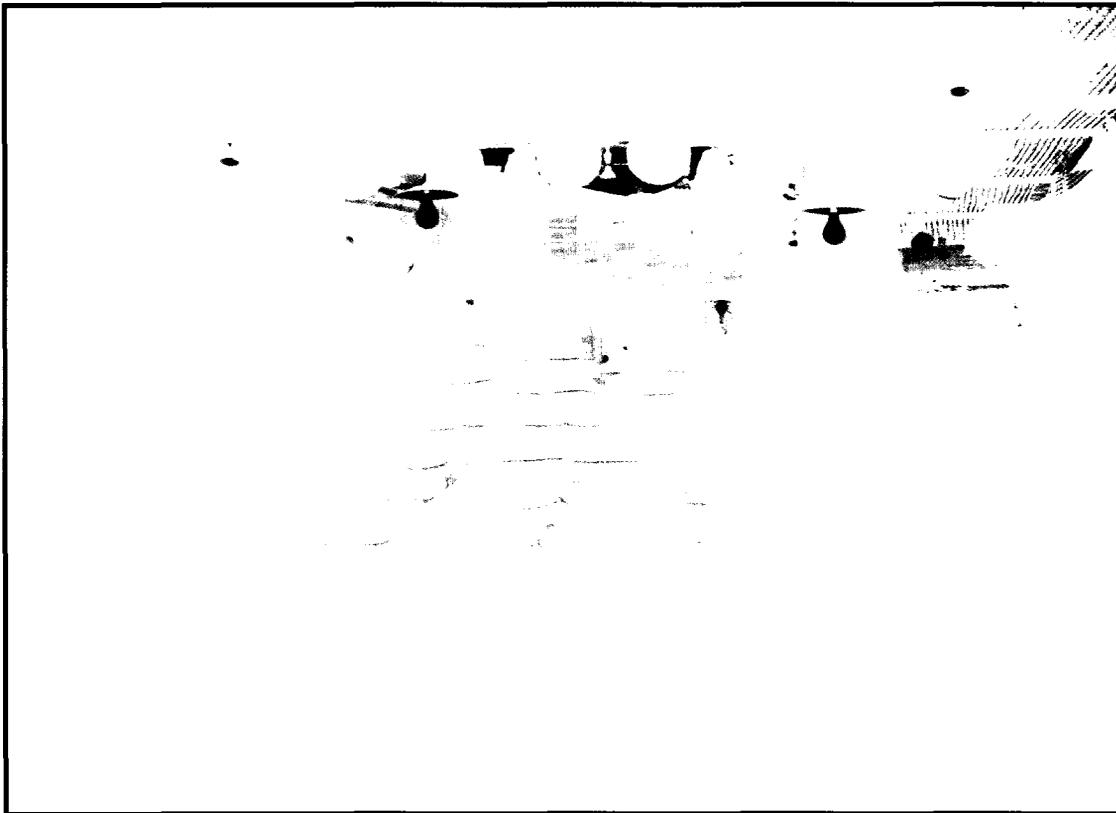




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From Universal Food
Subsidies to a
Self-Targeted Program
A Case Study in Tunisian Reform

Laura Tuck
Kathy Lindert

The World Bank
Washington, D.C.

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FOREWORD

Many developing countries, particularly those in the Middle East and North Africa, have subsidized the consumption of basic foodstuffs out of a concern for the nutritional intake and welfare of the poor. Later, as subsidies grew with inflation and population, the transfers became unsustainable. Efforts to move the subsidies to a more sustainable level have been hindered in some cases by fears of "bread riots." History shows that such fears are often well-founded. Indeed, violent protests have erupted in response to subsidy cuts in a number of countries, including Tunisia, Morocco, Egypt, the Dominican Republic, Sudan, Liberia, and most recently, Jordan.

