Sold	(0.09158)	30.8	(0.13318)	31.2	(0.03780)	15.5
Annual Sales in Units Sold	26,700,000		6,000,000		10,000,000	
Percent of Total Sales in Liters	58.4		19.7		21.9	
Total Losses in Dinars	(2,445,186)		(799,080)		(378,000)	
Percent of Total Losses	67.5		22.1		10.4	
Total Subsidy on All Products in Dinars			3,622,266			

Source : Direction des Prix et du Controle Economique, Ministere de l'Economie

ANNEX B TABLE 35

ESTIMATED COST STRUCTURE FOR FRESH PASTEURIZED MILK IN ONE LITER PLASTIC BOTTLES AND TETRA-BRIK PACKAGING 1988

Cost Component	LAINO Plastic Bottles	LAINO Tetra-Briks
	(Dinars per Liter)	
Raw Milk	0.2200	0.2200
Processing Costs:		
-- Electricity	0.0131	0.0127
-- Water	0.0070	0.0060
-- Chemicals and Other Supplies for Equipment Maintenance	0.0019	0.0017
-- Spare Parts	0.0077	0.0074
-- Personnel	0.0160	0.0160
-- Depreciation	0.0314	0.0203
-- Interest	0.0260	0.0200
PRE-TAX COST PRICE	0.3168	0.2987
Processor Margin @15%	0.0475	0.0448
Packaging	0.0540	0.1230
Value-Added Tax	0.0092	0.0209
EX-PLANT COST PRICE	0.4275	0.4874
Distributor Transport Margin	0.0080	0.0080
Wholesaler Margin	0.0080	0.0080
Retailer Margin	0.0150	0.0150
RETAIL PRICE OF FRESH PASTEURIZED MILK	0.4585	0.518.5

ANNEX C

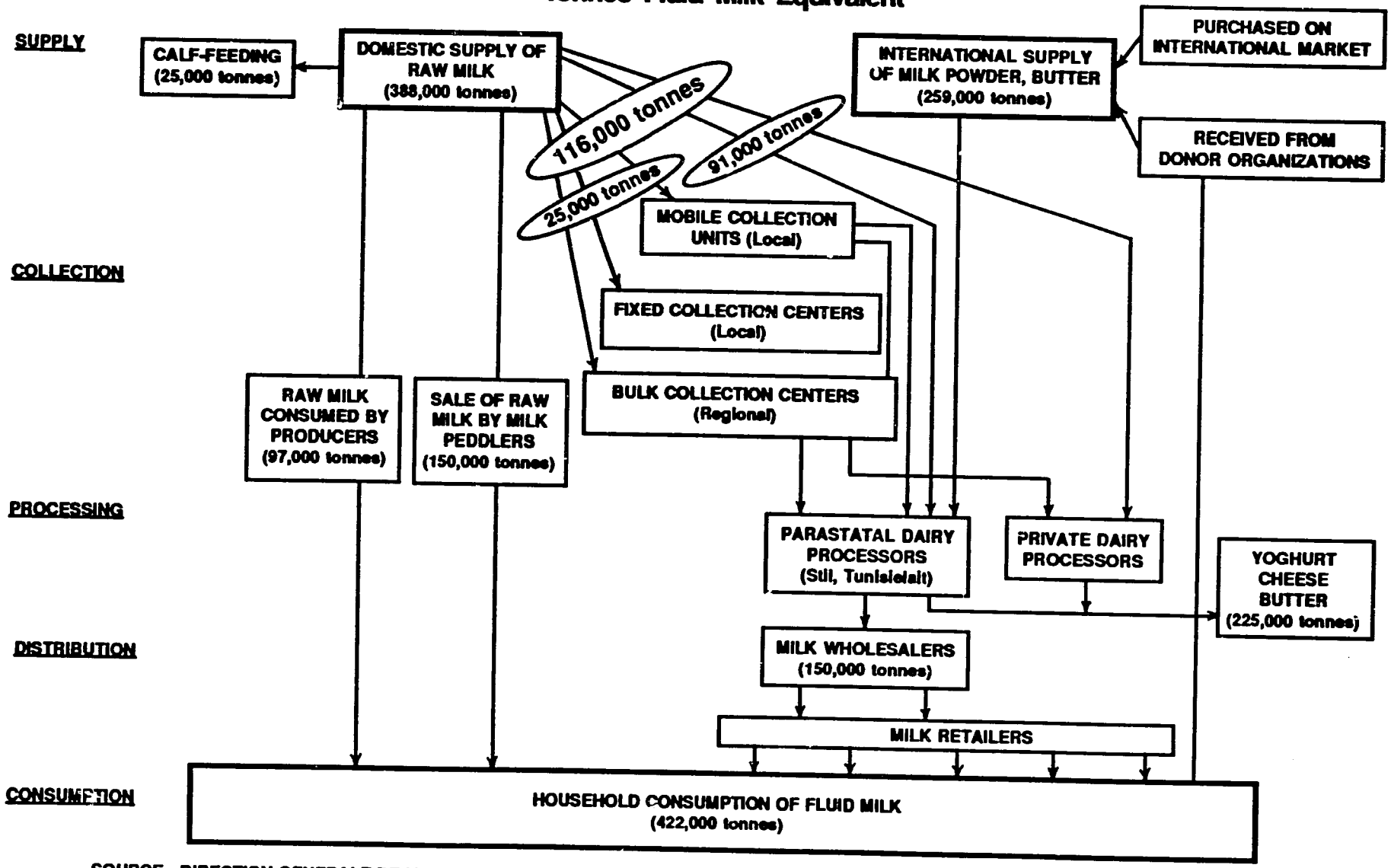
FIGURES, GRAPHS AND EXHIBITS

FIGURES AND GRAPHS

ANNEX C FIGURE 1

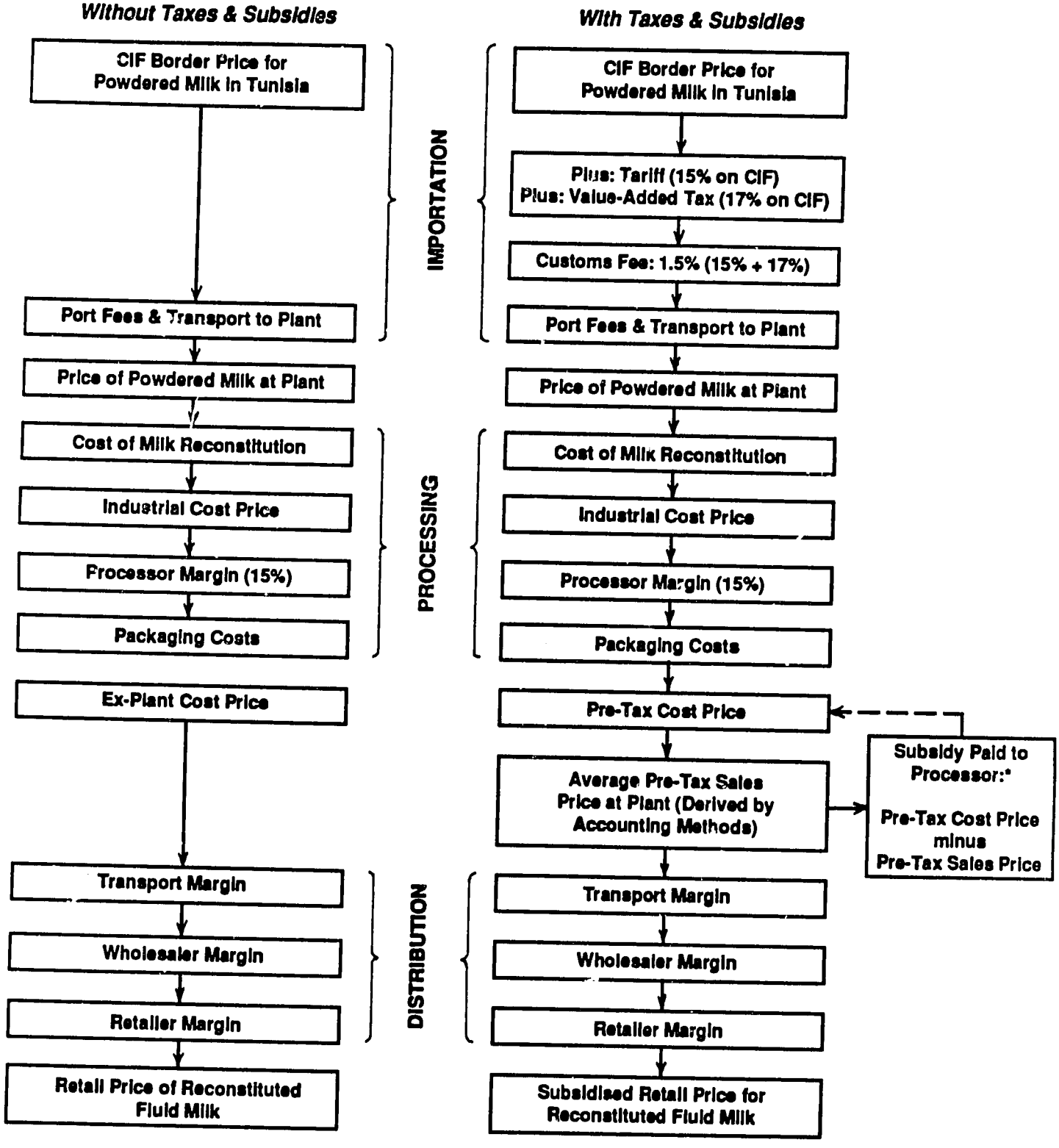
DISTRIBUTION SYSTEM FOR FLUID MILK - 1988

Tonnes Fluid Milk Equivalent



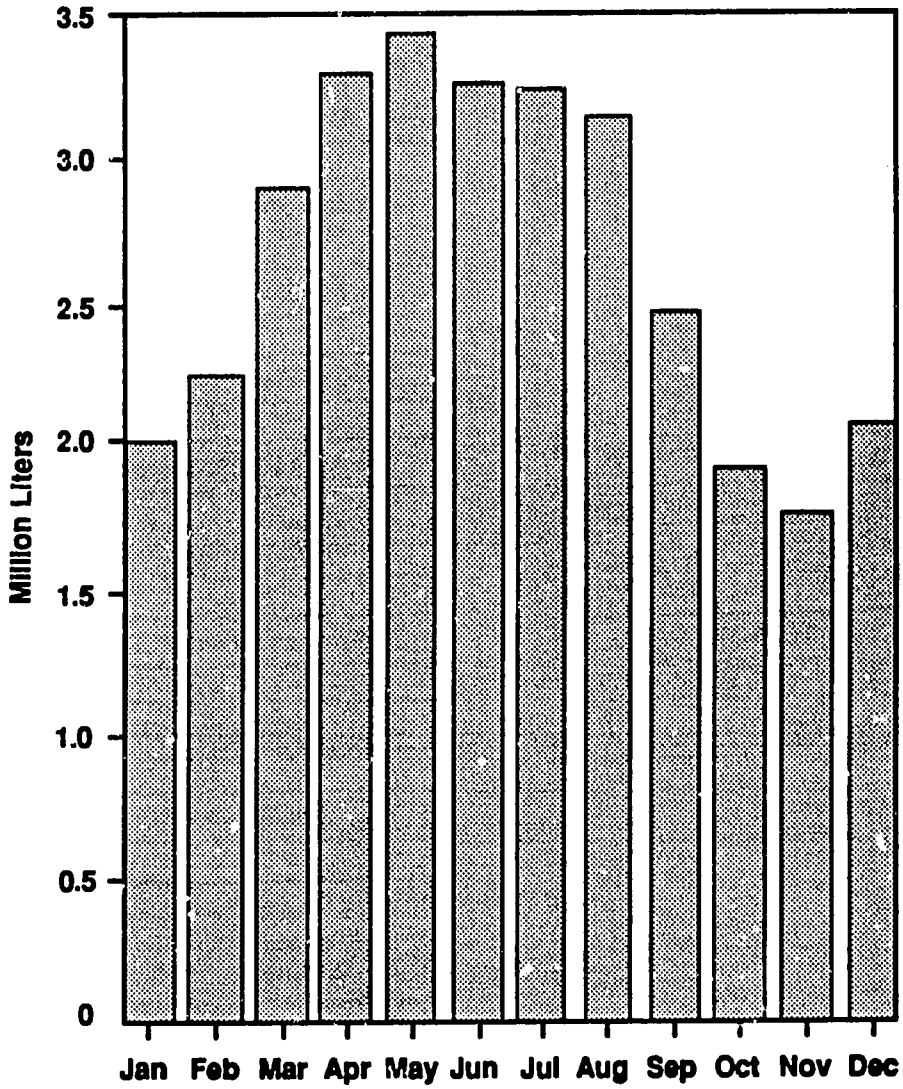
SOURCE: DIRECTION GENERALE DE L'AGRO-ALIMENTAIRE, PLAN DIRECTEUR DE L'INDUSTRIE DU LAIT ET DERIVES, PROJECTIONS FOR 1988

ANNEX C FIGURE 2
TRANSFORMATION OF POWDERED MILK TO RECONSTITUTED MILK: PRICES, TAXES AND SUBSIDIES

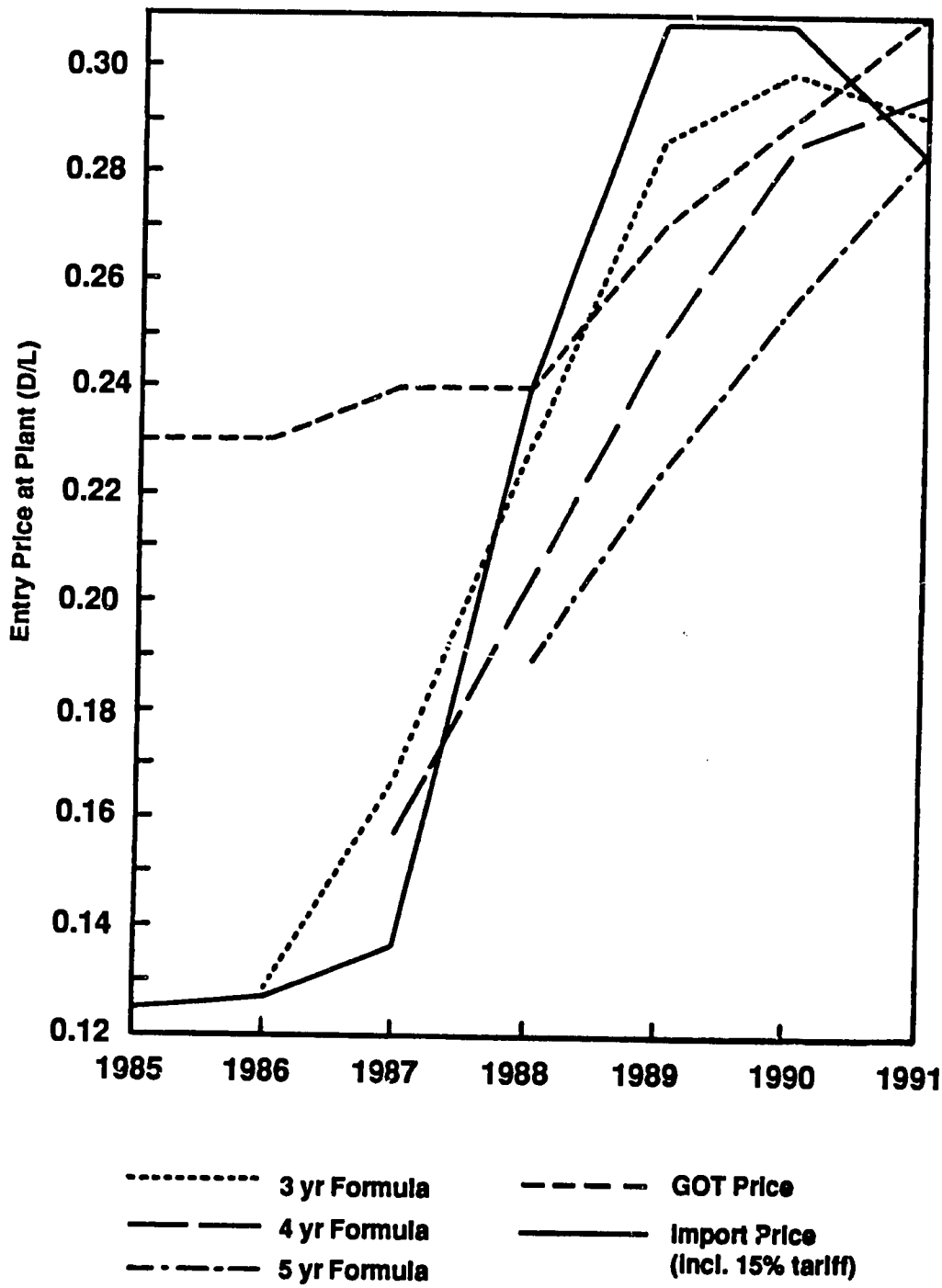


*Subsidy = Pre-Tax Cost - Fixed Sales Price - Transport Margin - Wholesale Margin - Retail Margin - Loss Factor

ANNEX C FIGURE 3
MILK RECEPTION BY MONTH
AVERAGE 1980-1988



ANNEX C FIGURE 4
FORMULA, GOT AND IMPORT PRICES FOR RAW MILK AND MILK POWDER



EXHIBITS

Loi N° 64-49 du 24 décembre 1964 (20 chaabane 1384), relative au contrôle de la production, du traitement et du commerce du lait (1).

Au nom du Peuple,

Nous, Habib Bourguiba, Président de la République Tunisienne.

L'Assemblée Nationale ayant adopté,

Promulguons la loi dont la teneur suit :

TITRE PREMIER

Dispositions générales

ARTICLE PREMIER. — La dénomination « Lait » est réservée exclusivement au produit de la sécrétion mammaire normale, obtenu par une ou plusieurs traites, sans addition ni soustraction, sauf dérogations spéciales. L'appellation « Lait » sans indication de l'espèce animale productive est réservée au lait de vache sous forme liquide à l'exclusion de tout lait en poudre, lait concentré, lait condensé, etc..

Tout lait provenant d'une femelle laitière autre que la vache doit être désigné par la dénomination « Lait » suivie de l'indication de l'espèce animale dont il provient : « lait de chèvre », « lait de brebis, lait de chamelle », etc...

Indépendamment de ses dénominations et suivant leur origine ou les traitements qu'ils auront subis, les laits doivent être vendus sous l'une ou l'autre des appellations suivantes : « lait provenant d'étables contrôlées », « lait pasteurisé », « lait stérilisé ».

Il existe quatre catégories de laits pasteurisés ou stérilisés, à l'exclusion de toutes autres;

1°) laits « standardisés » titrant 30 grammes de matière grasse au minimum par litre;

2°) laits « diététiques » partiellement écrémés dont le taux de la matière grasse est fixé par arrêté du Secrétaire d'Etat à la Santé Publique;

3°) laits « écrémés » dont le taux de la matière grasse n'est pas supérieur à 1 gramme par litre;

4°) laits aromatisés diététiques ou écrémés, correspondant aux produits visés aux 2° et au 3° ci-dessus complétés par un arôme (chocolat, etc...).

La mention de la catégorie à laquelle appartient le lait doit compléter les dénominations ou appellations prévues aux trois premiers alinéas du présent article.

Les laits diététiques ou écrémés purs, conformes au 2° ou 3° du quatrième alinéa du présent article, ne peuvent être conditionnés que dans les bouteilles capsulées, inviolables et portant une indication apparente de la qualité du lait vendu; ils ne peuvent être vendus que dans les pharmacies, les magasins de produits de régime, ou directement aux établissements hospitaliers et scolaires et aux collectivités.

Les laits aromatisés, conformes au 4° du quatrième alinéa du présent article, peuvent être vendus dans les magasins de détail et débits de boissons.

Il est interdit, sous peine des sanctions prévues au Titre V ci-après de fabriquer, transporter, détenir en vue de la vente, mettre en vente ou vendre, le produit liquide dénommé « lait régénéré ». Toutefois, ce produit peut être distribué à titre gratuit, exclusivement par :

— les établissements hospitaliers et scolaires;
— les services des collectivités publiques;
— les organisations de solidarité nationale ou assimilées.

ART. 2. — Ne constituent pas des manipulations et pratiques frauduleuses les opérations ci-après énumérées, qui ont pour objet l'amélioration de la conservation du lait :

— la filtration;
— la pasteurisation;
— la réfrigération;

(1) Travaux Préparatoires :

Discussion et adoption par l'Assemblée Nationale dans sa séance du 17 décembre 1964 (13 chaabane 1384).

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— l'homogénéisation;
— la stérilisation par des agents physiques agréés;
— le conditionnement.

Art. 3. — Il est interdit de transporter, de livrer ou de vendre :

1°) le lait provenant d'animaux atteints de maladies, dont la nomenclature sera fixée par arrêté du Secrétaire d'Etat au Plan et à l'Economie Nationale;

2°) le lait contenant des germes pathogènes;

3°) le lait dont la couleur, la saveur, l'odeur ou la composition est anormale ou qui contient des impuretés;

4°) le lait provenant d'une femelle ayant mis bas depuis moins de 7 jours, et d'une manière générale le lait colostral;

5°) le lait provenant d'animaux mal nourris ou manifestement surmenés;

6°) le lait provenant de femelles traitées à l'aide de médicaments susceptibles d'être éliminés par la mamelle, et ce, jusqu'à la fin du quatrième jour après le dernier traitement;

7°) le lait contenant des détritus ou des restes de produits employés au traitement d'un animal, des aliments ou de l'étable;

8°) le lait contenant un conservateur ou un anti-ferment quel qu'il soit;

9°) le lait contenant moins de matière grasse que le lait diététique ou le lait écrémé tels qu'ils sont définis à l'article premier ci-dessus;

10°) le lait provenant d'exploitation ou du personnel intervenant au stade de la production, du traitement ou de la vente du lait, qui serait atteint d'une affectation transmissible, dans les conditions fixées par arrêté du Secrétaire d'Etat à la Santé Publique.