Scarred by the violent responses to earlier cuts in its extensive food subsidy program, the Tunisian Government developed an innovative approach to reduce the budgetary costs of these transfers in a manner that was politically acceptable and that protected the purchasing power and nutritional status of the poor. Recent reforms have involved self-targeting subsidies in several ways. First, subsidies have been shifted to items that are perceived by consumers to be "inferior" because they possess certain unattractive features in their packaging or ingredients (though their nutritional value is preserved), and are thus consumed primarily by those in lower-income groups. Second, the government has liberalized the sale of unsubsidized higher-quality varieties that appeal to the more well-to-do, who then consume less of the subsidized foods.

This study demonstrates that these self-targeting reforms can be an effective tool both for reducing the fiscal costs of food subsidies and for improving their incidence. Careful implementation of these reforms has allowed the Tunisian Government to avoid any further "bread riots." In fact, opinion polls and press interviews reveal that consumers have accepted and endorsed these reforms as "necessary measures."

As a mid-term assessment of Tunisia's on-going reform program, this study is intended to provide a basis for policy-makers in Tunisia to sharpen the accuracy of their targeting efforts to an even greater degree. It also offers lessons to other countries regarding the practical issues involved in implementing self-targeting reforms.



Daniel Ritchie
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ABSTRACT

Tunisia, like many other developing countries, has a long history of subsidizing the consumption of a wide range of basic foodstuffs. Although these transfers have always made a substantial contribution to the welfare and nutritional intake of the poor, the generalized price subsidy program proved to be costly and inefficient. The scheme was costly because it claimed a large -- and unsustainable -- share of government resources. It was inefficient because it subsidized a broad range of products available to all consumers regardless of need.

In the early 1980s, Tunisian policy-makers began exploring ways in which to reform the extensive subsidy program. An initial attempt was made at that time, and subsidies on several food items were eliminated. However, violent riots, which erupted in response to these efforts, forced officials to rescind the measures and delayed the adoption of significant reforms until the end of the decade. The Tunisian Government was then faced with a common policy dilemma in reforming its subsidy program: how to reduce budgetary costs, in a politically acceptable way, while protecting the purchasing power and nutritional status of the poor. Targeting was considered an attractive option because it reduces leakages of program benefits to the non-poor and concentrates expenditures on those who need them most. Traditional targeted programs that screen individuals for eligibility were dismissed, however, because of the heavy administrative requirements associated with these mechanisms. Geographic targeting was also rejected because, in most areas, distinctions between neighborhoods were too obscure to make it effective.

An alternative solution to this dilemma involves designing the transfer scheme so that the poor identify themselves, a process known as self-targeting. Self-targeting via quality differentiation is being introduced in a number of developing countries as a means to improve the incidence of food subsidy schemes. With self-targeting, subsidized products are available to all (universal provision), but the program is designed so as to discourage the rich from consuming them (targeted take-up).

In Tunisia, recent reforms provide an illuminating case study in which innovation and creativity have led to an extensive use of quality differentiation to cut costs and improve program incidence. Two mutually reinforcing approaches to self-targeting are currently being implemented. The first tactic, a variant of the "inferior goods" approach, involves shifting subsidies to narrowly-defined items within a product line that are perceived by consumers to be of lower quality because they possess certain unattractive features in their packaging or ingredients. Although the intrinsic value of these products is preserved, these perceived "inferior" characteristics discourage consumption by wealthier households. The second method, the "superior goods" approach involves easing government controls to allow the private sector to market higher-quality, unsubsidized products that appeal to wealthier consumers, who then consume less of the subsidized varieties.

This study demonstrates that quality differentiation can indeed be an effective tool for reducing the fiscal costs and improving the self-targeting of food subsidies. Indeed, reforms have had an excellent impact on improving fiscal accounts: outlays on the subsidy program were cut from over four percent of GDP and ten percent of government expenditures in 1984 to two and six percent respectively in 1993. Moreover, simulations suggest that self-targeting reforms would have led to an even larger drop in program outlays, holding all other factors constant. Reforms have also been effective in transforming program incidence from a situation in which the universal subsidy program transferred more absolute benefits to the rich than the poor, to one in which the poor benefitted more from food subsidies than the rich. Furthermore, simulations indicate that self-targeted subsidy cuts shield the purchasing power and nutritional intake of the poor better than fiscally-comparable across-the-board reductions in subsidies.