Art. 4. — Est considéré comme une tentative de tromperie ou une tromperie, aux termes de l'article 1er du décret du 10 octobre 1919 (15 moharrem 1338) le fait de détenir sans motif légitime, de transporter, de traiter, d'exposer, de mettre en vente ou de vendre :

— du lait impropre à la consommation humaine ou du lait obtenu par mélange d'un lait impropre à la consommation avec un lait propre à cet usage,
— du lait provenant du mélange des diverses catégories reprises à l'article 1er ci-dessus;
— du lait obtenu par une traite incomplète, ou du lait ayant subi un écrémage même partiel, si la mention de cet écrémage n'est pas indiquée comme prévu à l'article premier ci-dessus.

Art. 5. — Est considérée comme une falsification aux termes de l'article 1er du décret susvisé du 10 octobre 1919 (15 moharrem 1338) l'addition, en quelques proportions que ce soit, d'eau potable au lait.

Est considérée comme falsification nuisible à la santé en conformité de l'article 3 du même décret, l'addition au lait en quelque proportion que ce soit, d'eau non potable ou l'addition au lait de substances autres que les produits aromatiques agréés par un arrêté conjoint des Secrétaires d'Etat au Plan et à l'Economie Nationale et à la Santé Publique.

TITRE II

Commission technique du lait

Art. 6. — Il est institué une commission technique du lait composée comme suit :

— un médecin inspecteur, représentant le Secrétaire d'Etat à la Santé Publique;
— un vétérinaire-inspecteur et un inspecteur du service de la répression des fraudes, représentant le Secrétaire d'Etat au Plan et à l'Economie Nationale;
— un pharmacien-inspecteur;
— un représentant des établissements de pasteurisation désigné par décision du Secrétaire d'Etat au Plan et à l'Economie Nationale;
— un représentant des coopératives de revendeurs et distributeurs de lait, désigné par l'organisation professionnelle la plus représentative;
— un représentant des producteurs, désigné par ue du Secrétaire d'Etat au Plan et à l'Economie Nati

Cette commission peut s'adjoindre, à titre cons toutes personnes dont la compétence lui paraît utile désigne au début de chacune de ses réunions et parı membres fonctionnaires, un président. Son secrétari assuré par le vétérinaire-inspecteur, représentant le taire d'Etat au Plan et à l'Economie Nationale.

La commission se réunit sur convocation de son taire, soit à la requête de trois au moins de ses mer soit à la demande de l'un des Secrétaires d'Etat au et à l'Economie Nationale ou à la Santé Publique.

Le siège de la commission technique du lait est au tariat d'Etat au Plan et à l'Economie Nationale où correspondance doit être adressée.

Art. 7. — La commission technique du lait a pour son :

— de surveiller l'hygiène du lait dans ses divers de production, de transformation et de commerci tion;
— de veiller à ce que toutes les personnes physiqu morales exerçant une activité quelconque dans l maine du lait aient la compétence professionnelle lue. Indépendamment de cette mission de surveil la dite commission peut connaître de toutes les tions touchant à la production, à la transformation commerce du lait et à ce titre présenter aux dép ments intéressés tous avis et suggestions.

La commission susvisée ne peut valablement déli que si quatre au moins de ses membres sont présent

Les procès-verbaux des délibérations sont adressés, cun en ce qui le concerne, aux Secrétaires d'Etat intér

Art. 8. — Dans un délai de deux mois à compter date de publication de la présente loi, les product transporteurs, revendeurs, colporteurs de lait ainsi qu industriels se livrant au traitement du lait et plus ralement toutes personnes physiques ou morales s'occu professionnellement de la production, du traitement commerce du lait doivent souscrire une déclaration quant explicitement l'activité qu'ils exercent. Cette d ration doit être également souscrite préalablement à l' cice de son activité professionnelle, par toute personne sique ou morale entrant dans le cadre des disposition précèdent.

Les déclarations sont adressées par les intéressés au térinaire-inspecteur, secrétaire de la commission techn du lait.

Celui-ci centralise les dossiers et les adresses pour quête portant sur l'hygiène et la compétence professio le, aux divers départements intéressés.

Le résultat de l'enquête est communiqué pour avis commission technique du lait qui adresse ensuite les siers assortis de ses avis et observations au Secré d'Etat au Plan et à l'Economie Nationale, ce dernier dél le cas échéant, aux intéressés une carte professionnell diquant l'activité qu'ils sont autorisés à exercer dan secteur du lait.

Toute infraction aux dispositions de la présente loi traîne automatiquement le retrait provisoire ou défi de la carte professionnelle.

La décision accordant ou retirant la carte profession est notifiée pour information à la commission techniqu lait qui la garde dans ses archives.

Art. 9. — Sur tout le territoire de la République, il interdit de vendre en nature en vue de la consomma humaine, tout lait autre que :

1°) le lait qui a été soumis à un traitement de paste sation ou stérilisation dans les conditions visées au tre IV ci-après;

2°) le lait qui est vendu directement aux consommat sur le lieu de la production;

3°) le lait qui est produit, transporté et vendu dans conditions fixées au Titre III ci-après sous le nom de « provenant d'étables officiellement contrôlées ».

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ART. 10. — Les professionnels doivent présenter à toute réquisition des agents habilités pour le contrôle du lait la carte professionnelle délivrée par le Secrétaire d'Etat au Plan et à l'Economie Nationale leur permettant d'exercer leur activité.

ART. 11. — Le lait employé pour la fabrication des crèmes, glaces, ice-cream, crèmes de pâtisserie, fromage frais et d'autres produits dérivés, dont la liste sera déterminée par arrêté conjoint des Secrétaires d'Etat au Plan et à l'Economie Nationale et à la Santé Publique, doit obligatoirement être, soit du lait provenant d'étables officiellement contrôlées, soit du lait soumis à un traitement de pasteurisation, soit du lait concentré ou du lait en poudre. Les teneurs maxima ou minima du lait servant à la préparation des produits susvisés seront déterminées par le même arrêté.

ART. 12. — Les emballages pour la vente du lait au détail ou leur fermeture inviolable, doivent porter mention de la catégorie du lait (pasteurisé-pasteurisé standardisé-stérilisé homogénéisé) ainsi que la raison sociale ou au moins le numéro d'agrément de l'établissement qui a traité ou produit le lait.

La reprise des emballages vides est subordonnée à l'état de propreté de ces derniers à tous les stades de la commercialisation, y compris celui de la vente en détail au consommateur.

TITRE III

Contrôle du lait

ART. 13. — Le lait peut être soumis à un contrôle sanitaire et hygiénique à la production, au transport et à la vente, tel qu'il est décrit au présent titre. Si ce lait est conforme aux exigences requises, il peut être vendu à l'état frais et a droit à l'appellation « lait provenant d'étables officiellement contrôlées » ou en abrégé « lait contrôlé ». Dans le cas où les exigences ne sont pas satisfaites, le lait devra être pasteurisé ou stérilisé.

ART. 14. — Le contrôle est limité aux vacheries-laitières pour lesquelles les propirétaires auront fait la demande conformément aux dispositions de l'article 8 de la présente loi. Il s'exerce sur les différentes opérations que le lait subit entre la production et la vente au public.

Le lait provenant de vacheries-laitières contrôlées doit répondre aux exigences suivantes :

— provenir de vaches indemnes de tuberculose;
— satisfaire aux épreuves de réduction exécutée suivant une méthode agréée par arrêté conjoint des Secrétaires d'Etat au Plan et à l'Economie Nationale et à la Santé Publique;
— avoir une acidité au moment de la vente inférieure à 21° Dornic;
— être, aussitôt après la traite, filtré, refroidi et maintenu jusqu'au départ du lieu de production à une température ne dépassant pas 10° C;
— être conditionné dans des emballages à fermeture inviolable et imposable à réutiliser, sur laquelle est indiquée la date ultime d'utilisation normale;
— contenir au maximum un germe du groupe Coli par millilitre;
— contenir au maximum 100.000 germes microbiens totaux par millilitre.

Toutefois, pour les prélèvements effectués dans les magasins de vente, ces chiffres pourront être porté à :
— deux germes du groupe Coli par millilitre;
— 200.000 germes microbiens totaux par millilitre.

ART. 15. — Quiconque a l'intention d'obtenir le contrôle officiel de son étable, afin de vendre du lait frais doit adresser au vétérinaire-inspecteur, secrétaire de la commission technique du lait une déclaration écrite indiquant notamment la situation de l'étable, le nombre de vaches qu'elle renferme et la quantité approximative de lait mise journellement en vente.

La dite déclaration entraîne l'ouverture de la procédure d'enquête visée à l'article 8 ci-dessus.

L'enquête porte sur l'état de santé des animaux, l'hygiène de ceux-ci, leur logement, leur alimentation, la traite et les diverses manipulations subies par le lait dans l'établissement ainsi que sur l'état de santé du personnel de l'étable. Il donne lieu à un rapport communiqué à la commission technique du lait et sanctionné par elle dans les conditions prévues à l'article 8 ci-dessus, la commission émet son avis sur l'agrément de l'étable intéressée.

L'agrément est donné par le Secrétaire d'Etat au Plan et à l'Economie Nationale. Il peut être retiré si, postérieurement, il se présente des motifs qui en auraient justifié le refus.

La décision accordant ou retirant l'agrément est communiquée pour information à la commission technique du lait qui la garde dans ses archives.

Toute infraction aux dispositions ci-dessus entraîne automatiquement le retrait de l'agrément.

ART. 16. — Toutes les décisions prévues aux articles 8 et 15 ci-dessus doivent être motivées. Les conclusions des enquêtes sont inscrites sur une fiche spéciale, établie par producteur laitier, et dont les duplicata sont centralisés aux archives de la commission technique du lait qui peut, s'il y a lieu, en délivrer copie au Parquet.

ART. 17. — Le vétérinaire-inspecteur doit, et sans prétendre à en être dédommagé par des particuliers, procéder, autant de fois qu'il convient et au moins une fois par trimestre, à des visites périodiques et inopinées des vacheries contrôlées pour s'assurer que toutes les prescriptions visées par la présente loi y sont observées. Il exécute toutes les opérations de contrôle qu'il juge nécessaire.

Les résultats de ces inspections doivent être notés sur un registre spécial et faire l'objet d'un rapport mensuel adressé au Chef du Service Vétérinaire.

ART. 18. — Les vaches entretenues dans un établissement laitier contrôlé doivent avoir été reconnues indemnes de toute maladie contagieuse et notamment de tuberculose après examen clinique et tuberculination par un vétérinaire habilité qui, pour preuve de son examen, délivrera un certificat détaché d'un registre à souche. Ce certificat pourra être réclamé au moment des visites sanitaires ultérieures.

Chaque animal est identifié par un numéro d'ordre apposé à l'oreille (tatouage ou à défaut, marque individuelle).

ART. 19. — Tout propriétaire ou gérant d'exploitation laitière contrôlée devra tenir, concurremment avec le vétérinaire-inspecteur, un registre d'inventaire des animaux de son étable.

Le registre-type sera fourni par le service vétérinaire; il mentionnera notamment le signalement, le numéro d'ordre auriculaire et la date des tuberculinations successives de chaque animal.

En outre, une fiche signalétique individuelle d'un modèle arrêté par le Chef du Service Vétérinaire, sera établie par le praticien et suivra l'animal dans ses mutations.

Les propriétaires ou gérants d'établissements laitiers contrôlés sont tenus de signaler sans délai au vétérinaire-inspecteur, tout cas suspect de maladie contagieuse observé parmi les animaux de leur exploitation.

Chaque entrée ou sortie d'une bête devra faire l'objet d'une déclaration écrite, adressé dans les 48 heures au secrétaire de la commission technique du lait. Cette déclaration sera établie sur une carte dont le modèle sera arrêté par le Chef du Service Vétérinaire, les cartes seront fournies aux producteurs par le vétérinaire du ressort.

ART. 20. — Le bétail laitier doit être nourri avec des aliments qui ne risquent pas de troubler les fonctions digestives, ni d'altérer les qualités organoleptiques normales du lait. En particulier est interdit l'usage de produits vénéneux où toxiques et de ceux qui pourraient communiquer au lait un mauvais goût ou une mauvaise odeur.

ART. 21. — Au cours de ses inspections périodiques, le vétérinaire contrôle l'état de santé des animaux en s'appliquant particulièrement aux conditions sanitaires et fonctionnelles des mamelles.

Il soumet ces animaux, au moins deux fois par an, à l'épreuve de la tuberculine, en se conformant exclusivement aux procédés approuvés par le service vétérinaire. Des prélèvements de lait pour analyse bactériologique et hygiénique peuvent être pratiqués chaque fois que cela s'avère nécessaire, et au moins deux fois par an.

Les certificats de tuberculination doivent être adressés au Chef du Service Vétérinaire aussitôt après l'opération.

ART. 22. — Les animaux qui auront réagi positivement à la tuberculine et présenté des signes cliniques de tuberculose, seront dirigés dans les quinze jours qui suivent le constat sur un abattoir surveillé par un vétérinaire pour être abattus.

Le vétérinaire habilité établira un laissez-passer mentionnant les noms et adresse du propriétaire, le numéro d'ordre auriculaire de l'animal et l'endroit où l'abattage devra avoir lieu. Le laissez-passer devra lui être renvoyé dans les huit jours par le vétérinaire-inspecteur de l'abattoir et porter l'attestation que l'animal a été abattu

Les animaux qui auront réagi à la tuberculine sans présenter de signes cliniques, seront séparés des animaux sains et vendus pour la boucherie dans un délai fixé par le Chef du Service Vétérinaire. Pendant ce délai, le lait provenant de ces vaches ne pourra être livré à la consommation qu'après pasteurisation ou stérilisation, tandis que les animaux eux-mêmes feront l'objet d'examens bactériologiques fréquents. La mise en évidence du bacille tuberculeux dans les excréments sera suivie d'une décision immédiate d'abattage.

ART. 23. — Le vétérinaire-inspecteur qui constate un motif officiel d'abattage établit immédiatement un procès-verbal de constat et procède de l'estimation de l'animal, conformément aux articles 24 et 26 ci-après.

Ce procès-verbal est envoyé, sous pli fermé de service, au vétérinaire-inspecteur de l'abattoir.

En cas de litige, le Chef du Service Vétérinaire ou son délégué procède à l'estimation définitive.

ART. 24. — 1°) le procès-verbal susvisé, rédigé par le vétérinaire-inspecteur qui a fait le constat, précisera :

a) l'origine de l'animal (nom, prénom, et adresse du propriétaire) son signalement et sa marque auriculaire;

b) les observations relatives à l'examen cliniques et à l'état général de l'animal;

c) les réactions tuberculiniques enregistrées, avec les dates;

d) le poids vif et la valeur de l'animal sur pieds;

2°) ce même procès-verbal sera complété, en ce qui le concerne, par le vétérinaire-inspecteur de l'abattoir, qui précisera notamment :

a) les lésions observées après abattage;

b) l'importance et le détail des saisies;

c) le poids de l'animal abattu;

d) le poids et la valeur de la viande, des issues et des abats récupérés;

e) la date de l'abattage;

3°) le vétérinaire-inspecteur de l'abattoir adressera le procès-verbal complété au Chef du Service Vétérinaire.

ART. 25. — Tout propriétaire qui se sera soumis aux dispositions du présent titre pourra obtenir de l'Etat, dans les limites prévues à l'article 26 ci-après et sous les modalités déterminées par arrêté du Secrétaire d'Etat au Plan et à l'Economie Nationale, une indemnité du chef;

1°) des travaux d'aménagement et d'assainissement des locaux utilisés comme étables et des locaux annexes;

2°) de la perte subie par l'abattage des animaux pour motif sanitaire.

ART. 26. — L'indemnité prévue au paragraphe 1° de l'article précédent ne pourra dépasser le tiers de la dépense, dans la limite d'un maximum fixé par arrêté du Secrétaire d'Etat au Plan et à l'Economie Nationale.

L'indemnité prévue au paragraphe 2° de l'article dent ne pourra excéder 50 % de la perte subie pc animaux reconnus atteints de tuberculose clinique, e de la perte pour les animaux qui en l'absence de cliniques ont fourni une réaction positive à la tuber La perte est calculée d'après la valeur réelle du suj sidéré au point de vue laitier et la valeur récupérée abattage.

Ne donnera pas droit à l'indemnité, l'abattage d'u mal :

a, en dehors de l'abattoir dûment inspecté et qu désigné pour l'abattage;

b, atteint de cachexie ou de misère physiologiqu

c, introduit dans l'étable depuis moins de 6 mois, à qu'il ne provienne d'une étable contrôlée;

d, en dehors des délais, tels que définis à l'article dessus.

ART. 27. — Les laits des vacheries contrôlées devro livrés en bouteilles ou bidons plombés. Les plombs vendus par le Service Vétérinaire. Les plombs devron 20 mm. de diamètre après avoir été aplatis.

Le scellé devra être reconnu inviolable.

Les bidons devront porter le numéro de la vacher trôlée correspondant à l'agrément donné dans les con fixées à l'article 15 ci-dessus.

La vente au public ne peut se faire que dans les sins autorisés préalablement par le Service d'Hygiè nicipal ou par le Service de la Santé Publique.

Le colportage est interdit autrement qu'en bouteill bouchage inviolable.

TITRE IV

Pasteurisation du lait

ART. 28. — Les laits pasteurisés doivent répond exigences suivantes :

1°) contenir moins de 30.000 germes microbiens par millilitre;

2°) contenir au maxima un germe du groupe C millilitre;

3°) présenter une réaction négative à la phosphat

4°) être fournis aux revendeurs à une température dépassant pas 10° C;

5°) être livrés avec une date limite d'utilisation n jusqu'à laquelle l'établissement pasteurisateur gar lait.

Par dérogation à ce qui précède, et uniquement d conditions de l'article 29 ci-après, le lait pasteuris en bidons contiendra au maximum :

a) 100.000 germes microbiens totaux par millilit sortie du pasteurisateur et 200.000 germes à la liv

b) 2 germes du groupe Coli par millilitre.

ART. 29. — Le lait pasteurisé doit être vendu en b les ou en bidons; en cas de livraison en bidons ceux vent être plombés.

Les plombs sont vendus par le Service Vétérinaire

Le bidon n'est autorisé que pour les ventes aux h et aux autres collectivités.

ART. 30. — Les laits soumis à la stérilisation doiv absolument exemptés de germes microbiens.

Ils doivent être vendus en bouteilles fermées p capsule assurant une étanchéité parfaite et inviola

Leur conservation doit être garantie six mois au mum. Leur homogénéisation doit être telle que, par agitation du récipient, les divers constituants du lai sent être remis en suspension.

TITRE V

Mesures d'exécution et sanctions

ART. 31. — Les infractions à la présente loi et au pris pour son application peuvent entraîner la sus temporaire ou définitive de l'activité du délinquant retrait de l'autorisation de vente et la fermeture du vente, sans préjudice des sanctions pénales prévues

cret du 10 octobre 1919 (15 moharrem 1338) sur la répression des fraudes; elles sont constatées, poursuivies et réprimées, en conformité des dispositions du même décret.

Les procès-verbaux rédigés et les échantillons prélevés sont transmis en conformité des dispositions de l'arrêté du 25 mai 1955 (21 safar 1374), réglementant le prélèvement, la transmission et l'analyse des échantillons recueillis.

Toutefois, lorsqu'il s'agit de réaliser un contrôle bactériologique du lait, le nombre d'échantillons à prélever pour chaque contrôle ainsi que les modalités particulières de prélèvement, d'analyse de ces échantillons et de règlement des frais en découlant, sont fixés par arrêtés conjoints des Secrétaires d'Etat au Plan et à l'Economie Nationale et à la Santé Publique.

L'ensemble des échantillons prélevés au titre d'un même procès-verbal de prélèvement est considéré comme l'échantillon unique prévu à l'article 22 du décret susvisé du 10 octobre 1919 (15 moharrem 1338).

L'Institut National de Recherches Vétérinaires et les laboratoires régionaux de la Santé Publique sont habilités à procéder à l'examen bactériologique des échantillons, dans les conditions fixées pour l'Institut Pasteur de Tunis par l'article 17 du décret susvisé du 10 octobre 1919 (15 moharrem 1338).

Ces laboratoires, lorsqu'ils procèdent à l'examen bactériologique remplissent la mission dévolue à l'expert unique prévu par le deuxième paragraphe de l'article 8 de l'arrêté précité du 23 mai 1955 (21 safar 1354).

Il est, cependant, permis aux intéressés de demander, en le faisant explicitement mentionner au procès-verbal, que l'examen soit confié à l'analyse d'un autre laboratoire agréé.

A la suite de l'examen, un rapport d'analyse est établi et adressé au Secrétariat d'Etat au Plan et à l'Economie Nationale (Inspection de la Répression des Fraudes).

Dans tous les cas, ce rapport a les effets attachés à la procédure contradictoire.

ART. 32. — Indépendamment des autorités habilitées par l'article 13 du décret susvisé du 10 octobre 1919 (15 moharrem 1338), les personnes qui seront spécialement désignées par les Secrétaires d'Etat au Plan et à l'Economie Nationale et à la Santé Publique pourront être agréées et commissionnées par le Secrétaire d'Etat au Plan et à l'Economie Nationale pour rechercher et constater les infractions, dresser procès-verbal, opérer des prélèvements et, s'il y a lieu effectuer des saisies pour tout ce qui concerne le contrôle de la production et du commerce du lait.

Les infractions aux dispositions de l'article 10 de la présente loi (défaut de carte) entraînent la saisie immédiate des laits détenus en vue de la vente, mis en vente et leur cession gratuite à une collectivité publique, au cas où ils seraient propres à la consommation.

ART. 33. — Le Tribunal pourra ordonner l'insertion aux frais du contrevenant dans deux journaux qu'il désignera, et s'il y a lieu, l'affichage pendant quinze jours dans l'établissement du contrevenant, du jugement rendu au pénal en application des articles 31 et 32 ci-dessus. Cette publicité sera obligatoire à compter de la deuxième infraction constatée à toutes dispositions de la présente loi.

En période de production laitière insuffisante, la régénération de lait à l'état liquide à partir de lait en poudre, pourra être autorisée à titre exceptionnel par le Secrétaire d'Etat au Plan et à l'Economie Nationale, après avis de la commission technique du lait; l'autorisation ainsi accordée mentionnera les modalités d'exécution et de contrôle de l'opération.

Le lait régénéré doit être exclusivement vendu en bouteilles capsulées, avec mention sur la capsule de l'indication « lait régénéré » suivie du terme « pasteurisé » ou « stérilisé » suivant le traitement subi.