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GLOSSARY OF ABBREVIATIONS

AES	: Subsidy already eliminated (under reform program)
AIDS	: Almost Ideal Demand System
ASAL II	: Second Agricultural Structural Adjustment Loan
BW	: Bread Wheat
BMI	: Body Mass Index
CCGC	: Central Field Crops Cooperative (Coopérative Centrale des Grandes Cultures)
CGC	: General Compensation Fund (Caisse Générale de Compensation)
COCEBLE	: Central Cooperative for Wheat (Coopérative Centrale de Blé)
CST	: Tunisian Sugar Complex (Complexe Sucrier de Tunisie)
DHS	: Demographic and Health Surveys Project
DW	: Durum wheat
EFRSL	: Economic and Financial Reform Support Loan
ES	: Subsidy eliminated under reform scenario
FAO	: Food and Agriculture Organization
INS	: National Statistics Institute (Institut Nationale de la Statistique)
LAINO	: A new private dairy processor for sterilized local fresh milk
LF	: Local Fresh Milk
NF	: Needy Families Direct Assistance Program
OC	: National Cereal Authority (Office des Céréales)
OCT	: Tunisian Trade Organization (Office du Commerce de Tunisie)
ONH	: National Oil Board (Office National de l'Huile)
PAE	: Per Adult Equivalent
PS	: Specific Weight of flour. (Poids Spécifique)
SAL	: Structural Adjustment Loan
SRM	: Sterilized-Reconstituted Milk
STIL	: Tunisian Dairy Products Company (largest) (Société Tunisienne des Industries Laitières)
STS	: Tunisian Sugar Company (Société Tunisienne de Sucre)
UHT	: Ultra High Temperature
UTSS	: Tunisian Union of Social Solidarity (Union Tunisienne de Solidarité Sociale)

EXECUTIVE SUMMARY

OVERVIEW

Through the *Caisse Générale de Compensation* (CGC), the Tunisian Government has subsidized the consumption of basic food-stuffs and a variety of other items since 1970. Subsidies have been paid on an unrestricted basis, meaning that the transfers have been available to anyone who chooses to purchase subsidized commodities in any quantity desired.

While CGC subsidies had always made a substantial contribution to the welfare and nutritional intake of the poor, by the 1980s it became apparent that the universal subsidy program had become too costly. The Tunisian Government was then faced with a common policy dilemma in reforming its subsidy program: how to reduce budgetary costs, in a politically acceptable way, while protecting low income groups. Rather than switching to an entirely different method of transferring income to the poor, the Government sought to fine-tune the existing framework of price subsidies by shifting subsidies to food products which are primarily consumed by lower-income households. With this approach, a type of self-targeting, subsidized products are still available to all, but they are selected specifically to discourage the rich from consuming them.

The transition from universal subsidies towards a more self-targeted program has been a continuing process rather than a discrete policy change. The rationale for this study is to evaluate the impact of CGC food subsidies, particularly on the poor, and to undertake a mid-term assessment of the on-going reform program. The analysis provides a basis for policy-makers in Tunisia to sharpen targeting mechanisms and offers lessons to other countries regarding the practical issues involved in implementing self-targeting reforms.