ATR. 34. — Toutes dispositions contraires à celles de la présente loi sont abrogées et notamment le décret du 27 mars 1936 (4 moharrem 1355) réglementant le commerce du lait frais au détail les articles 1 et 2 du décret du 23 juillet 1936 (4 joumada I 1355) relatif au lait et aux produits laitiers, les décrets des 10 août 1950 (23 chaoual 1369) et 26 juillet 1951 (21 chaoual 1370) relatifs au contrôle sanitaire et hygiènique de la production du lait, les articles 19, 20, 21, 22 et 23 de l'arrêté du 12 janvier 1951 (3 rabia II 1370) sur la répression des fraudes, les arrêtés des 18 août 1951 (15 doul kaada 1370) et 15 décembre 1952 (27 rabia I 1372), relatifs au contrôle sanitaire et hygiènique de la production du lait.

La présente loi sera publiée au *Journal Officiel de la République Tunisienne* et exécutée comme loi de l'Etat.

Fait à Tunis, le 24 décembre 1964 (20 chaabane 1384)

Le Président de la République Tunisienne,

HABIB BOURGUIBA.

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...i N° 70-26 du 19 mai 1970, relative aux modalités de fixation des prix et à la répression des infractions en matière économique (1).

Au Nom du Peuple,

Nous, Habib Bourguiba, Président de la République tunisienne;

L'Assemblée Nationale ayant adopté;

Promulguons la loi dont la teneur suit :

Titre I. — De la fixation des prix

Chapitre I. — *Les différents régimes de fixation des prix*

ARTICLE PREMIER. — Les prix des marchandises, produits services sont soumis aux régimes de la taxation, de l'homologation, de l'auto-homologation, de la liberté contrôlée de la liberté totale.

ART. 2. — La taxation est la fixation d'un prix unique, minimum ou maximum, applicable sur tout le territoire de République ou différencié suivant les régions.

(1) Travaux préparatoires :
Discussion et adoption par l'Assemblée Nationale dans sa séance du 12 mai 1970.

L'homologation est la fixation préalable des prix à p des éléments comptables de l'entreprise.

L'auto-homologation est la fixation des prix par l'e prise elle-même par application sur le prix de revien ses articles d'un taux de marque ou barème de marge b limite.

La liberté contrôlée est la fixation des prix par l'entre elle-même sous réserve de déposer les prix en question près du Ministère des Affaires Economiques préalabler à leur mise en application. Un décret fixera les condit d'application de ce régime.

La liberté totale est la détermination des prix par l'e prise elle-même en toute liberté. Cependant les disposit de la présente loi qui ne se rapportent pas à la fixation prement dite des prix sont applicables aux produits services placés sous ce régime.

Des décrets détermineront, par catégorie, les marchand produits et services soumis respectivements aux régimes d taxation, de l'homologation, de l'auto-homologation, de liberté contrôlée ou de la liberté totale.

ART. 3. — Il est institué une Caisse Générale de Comp sation destinée à agir sur les prix des marchandises, prod et services de première nécessité notamment au moyen subvention et de péréquation.

Les modalités de fonctionnement de cette Caisse ser fixées par décret.

Chapitre II. — *Des organes de fixation des prix*

ART. 4. — Les prix des produits et services sont fixés

— par arrêté du Ministre des Affaires Economiques ou arrêté conjoint du Ministre des Affaires Economiques et ou des Ministres responsables des produits ou services, ap avis du Comité National des Prix pour les produits de base les services d'intérêt général soumis à taxation,

— par décision du Ministre des Affaires Economiques p les marchandises, produits et services soumis à homologati

— par les entreprises elles-mêmes :

1°) lorsqu'il s'agit de produits pour lesquels les mar bénéficiaires brutes limites ou taux de marque auront fixés aux différents stades de la distribution par arrêtés Ministre des Affaires Economiques, pris après avis du Com National des Prix;

2°) lorsqu'il s'agit de produits, marchandises ou servi dont les prix sont soumis soit au régime de la liberté c trôlée soit au régime de la liberté totale.

Chapitre III. — *Du mécanisme de fixation des prix*

SECTION I

De la détermination des prix à la production

ART. 5. — Les prix de vente au stade de la production de la transformation de tout produit sont déterminés tenant compte du prix de revient industriel dont les éléme constitutifs seront définis par décret et de la marge br qui sera fixée par groupe de produits ou branche d'ind trie à partir des comptes des entreprises témoins, par arr du Ministre des Affaires Economiques, après avis du Com National des Prix.

Les dispositions du présent article ne s'appliquent pas a produits agricoles et à tout autre produit soumis au régi de la liberté totale.

SECTION II

De la détermination des prix au stade de la distribution

ART. 6. — Les prix de vente au stade de la distributi des marchandises et produits de fabrication locale ou d'i portation soumis à auto-homologation sont déterminés

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tenant compte du prix de revient dont les éléments constitutifs seront définis par décret et d'un taux de marque ou barème des marges commerciales maximum fixé par arrêtés, pris dans les conditions prévues à l'article 4 de la présente loi.

Chapitre IV. — *Publicité des prix*

SECTION I

De l'affichage et de l'étiquetage des prix

ART. 7. — Dans les établissements de vente au détail, les prix des marchandises et denrées doivent être indiqués de façon très lisible avec la dénomination exacte soit sur le produit ou marchandise soit sur son emballage ou récipient.

Cependant, dans les halles et marchés ainsi que dans les étalages des marchands ambulants, où l'indication des prix sur la marchandise peut présenter des difficultés, une affiche générale apparente concernant les indications prévues ci-dessus est suffisante.

Dans les hôtels, restaurants, cafés et les établissements assimilés, les prix pratiqués doivent être affichés à la vue du public et en outre pour les hôtels et pensions, dans les chambres et appartements.

SECTION II

Des factures

ART. 8. — La délivrance d'une facture en double expédition datée et signée par le vendeur et indiquant le prix pratiqué est obligatoire pour toute vente. Cependant en cas de vente au détail cette délivrance de facture n'est obligatoire que sur la demande de l'acheteur, sauf pour le cas d'achats opérés dans les foires, marchés et auprès des marchands ambulants.

Un arrêté du Ministre des Affaires Economiques fixera les mentions à porter obligatoirement sur les factures.

Titre II. — Du contrôle des prix

ART. 9. — Il est institué un Comité National des Prix ayant pour attributions :

1°) de donner son avis sur toute décision de taxation, d'homologation des prix ou de fixation de taux de marque ou marges commerciales limites;

2°) de constater à des périodes régulières, l'évolution générale des prix et de présenter toute suggestion quant à la politique générale de fixation et de contrôle des prix.

Un décret fixera la composition et le fonctionnement du Comité National des Prix

ART. 10. — Il est institué dans chaque Gouvernorat un Comité Régional des Prix, chargé de proposer au Ministre des Affaires Economiques les adaptations aux conditions locales des prix de vente au détail compte-tenu notamment des conditions de production.

Un décret fixera la composition et le fonctionnement des Comités Régionaux des Prix.

Titre III. — Des infractions et des sanctions

Chapitre I. — *Infractions en matière de prix*

ART. 11. — Est considérée comme majoration illicite de prix toute augmentation des prix résultant de la modification d'une des conditions de vente ci-après :

a) la vente d'une marchandise « nue » à un prix s'entendait antérieurement à la vente de cette marchandise « logée »;

b) la vente d'une marchandise prise au départ de l'usine, à la gare ou au quai de départ, à un prix qui s'entendait antérieurement à la vente de cette marchandise « rendue franco » chez l'acheteur;

c) l'application à la vente d'une marchandise d'un supplément de prix pour des prestations ou fournitures accessoires, si celles-ci étaient antérieurement comprises dans le prix de la vente principale.

ART. 12. — Constituent la pratique de prix illicites :

1°) toute vente de produit, toute prestation de servic toute offre, proposition de vente de produit ou de prestatic de service faite à un prix supérieur au prix fixé, autoris ou déposé;

2°) le maintien au même prix de produit ou de prestatic dont la qualité, ou quantité, le poids, la dimension ou volume utile a été diminué.

3°) l'intervention rémunérée sous quelque forme que soit d'un intermédiaire nouveau;

Est réputé intermédiaire nouveau au sens de ce paragraphe

a) le commerçant qui, en dehors de son activité habituell s'introduit même occasionnellement dans le cycle normal la distribution;

b) toute personne qui par acte isolé ou habituel s'intr duit également dans le cycle normal de la distribution.

4°) les ventes ou achats et les offres de vente ou d'ach comprenant sous quelques formes que ce soit une prestatic occulte supplémentaire;

5°) les prestations de service, les offres de prestations service, les demandes de prestations de service, comporta sous quelques formes que ce soit une rémunération occult

6°) entre commerçants, les ventes ou achats et les offr de vente ou d'achat comportant la livraison de produit inf rieur en qualité ou en quantité à ceux facturés ou à facturé à moins que l'acheteur ne porte plainte contre le vendeur;

7°) les ventes par des grossistes à des prix de détail quantités de marchandises correspondant habituellement à d ventes en gros.

ART. 13. — Est assimilé à la pratique de prix illicite le f. par tout commerçant, industriel ou artisan :

1°) de conserver les produits destinés à la vente en refusa de satisfaire dans la mesure de ses disponibilités aux demanc de sa clientèle dès lors que ces demandes ne présentent auc caractère anormal et que la vente des produits en questi n'est pas soumise à une réglementation spéciale;

2°) de subordonner la vente d'un produit quelconque, s à l'achat concomitant par le client d'autres marchandises, p duits ou denrées, soit à l'achat par le client d'une quant imposée;

3°) de mettre en vente un produit qui n'a pas fait l'ob d'une décision de fixation de prix, sauf le cas de produ soumis au régime de la liberté totale.

4°) de dissimuler dans un dépôt quelconque, des march dises dont son magasin n'est pas approvisionné;

5°) de ne pas présenter à la première demande des age chargés de la constatation des infractions en matière éco mique, des factures en originaux ou en copies.

Chapitre II. — *Constatation des infractions*

ART. 14. — Les infractions aux dispositions de la prése loi sont constatées soit par information judiciaire soit par procès-verbaux dressés :

— par les agents du contrôle économique,

— par les officiers de la police judiciaire,

— par toutes personnes dûment assermentées spécialem habilitées à cet effet et désignées par le Ministre des Affa Economiques.

Les procès-verbaux sont directement adressés en original une copie au Ministère des Affaires Economiques qui transmet à la juridiction compétente sauf s'il est décidé classer l'affaire ou d'accorder une transaction.

ART. 15. — Les procès-verbaux énoncent la date, le et la nature des constatations ou des contrôles effectu

indiquant que l'intéressé a été informé de la date et du lieu de leur rédaction et que convocation par lettre recommandée lui a été adressée sauf le cas de flagrant délit.

Ils précisent, le cas échéant, que déclaration de saisie a été faite à l'intéressé. Ces procès-verbaux sont dispensés de formalités et des droits de timbre et d'enregistrement, ils font preuve jusqu'à inscription de faux des constatations matérielles qu'ils énoncent.

ART. 16. — Les fonctionnaires et les agents chargés de la constatation des infractions en matière de prix et de règlementation économique sont autorisés à procéder à toutes opérations concernant la reconnaissance et la vérification des stocks, le contrôle, la circulation et l'emploi des produits et des ressources sans être tenus d'observer les formalités prescrites par les dispositions du décret du 29 décembre 1955, portant code des douanes.

Ils peuvent exiger la communication sur place des documents de toute nature (comptabilité, factures, copies de lettres, carnets de chèque, traites, comptes en Banques) propres à faciliter l'accomplissement de leur mission, en quelques mains qu'ils se trouvent.

Ils peuvent également en prendre connaissance dans les locaux de l'Administration et contre décharge et éventuellement procéder à leur saisie. Ce droit de communication s'applique aux experts mandatés par le Ministre des Affaires Economiques pour procéder à l'examen de ces documents.

Les fonctionnaires et agents visés au premier alinéa du présent article ont libre accès aux magasins, arrière-magasins, annexes, dépôts, exploitations, lieux de production, de vente, d'expédition ou de stockage et d'une façon générale en quelque lieu que ce soit, à l'exception des locaux d'habitation, dans lesquels les perquisitions seront faites conformément au droit commun.

L'action de ces fonctionnaires et agents s'exerce également au cours du transport des produits.

A cet effet, tous exploitants d'entreprise commerciale, industrielle ou artisanale sont tenus :

1°) d'indiquer sur la déclaration annuelle de patente, les emplacements (Ville, Rue et N°) de tous locaux dont ils disposent à quelque titre que ce soit, pour l'exercice de leur activité et plus particulièrement pour servir de dépôt de marchandises. Toute modification dans la consistance de ces locaux doit être déclarée dans les quinze jours au bureau qui a reçu la déclaration de patente.

2°) de communiquer aux fonctionnaires et agents visés à l'article 14 de la présente loi à toute demande de ceux-ci, la liste des locaux dont ils disposent, qui doit être tenue constamment à jour. Ces fonctionnaires et agents peuvent également consulter tous documents dans les Administrations de l'Etat, des Communes, des Etablissements publics et assimilés et les services concédés sans se voir opposer le secret professionnel.

Les fonctionnaires, agents et toute personne appelés à participer à l'application de la présente loi sont tenus au secret professionnel dans les termes de l'article 254 du code pénal.

ART. 17. — Peuvent être saisis les produits, denrées ou marchandises de toute nature qui ont fait l'objet des infractions visées au titre III, chapitre Ier de la présente loi. La saisie est obligatoire lorsque ces mêmes infractions ont été commises dans les conditions prévues à l'article 25 de la présente loi.

ART. 18. — La saisie des produits, denrées ou marchandises prévue à l'article précédent peut être réelle ou fictive selon que les objets sur lesquels elle porte, peuvent ou non être appréhendés.

Si la saisie est fictive, il est procédé à une estimation dont le montant ne peut être inférieur au produit de la vente ou au prix offert, lorsque l'infraction résulte d'une vente ou d'une offre de vente.

Le délinquant et, le cas échéant, le complice sont solidairement responsables du versement intégral de la valeur ainsi fixée.

Lorsque la saisie est réelle, les produits saisis peuvent être laissés à la disposition du délinquant à charge pour ce dernier, s'il ne les représente en nature, d'en verser la valeur estimative fixée au procès-verbal. L'octroi de cette faculté peut être subordonné à la fourniture de toutes garanties jugées suffisantes.

Lorque les produits saisis n'ont pas été laissés à la disposition du délinquant, la saisie réelle donne lieu à constitution de gardiennage à l'endroit désigné par le service du Contrôle Economique. Au cas où la saisie porte sur des produits périssables ou si les nécessités du ravitaillement l'exigent la vente des produits saisis peut être ordonnée immédiatement par le Ministre des Affaires Economiques et sans formalités judiciaires préalables.

Le produit de la vente sera consigné dans les caisses du Trésor et des Recettes des Finances jusqu'à ce qu'il y soit statué par le Ministre des Affaires Economiques ou par le Tribunal compétent en matière de confiscation.

Chapitre III. — *Sanctions administratives*

ART. 19. — En cas d'infraction aux articles 11 à 13 de la présente loi et sans préjudice des peines qui sont prononcées par les tribunaux, le Ministre des Affaires Economiques peut ordonner la fermeture, pour une durée maximum de six mois, des magasins, locaux, ateliers ou usines du délinquant ou des entreprises qu'il dirige ou administre et qui ont été l'occasion des infractions commises.

ART. 20. — Lorsqu'intervient une décision administrative prononçant la fermeture d'une entreprise, le délinquant doit continuer à payer à son personnel, pendant la durée de cette fermeture, les salaires, indemnités et rémunérations de toute nature auxquels ils avaient droit jusqu'alors.

ART. 21. — Le Ministre des Affaires Economiques peut en outre décider l'affichage et l'insertion dans les journaux qu'il désigne ou la publicité par tout autre moyen, des décisions prononçant la sanction prévue à l'article 20 de la présente loi.

Les décisions sont affichées en caractères apparents aux portes principales des usines, bureaux et ateliers, à la devanture des magasins et le cas échéant, au siège de la municipalité de son domicile ou de sa résidence. Les frais d'affichage et d'insertion sont mis à la charge du délinquant.

Chapitre IV. — *De la procédure judiciaire*

ART. 22. — Les infractions en matière de contrôle économique sont de la compétence exclusive des tribunaux de 1ère instance.

Le Ministère Public compétent ou le juge d'instruction peut demander sur des points précis, l'avis motivé du Ministre des Affaires Economiques. Cet avis vaut expertise.

Le tribunal peut ordonner une autre expertise s'il juge l'avis du Ministre des Affaires Economiques insuffisamment motivé ou si l'intéressé n'a pas été à même de donner personnellement des explications.

Chapitre V. — *Des sanctions judiciaires*

ART. 23. — Sont punies d'un emprisonnement de 1 mois à 5 ans et d'une amende de 50 à 20.000 dinars ou de l'une de ces deux peines seulement les infractions aux dispositions du chapitre Ier du titre III de la présente loi.

ART. 24. — Sont punies d'une amende de 20 dinars à 8.000 dinars les infractions aux dispositions de l'article

de la présente loi et d'un emprisonnement de 1 mois à 6 mois et d'une amende de 20 dinars à 8.000 dinars ou de l'une de ces deux peines seulement, les infractions aux dispositions de l'article 8 de la présente loi.

ART. 25. — Indépendamment des autres peines prévues par la législation en vigueur, sont punies d'une peine de deux ans d'emprisonnement et de 5.000 à 20.000 dinars d'amende ou de l'une de ces deux peines seulement, les infractions définies au titre III, chapitre 1er de la présente loi, lorsqu'elles sont commises par quiconque ne peut justifier de sa qualité de producteur ou de commerçant et se livre à des opérations assimilables en raison de leur importance ou de leur répétition à une activité professionnelle ou lorsqu'elles sont commises par quiconque a fait ou tenté de faire usage de manœuvres frauduleuses telles que notamment :

— l'émission volontaire ou la falsification d'écriture,

— la dissimulation des pièces comptables ou la tenue de comptabilité occulte,

— l'établissement de fausses factures,

— la remise et la perception de soultes occultes.

Les alinéas 13 et suivants de l'article 53 du code pénal ne sont pas applicables à l'amende.

ART. 26. — Le refus de communication ou la dissimulation des documents visés à l'article 16 de la présente loi sont punis d'un mois à 6 mois d'emprisonnement et d'une amende de 20 à 8.000 dinars ou de l'une de ces deux peines seulement.

L'opposition aux fonctions des agents visés à l'article 14 de la présente loi et des experts visés à l'article 16 de la présente loi, les injures et voies de fait commises à leurs égards sont punies d'un emprisonnement de 1 mois à 5 ans et d'une amende de 50 dinars à 1.000 dinars.

ART. 27. — Quiconque produit ou transmet des renseignements inexacts ou incomplets à l'appui d'une demande de majoration ou de fixation de prix est passible d'un mois à 6 mois d'emprisonnement et d'une amende de 20 à 8.000 dinars ou de l'une de ces deux peines seulement. Les mêmes peines s'appliquent à quiconque incite à pratiquer des prix non conformes aux prix fixés ou autorisés ou qui procède à la fixation des prix pour lesquels il n'a pas été habilité. Pour l'application du présent article, le parquet est saisi à la requête du Ministre des Affaires Economiques.

ART. 28. — L'amende ne peut, nonobstant les dispsitions de l'article 53 du code pénal, relatif aux circonstances atténuantes, être inférieure au minimum fixé à 20 dinars.

En cas de récidive dans le délai de deux ans les peines peuvent être portées au double et l'article 53 du code pénal n'est pas applicable.

Pour l'application du présent article, sont réputés en état de récidive ceux qui se rendent coupables d'une infraction du même genre, même si la première a été suivie d'un règlement par voie transactionnelle,

ART. 29. — Sont passibles des peines prévues aux articles qui précèdent, tous ceux qui, soit personnellement, soit en qualité de chargés de la direction et de l'administration de toute entreprise société ou collectivité ont contrevenu aux dispositions de la présente loi, ils sont également soumis aux mesures de saisie ou autres.

Ces entreprises, sociétés, associations ou collectivités répondront solidairement avec les délinquants du montant des confiscations, amendes, transactions et frais.

ART. 30. — Le tribunal prononce la confiscation au profit de l'Etat de tout ou partie des denrées, produits et marchandises faisant l'objet des mesures prévues à l'article 17 alinéa 1er de la présente loi; il prononce obligatoirement la confiscation lorsque ces infractions ont été commises dans les conditions prévues à l'article 25 de la présente loi.

En cas de saisie fictive, la confiscation porte sur tout ou partie de la valeur estimative. Il en est de même en cas de saisie réelle. Lorsque les produits saisis ont été laissés à la disposition du délinquant et que celui-ci ne les présente pas en nature, ou si ces produits ont été vendus en application du-dit article, la confiscation porte sur tout ou partie du prix de vente.

Faute d'être réclamés par leur propriétaire dans le délai de 6 mois à compter du jour où le jugement est devenu définitif, les produits non-confisqués et qui n'ont pas fait l'objet d'un gardiennage sur place, sont réputés propriété de l'Etat.

Les produits confisqués ou acquis à l'Etat sont remis au service des domaines qui procède à leur aliénation dans les conditions fixées par la législation en vigueur.

ART. 31. — La juridiction compétente peut ordonner que sa décision soit publiée intégralement ou par extraits dans les journaux qu'elle désigne et affichée en caractères très apparents dans les lieux qu'elle indique, notamment aux portes principales des usines ou ateliers du condamné, à la devanture de son magasin, le tout aux frais du condamné.

ART. 32. — La suppression, la dissimulation ou la lacération totale ou partielle des affiches, apposées conformément aux dispositions des articles 21 et 31 de la présente loi, opérées volontairement par le délinquant, à son instigation ou par son ordre, entraîne contre lui l'application d'un emprisonnement de 6 à 15 jours et il sera procédé de nouveau à l'exécution intégrale des dispositions relatives à l'affichage aux frais du délinquant.