IMPACT OF THE UNIVERSAL SUBSIDY PROGRAM

Since its inception, the central objectives of the CGC subsidy program have involved redistributing income toward the poor and protecting the purchasing power and nutritional status of low-income groups. To some extent, the universal subsidy program¹ was successful in meeting these goals. It was progressive in relative terms, contributing over five times more to the purchasing power of the poor than to that of the rich (as a share of total expenditures).² This is not surprising since most CGC subsidies have been placed on food products which, by Engel's Law, generally constitute a larger share of total spending by lower-income consumers than by the more well-to-do. In 1990, expenditures on

¹The "universal subsidy" program covers the period until 1990, after which the Government launched a series of reforms designed explicitly to improve the targeting of CGC subsidies. Under the universal program, subsidies were placed on a broad range of products, and the subsidized commodities were generally the only variety of the product available on the market. During this period (1970-90), the program experienced virtually universal "take-up" across income groups; hence the term "universal." The program after 1990, however, is referred to as the "reform" program or the "self-targeted" program due to the efforts of policy-makers to introduce quality differentiation in order to improve the targeting of food subsidies.

²In 1985, food subsidies contributed 5.5 times more to the total expenditures of the lowest-income group than the highest; in 1990, they accounted for 5.4 times more of the purchasing power of the lowest-income quintile than the highest; by 1993, they contributed to 7.2 times more.

subsidized products accounted for close to nine percent of the total expenditures of the lowest-income quintile, as compared to less than two percent for the wealthiest quintile.³ Moreover, roughly 60 percent of total caloric intake and 73 percent of protein consumption of the poor were derived from subsidized foods.⁴

Despite these benefits, by the mid-1980s, it was clear that the universal subsidy program was inefficient and costly. It was inefficient because it subsidized a broad range of products available to all Tunisians regardless of need. In fact, the wealthiest-income group benefitted twice as much as the poorest-income group from the program in absolute terms.⁵ The program was costly because it claimed a large share of Government resources: by 1984, outlays on subsidies hovered around four percent of GDP and ten percent of total Government expenditures.

ALTERNATIVE COURSES OF REFORM

The high and rising costs of the program, combined with inefficiencies and substantial leakages to the non-poor, made an overhaul of the universal subsidy system an urgent priority. In the early 1980s, Tunisian policy-makers began exploring ways in which to reform the program. An initial attempt to reduce the budgetary costs of the CGC was made at that time, and subsidies on several food items were eliminated, effectively doubling their prices. However, violent riots, which erupted in response to these efforts, forced officials to rescind the measures and delayed the adoption of significant reforms until the end of the decade.

Because a complete elimination of the program no longer seemed like a feasible option from a political standpoint, the Government examined alternatives to better target the transfers to the poor. Targeting was considered an attractive option because it reduces leakages of program benefits to the non-poor and concentrates public expenditures on those who need them the most.

Traditional targeted programs, such as direct-assistance schemes, however, generally require specific selection of the target group. As a result, they often entail administrative costs, experience implementation difficulties and suffer from a lack of political support. Administrative costs are associated with, *inter alia*, identifying beneficiaries, screening applicants, maintaining eligibility lists, and preventing fraud. Implementation difficulties often arise in selecting the beneficiaries and keeping up-to-date eligibility lists due to a lack of information regarding individual or household incomes. Without such information, these programs tend to be plagued by leakages to the non-poor and exclusion of eligible beneficiaries. Political support for well-targeted programs can be weak due to the narrow range of beneficiaries which usually excludes powerful and vocal groups within the population. Attempts

³/Population is ranked by total expenditure per adult equivalent which is used as a proxy for income throughout the analysis.

⁴/INS Household Expenditure Survey, District of Tunis component (1990). Intake derived from purchased subsidized products only (excludes on-farm consumption).

⁵/On a per capita basis. INS Household Expenditure Survey (1985).

to implement other targeted direct-assistance programs in Tunisia have not been able to avoid these problems.⁶ As a result, the Tunisian Government did not consider traditional direct-assistance schemes (such as food stamps) as feasible alternatives to the CGC food subsidy program.

Other targeting mechanisms were also explored, but did not prove to be appropriate candidates for reforming the food subsidy program. For example, geographic targeting was rejected because, in most areas, distinctions between neighborhoods were too obscure to make it effective.

THE REFORM PROGRAM: FROM UNIVERSAL SUBSIDIES TO SELF-TARGETING

Given political, economic, and administrative constraints, the foundations provided by the universal food subsidy system favored reforms to reduce costs and improve the distribution of subsidies across income groups within the existing framework of food price subsidies over those requiring an entirely new institutional structure to channel transfers to intended beneficiaries. In this context, a reform program was developed and incorporated into the VIII Development Plan (1991-96). Its explicit goals aimed to reduce CGC expenditures with the least possible impact on the lower-income households. The primary components of the reform program included: (i) improving the targeting of CGC intervention toward the poor; (ii) gradually adjusting prices to progressively reduce and eliminate subsidies on certain products; and (iii) reducing unnecessary production and distribution costs for subsidized products.

A particularly innovative aspect of the Tunisian reform program has been its reliance on self-selection mechanisms to improve the distributional incidence of subsidies. Self-targeting occurs when benefits are available to all, but the program is specifically designed so that the non-poor elect not to participate. While other targeted programs require social workers or other agents to undertake some kind of screening (such as individual or group assessment) to determine eligibility, with self-targeting the decision to participate is made by individuals themselves.

The principal device used to promote self-targeting in Tunisia is quality differentiation. Designing a self-targeted food subsidy program using quality grading involves examining household expenditure data to determine whether there are significant differences in consumption across income groups. If the poor consume a different basket of goods from wealthier consumers, this basket can be selected for subsidization. Using existing survey data to identify goods that should benefit from subsidies allows self-targeted programs to economize on information costs by avoiding the cumbersome task of assessing individuals' income levels to determine eligibility. In practice, however, consumption patterns may not differ significantly across income groups. This does not mean that self-targeting is not feasible, but rather that it may require some creativity to invent "inferior" subsidized goods which are unattractive to wealthier consumers and unsubsidized high-quality alternatives ("superior" goods) to siphon off the demand by the rich.

⁶Direct-assistance schemes include the Needy Families Program and the *Union Tunisienne de Solidarité Sociale*, which is responsible for low-income food ration programs and cash transfers to the elderly and handicapped. These programs are quite small in comparison to the CGC program and would not compensate the poor for an elimination of food subsidies. The World Bank (April 1993).

As a first step in improving the targeting accuracy of the Tunisian program, subsidies were eliminated on goods clearly consumed disproportionately by the rich (such as meat). Remaining subsidies were focused on basic staples, and currently all of the subsidized products, with the possible exception of certain types of milk, are consumed in substantial quantities by the poor.

The reform program in Tunisia extended self-targeting efforts still further by developing a range of goods that represent distinct "quality" grades to consumers of different incomes. Two new approaches to self-targeting are currently being implemented (a summary of self-targeting measures is presented in Box A below).

The first tactic for extending self-targeting, a variation of the "inferior goods" approach, involves shifting subsidies to narrowly-defined items within a product line that are perceived by consumers to be of a lower quality because they possess certain unattractive features in their packaging or ingredients. Although the intrinsic value of these products is preserved, these perceived "inferior" characteristics discourage consumption by wealthier households.⁷ Examples are discussed below.

The second method, the "superior goods" approach, is appropriate when a government has traditionally subsidized a particular commodity and no other varieties or qualities are available on the market at cost (usually because of official marketing regulations or restrictions). In Tunisia, the quality of subsidized products has generally been reasonable, but not exceptional. Since markets have otherwise been tightly controlled by state marketing boards, the subsidized product has often been the only variety available on the market. To reduce subsidy costs while maintaining benefits to the poor, authorities have liberalized the sale of higher-quality versions of these products, which are sold at cost and attract the demand from wealthier households who then consume less of the subsidized products. This "superior goods" approach is consistent with the pursuit of a general liberalization strategy designed to increase efficiency in the subsector, but has the added benefit, in this context, that it promotes self-targeting. Several examples are discussed below.