ART. 33. — Le tribunal peut prononcer la fermeture temporaire des magasins, ateliers et usines du délinquant ou interdire à ce dernier à titre temporaire, l'exercice de sa profession. Toute infraction aux dispositions d'un jugement de fermeture ou d'interdiction d'exercer la profession est punie d'une amende de 1.000 à 10.000 dinars et d'un emprisonnement de deux mois à cinq ans.

TITRE IV. — De la transaction

ART. 34. — Le Ministre des Affaires Economiques peut conclure une transaction avec le délinquant.

ART. 35. — Le projet de transaction doit être constaté par écrit en autant d'originaux qu'il y a de parties ayant un intérêt distinct. Il doit également être revêtu de la signature du délinquant et contenir expressement l'aveu de l'infraction et l'engagement de payer dans un délai déterminé le montant de la transaction. Il ne devient définitif qu'après signature du Ministre des Affaires Economiques ou son représentant.

Les actes de transaction sont dispensés des formalités de timbre et d'enregistrement.

ART. 36. — Le versement de la somme fixée par l'acte transactionnel éteint l'action publique aussi bien que celle de l'administration.

ART. 37. — La transaction lie irrévocablement les parties et n'est susceptible d'aucun recours pour quelque cause que ce soit. La transaction passée avec l'un des co-auteurs, complice ou personne civilement responsable d'une même infraction, produit effet à l'égard de tous.

ART. 38. — Le montant des sommes dues en vertu de la transaction est recouvré par le Ministre des Finances. Le paiement doit être effectué dans le délai déterminé dans l'acte de transaction.

Si l'acte de transaction comporte abandon des produits saisis, il est procédé à la vente dans les conditions fixées à l'article 30 de la présente loi.

ART. 39. — Lorsque la transaction n'est pas accordée ou lorsqu'elle reste sans effet dans le délai prévu par l'acte de transaction, le Ministre des Affaires Economiques transmet le dossier au parquet.

TITRE V. — Dispositions spéciales

ART. 40. — Les sommes recouvrées au titre de la confiscation, amende et transaction par application de la présente loi sont prises en recettes au profit du budget de l'Etat.

Des primes seront accordées, dans les conditions fixées par décret, aux agents de contrôle économique.

ART. 41. — Sont abrogées toutes les dispositions contraires à la présente loi et notamment :

1°) le décret du 12 août 1943 concernant le contrôle des prix, ensemble les textes qui l'ont modifié ou complété;

2°) l'arrêté du 12 novembre 1953 soumettant au régime de l'homologation ou de l'auto-homologation les marchandises importées.

Toutefois les textes pris en application du décret du 12 août 1943 demeurent applicables jusqu'à ce qu'il en soit autrement ordonné.

La présente loi sera publiée au *Journal Officiel de la République Tunisienne* et exécutée comme loi de l'Etat.

Fait à Tunis, le 19 mai 1970

P. le Président de la République Tunisienne
et par délégation,

Le Premier Ministre

BAHI LADGHAM

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FIXATION DES PRIX

Decret N 82-134 du 27 janvier 1982, relatif aux régimes de fixation des prix des produits, marchandises et services.

Nous, **Habib Bourguiba**, Président de la République Tunisienne;

Vu la loi n° 70-26 du 19 mai 1970, relative aux modalités de fixation des prix et à la répression des infractions en matière de prix et notamment son article 2,

Vu le décret n° 70-543 du 24 octobre 1970 relatif aux régimes de fixation des prix des produits, des marchandises et services modifié par les décrets n° 73-138 du 30 mars 1973 et n° 76-34 du 27 janvier 1976,

Vu la proposition du Ministre de l'Economie Nationale,

Vu l'avis du Tribunal Administratif,

Décrétons :

Article Premier. — Sont soumis au régime de la liberté totale

Au stade de la production : les prix des produits agricoles de la pêche et de l'artisanat ainsi que les prix des produits industriels et services figurant au tableau A annexé au présent décret.

Au stade de la distribution : les prix des produits, marchandises et services qui sont soumis au régime de la liberté totale au stade de la production et pour lesquels il n'y a pas eu fixation de taux de marque ou marges commerciales limités au stade de la distribution

Art. 2. — Sont soumis au régime de l'auto-homologation.

- Au stade de la production : les prix des produits marchandises et services pour lesquels des marges brutes auront été fixées au stade de la production par arrêté du Ministre de l'Economie Nationale après avis du comité national des prix.

-- Au stade de la distribution : les prix des produits et marchandises importés ou de fabrication locale et pour lesquels des marges commerciales ou taux de marque auront été fixés par arrêté du Ministre de l'Economie Nationale après avis du comité national des prix

Art. 3. — Sont soumis au régime de la liberté contrôlée, les services repris au tableau D annexé au présent décret quinze jours après la date du dépôt du dossier les intéressés sont autorisés à appliquer les prix déposés sauf si entretemps l'administration est opposée à cette mise en application auquel cas les intéressés doivent attendre la notification des prix autorisés par l'administration.

Art. 4 — Sont soumis au régime de la taxation des prix, les marchandises et les produits sensibles ou de grande consommation et les services d'intérêt général énumérés dans le tableau B annexé au présent décret.

Art. 5 - Sont soumis à homologation :

Au stade de la production les prix des produits fabriqués ou transformés localement repris dans le tableau C du présent décret.

Au stade de la distribution : les prix des marchandises importées ou fabriquées localement et pour lesquelles les marges commerciales ou taux de marque ne sont pas fixés à l'exception des produits taxés ou soumis au régime de la liberté totale des prix, au stade de la distribution

Art. 6. — Pour les produits et marchandises soumis à homologation des dossiers comportant les ventilations des prix proposes accompagnés de pièces justificatives dont notamment le bilan, le compte d'exploitation, le relevé des amortissements et les factures d'achat doivent être adressés par lettre recommandée avec accusé de réception au Ministère de l'Economie Nationale Direction des Prix et du Contrôle Economique 45 jours à compter de la date de réception des dossiers d'homologation et à défaut de réponse de la part de l'administration, les intéressés sont autorisés à appliquer les prix proposés sous réserve de pratiquer les prix fixés par l'Administration à partir de la date de leur notification

Pour les entreprises nouvelles les dossiers adressés sous pli recommandé à la Direction des Prix et du Contrôle Economique doivent comporter selon le cas la déclaration ou l'étude présentée à l'API en vue de l'obtention de l'Agrément ainsi qu'une copie de l'agrément obtenu.

15 jours à compter de la date de reception des dossiers d'homologation et à defaut de reponse de la part de l'administration, les intéressés sont autorisés à appliquer, jusqu'à clôture du premier exercice comptable, les prix proposés à l'administration. Sont réputés entreprises nouvelles les entreprises n'ayant pas clôturé leur premier exercice comptable.

Art. 7. — Les infractions aux dispositions du présent décret sont constatées, poursuivies et réprimées conformément aux dispositions de la loi susvisée n° 70-26 du 19 mai 1970.

Art. 8. — Les dispositions du décret susvisée n° 70-543 du 24 octobre 1970 sont abrogées

Art. 9. — Le Ministre de l'Economie Nationale est chargé de l'exécution du présent décret qui sera publié au Journal Officiel de la République Tunisienne.

Fait à Tunis, le 27 janvier 1982

P. le Président de la République Tunisienne
et par délégation
Le Premier Ministre
Mohamed MZALI

ANNEXES

TABLEAU A.

Liste des produits soumis au régime de la liberté totale au stade de la production.

a) Produits alimentaires

— Patisserie
— Sorbetterie
- Confiserie halwa chamia
-- Chewing gum
— Gervais, petit suisses, crème fraiche, yaourts aux fruits et flan.
Confitures
- Plats cuisinés
-- Sirops

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— Corps gras à l'exclusion de l'huile, de la margarine du beurre et de l'huile de lin

— Chips et produits snack

b) **Articles en plastique**

— Articles de toilette

— Articles d'emballage et de conditionnement à l'exclusion des caisses, caisses à bouteilles, bacs à manutention.

— Tubes et tuyaux et accessoires électriques en plastique

— Articles de bureaux à l'exclusion des articles scolaires

— Articles chaussants à l'exclusion des bottes de sécurité et des bottes de protection.

— Articles de maroquinerie à l'exclusion des articles scolaires et des bottes.

— Articles d'ameublement

— Bateaux de plaisance

— Articles publicitaires

— Jouets

— Articles de ménage

— Article en mousse

c) **Produits chimiques**

— Parfumerie et cosmetiques

— Bougies et ouvrages en cuir - cirage

— Bombes aérosols

d) **Articles en papier**

— Cartes postales

— Agendas et calendriers

— Brochures, dépliants, prospectus

c) **Articles en bois**

— Menuiserie en bois

— Meubles en bois et en formica

f) **Articles mécaniques et électriques**

— Triangles de présignalisation

— Moules et coquille tout ce qui fait l'objet d'un devis (fabrication spécifique).

g) **Services**

— Location voiture

— Location machines électroniques

LISTE DES PRODUITS, MARCHANDISES ET SERVICES SOUMIS AU REGIME DE LA TAXATION DES PRIX

TABLEAU B.

1°) **A tous les stades :**

— Pain

— Farine et semoule

— Couscous et pâtes alimentaires

— Huiles alimentaires

— Sucre

— Thé

— Café

— Chaux ciment briques et aciers de construction (rond à béton)

— Carburants

— Electricité, eau, gaz

— Engrais

— Transport

— Livres et cahiers scolaires

— Poivre

— Médicaments et actes médicaux

— Lait régénéré

— Cafés et boissons servis dans les hôtels

2°) **Au stade de la distribution :**

— Les produits agricoles de grande consommatio ou faisant l'objet d'organisation de campagr dont les prix viennent à subir des variatior de nature à affecter les intérêts des produc teurs ou consommateurs.

— Poulets et viande bovine

TABLEAU C.

LISTE DES PRODUITS MARCHANDISES ET SERVICES SOUMIS AU REGIME DE L'HOMOLOGATION

PRODUITS ALIMENTAIRES

— Boissons alcoolisées (vins, bières, spiritueux)

— Sel

— Margarine

— Levure de panification

ARTICLES ELECTRIQUES ET MECANIQUES

— Emballages métalliques (boites et tubes)

— Rond marchand, fer carré et tréfiles

— Plaquettes de freins

— Fûts métalliques

— Lames à raser

— Accumulateurs en plomb

MATERIAUX DE CONSTRUCTION

— Marbre en blocs

— Platre

— Articles sanitaires

— Articles de vaisselle en céramique.

— Ouvrage en ciment amiante

— Verrerie gobletterie

— Verrerie emballage

— Articles scolaires

ARTICLES EN PLASTIQUE

— Articles scolaires

— Boite de protection et de sécurité

— Vêtement de protection, tissus enduits plaq en polyster

— Film pour serres

PRODUITS CHIMIQUES

— Produits d'hygiène corporelle

— Javel et grézyl

— Détergents poudres

— Pneumatiques et chambres à air

— Savons de ménage

DIVERS

— Papier et emballage en papier

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— Sac en jute

Articles scolaires en cuir ou simili cuir

Valises en carton et en simili cuir

Balais à sorgho et nylon

TABLEAU D.

LISTE DES SERVICES SOUMIS AU REGIME DE LA LIBERTE CONTROLEE

- Boissons servies dans les établissements de la 1ere - 2eme et 3eme catégorie.

Auto écoles

Nettoyage a sec

Coiffures

Station service

Ateliers de réparation mécanique auto

Bains maures

Reparation radio-télévision et appareils électro-menager

AUTO - HOMOLOGATION AU STADE DE LA PRODUCTION

Décret N° 82-135 du 27 janvier 1982, relatif au prix de revient et au prix de vente des produits ou marchandises soumis au régime de l'auto-homologation au stade de la production.

Nous, **Habib Bourguiba**, Président de la République Tunisienne :

Vu la loi n° 70-26 du 19 mai 1970, relative aux modalités de fixation des prix et à la répression des infractions en matière économique.

Vu le décret n° 82-134 du 27 janvier 1982, relatif aux régimes de fixation des prix des produits, marchandises et services.

Sur la proposition du Ministre de l'Economie Nationale;

Vu l'avis du Tribunal Administratif,

Décrétons :

Article Premier. — Les prix de revient au stade de la production des produits ou marchandises fabriqués ou transformés localement et soumis au régime de l'auto-homologation sont déterminés à partir des éléments ci-dessous qui doivent répondre aux exigences indiquées pour chacun d'eux.

1° — Coûts des matières premières et accessoires hors taxes.

La liste de ces matières ainsi que les quantités utilisées par unité produite doivent faire l'objet d'une fiche technique à déposer au Ministère de l'Economie Nationale aux fins de contrôle. quant aux coûts, ils doivent refléter les variations des prix des matières premieres et accessoires tant à la hausse qu'à la baisse, les factures d'achat définitive faisant foi.

Toutefois, si la variation des coûts de ces matières est inférieure ou égale à 3% le prix de vente pratiqué doit être maintenu inchangé.

2 - Frais de fabrication :

Ces frais de fabrication qui doivent être évalués sur la base des donnés réelles de l'exercice comptable precédent comprennent :

Frais du personnel non administratif

Matières consommables (fuel, essence, produits d'entretien et de nettoyage etc...)

Fournitures faites à l'entreprise (eau, gaz, électricité).

Entretien et réparation

Petit outillage

Amortissement du matériel et des locaux de production.

Loyer des locaux de production.

Les frais financiers de financement.

Art 2. — Les prix de vente des produits et marchandises fabriqués ou transformés localement et soumis au régime de l'auto-homologation sont determinés en tenant compte :

a) du prix de revient dont les différents elements sont définis par l'article 1er ci-dessus.

b) de la marge brute composée des frais generaux et de la marge bénéficiaire nette et fixée par groupe de produits ou branche d'activité par arrêté du Ministre de l'Economie Nationale.

c) du coût des articles de conditionnement extérieur hors taxe sur le chiffre d'affaires.

d) des taxes acquitées par l'entreprise sur le prix de vente du produit fabriqué.

Art. 3. — Tout changement dans les prix de vente doit être communiqué à l'administration dans un délai ne dépassant pas les 48 heures par lettre recommandée portant indication de l'ancien prix et du nouveau prix avec pièces justificatives à l'appui.

Art. 4. — Les infractions aux dispositions du présent arrêté seront constatées, poursuivies et réprimées conformément aux dispositions de la loi susvisée n° 70-26 du 19 mai 1970 relative aux modalités de fixation des prix et à la répression des infractions en matière économique.

Art. 5. — Le Ministre de l'Economie Nationale est chargé de l'exécution du présent décret qui sera publié au Journal Officiel de la République Tunisienne.

Fait à Tunis, le 27 Janvier 1982

P. le Président de la République Tunisienne
et par délégation
Le Premier Ministre
Mohamed MZALI

Arrêté du Ministre de l'Economie Nationale du 27 janvier 1982, fixant les taux des marges brutes applicables sur les prix de revient de certains produits ou marchandises fabriqués ou transformés localement et soumis au régime de l'auto-homologation au stade de la production.

Le Ministre de l'Economie Nationale;

Vu la loi n° 70-26 du 19 mai 1970, relative aux modalités de fixation des prix et à la répression des infractions en matière économique.

Vu le décret n° 82-134 du 27 janvier 1982, relatif au régime de fixation des prix des produits, marchandises et services.

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Vu le décret n° 82-135 du 27 janvier 1982 relatif au prix de revient et au prix de vente des produits ou marchandises soumis au régime de l'auto homologation au stade de la production.

Vu l'avis du Comité National des Prix.

Arrête :

Article Premier. — Les taux de marges brutes applicables sur les prix de revient industriels de certains produits ou marchandises fabriqués ou transformés localement et soumis au régime de l'autohomologation au stade de la production, sont fixés conformément au tableau annexé au présent arrêté.

Art. 2. — Des taux maxima de certains ou de tous les éléments constitutifs du prix de revient industriel des produits ou marchandises soumis au régime de l'auto-homologation au stade de la nroduction, prévus par le décret sus-visé n° 82-135 du 27 janvier 1982 peuvent être fixés pour chaque catégorie de produits ou marchandises, par arrêté du Ministre de l'Economie Nationale.

Art. 3. — Les infractions aux dispositions du présent arrêté seront constatées, poursuivies et reprimées conformément aux dispositions de la loi sus-visée N° 70-26 du 19 mai 1970.

Tunis, le 27 janvier 1982

Le Ministre de l'Economie Nationale

Abdelaziz LASRAM

Vu

Le Premier Ministre

Mohamed MZALI

ANNEXE

Marges industrielles des produits soumis à l'auto-homologation au stade de la production

DESIGNATION DES PRODUITS	Marge brute
A. — **Produits alimentaires**	15 %
— Biscuits	18 %
— Biscuits - biscuits gaufrette	18 %
— Chocolat	16 %
B. — **Articles en plastique**	21 %
C. — **Chaussures :**	22 %
D. — **Matériaux de construction**	18 %
— Marbre - sciage	20 %
- usinage	24 %
— Carreaux mosaïques	17 %
— Tuyaux en amiante ciment	20 %
— Aggloméré	16 %
E. — **Produits chimiques**	16 %
— Peinture à l'exclusion des résines et toutes autres matières servant à la fabrication de la peinture	23 %
— Mastic	23 %
— Colle	19 %
— Détergents liquides à l'exclusion du Javel et Grésyl	16 %
— Désinfectants ménagers	16 %
— Encres scolaires et d'imprimerie	16 %
F. — **Textiles**	20 %
— Tissus coton (y compris les draps de lit)	21 %
— Draperie et lainage	22 %
— Tissus soierie S.N. + S.A	24 %
— Ameublement (y compris de velours) et tissus jacquard	28 %
— Bonneterie	24 %
— Confection	23 %
— Papiers sanitaires	18 %
— Carton	16 %
— Radio Télé, Antennes	12 %
— Electro ménager	15 %
— Cables électriques et téléphoniques	16 %
— Mécaniques	17 %

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ANNEX D

CALCULATION OF POLICY ALTERNATIVES AND SUPPLEMENTARY INFORMATION

CALCULATION OF POLICY ALTERNATIVES

SCENARIO 1

ALTERNATIVE PRICING SYSTEMS FOR MILK

I. Current System - GOT Prices for Raw Milk at Plant

	1985	1986	1987	1988	1989	1990	1991	1992
PRODUCER PRICE	0.22	0.22	0.23	0.23	0.26	0.28	0.3	0.325
TRANSPORT	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PLANT ENTRY PRICE	0.23	0.23	0.24	0.24	0.27	0.29	0.31	0.035

II. Import Prices for Milk Powder based on GATT Prices (with 15% Tariff)

	1985	1986	1987	1988	1989	1990	1991	1992
US DOLLARS								
FOB WMP-GATT	888	930	938	1633	2200	2200	2000	2000
FOB SMP-GATT	666	738	838	1575	2100	2100	1900	1900
CIF WMP-Tunis	976.8	1023	1031.8	1796.3	2420	2420	2200	2200
CIF SMP-Tunis	719.28	797.04	905.04	1701	2268	2268	2052	2052
EXCH RATE ($1=)	0.8345	0.794	0.8287	0.9	0.9	0.9	0.9	0.9
DINAR								
CIF WMP-Tunis	815.14	812.26	855.05	1616.67	2178	2178	1980	1980
CIF SMP-Tunis	600.24	632.85	750.01	1530.9	2041.2	2041.2	1846.8	1846.8
WMP + 15% TAR	937.41	934.1	983.31	1859.17	2504.7	2504.7	2277	2277
SMP + 15% TAR	690.28	727.78	862.51	1760.54	2347.38	2347.38	2123.8	2123.8
WMP at PLANT	947.18	944.33	993.63	1877.13	2528.9	2528.9	2299	2299
SMP at PLANT	697.47	735.75	871.56	1777.55	2370.06	2370.06	2144.3	2144.3
BLEND at PLANT	847.3	860.9	944.8	1837.3	2465.36	2465.36	2237.1	2237.1
FLUID MILK (D/l) (Price landed at Plant)	0.095	0.097	0.106	0.206	0.277	0.277	0.251	0.251
GATT BUTTER PRICE	1091	1091	1227	1364	1200	1200	1200	1200
FLUID MILK (inc butter) (Price landed at Plant)	0.124	0.126	0.138	0.242	0.308	0.308	0.282	0.282

III. Formula Pricing Based on a Moving Average of GATT PRICES (incl 15% tariff)

	1985	1986	1987	1988	1989	1990	1991	1992
GATT PRICES (incl 15% tariff)	0.124	0.126	0.138	0.242	0.308	0.308	0.282	0.282
3 YR AV		0.129	0.169	0.229	0.286	0.299	0.291	
4 YR AV			0.158	0.204	0.249	0.285	0.295	
5 YR AV				0.188	0.224	0.256	0.284	

IV. Economic Price for Imported Milk Powder at Plant (No tariffs)

	1985	1986	1987	1988	1989	1990	1991	1992
US DOLLARS								
FOB WMP-GATT	888	930	938	1633	2200	2200	2000	2000
FOB SMP-GATT	666	738	838	1575	2100	2100	1900	1900
CIF WMP-Tunis	976.8	1023	1031.8	1796.3	2420	2420	2200	2200
CIF SMP-Tunis	719.28	797.04	905.04	1701	2268	2268	2052	2052
EXCH RATE ($1=)	0.8345	0.794	0.8287	0.9	0.9	0.9	0.9	0.9
DINAR								
CIF WMP-Tunis	815.14	812.26	855.05	1616.67	2178	2178	1980	1980
CIF SMP-Tunis	600.24	632.85	750.01	1530.9	2041.2	2041.2	1846.8	1846.8
WMP at PLANT	823.29	820.38	863.6	1632.84	2199.78	2199.78	1999.8	1999.8
SMP at PLANT	726.47	805.01	914.09	1718.01	2290.68	2290.68	2072.5	2072.5
BLEND at PLANT	784.56	814.23	883.8	1666.91	2236.14	2236.14	2028.8	2028.8
FLUID MILK (D/L) (Price at plant)	0.088	0.091	0.099	0.187	0.251	0.251	0.228	0.228
GATT BUTTER PRICE	1091	1091	1227	1364	1200	1200	1200	1200
F MILK inc BUTTER (Price landed at Plant)	0.117	0.12	0.131	0.223	0.282	0.282	0.259	0.259