Data from the 1990 household expenditure survey clearly indicated which cereals products justified continued subsidies under the CGC reform program and which were candidates for removal from the program. In 1990, *baguettes* were consumed virtually exclusively by the rich; wealthier households also consumed disproportionately more pasta, couscous and pastry flour. Although the lowest-income quintile consumed slightly more *gros pain*⁸ than the richest, expenditure patterns for *gros pain* did not differ significantly across quintiles, and middle-income households spent the most on this type of bread. Semolina was the only existing cereals product that was clearly consumed more by the poor than the rich in both absolute and relative terms. The CGC reform program responded to these expenditure patterns

⁷/It is important to note that it is *perceived* inferior characteristics, and not any real downgrading of nutritional value, that make a particular item suitable for self-targeting. In fact, some "inferior" products are actually nutritionally richer than their "superior" counterparts, although they possess certain features (such as color, texture, taste or packaging) that make them unattractive to wealthier consumers.

⁸/Gros pain is a larger loaf bread made from the same type of traditional baking flour as *baguettes*.

by eliminating direct subsidies on *baguettes*, pasta, couscous and pastry flour.⁹ Household survey data for 1993 indicate that, despite these measures, the rich did not substitute consumption in favor of semolina or *gros pain*, which remain subsidized under the CGC program, and the reforms were indeed successful in improving the targeting of cereals subsidies. In addition, the Government recently applied the "superior goods" approach by liberalizing the sale of unsubsidized high-quality varieties of bread that had not previously been allowed on the market but which appeal to high-income consumers.¹⁰ Current reform plans entail further pursuit of the "inferior goods" approach. Since subsidies on baguettes have already been eliminated, there will only be a subsidy on one type of bread. This bread will have the "inferior" features of *gros pain* (similar size, shape, weight) but, in addition, will be made from a distinct, high-extraction rate flour. This flour is considered unattractive to wealthier consumers because of its darker color and rougher texture.¹¹

Self-targeting reforms have also been applied to cooking oils. Market studies and household expenditure survey data indicate that, while the rich consume more cooking oil than the poor (1990 data), they tend to purchase it in bottles with labels clearly identifying the type of oil they contain.¹² Since the poor are willing to buy unmarked oil identified merely as "cooking oil," generic grain oil,¹³ sold unpackaged from bulk retailers¹⁴ or in inexpensive bottles, was chosen to carry CGC subsidies. In addition, to redirect the demand of wealthier consumers away from subsidized generic cooking oil, the Government recently liberalized imports of "superior" pure grain oils, which are heavily advertised by European television in Tunisia, to be sold at cost by private operators.

Several attempts have been made to improve the targeting of sugar subsidies, which have primarily been justified as a means to preserve the purchasing power of the poor, who spend over three times more on sugar (as a share of total expenditures) than the rich, and not on the basis of any nutritional rationale (although sugar does provide a significant caloric input). Because 1990 survey data revealed that cube sugar was consumed virtually exclusively by the rich, the subsidy on cube sugar was completely eliminated in 1991. The Government also attempted to apply the "inferior goods" approach by introducing a heavily-subsidized new variety, a less-refined brown sugar, that was thought to be unattractive to high-income consumers. In fact, despite being over 43 percent cheaper than granulated

⁹/Although direct subsidies on pasta and couscous were eliminated in 1993, these products remain subsidized indirectly via the subsidy on semolina, which is an input into their production.

¹⁰/Prior to self-targeting reforms, *baguettes* and *gros pain* were the only varieties of bread available on the market. Both *baguettes* and *gros pain* were subsidized under the universal subsidy program.

¹¹/In addition, because the new high extraction rate flour re-incorporates bran particles, it is nutritionally richer than the traditional baking flour currently used to make *gros pain* and *baguettes*. Thus although the new bread is less attractive to wealthier consumers, it is not "inferior" from a nutritional standpoint.

¹²/Market study conducted by *Comète Engineering*, May 1989; INS 1990 Household Expenditure Survey.

¹³/In fact, generic grain oil was explicitly created for the purpose of improving the targeting of subsidies as part of the "inferior goods" approach under the CGC reform program.