V. Financial Price of Imported Powdered Milk at Plant
Based on tariffs and taxes as at 1988

	1985	1986	1987	1988	1989	1990	1991	1992
US DOLLARS								
FOB WMP-GATT	888	930	938	1633	2200	2200	2000	2000
FOB SMP-GATT	666	738	838	1575	2100	2100	1900	1900
CIF WMP-Tunis	976.8	1023	1031.8	1796.3	2420	2420	2200	2200
CIF SMP-Tunis	719.28	797.04	905.04	1701	2263	2268	2052	2052
EXCH RATE ($1=)	0.8345	0.794	0.8287	0.9	0.9	0.9	0.9	0.9
DINAR								
CIF WMP-Tunis	815.14	812.26	855.05	1616.67	2178	2178	1980	1980
CIF SMP-Tunis	600.24	632.85	750.01	1530.9	2041.2	2041.2	1846.8	1846.8
15% TAR WMP	122.27	121.84	128.26	242.5	326.7	326.7	297	297
15% TAR SMP	90.04	94.93	112.5	229.64	306.18	306.18	277.02	277.02
CUSTOM FEE WMP	3.91	3.9	4.1	7.76	10.45	10.45	9.5	9.5
CUSTOM FEE SMP	2.88	3.04	3.6	7.35	9.8	9.8	8.86	8.86
HANDLING WMP	8.15	8.12	8.55	16.17	21.78	21.78	19.8	19.8
HNDLING SMP	6	6.33	7.5	15.31	20.41	20.41	18.47	18.47
WMP at plant	949.47	946.12	995.96	1883.1	2536.93	2536.93	2306.3	2306.3
SMP at plant	699.16	737.15	873.61	1783.2	2377.59	2377.59	2151.1	2151.1
BLEND at PLANT	849.35	862.53	947.02	1843.14	2473.19	2473.19	2244.2	2244.2
FLUID MILK (D/L) (Price landed at plant)	0.095	0.097	0.106	0.207	0.278	0.278	0.252	0.252
GATT BUTTER PRICE	1091	1091	1227	1364	1200	1200	1200	1200
F MILK inc BUTTER (Price landed at Plant)	0.124	0.126	0.138	0.243	0.309	0.309	0.283	0.283

SCENARIO 2

BASE CASE PROJECTIONS

General Assumptions
Constant per capita consumption 23.5 liters/capita
Aggregate Demand increases by 2.5% p.a. due to population growth
Inflation 8% per annum
Pre-Tax sales price for fresh milk is pre-tax cost price plus 5% for losses

1989 Assumptions: Sterilized - Weighted Avge for Sfax, BS and TLAIT
Pasteurized - STIL (BS)
UHT - STIL (TP)
Fresh - LAINO

TOTAL PRODUCTION: 200000
TOTAL SALES: 190000 (23.5 liter/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.217	0.238	0.212	0.247
Processing	0.081	0.053	0.051	0.07
Industrial Cost Price	0.298	0.291	0.263	0.317
Processing Margin 15%	0.045	0.044	0.039	0.048
Packaging	0.085	0.081	0.132	0.065
Pre-Tax Cost Price	0.428	0.416	0.434	0.43
Pre-Tax Sales Price	0.254	0.218	0.249	0.452
Subsidy per liter	0.174	0.198	0.185	0
Output (1000 liters)	64600	39900	85500	?
Product Subsidy (m Dinar)	11.24	7.9	15.818	0
Total Subsidy (m Dinar)	34.958			

BASE CASE PROJECTIONS

1990 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.276
TOTAL SALES: 194500 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.278	0.278	0.278	0.267
Processing	0.087	0.057	0.055	0.076
Industrial Cost Price	0.365	0.335	0.333	0.343
Processing Margin 15%	0.055	0.05	0.05	0.051
Packaging	0.092	0.087	0.143	0.07
Pre-Tax Cost Price	0.512	0.472	0.526	0.464
Pre-Tax Sales Price	0.254	0.218	0.249	0.487
Subsidy per liter	0.258	0.254	0.277	0
Output (1000 liters)	66130	40845	87525	?
Product Subsidy (m Dinar)	17.062	10.375	24.244	0
Total Subsidy (m Dinar)	51.681			

BASE CASE PROJECTIONS

1991 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.503
TOTAL SALES: 199800 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.252	0.252	0.252	0.287
Processing	0.094	0.062	0.059	0.082
Industrial Cost Price	0.346	0.314	0.311	0.369
Processing Margin 15%	0.052	0.047	0.047	0.055
Packaging	0.099	0.094	0.154	0.076
Pre-Tax Cost Price	0.497	0.455	0.512	0.5
Pre-Tax Sales Price	0.254	0.218	0.249	0.525
Subsidy per liter	0.243	0.237	0.263	0
Output (1000 liters)	67932	41958	89910	?
Product Subsidy (m Dinar)	16.507	9.944	23.646	0
Total Subsidy (m Dinar)	50.097			

BASE CASE PROJECTIONS

1992 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.716
TOTAL SALES: 204800 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.252	0.252	0.252	0.287
Processing	0.102	0.067	0.064	0.089
Industrial Cost Price	0.354	0.319	0.316	0.376
Processing Margin 15%	0.053	0.048	0.047	0.056
Packaging	0.107	0.102	0.166	0.082
Pre-Tax Cost Price	0.514	0.469	0.529	0.514
Pre-Tax Sales Price	0.254	0.218	0.249	0.54
Subsidy per liter	0.26	0.251	0.28	0
Output (1000 liters)	69632	43008	92160	?
Product Subsidy (m Dinar)	18.104	10.795	25.805	0
Total Subsidy (m Dinar)	54.704			

BASE CASE PROJECTIONS

1993 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.934
TOTAL SALES: 209900 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.252	0.252	0.252	0.287
Processing	0.11	0.072	0.069	0.096
Industrial Cost Price	0.362	0.324	0.321	0.383
Processing Margin 15%	0.054	0.049	0.048	0.057
Packaging	0.116	0.11	0.179	0.089
Pre-Tax Cost Price	0.532	0.483	0.548	0.529
Pre-Tax Sales Price	0.254	0.218	0.249	0.555
Subsidy per liter	0.278	0.265	0.299	0
Output (1000 liters)	71366	44079	94455	?
Product Subsidy (m Dinar)	19.84	11.681	28.242	0
Total Subsidy (m Dinar)	59.763			

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BASE CASE PROJECTIONS

1994 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 9.157
TOTAL SALES: 215200 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.252	0.252	0.252	0.287
Processing	0.119	0.078	0.075	0.104
Industrial Cost Price	0.371	0.33	0.327	0.391
Processing Margin 15%	0.056	0.05	0.049	0.059
Packaging	0.125	0.119	0.193	0.096
Pre-Tax Cost Price	0.552	0.499	0.569	0.546
Pre-Tax Sales Price	0.254	0.218	0.249	0.573
Subsidy per liter	0.298	0.281	0.32	0
Output (1000 liters)	73168	45192	96840	?
Product Subsidy (m Dinar)	21.804	12.699	30.989	0
Total Subsidy (m Dinar)	65.493			

BASE CASE PROJECTIONS

1995

Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 9.386
TOTAL SALES: 220600 (23.5 liters/capita)
(1000 liters)

	Sterilized	Pasteurised	UHT	Fresh
		Dinars/liter		
Milk Powder/Raw Milk	0.252	0.252	0.252	0.287
Processing	0.129	0.084	0.081	0.112
Industrial Cost Price	0.381	0.336	0.333	0.399
Processing Margin 15%	0.057	0.05	0.05	0.06
Packaging	0.135	0.129	0.208	0.104
Pre-Tax Cost Price	0.573	0.515	0.591	0.563
Pre-Tax Sales Price	0.254	0.218	0.249	0.591
Subsidy per liter	0.319	0.297	0.342	0
Output (1000 liters)	75004	46326	99270	?
Product Subsidy (m Dinar)	23.926	13.759	33.95	0
Total Subsidy (m Dinar)	71.635			

SCENARIO 3

SUBSIDY FREEZE 1989-1995

General Assumptions
Constant per capita consumption 23.5 liters/capita
Aggregate Demand increases by 2.5% pa due to population growth
Inflation 8% per annum
Freeze Subsidy at 35 m D beginning in 1990
Own-price elasticity of demand -0.6

1989 Assumptions: Sterilized - Weighted Avge for Sfax, BS and TLAIT
Pasteurized - STIL (BS)
UHT - STIL (TP)

TOTAL PRODUCTION: 200000
TOTAL SALES (1000 liters) 190000

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.217	0.238	0.212
Processing	0.081	0.053	0.051
Industrial Cost Price	0.298	0.291	0.263
Processing Margin 15%	0.045	0.044	0.039
Packaging	0.085	0.081	0.132
Pre-Tax Cost Price	0.428	0.416	0.434
Pre-Tax Sales Price	0.254	0.218	0.249
Subsidy per liter	0.174	0.198	0.185
Output (1000 liters)	64600	39900	85500
Product Subsidy (m Dinar)	11.24	7.9	15.818
Total Subsidy (m Dinar)	34.958		

SUBSIDY FREEZE

1990 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.276
TOTAL SALES (1000 liters) 194500

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.278	0.278	0.278
Processing	0.087	0.057	0.055
Industrial Cost Price	0.365	0.335	0.333
Processing Margin 15%	0.055	0.05	0.05
Packaging	0.092	0.087	0.143
Pre-Tax Cost Price	0.512	0.472	0.526
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.258	0.254	0.277
EFFECT OF CAP ON CONSUMER PRICES - NO PRICE RESPONSE			
Output (1000 liters)	66130	40845	87525
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.18	0.18	0.18
Cost Passed on to Consumer	0.078	0.074	0.097
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.358	0.334	0.417
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Projected Sales (1000 l)	66130	40845	87525
Price Increase (%)	27.86	28.46	30.31
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	55075.71	33870.31	71607.7
Cost of subsidy (m D)	9.914	6.097	12.889
Total Subsidy (m D)	28.9		
Total Sales (1000 l)	160553.72		

SUBSIDY FREEZE

1991 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.503
TOTAL SALES (1000 liters) 199800

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.094	0.062	0.059
Indust. Cost Price	0.346	0.314	0.311
Process Margin 15%	0.052	0.047	0.047
Packaging	0.099	0.094	0.154
Pre-Tax Cost Price	0.497	0.455	0.512
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.243	0.237	0.263
EFFECT OF CAP ON CONSUMER PRICES			
Output (1000 liters)	67932	41958	89910
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.175	0.175	0.175
Cost Passed on to Consumer	0.068	0.062	0.088
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.348	0.322	0.408
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1990 (1000 l)	55075.71	33870.31	71607.7
Projected Sales (1000 l) (adj for 2.5% popn growth)	56452.6	34717.1	73397.9
Price Increase (%)	-2.79	-3.59	-2.16
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	57397.62	35464.91	74349.14
Cost of subsidy (m D)	10.045	6.206	13.011
Total Subsidy (m D)	29.262		
Total Sales (1000 l)	167211.67		

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SUBSIDY FREEZE

1992 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.716
TOTAL SALES (1000 liters) 204800

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.102	0.067	0.064
Industrial Cost Price	0.354	0.319	0.316
Processing Margin 15%	0.053	0.048	0.047
Packaging	0.107	0.102	0.166
Pre-Tax Cost Price	0.514	0.469	0.529
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.26	0.251	0.28
EFFECT OF CAP ON CONSUMER PRICES			
Output (1000 liters)	69632	43008	92160
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.171	0.171	0.171
Cost Passed on to Consumer	0.089	0.08	0.109
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.369	0.34	0.429
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1991 (1000 l)	57397.62	35464.91	74349.14
Projected Sales (1000 l) (adj. for 2.5% popn growth)	58832.6	36351.5	76207.9
Price Increase (%)	6.03	5.59	5.15
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	56704.04	35132.27	73853.08
Cost of subsidy (m D)	9.696	6.008	12.629
Total Subsidy (m D)	28.333		
Total Sales (1000 l)	165689.39		

SUBSIDY FREEZE

1993 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 8.934
TOTAL SALES (1000 liters) 209900

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.11	0.072	0.069
Industrial Cost Price	0.362	0.324	0.321
Processing Margin 15%	0.054	0.049	0.048
Packaging	0.116	0.11	0.179
Pre-Tax Cost Price	0.532	0.483	0.548
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.278	0.265	0.299
EFFECT OF CAP ON CONSUMER PRICES			
Output (1000 liters)	71366	44079	94455
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.167	0.167	0.167
Cost Passed on to Consumer	0.111	0.098	0.132
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.391	0.358	0.452
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1992 (1000 l)	56704.04	35132.27	73853.08
Projected Sales (1000 l) (adj. for 2.5% popn growth)	58121.6	36010.6	75699.4
Price Increase (%)	5.96	5.29	5.36
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	56043.17	34867.62	73264.91
Cost of subsidy (m D)	9.359	5.823	12.235
Total Subsidy (m D)	27.417		
Total Sales (1000 l)	164175.7		

SUBSIDY FREEZE

1994 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 9.157
TOTAL SALES (1000 liters) 215200

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.119	0.078	0.075
Industrial Cost Price	0.371	0.33	0.327
Processing Margin 15%	0.056	0.05	0.049
Packaging	0.125	0.119	0.193
Pre-Tax Cost Price	0.532	0.499	0.569
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.298	0.281	0.32
EFFECT OF CAP ON CONSUMER PRICES			
Output (1000 liters)	73168	45192	96840
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.163	0.163	0.163
Cost Passed on to Consumer	0.135	0.118	0.157
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.415	0.378	0.477
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1993 (1000 l)	56043.17	34867.62	73264.91
Projected Sales (1000 l) (adj. for 2.5% popn growth)	57444.2	35739.3	75096.5
Price Increase (%)	6.14	5.59	5.53
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	55327.96	34540.6	72604.8
Cost of subsidy (m D)	9.018	5.63	11.835
Total Subsidy (m D)	26.483		
Total Sales (1000 l)	162473.36		

SUBSIDY FREEZE

1995 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m): 9.386
TOTAL SALES (1000 liters) 220600

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.129	0.084	0.081
Indust. Cost Price	0.381	0.336	0.333
Process Margin 15%	0.057	0.05	0.05
Packaging	0.135	0.129	0.208
Pre-Tax Cost Price	0.573	0.515	0.591
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.319	0.297	0.342
EFFECT OF CAP ON CONSUMER PRICES			
Output (1000 liters)	75004	46326	99270
Allowable Subsidy (m D)	11.9	7.35	15.75
Allowable Subsidy per lit	0.159	0.159	0.159
Cost Passed on to Consumer	0.16	0.138	0.183
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.44	0.398	0.503
EFFECT OF CAP ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1994 (1000 l)	55327.96	34540.6	72604.8
Projected Sales (1000 l) (adj. for 2.5% popn growth)	56711.2	35404.1	74419.9
Price Increase (%)	6.02	5.29	5.45
Price elasticit of demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	54662.79	34280.37	71986.37
Cost of subsidy (m D)	8.691	5.451	11.446
Total Subsidy (m D)	25.588		
Total Sales (1000 l)	160929.53		

SCENARIO 4

FIVE YEAR SUBSIDY REMOVAL 1990-1995

General Assumptions
Constant per capita consumption 23.5 liters/capita
Demand increases by 2.5% due to population growth
Inflation 8% per annum
Own-price elasticity of demand -0.6
Begin phase-out in 1990, 20% per year from a base of 35 m D

1989 Assumptions: Sterilized - Weighted Avge for Sfax, BS and TLAIT
Pasteurized - STIL (BS)
UHT - STIL (TP)

TOTAL PRODUCTION: 200000
TOTAL SALES: 190000 23.5 liters/capita
(1000 liters)

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.217	0.238	0.212
Processing	0.081	0.053	0.051
Industrial Cost Price	0.298	0.291	0.263
Processing Margin 15%	0.045	0.044	0.039
Packaging	0.085	0.081	0.132
Pre-Tax Cost Price	0.428	0.416	0.434
Pre-Tax Sales Price	0.254	0.218	0.249
Subsidy per liter	0.174	0.198	0.185
Output (1000 liters)	64600	39900	85500
Product Subsidy (m Dinar)	11.24	7.9	15.818
Total Subsidy (m Dinar)	34.958		

FIVE YEAR SUBSIDY REMOVAL

1990 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	8.276
TOTAL SALES (1000 liters)	194500
SUBSIDY CAP: (m D)	28

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.278	0.278	0.278
Processing	0.087	0.057	0.055
Industrial Cost Price	0.365	0.335	0.333
Processing Margin 15%	0.055	0.05	0.05
Packaging	0.092	0.087	0.143
Pre-Tax Cost Price	0.512	0.472	0.526
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.258	0.254	0.277
EFFECT OF PHASE-OUT ON CONSUMER PRICES			
Output (1000 liters)	66130	40845	87525
Allowable Subsidy (m D)	9.52	5.88	12.6
Allowable Subsidy per lit	0.144	0.144	0.144
Cost Passed on to Consumer	0.114	0.11	0.133
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.394	0.37	0.453
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Projected Sales (1000 l)	66130	40845	87525
Price Increase (%)	40.71	42.31	41.56
Price elastic of demand	-0.6	-0.6	-0.6
Actual sales (1000 l)	49977.1	30476.1	65699.8
Cost of Subsidy (m D)	7.2	4.39	9.46
Total Subsidy (m D)	21.05		
Total Sales (1000 l)	146153		

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FIVE YEAR SUBSIDY REMOVAL

1991

Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	8.503
TOTAL SALES (1000 liters)	199800
SUBSIDY: (m D)	21

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.094	0.062	0.059
Industrial Cost Price	0.346	0.314	0.311
Processing Margin 15%	0.052	0.047	0.047
Packaging	0.099	0.094	0.154
Pre-Tax Cost Price	0.497	0.455	0.512
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.243	0.237	0.263
EFFECT OF PHASE-OUT ON CONSUMER PRICES			
Output (1000 liters)	67932	41958	89910
Allowable Subsidy (m D)	7.14	4.41	9.45
Allowable Subsidy per lit	0.105	0.105	0.105
Cost Passed on to Consumer	0.138	0.132	0.158
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.418	0.392	0.478
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1990 (1000 l)	49977.1	30476.1	65699.8
Projected Sales (1000 l) (adj for 2.5% popn growth)	51226.5	31238	67342.3
Price Increase (%)	6.09	5.95	5.52
Price elastic of demand	-0.6	-0.6	-0.6
Actual sales (1000 l)	49354.7	30122.8	65111.9
Cost of Subsidy (m D)	5.18	3.16	6.84
Total Subsidy (m D)	15.18		
Total Sales (1000 l)	144589.4		

FIVE YEAR SUBSIDY REMOVAL

1992 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	8.716
TOTAL SALES (1000 liters)	204800
SUBSIDY: (m D)	14

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.102	0.067	0.064
Industrial Cost Price	0.354	0.319	0.316
Processing Margin 15%	0.053	0.048	0.047
Packaging	0.107	0.102	0.166
Pre-Tax Cost Price	0.514	0.469	0.529
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.26	0.251	0.28
EFFECT OF PHASE-OUT ON CONSUMER PRICES			
Output (1000 liters)	69632	43008	92160
Allowable Subsidy (m D)	4.76	2.94	6.3
Allowable Subsidy per lit	0.068	0.068	0.068
Cost Passed on to Consumer	0.192	0.183	0.212
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.472	0.443	0.532
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1991 (1000 l)	49354.7	30122.8	65111.9
Projected Sales (1000 l) (adj for 2.5% popn growth)	50588.6	30873.9	66739.7
Price Increase (%)	12.92	13.01	11.3
Price elastic of demand	-0.6	-0.6	-0.6
Actual sales (1000 l)	46667	28465.7	62214.7
Cost of Subsidy (m D)	3.17	1.94	4.23
Total Subsidy (m D)	9.34		
Total Sales (1000 l)	137347.4		

FIVE YEAR SUBSIDY REMOVAL

1993 Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	8.934
TOTAL SALES (1000 liters)	209900
SUBSIDY: (m D)	7

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.11	0.072	0.069
Industrial Cost Price	0.362	0.324	0.321
Processing Margin 15%	0.054	0.049	0.048
Packaging	0.116	0.11	0.179
Pre-Tax Cost Price	0.532	0.483	0.548
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.278	0.265	0.299
EFFECT OF PHASE-OUT ON CONSUMER PRICES			
Output (1000 liters)	71366	44079	94455
Allowable Subsidy (m D)	2.38	1.47	3.15
Allowable Subsidy per lit	0.033	0.033	0.033
Cost Passed on to Consumer	0.245	0.232	0.266
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.525	0.492	0.586
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1992 (1000 l)	46667	28465.7	62214.7
Projected Sales (1000 l) (adj for 2.5% popn growth)	47833.7	29177.3	63770.1
Price Increase (%)	11.23	11.06	10.15
Price elastic of demand	-0.6	-0.6	-0.6
Actual sales (1000 l)	44610.7	27241.1	59886.5
Cost of Subsidy (m D)	1.47	0.9	1.98
Total Subsidy (m D)	4.35		
Total Sales (1000 l)	131738.3		

FIVE YEAR SUBSIDY REMOVAL

1994

Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	9.157
TOTAL SALES (1000 liters)	215200
SUBSIDY: (m D)	0

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Milk Powder/Raw Milk	0.252	0.252	0.252
Processing	0.119	0.078	0.075
Industrial Cost Price	0.371	0.33	0.327
Processing Margin 15%	0.056	0.05	0.049
Packaging	0.125	0.119	0.193
Pre-Tax Cost Price	0.552	0.499	0.569
Pre-Tax Sales Price	0.254	0.218	0.249
Full Subsidy per liter	0.298	0.281	0.32
EFFECT OF PHASE-OUT ON CONSUMER PRICES			
Output (1000 liters)	73168	45192	96840
Allowable Subsidy (m D)	0	0	0
Allowable Subsidy per lit	0	0	0
Cost Passed on to Consumer	0.298	0.281	0.32
Current Retail Price	0.28	0.26	0.32
Revised Retail Price	0.578	0.541	0.64
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1993 (1000 l)	44610.7	27241.1	59886.5
Projected Sales (1000 l) (adj for 2.5% popn growth)	45726	27922.1	61383.7
Price Increase (%)	10.1	9.96	9.22
Price elasticity of deman	-0.6	-0.6	-0.6
Actual sales (1000 l)	42955	26253.5	57988
Cost of Subsidy (m D)	0	0	0
Total Subsidy (m D)	0		
Total Sales (1000 l)	127196.5		