¹⁴/An issue that requires attention, however, is the hygienic concerns surrounding the sales of bulk oil, as discussed below.

white sugar (which continues to benefit from CGC subsidies), brown sugar was not readily accepted by consumers of any income level and demand remained low. Even poorer households rejected less-refined brown sugar at existing price differentials, apparently because of consumer perceptions that the darker sugar was "dirty." This experience presents an important lesson regarding the practicalities involved in designing a self-targeted program and the importance of consumer acceptance. Indeed, there is a fine line between designing a product to be unappealing to wealthier consumers and preventing its rejection by the poor (as noted in Box B).

Box A - SUMMARY OF SELF-TARGETING EFFORTS UNDERWAY OR UNDER CONSIDERATION IN TUNISIA		
	INFERIOR GOODS APPROACH	SUPERIOR GOODS APPROACH
Durum-Wheat Products	<ul style="list-style-type: none"> ●Maintain subsidies on semolina (continuous) 	<ul style="list-style-type: none"> ●Eliminate direct subsidies on couscous and pasta (1993)
Bread-Wheat Products	<ul style="list-style-type: none"> ●Replace subsidies on <i>gros pain</i> with subsidies on a single subsidized bread (<i>pain unique</i>) made from a distinct high extraction rate flour (1995/96) 	<ul style="list-style-type: none"> ●Eliminate subsidies on baguettes (1993) ●Eliminate subsidy on pastry flour (1991) ●Liberalize production of other breads that attract the demand of high-income consumers (1991-present)
Cooking Oils:	<ul style="list-style-type: none"> ●Eliminate olive oil from subsidized <i>huile de mélange</i> resulting in the creation of a subsidized generic grain oil (1989) ●Shift subsidy toward generic oil sold mostly to the poor in small quantities from large drums (<i>en vrac</i>) and away from bottled oil which is mainly purchased by the rich (oil type differentials: since 1989; packaging differentials: proposed) 	<ul style="list-style-type: none"> ●Liberalize imports of pure grain oils packaged in glass bottles sold at cost to attract demand of high-income consumers and reduce consumption of subsidized oils (1992) ●Create "fixed mixed" cooking oil with 40 percent olive oil and 60 percent grain oil to diversify range of products on market and reduce unit subsidies per liter (1993) ●Olive oil also serves as a "superior" good (continuous)
Sugar:	<ul style="list-style-type: none"> ●Shift subsidy toward a less-refined brown sugar which is not preferred by upper-income groups (1990) 	<ul style="list-style-type: none"> ●Eliminate subsidies on cube sugar which is consumed virtually exclusively by the rich (1991)
Milk:	<ul style="list-style-type: none"> ●Shift subsidies to pasteurized-reconstituted milk (least-preferred type of milk) packaged in cheaper cartons that are less attractive to wealthy consumers, such as <i>berlingot</i> cartons and <i>coussin</i> milk pouches (1991-94) 	<ul style="list-style-type: none"> ●Apply a small, temporary, promotional subsidy to fresh, locally-produced sterilized milk (a luxury) which is consumed primarily by the rich (1992)

Data from INS household expenditures surveys indicated that milk as a category is not particularly well-suited to carry subsidies under the CGC reform program because the rich consume roughly three times more processed milk than the poor.¹⁵ Survey data revealed that only one type of milk, pasteurized-reconstituted, justifies subsidization from a redistributive standpoint. Yet for perceived nutritional, and perhaps political, reasons, the Government has classified milk as an essential product for CGC subsidy coverage. To improve the balance between the dual objectives of protecting the welfare and nutritional status of the poor, several measures were incorporated into the CGC reform program to

¹⁵In per adult equivalent terms in 1990.

improve the targeting of milk subsidies using both the "superior goods" approach and the "inferior goods" approach.