FIVE YEAR SUBSIDY REMOVAL

1995

Assumptions: Financial Cost for Milk Powder
Other costs increase by 8% (inflation)

TOTAL POPULATION (m):	9.386
TOTAL SALES (1000 liters)	220600
SUBSIDY: (m D)	0

	Sterilized	Pasteurised	UHT
		Dinars/liter	
Output (1000 liters)	75004	46326	99270
Unsubsidized Prices	0.629	0.568	0.648
EFFECT OF PHASE-OUT ON CONSUMPTION - WITH PRICE RESPONSE			
Adj. Sales 1994 (1000 l)	42955	26253.5	57988
Projected Sales (1000 l) (adj for 2.5% popn growth)	44028.9	26909.8	59437.7
Price Increase (%)	8.82	4.99	1.25
Price elastic of demand	-0.6	-0.6	-0.6
Actual sales (1000 l)	41698.9	26104.1	58991.9
Cost of Subsidy (m D)	0	0	0
Total Subsidy (m D)	0		
Total Sales (1000 l)	126794.9		

SCENARIO 5

SUBSIDIZATION - PLASTIC GRANULES ONLY

Assume - Constant consumption (23.5 l/cap); production increases by 2.5% per year (popn growth) from 1989 base
- Conversion in 1990 during which all current policies remain in effect
- Own-price elasticity of demand of -0.6

1990

TOTAL POPULATION (m):	8.276
TOTAL SALES	194500

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	66130	40845	87525	194500
PROCESSING		Dinars/liter		
Milk Powder	0.278	0.278	0.278	
Processing	0.087	0.057	0.055	
Industrial Cost Price	0.365	0.335	0.333	
Processing Margin 15%	0.055	0.05	0.05	
Total Packaging	0.092	0.087	0.143	
Pre-Tax Cost Price	0.512	0.472	0.526	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.258	0.254	0.277	
Product Subsidy (m D)	17.062	10.375	24.244	51.681

1991 SUBSIDIZATION - PLASTIC GRANULES ONLY

TOTAL POPULATION (m):	8.503
TOTAL SALES	199800

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	67932	41958	89910	199800
GRANULES				
Volume of Granules (MT)	2046.112	1263.775	2708.089	6017.976
Cost of Granules (m D) (incl all taxes except TVA)	3.319	2.05	4.392	9.761
Cost per liter	0.049	0.049	0.049	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.094	0.062	0.059	
Industrial Cost Price	0.346	0.314	0.311	
Processing Margin 15%	0.052	0.047	0.047	
Total Packaging	0.071	0.071	0.071	
Foreign component	0.049	0.049	0.049	
Domestic component	0.022	0.022	0.022	
Pre-Tax Cost Price (excl foreign component)	0.42	0.383	0.38	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.166	0.165	0.131	
Product Subsidy (m D)	11.277	6.923	11.778	29.978

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.319	2.05	4.392	9.761
Processing (m D)		0	0	0
				9.761
Subsidy per liter				
Granules (m D)	0.049	0.049	0.049	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.166	0.165	0.131	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.446	0.425	0.451	

1991 SUBSIDIZATION - PLASTIC GRANULES ONLY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Projected Sales (1000 l)	67932	41958	89910	199800
Price Increase (%)	59.29	63.46	40.94	
Price Elastic. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	43765.87	25982.07	67824.51	137572.45
Subsidies				
Volume of Granules (MT)	1.32	0.78	2.04	
Cost of Granules (m D)	2.141	1.265	3.309	6.715

1992 SUBSIDIZATION - PLASTIC GRANULES ONLY

TOTAL POPULATION (m): 8.716
TOTAL SALES 204800

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	69632	43008	92160	204800
GRANULES				
Volume of Granules (MT)	2097.316	1295.401	2775.859	6168.576
Cost of Granules (m D) (incl all taxes except TVA)	3.674	2.269	4.862	10.805
Cost per liter	0.053	0.053	0.053	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.102	0.067	0.064	
Industrial Cost Price	0.354	0.319	0.316	
Processing Margin 15%	0.053	0.048	0.047	
Total Packaging	0.077	0.077	0.077	
Foreign component	0.053	0.053	0.053	
Domestic component	0.024	0.024	0.024	
Pre-Tax Cost Price (excl foreign component)	0.431	0.391	0.387	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.177	0.173	0.138	
Product Subsidy (m D)	12.325	7.44	12.718	32.483

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.674	2.269	4.862	10.805
Processing (m D)	0	0	0	0
				10.805
Subsidy per liter				
Granules (m D)	0.053	0.053	0.053	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.177	0.173	0.138	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.457	0.433	0.458	

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1992 SUBSIDIZATION - PLASTIC GRANULES ONLY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

1991 Sales (1000 l)	43765.87	25982.07	67824.51	137572.45
(With price response)				
Projected Sales (1000 l)	44860	26631.6	69520.1	141011.7
(Adj for pop growth 2.5%)				
Price Increase (%)	2.47	1.88	1.55	
Price Elastic. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	44195.17	26331.2	68873.56	139399.93
Subsidies				
Volume of Granules (MT)	1.33	0.79	2.07	
Cost of Granules (m D)	2.33	1.384	3.626	7.34

1993 SUBSIDIZATION - PLASTIC GRANULES ONLY

TOTAL POPULATION (m):	8.934
TOTAL SALES	209900

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	71366	44079	94455	209900
GRANULES				
Volume of Granules (MT)	2149.544	1327.659	2844.985	6322.188
Cost of Granules (m D) (incl all taxes except TVA)	4.066	2.512	5.382	11.96
Cost per liter	0.057	0.057	0.057	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.11	0.072	0.069	
Industrial Cost Price	0.362	0.324	0.321	
Processing Margin 15%	0.054	0.049	0.048	
Total Packaging	0.083	0.083	0.083	
Foreign component	0.057	0.057	0.057	
Domestic component	0.026	0.026	0.026	
Pre-Tax Cost Price (excl foreign component)	0.442	0.399	0.395	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.188	0.181	0.146	
Product Subsidy (m D)	13.417	7.978	13.79	35.185

BREAKDOWN OF SUBSIDIES - ASSUMING NO SUBSIDIES

Total Subsidy				
Granules (m D)	4.066	2.512	5.382	11.96
Processing (m D)	0	0	0	0
				11.96
Subsidy per liter				
Granules (m D)	0.057	0.057	0.057	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.188	0.181	0.146	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.468	0.441	0.466	

1993 SUBSIDIZATION - PLASTIC GRANULES ONLY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

1992 Sales (1000 l) (With price response)	44195.17	26331.2	68873.56	139399.93
Projected Sales (1000 l) (Adj for pop growth 2.5%)	45300	26989.5	70595.4	142884.9
Price Increase (%)	2.41	1.85	1.75	
Price Elastic. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	446[illegible]4.96	26689.92	69854.15	141189.03
Subsidies				
Volume of Granules (MT)	1.34	0.8	2.1	
Cost of Granules (m D)	2.535	1.513	3.973	8.021

1994 SUBSIDIZATION - PLASTIC GRANULES ONLY

TOTAL POPULATION (m):	9.157
TOTAL SALES	215200

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	73168	45192	96840	215200
GRANULES				
Volume of Granules (MT)	2203.82	1361.183	2916.821	6481.824
Cost of Granules (m D) (incl all taxes except TVA)	4.503	2.781	5.959	13.243
Cost per liter	0.062	0.062	0.062	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.119	0.078	0.075	
Industrial Cost Price	0.371	0.33	0.327	
Processing Margin 15%	0.056	0.05	0.049	
Total Packaging	0.09	0.09	0.09	
Foreign component	0.062	0.062	0.062	
Domestic component	0.028	0.028	0.028	
Pre-Tax Cost Price (excl foreign component)	0.455	0.408	0.404	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.201	0.19	0.155	
Product Subsidy (m D)	14.707	8.586	15.01	38.303

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.503	2.781	5.959	13.243
Processing (m D)	0	0	0	0
				13.243
Subsidy per liter				
Granules (m D)	0.062	0.062	0.062	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.201	0.19	0.155	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.481	0.45	0.475	

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

1993 Sales (1000 l)	44644.96	26689.92	69854.15	141189.03
(With price response)				
Projected Sales (1000 l)	45761.1	27357.2	71600.5	144718.8
(Adj for pop growth 2.5%)				
Price Increase (%)	2.78	2.04	1.93	
Price Elastic. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	44997.8	27022.35	70771.37	142791.52
Subsidies				
Volume of Granules (MT)	1.36	0.81	2.13	
Cost of Granules (m D)	2.779	1.655	4.352	8.786

1995 SUBSIDIZATION - PLASTIC GRANULES ONLY

TOTAL POPULATION (m): 9.386
TOTAL SALES 220600

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	75004	46326	99270	220600
GRANULES				
Volume of Granules (MT)	2259.12	1395.339	2990.012	6644.471
Cost of Granules (m D) (incl all taxes except TVA)	4.985	3.079	6.598	14.662
Cost per liter	0.066	0.066	0.066	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.129	0.084	0.081	
Industrial Cost Price	0.381	0.336	0.333	
Processing Margin 15%	0.057	0.05	0.05	
Total Packaging	0.097	0.097	0.097	
Foreign component	0.066	0.066	0.066	
Domestic component	0.031	0.031	0.031	
Pre-Tax Cost Price (excl foreign component)	0.469	0.417	0.414	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.215	0.199	0.165	
Product Subsidy (m D)	16.126	9.219	16.38	41.725

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.985	3.079	6.598	14.662
Processing (m D)	0	0	0	0
				14.662
Subsidy per liter				
Granules (m D)	0.066	0.066	0.066	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.215	0.199	0.165	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.495	0.459	0.485	

SUBSIDIZATION - PLASTIC GRANULES ONLY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

1994 Sales (1000 l) (With price response)	44997.8	27022.35	70771.37	142791.52
Projected Sales (1000 l) (Adj for pop growth 2.5%)	46122.7	27697.9	72540.7	146361.3
Price Increase (%)	2.91	2	2.11	
Price Elastic. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	45317.4	27365.53	71622.33	144305.26
Subsidies				
Volume of Granules (MT)	1.36	0.82	2.16	
Cost of Granules (m D)	3.001	1.809	4.766	9.576

SCENARIO 6

SUBSIDIZATION - PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

Assumptions

Existing production systems maintained during conversion period 1990
Plastic granules subsidy begins 1991
Subsidy cap operative from 1990
Own-price elasticity of demand -0.6

1990

TOTAL POPULATION (m):	8.276
TOTAL SALES	194500

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	66130	40845	87525	194500
PROCESSING		Dinars/liter		
Milk Powder	0.278	0.278	0.278	
Processing	0.087	0.057	0.055	
Industrial Cost Price	0.365	0.335	0.333	
Processing Margin 15%	0.055	0.05	0.05	
Total Packaging	0.092	0.087	0.143	
Pre-Tax Cost Price	0.512	0.472	0.526	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.258	0.254	0.277	
Product Subsidy (m D)	17.062	10.375	24.244	51.681

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	0	0	0	0
Processing (m D)	11.9	7.35	15.75	35
				35
Subsidy per liter				
Granules (m D)	0	0	0	
Processing (m D)	0.18	0.18	0.18	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.078	0.074	0.097	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.358	0.334	0.417	

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Projected Sales (1000 l)	66130	40845	87525	194500
Price Increase (%)	27.857	28.462	30.313	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	55076.899	33869.817	71606.128	160552.84
Processing Subsidy (m D)	9.914	6.097	12.889	28.9

1991 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

TOTAL POPULATION (m):	8.503
TOTAL SALES	199800

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	67932	41958	89910	199800
GRANULES				
Volume of Granules (MT)	2046.112	1263.775	2708.089	6017.976
Cost of Granules (m D) (incl all taxes except TVA)	3.319	2.05	4.392	9.761
Cost per liter	0.049	0.049	0.049	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.094	0.062	0.059	
Industrial Cost Price	0.346	0.314	0.311	
Processing Margin 15%	0.052	0.047	0.047	
Total Packaging	0.071	0.071	0.071	
Foreign component	0.049	0.049	0.049	
Domestic component	0.022	0.022	0.022	
Pre-Tax Cost Price (excl foreign component)	0.42	0.383	0.38	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.166	0.165	0.131	
Product Subsidy (m D)	11.277	6.923	11.778	29.978

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.319	2.05	4.392	9.761
Processing (m D)	8.581	5.3	11.358	25.239
				35
Subsidy per liter				
Granules (m D)	0.049	0.049	0.049	
Processing (m D)	0.126	0.126	0.126	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.04	0.039	0.005	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.32	0.299	0.325	

1991 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1990 Sales (1000 l)	55076.899	33869.817	71606.128	160552.84
(with price response)				
Projected Sales 1991	56453.8	34716.6	73396.3	164566.7
(adj for popn growth 2.5%)				
Prices				
1990 prices (D\l)	0.358	0.334	0.417	
1991 prices	0.32	0.299	0.325	
Price Increase (%)	-10.615	-10.479	-22.062	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	60049.342	36899.371	83111.915	180060.62
Subsidies				
Volume of Granules (MT)	1808.686	1111.409	2503.331	
Cost of Granules (m D)	2.933	1.803	4.06	8.796
Processing Subsidy (m D)	7.566	4.649	10.472	22.687
Total Subsidy (m D)	31.483			

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1992 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

TOTAL POPULATION (m):	8.716
TOTAL SALES	204800

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	69632	43008	92160	204800
GRANULES				
Volume of Granules (MT)	2097.316	1295.401	2775.859	6168.576
Cost of Granules (m D) (incl all taxes except TVA)	3.674	2.269	4.862	10.805
Cost per liter	0.053	0.053	0.053	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.102	0.067	0.064	
Industrial Cost Price	0.354	0.319	0.316	
Processing Margin 15%	0.053	0.048	0.047	
Total Packaging	0.077	0.077	0.077	
Foreign component	0.053	0.053	0.053	
Domestic component	0.024	0.024	0.024	
Pre-Tax Cost Price (excl foreign component)	0.431	0.391	0.387	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.177	0.173	0.138	
Product Subsidy (m D)	12.325	7.44	12.718	32.483

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.674	2.269	4.862	10.805
Processing (m D)	8.226	5.081	10.888	24.195
				35
Subsidy per liter				
Granules (m D)	0.053	0.053	0.053	
Processing (m D)	0.118	0.118	0.118	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.059	0.055	0.02	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.339	0.315	0.34	

1992 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1991 Sales (1000 l)	60049.342	36899.371	83111.915	180060.62
(with price response)				
Projected Sales (1000 l)	61550.6	37821.9	85189.7	184562.2
(adj for popn growth 2.5%)				
Prices				
1991 prices (D\l)	0.32	0.299	0.325	
1992 prices	0.339	0.315	0.34	
Price Increase (%)	5.937	5.351	4.615	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	59358.044	36607.590	82830.797	178796.43
Subsidies				
Volume of Granules (MT)	1787.864	1102.621	2494.864	
Cost of Granules (m D)	3.132	1.931	4.37	9.433
Processing Subsidy (m D)	7.004	4.32	9.774	21.098
Total Subsidy (m D)	30.531			

1993 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

TOTAL POPULATION (m): 8.934
TOTAL SALES 209900

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	71366	44079	94455	209900
GRANULES				
Volume of Granules (MT)	2149.544	1327.659	2844.985	6322.188
Cost of Granules (m D) (incl all taxes except TVA)	4.066	2.512	5.382	11.96
Cost per liter	0.057	0.057	0.057	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.11	0.072	0.069	
Industrial Cost Price	0.362	0.324	0.321	
Processing Margin 15%	0.054	0.049	0.048	
Total Packaging	0.083	0.083	0.083	
Foreign component	0.057	0.057	0.057	
Domestic component	0.026	0.026	0.026	
Pre-Tax Cost Price (excl foreign component)	0.442	0.399	0.395	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.188	0.181	0.146	
Product Subsidy (m D)	13.417	7.978	13.79	35.185
BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE				
Total Subsidy				
Granules (m D)	4.066	2.512	5.382	11.96
Processing (m D)	7.834	4.838	10.368	23.04
				35
Subsidy per liter				
Granules (m D)	0.057	0.057	0.057	
Processing (m D)	0.11	0.11	0.11	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.078	0.071	0.036	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.358	0.331	0.356	

1993 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1992 Sales (1000 l) (with price response)	59358.044	36607.590	82830.797	178796.43
Projected Sales (1000 l) (adj for popn growth 2.5%)	60342	37522.8	84901.6	183266.4
Prices				
1992 prices (D\l)	0.339	0.315	0.34	
1993 prices	0.358	0.331	0.356	
Price Increase (%)	5.605	5.079	4.706	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	58795.883	36379.330	82504.318	177679.53
Subsidies				
Volume of Granules (MT)	1770.932	1095.745	2485.03	
Cost of Granules (m D)	3.35	2.073	4.701	10.124
Processing Subsidy (m D)	6.468	4.002	9.075	19.545
Total Subsidy (m D)	29.669			

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1994 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

TOTAL POPULATION (m):	9.157
TOTAL SALES	215200

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	73168	45192	96840	215200
GRANULES				
Volume of Granules (MT)	2203.82	1361.183	2916.821	6481.824
Cost of Granules (m D) (incl all taxes except TVA)	4.503	2.781	5.959	13.243
Cost per liter	0.062	0.062	0.062	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.119	0.078	0.075	
Industrial Cost Price	0.371	0.33	0.327	
Processing Margin 15%	0.056	0.05	0.049	
Total Packaging	0.09	0.09	0.09	
Foreign component	0.062	0.062	0.062	
Domestic component	0.028	0.028	0.028	
Pre-Tax Cost Price (excl foreign component)	0.455	0.408	0.404	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.201	0.19	0.155	
Product Subsidy (m D)	14.707	8.586	15.01	38.303

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.503	2.781	5.959	13.243
Processing (m D)	7.397	4.569	9.791	21.757
				35
Subsidy per liter				
Granules (m D)	0.062	0.062	0.062	
Processing (m D)	0.101	0.101	0.101	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.1	0.089	0.054	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.38	0.349	0.374	

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1994 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1993 Sales (1000 l)	58795.883	36379.330	82504.318	177679.53
(with price response)				
Projected 1994 Sales	60265.8	37288.8	84566.9	182121.5
(adj for popn growth 2.5%)				
Prices				
1993 prices (D\l)	0.358	0.331	0.356	
1994 prices (D\l)	0.38	0.349	0.374	
Price Increase (%)	6.145	5.438	5.056	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	58043.799	36072.141	82001.478	176117.41
Subsidies				
Volume of Granules (MT)	1748.279	1086.493	2469.885	
Cost of Granules (m D)	3.572	2.22	5.046	10.838
Processing Subsidy (m D)	5.862	3.643	8.282	17.787
Total Subsidy (m D)	28.625			

1995 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

TOTAL POPULATION (m): 9.386
TOTAL SALES 220600

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	75004	46326	99270	220600
GRANULES				
Volume of Granules (MT)	2259.12	1395.339	2990.012	6644.471
Cost of Granules (m D) (incl all taxes except TVA)	4.985	3.079	6.598	14.662
Cost per liter	0.066	0.066	0.066	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.129	0.084	0.081	
Industrial Cost Price	0.381	0.336	0.333	
Processing Margin 15%	0.057	0.05	0.05	
Total Packaging	0.097	0.097	0.097	
Foreign component	0.066	0.066	0.066	
Domestic component	0.031	0.031	0.031	
Pre-Tax Cost Price (excl foreign component)	0.469	0.417	0.414	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.215	0.199	0.165	
Product Subsidy (m D)	16.126	9.219	16.38	41.725

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.985	3.079	6.598	14.662
Processing (m D)	6.915	4.271	9.152	20.338
				35
Subsidy per liter				
Granules (m D)	0.066	0.066	0.066	
Processing (m D)	0.092	0.092	0.092	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.123	0.107	0.073	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.403	0.367	0.393	

1995 PLASTIC GRANULES PLUS SUBSIDY CAP 35 m D

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1994 Sales (1000 l)	58043.799	36072.141	82001.478	176117.41
(with price response)				
Projected 1995 Sales	59494.9	36973.9	84051.5	180520.3
(adj for popn growth 2.5%)				
Prices				
1994 prices (D\l)	0.38	0.349	0.374	
1995 prices (D\l)	0.403	0.367	0.393	
Price Increase (%)	6.053	5.158	5.08	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	57334.164	35829.631	81489.610	174653.40
Subsidies				
Volume of Granules (MT)	1726.905	1079.189	2454.467	
Cost of Granules (m D)	3.81	2.381	5.416	11.607
Processing Subsidy (m D)	5.275	3.296	7.497	16.068
Total Subsidy (m D)	27.675			

SCENARIO 7

SUBSIDIZATION - PLASTIC GRANULES PLUS CAP PLUS FIVE YEAR PHASE-OUT OF PROCESSING SUBSIDY

Assumptions:

Subsidy on plastic granules operative beginning in 1991
Phase out processing subsidy beginning 1991
Base processing subsidy (33.6 m D) is the equivalent subsidy in 1990
35 million dinar subsidy cap operative for 1990
Own-price elasticity of demand -0.6

1990
TOTAL POPULATION (m): 8.276
TOTAL SALES 194500

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	66130	40845	87525	194500
PROCESSING		Dinars/liter		
Milk Powder	0.278	0.278	0.278	
Processing	0.087	0.057	0.055	
Industrial Cost Price	0.365	0.335	0.333	
Processing Margin 15%	0.055	0.05	0.05	
Total Packaging	0.092	0.087	0.143	
Pre-Tax Cost Price (excl. foreign component)	0.512	0.472	0.526	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.258	0.254	0.277	
Product Subsidy (m D)	17.062	10.375	24.244	51.681

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	0	0	0	0
Processing (m D)	11.9	7.35	15.75	35
				35
Subsidy per liter				
Granules (m D)	0	0	0	
Processing (m D)	0.18	0.18	0.18	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.078	0.074	0.097	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.358	0.334	0.417	

1990 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Projected Sales (1000 l)	66130	40845	87525	194500
Price Increase (%)	27.857	28.462	30.313	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	55076.899	33869.817	71606.128	160552.84
Processing Subsidy (m D)	9.914	6.097	12.889	28.9
Total Subsidy (m D)	28.9			

1991 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

TOTAL POPULATION (m): 8.503
TOTAL SALES 199800

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	67932	41958	89910	199800
GRANULES				
Volume of Granules (MT)	2046.112	1263.775	2708.089	6017.976
Cost of Granules (m D) (incl all taxes except TVA)	3.319	2.05	4.392	9.761
Cost per liter	0.049	0.049	0.049	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.094	0.062	0.059	
Industrial Cost Price	0.346	0.314	0.311	
Processing Margin 15%	0.052	0.047	0.047	
Total Packaging	0.071	0.071	0.071	
Foreign component	0.049	0.049	0.049	
Domestic component	0.022	0.022	0.022	
Pre-Tax Cost Price (excl foreign component)	0.42	0.383	0.38	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.166	0.165	0.131	
Product Subsidy (m D)	11.277	6.923	11.778	29.978

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.319	2.05	4.392	9.761
Processing (m D)	9.139	5.645	12.096	26.88
				36.641
Subsidy per liter				
Granules (m D)	0.049	0.049	0.049	
Processing (m D)	0.135	0.135	0.135	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.031	0.03	-0.004	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.311	0.29	0.316	

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BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1990 Sales (1000 l)	55076.899	33869.817	71606.128	160552.84
(with price response)				
Projected Sales 1991	56453.8	34716.6	73396.3	164566.7
(adj for popn growth 2.5%)				
Prices				
1990 prices (D/l)	0.358	0.334	0.417	
1991 prices	0.311	0.29	0.316	
Price Increase (%)	-13.128	-13.174	-24.221	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	60900.552	37460.738	84062.690	182423.98
Subsidies				
Volume of Granules (MT)	1834.325	1128.317	2531.968	
Cost of Granules (m D)	2.975	1.83	4.107	8.912
Processing Subsidy (m D)	8.222	5.057	11.348	24.627
Total Subsidy (m D)	33.539			

1992 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

TOTAL POPULATION (m): 8.716
TOTAL SALES 204800

	Sterilized	Pasteurised	UHT.	TOTAL
OUTPUT (1000 l)	69632	43008	92160	204800
GRANULES				
Volume of Granules (MT)	2097.316	1295.401	2775.859	6168.576
Cost of Granules (m D) (incl all taxes except TVA)	3.674	2.269	4.862	10.805
Cost per liter	0.053	0.053	0.053	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.102	0.067	0.064	
Industrial Cost Price	0.354	0.319	0.316	
Processing Margin 15%	0.053	0.048	0.047	
Total Packaging	0.077	0.077	0.077	
Foreign component	0.053	0.053	0.053	
Domestic component	0.024	0.024	0.024	
Pre-Tax Cost Price (excl foreign component)	0.431	0.391	0.387	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.177	0.173	0.138	
Product Subsidy (m D)	12.325	7.44	12.718	32.483

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	3.674	2.269	4.862	10.805
Processing (m D)	6.854	4.234	9.072	20.16
				30.965
Subsidy per liter				
Granules (m D)	0.053	0.053	0.053	
Processing (m D)	0.098	0.098	0.098	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.079	0.075	0.04	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.359	0.335	0.36	

1992 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1991 Sales (1000 l)	60900.552	37460.738	84062.690	182423.98
(with price response)				
Projected 1992 Sales	62423.1	38397.3	86164.3	186984.7
(adj for popn growth 2.5%)				
Prices				
1991 prices (D\l)	0.311	0.29	0.316	
1992 prices	0.359	0.335	0.36	
Price Increase (%)	15.434	15.517	13.924	
Price Elast. of Demand	-0.6	-0.6	-0.6	
				Total
Actual Sales (1000 l)	56642.471	34822.434	78965.789	170430.69
Subsidies				
Volume of Granules (MT)	1706.071	1048.852	2378.45	
Cost of Granules (m D)	2.988	1.837	4.166	8.991
Processing Subsidy (m D)	5.551	3.413	7.739	16.703
Total Subsidy (m D)	25.694			

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1993 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

TOTAL POPULATION (m):	8.934			
TOTAL SALES	209900			
	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	71366	44079	94455	209900
GRANULES				
Volume of Granules (MT)	2149.544	1327.659	2844.985	6322.188
Cost of Granules (m D) (incl all taxes except TVA)	4.066	2.512	5.382	11.96
Cost per liter	0.057	0.057	0.057	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.11	0.072	0.069	
Industrial Cost Price	0.362	0.324	0.321	
Processing Margin 15%	0.054	0.049	0.048	
Total Packaging	0.083	0.083	0.083	
Foreign component	0.057	0.057	0.057	
Domestic component	0.026	0.026	0.026	
Pre-Tax Cost Price (excl foreign component)	0.442	0.399	0.395	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.188	0.181	0.146	
Product Subsidy (m D)	13.417	7.978	13.79	35.185
BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE				
Total Subsidy				
Granules (m D)	4.066	2.512	5.382	11.96
Processing (m D)	4.57	2.822	6.048	13.44
				25.4
Subsidy per liter				
Granules (m D)	0.057	0.057	0.057	
Processing (m D)	0.064	0.064	0.064	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.124	0.117	0.082	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.404	0.377	0.402	

1993 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1992 Sales (1000 l)	56642.471	34622.434	78965.789	170430.69
(with price response)				
Projected 1993 Sales	58058.5	35693	80939.9	174691.4
(adj for popn growth 2.5%)				
Prices				
1992 prices (D\l)	0.359	0.335	0.36	
1993 prices	0.404	0.377	0.402	
Price Increase (%)	12.535	12.537	11.667	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	53691.920	33008.101	75273.945	161973.96
Subsidies				
Volume of Granules (MT)	1617.201	994.204	2267.251	
Cost of Granules (m D)	3.059	1.881	4.289	9.229
Processing Subsidy (m D)	3.436	2.113	4.818	10.367
Total Subsidy (m D)	19.596			

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1994 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

TOTAL POPULATION (m):	9.157
TOTAL SALES	215200

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	73168	45192	96840	215200
GRANULES				
Volume of Granules (MT)	2203.82	1361.183	2916.821	6481.824
Cost of Granules (m D) (incl all taxes except TVA)	4.503	2.781	5.959	13.243
Cost per liter	0.062	0.062	0.062	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.119	0.078	0.075	
Industrial Cost Price	0.371	0.33	0.327	
Processing Margin 15%	0.056	0.05	0.049	
Total Packaging	0.09	0.09	0.09	
Foreign component	0.062	0.062	0.062	
Domestic component	0.028	0.028	0.028	
Pre-Tax Cost Price (excl foreign component)	0.455	0.408	0.404	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.201	0.19	0.155	
Product Subsidy (m D)	14.707	8.586	15.01	38.303

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.503	2.781	5.959	13.243
Processing (m D)	2.285	1.411	3.024	6.72
				19.963
Subsidy per liter				
Granules (m D)	0.062	0.062	0.062	
Processing (m D)	0.031	0.031	0.031	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.17	0.159	0.124	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.45	0.419	0.444	

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1993 Sales (1000 l) (with price response)	53691.920	33008.101	75273.945	161973.96
Projected 1994 Sales (adj for popn growth 2.5%)	55034.2	33833.3	77155.8	166023.3
Prices				
1993 prices (D\l)	0.404	0.377	0.402	
1994 prices (D\l)	0.45	0.419	0.444	
Price Increase (%)	11.386	11.141	10.448	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	51274.483	31571.679	72319.057	155165.22
Subsidies				
Volume of Granules (MT)	1544.387	950.939	2178.25	
Cost of Granules (m D)	3.155	1.943	4.45	9.548
Processing Subsidy (m D)	1.59	0.979	2.242	4.811
Total Subsidy (m D)	14.359			

PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

TOTAL POPULATION (m):	9.386
TOTAL SALES	220600

	Sterilized	Pasteurised	UHT	TOTAL
OUTPUT (1000 l)	75004	46326	99270	220600
GRANULES				
Volume of Granules (MT)	2259.12	1395.339	2990.012	6644.471
Cost of Granules (m D) (incl all taxes except TVA)	4.985	3.079	6.598	14.662
Cost per liter	0.066	0.066	0.066	
PROCESSING		Dinars/liter		
Milk Powder	0.252	0.252	0.252	
Processing	0.129	0.084	0.081	
Industrial Cost Price	0.381	0.336	0.333	
Processing Margin 15%	0.057	0.05	0.05	
Total Packaging	0.097	0.097	0.097	
Foreign component	0.066	0.066	0.066	
Domestic component	0.031	0.031	0.031	
Pre-Tax Cost Price (excl foreign component)	0.469	0.417	0.414	
Pre-Tax Sales Price	0.254	0.218	0.249	
Full Subsidy per liter	0.215	0.199	0.165	
Product Subsidy (m D)	16.126	9.219	16.38	41.725

BREAKDOWN OF SUBSIDIES - ASSUMING NO PRICE RESPONSE

Total Subsidy				
Granules (m D)	4.985	3.079	6.598	14.662
Processing (m D)	0	0	0	0
				14.662
Subsidy per liter				
Granules (m D)	0.066	0.066	0.066	
Processing (m D)	0	0	0	
Cost Passed on to Consumer				
Granules (m D)	0	0	0	
Processing (m D)	0.215	0.199	0.165	
Current Retail Price (D/l	0.28	0.26	0.32	
Revised Retail Price (D/l	0.495	0.459	0.485	

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1995 PLASTIC GRANULES PLUS CAP PLUS 5 YEAR PHASE-OUT OF SUBSIDY

BREAKDOWN OF SUBSIDIES - WITH PRICE RESPONSE

Sales				
1994 Sales (1000 l)	51274.483	31571.679	72319.057	155165.22
(with price response)				
Projected 1995 Sales	52556.3	32361	74127	159044.3
(adj for popn growth 2.5%)				
Prices				
1994 prices (D\l)	0.45	0.419	0.444	
1995 prices (D\l)	0.495	0.459	0.485	
Price Increase (%)	10	9.547	9.234	
Price Elast. of Demand	-0.6	-0.6	-0.6	
Actual Sales (1000 l)	49402.922	30507.297	70020.067	149930.28
Subsidies				
Volume of Granules (MT)	1488.016	918.88	2109.004	
Cost of Granules (m D)	3.283	2.028	4.654	9.965
Processing Subsidy (m D)	0	0	0	0

SCENARIO 8

SUBSIDY RESTRICTED TO LOWEST INCOME GROUPS

ASSUMPTIONS:

Household Expenditures on Milk, Eggs and Dairy Products
75% on milk and dairy products
66% of 75% on fluid milk = 50%
33% of 75% on reconstituted milk = 25%
33% of 75% on raw milk = 25%

Poverty Line according to 1985 HH Expenditure Survey
Rural areas = 95 D/capita/yr hh expenditure
Urban areas = 190 D/capita/year hh expenditure

Assume for 1990-1991
Poverty Line of 150 D/capita/year for rural areas
Poverty line of 250 D/capita/year for urban areas

Population Distribution (World Bank, 1988)
Urban 56%
Rural 44%

Urban Poor 4.5% of total population (1985 HH Exp Survey)
Rural Poor 3.2% of total population

Expenditures on recon milk (HH Exp Survey)
Urban Poor - 2.075 D/cap/yr
Rural Poor - 0.6 D/cap/yr

Population growth according to Table 1, Annex B until 1991 and then 2.5% pa

Subsidy restricted to sterilized milk in plastic bottles

ESTIMATED CONSUMPTION OF RECONSTITUTED MILK by URBAN AND RURAL POOR

	1990	1991	1992	1993	1994	1995
Total Population	8.276	8.503	8.716	8.934	9.157	9.386
Urban Poor	0.372	0.383	0.392	0.402	0.412	0.422
Rural Poor	0.265	0.272	0.279	0.286	0.293	0.3
Exp on Recon Milk (m D)						
Urban Poor	0.772	0.795	0.813	0.834	0.855	0.876
Rural Poor	0.159	0.163	0.167	0.172	0.176	0.18
Total	0.931	0.958	0.98	1.006	1.031	1.056
Volume Milk Consumed (l)	3325000	3421429	3500000	3592857	3682143	3771429

SUBSIDY RESTRICTED TO LOWEST INCOME GROUPS

REQUIRED LEVEL OF SUBSIDIZATION - STERILIZED MILK IN PLASTIC BOTTLES

	1990	1991	1992	1993	1994	1995
Milk Powder	0.278	0.252	0.252	0.252	0.252	0.252
Processing	0.087	0.094	0.102	0.11	0.119	0.129
Industrial Cost Price	0.365	0.346	0.354	0.362	0.371	0.381
Processing Margin 15%	0.055	0.052	0.053	0.054	0.056	0.057
Packaging	0.066	0.071	0.077	0.083	0.09	0.097
Pre-Tax Price	0.486	0.469	0.484	0.499	0.517	0.535
Pre-Tax Sale Price	0.254	0.254	0.254	0.254	0.254	0.254
Subsidy per liter	0.232	0.215	0.23	0.245	0.263	0.281
TOTAL SUBSIDY (m D)	0.771	0.736	0.805	0.88	0.968	1.06

EFFECT ON PRICE LEVELS FOR NON-SUBSIDIZED MILK

Year	Sterilized	Pasteurised	UHT
		dinars/liter	
1989	0.28	0.26	0.32
1990	0.565	0.523	0.515
1991	0.549	0.505	0.552
1992	0.567	0.519	0.567
1993	0.586	0.533	0.583
1994	0.607	0.551	0.601
1995	0.629	0.568	0.618

Calculated as pre-tax cost price + distribution margin (0.026 D/l) + 5% loss factor

SUBSIDY RESTRICTED TO LOWEST INCOME GROUPS

EFFECT ON CONSUMPTION - WITH PRICE RESPONSE (Own-price elasticity of demand -0.6)

1990

POPULATION (m):	8.276
PROJECTED SALES	194500

	Sterilized	Pasteurised	UHT
Output (1000 l)	66130	40845	87525
Price Increase (%)	101.79	101.15	60.94
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	25741.8	16056.2	55522.4
Total Sales (m D)	97320.4		

1991

1990 Sales (1000 l)	25741.8	16056.2	55522.4
Projected Sales (Adj for 2.5% popn growth)	26385.3	16457.6	56910.5
Price Increase (%)	-2.83	-3.44	7.18
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	26833.3	16797.3	54458.8
Total Sales (m D)	98089.4		

1992

1991 Sales (1000 l)	26833.3	16797.3	54458.8
Projected Sales (Adj for 2.5% popn growth)	27504.1	17217.2	55820.3
Price Increase (%)	3.28	2.77	2.72
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	26962.8	16931.1	54909.3
Total Sales (m D)	98803.2		

SUBSIDY RESTRICTED TO LOWEST INCOME GROUPS

1993

1992 Sales (1000 l)	26962.8	16931.1	54909.3
Projected Sales (Adj for 2.5% popn growth)	27636.9	17354.4	56282
Price Increase (%)	3.35	2.7	2.82
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	27081.4	17073.3	55329.7
Total Sales (m D)	99484.4		

1994

1993 Sales (1000 l)	27081.4	17073.3	55329.7
Projected Sales (Adj for 2.5% popn growth)	27758.4	17500.1	56712.9
Price Increase (%)	3.58	3.38	3.09
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	27162.1	17145.2	55661.4
Total Sales (m D)	99968.7		

1995

1994 Sales (1000 l)	27162.1	17145.2	55661.4
Projected Sales (Adj for 2.5% popn growth)	27841.2	17573.8	57052.9
Price Increase (%)	3.62	3.09	2.83
Price Elast of Demand	-0.6	-0.6	-0.6
Actual Sales (1000 l)	27236.5	17248	56084.1
Total Sales (m D)	100568.6		

SUPPLEMENTARY INFORMATION

ANNEX D TABLE 1
INTERNATIONAL PRICES FOR DAIRY PRODUCTS AS REPORTED TO THE INTERNATIONAL DAIRY ARRANGEMENT
1985-1988

	1985				1986			
Dairy Product	1st	2nd	3rd	4th	1st	2nd	3rd	4th
	(US $ per Metric Ton F.O.B.)							
Skimmed Milk Powder 1/	600-650	630-700	685-800	750-800	812-850	650-740	740-800	750-800
Whole Milk Powder	860-950	850-960	890-1010	950-1000	990-1050	900-1050	930-1000	900-1050
Anhydrous Milk Fat 2/	1440-1500	1290-1650	1200-1360	1200-1300	1200	1200	1200	1200
Butter 2/	1200-1300	850-1450	1000-1150	1000-1200	1000	1000	1000	1000
Cheddar Cheese 3/	1150-1200	1100-1430	1050-1270	1000-1300	1100-1380	1100-1500	1050-1300	1030-1130

	1987				1988		
Dairy Product	1st	2nd	3rd	4th	1st	2nd	3rd
	(US $ per Metric Ton F.O.B.)						
Skimmed Milk Powder 1/	750-900	800-900	900-1000	900-1250	1300-1400	1500-1700	1650-1900
Whole Milk Powder	900-1000	950-1050	950-1060	950-1300	1400-1500	1500-1700	1700-2000
Anhydrous Milk Fat 2/	1200	1200	1200-1250	1200-1250	1200	1200	1200-1250
Butter 2/	1000	1000	1000-1050	1000-1200	1100	1100-1300	1200-1600
Cheddar Cheese 3/	1050-1200	1100-1200	1150-1250	1150-1400	1600-1800	1400-1800	1800-2400

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes 1/ Mainly skimmed milk powder for human consumption. Some sales of skimmed milk powder for animal feed made according to Article 3:5 of the Protocol Regarding Certain Milk Producers have been made at lower prices than the ranges indicated.

2/ The minimum export prices of anhydrous milk fat and butter were provisionally suspended from 11/16/84 to 5/31/85, some old butter and anhydrous milk fat was sold at prices lower than the ranges indicated by derogation under Article 7:1 of the Protocol Regarding Milk Fat.

3/ Some sales of cheese below normal export quality made according to Article 7:2 of the Protocol Regarding Certain Cheeses have been made at lower prices than the range indicated.

ANNEX D TABLE 2
MINIMUM EXPORT PRICES AS NEGOTIATED UNDER THE INTERNATIONAL DAIRY ARRANGEMENT
1980-1988

Dairy Products	Effective Date 1/1/80	10/1/80	10/1/81	6/5/85	10/2/86	6/25/87	9/23/87	3/23/88	9/21/88
	(US $ per Metric Ton F.O.B.)								
Skimmed Milk Powder	425	500	600	600	680	765	825	900	1,050
Whole Milk Powder	725	800	950	830	880	900	950	1,000	1,150
Buttermilk Powder	425	500	600	600	680	765	825	900	1,050
Anhydrous Milk Fat	1,100	1,200	1,440	1,200	1,200	1,200	1,200	1,325	1,500
Butter	925	1,000	1,200	1,000	1,000	1,000	1,000	1,100	1,250
Certain Cheeses	800	900	1,000	1,000	1,030	1,030	1,120	1,200	1,350

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Note : The minimum export prices are fixed for pilot products defined in the International Dairy Arrangement taking into account, in particular, the current market situation, dairy prices in producing participants, the need to ensure equitable prices to consumers, and the desirability of maintaining a minimum return to the most efficient producers in order to ensure stability of supply over the longer term. The latest minimum prices for all pilot products became effective on 21 September 1988. Minimum export prices must not be considered as market prices, but merely the floor price levels which participants have agreed to observe.

ANNEX D TABLE 3
SHARE OF DAIRY PRODUCTS IN FOOD AID COMPARED TO TOTAL DAIRY PRODUCT EXPORTS FOR SELECTED COUNTRIES
1984-1987

Country	Total Exports				Food Aid				Food Aid/Total Exports			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
	(Thousands of Metric Tons)								(Percent)			
						Skimmed Milk Powder						
Australia	70.2	90.2	74.4	67.6	4.2	0.8	0.4	0.3	6.0	0.9	0.5	0.4
Canada	70.0	60.6	66.1	-	28.0 1/	-	-	-	40.0	-	-	
European Community	307.0	306.3	268.0	390.0	167.0	124.0	98.0	110.0	54.4	40.5	36.6	28.2
Switzerland	0.7	8.8	8.4	10.3	0.7	1.2	0.7	0.8	100.0	13.6	8.3	7.8
United States	264.5	304.8	366.0	298.8	180.5	221.9	148.6	126.8	68.3	72.8	40.6	42.4
Total	712.4	770.7	782.9	766.7	380.4	347.9	247.7	237.9	53.4	49.0 2/	34.6 2/	31.0
						Whole Milk Powder						
Australia	27.3	31.7	38.0	43.1	0.60	0.04	0.07	0.02	2.2	0.1	0.2	0.1
Switzerland	3.1	3.0	3.0	2.4	2.70	2.60	2.60	2.00	87.1	86.7	86.7	83.3
Total	30.4	34.7	41.0	45.5	3.30	2.64	2.67	2.02	10.8	7.6	6.5	4.4
						Anhydrous Milk Fat						
Australia	10.8	24.0	23.8	13.1	-	0.60	0.10	-	-	2.5	0.4	-
European Community	129.0	153.0	119.5	148.0	49.00	28.00	29.00	19.00	38.0	18.3	24.3	12.8
Total	139.8	177.0	143.3	161.1	49.00	28.60	29.10	19.00	35.0	16.1	20.3	11.8

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Food aid for Canada is for the fiscal year, whereas total export figures are for the calendar year.

2/ Calculated without Canadian figures.

ANNEX D TABLE 4
TOTAL MILK DELIVERIES IN MAJOR PRODUCING COUNTRIES
1981-1987

Producing Country	Average 1981/83	Year 1985	1986	1987
	(Millions of Metric Tons)			
International Dairy Arrangement				
Argentina	5.53	5.38	5.79	6.13
Australia	5.61	6.20	6.13	6.27
Bulgaria	1.89	2.02	2.08	2.10
European Community	100.87	105.90	102.26	101.75
Egypt	0.75	0.96	0.97	0.97
Finland	2.98	2.89	2.89	2.78
Hungary	2.28	2.52	2.38	2.43
Japan	6.80	7.38	7.46	7.33
New Zealand	6.77	7.83	7.76	7.57
Norway	1.94	1.84	1.85	1.88
Poland	10.07	11.47	10.94	11.06
Romania	4.86	4.52	4.66	4.72
South Africa	0.95	0.86	0.87	0.88
Sweden	3.50	3.58	3.42	3.37
Switzerland	3.02	3.08	3.05	2.99
Uruguay	0.59	0.50	0.56	0.58
Other Non-Member Producing Countries				
Austria	2.38	2.38	2.38	2.26
Canada	7.60	7.26	7.52	7.59
United States	61.56	65.24	65.34	64.82
USSR	92.12	97.76	100.65	101.59
Total IDA Participants	158.41	161.12	163.07	162.81
World Total	483.00	506.80	521.89	517.00

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

ANNEX D TABLE 5
COW MILK PRODUCTION OR MILK DELIVERIES IN SELECTED PRODUCING COUNTRIES
WITH PERCENTAGE CHANGES FROM PREVIOUS YEAR
1986-1988

Producing Country	Year	Milk Production/Deliveries	Percentage Change from Previous Year: Production/ Deliveries	Milk Yield	Dairy Cow Numbers
		(Millions of Tons)		(Percent)	
European Community 12	1986	106.90 2/	+ 1.0	+ 2.0	- 2.0
	1987	101.40	- 5.1		- 6.0
	1988 1/	98.40	- 3.0		- 4.4
USSR	1986	102.17 3/	+ 2.3	+ 2.0	- 2.0
	1987	103.40	+ 1.2	+ 2.2	- 1.2
	1988 1/	107.50	+ 4.0		- 0.7
United States	1986	65.35 3/	+ 0.7	+ 2.3	- 1.5
	1987	64.64	- 1.0	+ 4.0	- 3.0
	1988 1/	65.93	+ 2.0		- 1.4
Poland	1986	15.70 3/	- 4.5	+ 2.0	- 3.0
	1987	15.42	- 1.8	+ 3.4	- 5.2
	1988 1/	15.42	0.0		
New Zealand	1986	7.54 2/	- 1.2	+ 0.6	+ 1.5
	1987	6.63	- 12.1		- 0.4
	1988 1/	7.11	+ 7.2		
Canada	1986	7.52 3/	+ 3.6	+ 2.1	- 1.9
	1987	7.59	+ 0.9	+ 1.7	- 2.6
	1988 1/	7.74	+ 2.0	+ 2.7	- 0.7
Japan	1986	7.45 2/	+ 0.1	- 0.1	+ 1.0
	1987	7.33	- 1.7		- 2.1
	1988 1/	7.40	+ 1.0		
Australia	1986	6.21 2/	- 0.5	+ 2.4	- 2.5
	1987	6.34	+ 2.2	+ 3.9	- 1.7
	1988 1/	6.37	+ 0.5	+ 2.0	- 1.1

Source: International Dairy Arrangement, The World Market for Dairy Products 1988, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1988

Notes : 1/ Figures for 1988 are forecasts.

2/ Milk deliveries.

3/ Milk production.

ANNEX D TABLE 6
PRODUCTION OF SKIMMED MILK POWDER BY MAJOR PRODUCING COUNTRIES
1981-1988

Producing Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	19.29	17.20	7.48	13.49	4.87	69	82
Australia	91.20	133.80	122.79	128.90	30.39	141	136
Bulgaria	8.10	-	7.20	8.00	4.50	99	-
European Community	2158.29	1889.00	2233.00	1662.00	798.00	77	65
Finland	60.70	42.00	45.00	39.00	14.00	64	45
Hungary	35.09	22.00	19.90	15.90	12.30	45	73
Japan	137.70	181.00	184.00	152.00	83.00	110	119
New Zealand	181.50	197.40	154.59	147.50	61.59	81	105
Norway	10.50	7.40	9.94	10.64	4.04	101	64
Poland	104.09	158.30	150.11	148.33	74.10	142	182
Romania	27.40	27.50	31.00	25.88	-	94	-
South Africa	21.40	24.70	17.16	11.61	6.91	54	75
Sweden	47.50	57.10	48.70	46.50	23.00	97	80
Switzerland	30.20	30.50	28.09	22.40	15.00	74	85
Uruguay	3.30	3.00	3.84	6.94	4.64	210	331
Other Non-Member Producing Countries							
Austria	31.90	30.60	32.90	28.16	9.50	88	60
Canada	143.79	97.70	104.20	103.16	59.36	71	83
United States	640.89	630.50	588.09	471.39	265.40	73	77
Total IDA Participants	2936.29	2788.40	3062.83	2439.01	1136.36	83	74
World Total	4605.00	4544.00	4758.00	4200.00	1470.62	91	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Production for first half of 1988

3/ Index for full year production

4/ Index for first half year production only

ANNEX D TABLE 7
QUARTERLY STOCKS OF SKIMMED MILK POWDER WITHIN MAJOR PRODUCING COUNTRIES
1981-1988

Producing Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina							
-- 1 January	9.00	5.10	6.71	2.38	5.80	26	64
-- 1 April	7.60	3.80	3.13	1.50	-	19	-
-- 1 July	2.70	3.80	2.34	0.91	-	33	-
-- 1 October	3.60	4.50	1.45	2.26	-	62	-
Australia							
-- 1 January	33.40	39.10	30.59	29.70	34.09	88	102
-- 1 April	27.70	38.40	30.20	25.00	26.20	90	94
-- 1 July	13.20	12.40	8.70	10.60	9.00	80	68
-- 1 October	19.29	17.30	17.59	15.20	-	78	-
Bulgaria							
-- 1 January	-	0.10	0.10	-	-	-	-
-- 1 April	-	-	-	-	-	-	-
-- 1 July	-	-	-	-	-	-	-
-- 1 October	-	-	-	-	-	-	-
European Community							
-- 1 January	362.00	617.00	520.00	772.00	392.00	213	108
-- 1 April	354.00	405.00	646.00	765.00	240.00	216	67
-- 1 July	513.00	381.00	887.00	777.00	40.00	151	7
-- 1 October	649.00	478.00	845.00	732.00	-	112	-
Finland							
-- 1 January	17.00	15.00	6.00	8.00	9.00	47	52
-- 1 April	15.00	11.00	5.00	12.00	7.00	80	46
-- 1 July	22.00	13.00	8.00	17.00	8.00	77	36
-- 1 October	25.00	12.00	12.00	18.00	-	72	-
Hungary							
-- 1 January	0.90	0.40	0.70	3.20	0.40	355	44
-- 1 April	0.90	0.30	1.60	1.80	0.40	200	44
-- 1 July	1.30	2.50	2.50	1.10	2.20	84	169
-- 1 October	1.70	1.30	4.90	0.90	-	52	-
Japan							
-- 1 January	75.00	25.00	44.00	52.00	26.00	69	34
-- 1 April	71.00	37.00	47.00	50.00	29.00	70	40
-- 1 July	63.00	43.00	54.00	45.00	25.00	71	39
-- 1 October	56.00	39.00	54.00	35.00	-	62	-

New Zealand							
-- 1 January	132.00	71.00	84.59	24.40	26.09	18	19
-- 1 April	142.00	85.00	93.20	29.00	46.00	20	32
-- 1 July	89.00	76.50	24.00	19.00	25.00	21	28
-- 1 October	83.00	49.70	3.50	6.60	-	-	-
Norway							
-- 1 January	2.80	1.00	0.74	2.46	0.55	87	19
-- 1 April	3.80	1.50	1.49	3.77	3.21	99	84
-- 1 July	3.60	1.40	1.14	3.56	2.09	98	58
-- 1 October	2.40	0.40	0.71	3.21	-	133	-
Poland							
-- 1 January	-	11.80	10.22	18.84	10.69	-	-
-- 1 April	-	6.20	4.21	10.96	6.13	-	-
-- 1 July	-	7.60	13.29	11.94	10.77	-	-
-- 1 October	-	9.20	18.15	16.00	-	-	-
South Africa							
-- 1 January	8.30	13.40	11.32	3.40	3.77	40	45
-- 1 April	10.20	15.50	8.41	3.33	4.50	32	44
-- 1 July	9.30	14.70	3.32	2.90	3.56	31	38
-- 1 October	9.90	15.50	2.23	3.20	-	32	-
Sweden							
-- 1 January	9.70	8.00	12.10	17.29	9.70	178	100
-- 1 April	9.30	10.70	10.20	19.40	9.10	208	97
-- 1 July	11.70	13.00	16.00	17.00	5.40	145	46
-- 1 October	13.90	15.10	13.80	12.40	-	89	-
Switzerland							
-- 1 January	2.90	12.70	11.90	11.70	2.60	403	89
-- 1 April	3.00	11.60	13.50	7.40	2.00	246	66
-- 1 July	3.70	14.20	14.70	7.80	2.50	210	67
-- 1 October	3.50	17.00	10.40	4.70	-	134	-
Uruguay							
-- 1 January	1.60	1.50	2.60	0.91	1.86	56	116
-- 1 March	-	2.00	2.70	1.38	0.89	-	-
-- 1 July	-	2.60	2.61	0.53	0.46	-	-
-- 1 October	-	1.20	2.90	0.59	-	-	-
Other Non-Member Producing Countries							
Austria							
-- 1 January	8.30	-	-	-	-	-	-
-- 1 March	5.40	-	-	-	-	-	-
-- 1 July	7.40	-	-	-	-	-	-
-- 1 October	10.10	-	-	-	-	-	-
Canada							
-- 1 January	29.29	20.50	15.60	10.30	12.92	35	44
-- 1 March	26.09	24.20	15.90	15.84	18.29	60	70
-- 1 July	46.50	30.20	35.59	19.43	21.73	41	46
-- 1 October	52.79	30.50	17.29	12.36	-	23	-

United States							
-- 1 January	417.00	559.00	458.59	311.50	80.29	74	19
-- 1 March	441.00	504.60	448.09	233.00	68.50	52	15
-- 1 July	494.00	493.20	459.00	194.40	83.00	39	16
-- 1 October	525.00	468.20	383.19	111.50	50.00	21	9
Total IDA Participants							
-- 1 January	654.59	-	741.58	946.29	522.56	144	79
-- 1 March	644.50	-	866.63	930.53	374.43	144	58
-- 1 July	732.50	-	1037.60	914.34	133.98	124	18
-- 1 October	867.29	-	986.63	850.06	-	98	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Stocks for first three quarters of 1988

3/ Index for stocks for the full year

4/ Index for stocks for the first three-quarters of the year only

ANNEX D TABLE 8
PRODUCTION OF WHOLE MILK POWDER IN MAJOR PRODUCING COUNTRIES

Producing Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	60.09	84.60	81.59	86.73	34.78	122	122
Australia	53.79	46.60	60.40	63.00	26.10	145	149
Bulgaria	4.50	3.70	-	-	-	-	-
European Community	634.00	733.00	771.00	894.00	457.00	128	143
Finland	27.00	34.00	31.00	25.00	12.00	107	85
Hungary	3.70	3.80	4.30	4.90	2.70	145	135
Japan	34.00	35.00	32.00	30.00	16.00	81	87
New Zealand	109.40	147.80	189.50	158.00	79.40	156	177
Norway	0.90	1.10	1.22	1.36	0.70	185	175
Poland	41.59	48.90	47.32	47.73	22.59	112	110
South Africa	12.10	11.20	10.83	8.58	4.53	73	76
Sweden	6.20	5.70	5.30	6.00	3.20	100	94
Switzerland	15.80	12.90	13.00	14.10	7.10	71	69
Uruguay	0.80	3.00	2.74	3.59	1.04	375	173
Other Non-Member Producing Countries							
Austria	22.59	21.00	21.20	18.40	5.49	105	44
United States	45.29	54.10	55.09	65.59	36.80	135	159
Total IDA Participants	1250.21	1171.30	1250.21	1342.99	674.23	125	137
World Total	1782.00	1940.00	1971.00	2150.00	716.52	121	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Production for first half of 1988

3/ Index for full year production

4/ Index for first half year production only

ANNEX D TABLE 9
EXPORTS OF WHOLE MILK POWDER IN MAJOR PRODUCING COUNTRIES
1981-1988

Exporting Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	8.90	-	0.75	0.14	-	1	-
Australia	37.70	31.70	38.00	43.09	25.80	121	127
European Community	483.09	459.80	479.00	560.58	300.00	107	119
Finland	25.79	33.00	31.70	26.70	8.90	115	66
New Zealand	98.00	134.60	166.20	159.59	80.09	148	150
South Africa	-	0.20	-	0.01	0.14	-	-
Sweden	1.20	-	-	-	-	-	-
Switzerland	2.50	0.40	3.00	2.40	0.20	40	40
Uruguay	0.20	0.20	0.02	1.80	0.09	870	90
Other Non-Member Exporting Countries							
Austria	19.00	15.40	17.00	14.20	3.30	106	32
United States	10.70	40.60	20.29	3.96	1.42	52	28
Total IDA Participants	657.39	659.90	718.67	794.33	415.42	113	120
World Total	697.00	737.00	766.00	925.00	-	-	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Production for first half of 1988

3/ Index for full year production

4/ Index for first half year production only

ANNEX D TABLE 10
EXPORTS OF WHOLE MILK POWDER BY DESTINATION
1987

Export Destination	Exporting Country: Australia	European Community	Finland	New Zealand	United States	Total
	(Thousands of Metric Tons)					
Western Europe	-	14.20	0.10	-	0.30	14.60
Eastern Europe	-	1.70	-	-	-	1.70
USSR	-	26.00	26.59	-	-	52.59
North America	1.70	0.60	-	0.50	0.56	3.36
South America	-	61.79	-	56.29	0.10	118.19
Central America	-	19.09	-	2.80	0.53	22.42
Caribbean	-	19.59	-	6.50	0.34	26.43
Africa	1.00	187.90	-	0.70	0.84	190.44
South and East Asia	38.49	91.20	-	65.40	0.53	195.62
Western Asia	0.20	137.49	-	-	0.46	138.15
Oceania	1.20	1.00	-	-	-	2.20
Other Destinations	0.50	-	-	27.40	0.40	28.30
Total Exports	43.09	560.59	26.69	159.59	4.06	794.05
Exports to OPEC	0.70	238.49	-	39.10	-	278.29

Source: International Dairy Arrangement, The World Market for Dairy Products 1988, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1988

ANNEX D TABLE 11
CONSUMPTION OF SKIMMED MILK POWDER IN MAJOR PRODUCING COUNTRIES
1981-1988

Consuming Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	15.60	15.80	15.17	11.69	6.60	74	71
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
Australia	53.79	52.50	51.70	59.00	15.40	109	59
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
Bulgaria	1.40	1.60	1.60	-	-	-	-
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	1.40	-	-	-	-	-	-
European Community	1475.39	1679.00	1758.00	1573.00	1073.00	106	121
-- Human Consumption	223.70	296.00	347.00	473.00	524.00	211	-
-- Animal Consumption	1237.69	1383.00	1411.00	1100.00	549.00	88	-
Finland	57.00	45.00	39.00	33.00	13.00	57	52
-- Human Consumption	12.00	13.00	13.00	13.00	-	108	-
-- Animal Consumption	45.00	32.00	26.00	20.00	-	44	-
Hungary	31.79	23.10	18.70	19.70	11.20	61	73
-- Human Consumption	4.10	4.30	5.20	5.30	2.30	129	-
-- Animal Consumption	27.70	18.80	13.50	14.40	8.90	51	-
Japan	248.29	255.00	267.00	270.00	137.00	108	112
-- Human Consumption	177.29	179.00	196.00	195.00	99.00	109	-
-- Animal Consumption	71.00	76.00	71.00	75.00	38.00	105	-
New Zealand	1.70	-	-	-	-	-	-
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
Norway	8.30	7.30	8.48	8.08	4.71	97	112
-- Human Consumption	4.10	3.90	4.15	4.43	2.66	108	-
-- Animal Consumption	4.20	3.40	4.33	3.65	2.06	86	-
Poland	90.79	106.10	106.37	104.77	51.92	115	139
-- Human Consumption	28.00	44.60	55.25	41.32	10.23	147	-
-- Animal Consumption	62.79	61.50	51.12	63.45	41.69	101	-
Romania	-	6.10	-	-	-	-	-
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
South Africa	16.29	17.00	18.71	15.92	7.84	97	91
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
Sweden	28.00	25.40	25.50	24.90	18.70	88	133
-- Human Consumption	19.40	17.10	19.90	20.00	14.80	103	-
-- Animal Consumption	8.60	8.30	5.60	5.00	3.90	58	-
Switzerland	29.20	23.70	20.59	22.00	14.70	75	88
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
Uruguay	1.80	1.70	0.92	2.50	1.61	138	402
-- Human Consumption	1.80	1.70	0.78	2.50	1.61	138	-
-- Animal Consumption	-	0.14	-	-	-	-	-
Other Non-Member Consuming Countries							
Austria	18.20	15.30	17.09	16.63	9.83	91	101
-- Human Consumption	2.20	-	-	-	-	-	-
-- Animal Consumption	16.00	-	-	-	-	-	-

Canada	49.59	44.80	45.00	59.95	25.84	120	97
-- Human Consumption	-	-	-	-	-	-	-
-- Animal Consumption	-	-	-	-	-	-	-
United States	366.29	359.00	322.00	318.00	-	86	-
-- Human Consumption	339.69	-	-	-	-	-	-
-- Animal Consumption	26.70	-	-	-	-	-	-
Total IDA Participants	2059.39	2253.20	2337.85	2144.56	1355.68	104	116
Producer Country Total	3411.50	3501.00	3449.00	2539.14	-	101	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Production for first half of 1988

3/ Index for full year consumption

4/ Index for first half year consumption only

ANNEX D TABLE 12
IMPORTS OF SKIMMED MILK POWDER BY MAJOR EXPORTING COUNTRIES
1981-1988

Importing Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	0.40	0.20	0.02	1.62	-	405	-
Australia	0.80	0.50	0.70	2.10	0.50	262	166
Bulgaria	-	-	0.20	-	1.50	-	-
European Community	0.30	-	1.00	2.00	5.00	666	666
Hungary	-	1.50	1.60	0.80	0.70	-	-
Japan	89.70	104.00	91.00	92.40	53.69	103	124
Poland	13.40	-	-	-	-	-	-
South Africa	10.10	-	-	4.73	0.73	46	182
Sweden	0.50	1.00	0.60	1.10	-	220	-
Uruguay	0.40	-	-	-	-	-	-
Other Non-Member Importing Countries							
Canada	-	-	-	5.55	0.49	-	-
United States	0.30	1.30	0.90	1.22	0.58	406	-
Total IDA Participants	115.60	107.10	95.12	104.74	62.12	90	132
World Total	1312.00	1454.0	1614.00	1625.00	63.19	123	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Imports for first half of 1988

3/ Index for full year of imports

4/ Index for first half year of imports only

ANNEX D TABLE 13
EXPORTS OF SKIMMED MILK POWDER BY MAJOR EXPORTING COUNTRIES
1981-1988

Exporting Country	Average 1981/83	1985	1986	Year 1987	1988 2/	Index 1/ 1987 3/	1988 4/
	(Thousand of Metric Tons)						
International Dairy Arrangement Participants							
Argentina	4.90	-	1.20	-	-	-	-
Australia	33.59	90.20	74.40	67.59	40.59	201	234
European Community	354.69	306.30	266.69	388.09	163.00	109	86
Finland	4.00	6.00	3.60	6.40	1.20	160	200
Hungary	2.90	-	0.30	-	-	-	-
Japan	0.70	-	-	-	-	-	-
New Zealand	148.00	172.90	160.00	138.00	81.49	93	100
Norway	1.60	-	0.03	0.04	2.02	2	155
Poland	18.40	41.40	26.37	39.19	18.03	212	367
South Africa	2.50	9.80	6.37	0.05	-	2	-
Sweden	21.70	28.60	21.50	29.20	8.60	134	67
Switzerland	1.60	7.60	8.40	10.30	0.40	643	-
Uruguay	1.10	2.30	2.09	3.48	4.43	316	215
Other Non-Member Exporting Countries							
Austria	16.50	25.00	45.09	33.00	3.30	200	49
Canada	87.59	60.60	60.09	46.15	25.18	52	76
United States	166.70	304.90	366.00	208.77	114.55	179	177
Total IDA Participants	595.69	665.10	570.96	682.35	319.77	99	102
World Total	951.00	1192.0	1166.00	1225.00	517.25	-	-

Sources: International Dairy Arrangement, The World Market for Dairy Products 1988 and International Dairy Arrangement, The World Market for Dairy Products 1987, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1987 and November 1988

Notes : 1/ Index base 1981/83 = 100

2/ Exports for first half of 1988

3/ Index for full year of exports

4/ Index for first half year of exports only

ANNEX D TABLE 14
EXPORTS OF SKIMMED MILK POWDER BY DESTINATION
1987

Export Destination	Exporting Country: Australia	European Community	New Zealand	Poland	Sweden	Canada	United States	Total
	(Thousands of Metric Tons)							
Western Europe	-	5.30	-	2.00	2.60	-	11.02	20.92
Eastern Europe	-	0.50	-	1.00	-	-	-	1.50
USSR	-	0.30	-	-	-	-	-	0.30
North America	0.10	0.70	-	-	2.70	3.10	0.26	6.86
South America	0.20	21.49	10.40	-	3.20	12.80	91.50	139.59
Central America	-	58.70	10.50	-	0.30	13.10	76.18	158.77
Caribbean	-	9.70	2.20	-	2.40	-	14.54	28.84
Africa	-	149.59	3.50	12.20	2.70	-	41.59	209.59
South and East Asia	65.89	111.80	67.40	18.40	8.20	-	43.49	315.19
Western Asia	0.10	25.29	19.70	0.50	3.50	-	20.18	69.27
Oceania	0.40	0.30	-	5.10	-	-	-	5.80
Other Destinations	0.91	4.40	24.29	-	3.60	17.15	-	50.35
Total Exports	67.60	388.09	137.99	39.19	29.20	46.14	298.77	1006.98
Exports to OPEC	4.40	94.69	34.90	5.00	2.70	-	26.88	168.57

Source: International Dairy Arrangement, The World Market for Dairy Products 1988, General Agreement on Tariffs and Trade, Geneva, Switzerland, November 1988

ANNEX E

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