Based on expenditure patterns revealed by household survey data, reforms were introduced to shift subsidies to pasteurized-reconstituted milk packaged in half-liter *berlingot* cartons and flimsy film milk pouches (called *coussin*). Both the content and the packaging of these "inferior" goods served to strengthen the targeting of subsidies.¹⁶ Data from the 1993 household expenditure survey indicated that subsidies on this type of milk were indeed well targeted to the poor in both absolute and relative terms, though only pasteurized-reconstituted milk packaged in *berlingot* cartons was consumed in significant quantities. The "superior goods" approach was also applied in an attempt to improve the targeting of milk subsidies: the Government placed a small promotional subsidy on fresh, locally-produced milk which was historically unable to compete with heavily subsidized milk reconstituted from imported powder.¹⁷ The injection of this small subsidy on fresh milk actually reduced program costs and improved targeting by shifting demand from wealthier consumers away from reconstituted milk which receives a much larger unit subsidy.

**Box B - "LESSONS LEARNED:" PRACTICAL ISSUES INVOLVED IN
IMPROVING THE INCIDENCE OF FOOD SUBSIDIES VIA SELF-TARGETING**

Several lessons emerge from the 1993 snapshot of the impact of self-targeting via quality differentiation on the incidence of food subsidies in Tunisia.

- *The existence of superior alternatives is an essential companion to the inferior goods approach.*
- *Introducing a small promotional subsidy on a superior variety can actually decrease total outlays on the subsidy program.*
- *There is a fine line between creating a product to be unattractive to wealthier consumers and having it also be unappealing to the poor.*
- *Subsidies should be set so that consumer prices appropriately reflect perceived quality differences.*

^{16/} Pasteurized-reconstituted milk is the least-preferred variety of milk because of its taste and limited shelf-life. Unlike traditional packages (such as plastic bottles and tetrabrik cartons), *berlingot* cartons and *coussin* pouches (which were created explicitly for the purposes of self-targeting) contain only one-half liter of milk, and thus favor poorer consumers, who tend to make smaller budgetary outlays at any given time, but are less attractive to the wealthier households, who generally purchase large quantities of milk (in cases of six one-liter tetrabrik cartons). *Coussin* pouches possess additional features that make them even more "inferior" than *berlingot* cartons (including their inability to stand upright and their requirement that the milk be transferred to another container upon opening).

^{17/} Reconstituted milk is available in two varieties: sterilized-reconstituted milk (which is packaged in tetrabrik cartons and plastic bottles) and pasteurized-reconstituted milk which is sold in *berlingot* cartons and *coussin* pouches (as mentioned above). Local fresh milk is sterilized and is sold in tetrabrik cartons and plastic bottles.

IMPACT OF THE REFORM PROGRAM

These two mutually reinforcing techniques for self-targeting have been implemented with success in Tunisia. Reforms have had an excellent impact on improving fiscal accounts, as shown in Figure A on page xiii below: outlays on the subsidy program were cut from over four percent of GDP and ten percent of government expenditures in 1984 to two and six percent respectively in 1993. Moreover, simulations suggest that self-targeting reforms would have led to a 34 percent drop in outlays on the CGC subsidy program from 1990 to 1993, to 1.9 percent of GDP and 5.1 percent of public expenditures, *holding all other factors*¹⁸ *constant*.

Reforms have also been effective in transforming program incidence from a situation in which the universal subsidy transferred more absolute benefits to the rich than the poor, to one in which the poor benefitted more from food subsidies than the rich (as shown in Figure B on page xiii below).¹⁹

RECOMMENDATIONS

In fine-tuning the current reform program, Tunisian policy-makers must pay close attention to the genuine trade-off that exists between reducing budgetary costs and protecting the poor. *Any* adjustments that increase prices in real terms have an adverse effect on the welfare and dietary intake of the poor. "Targeted" price adjustments, which reduce or eliminate subsidies on products consumed disproportionately by the rich, dampen these effects. However, even these adjustments hurt the poor to the extent that the poor consume the goods in question.

Political considerations, imperfect information and the importance of food subsidies to the poor limit the tools available to Tunisian policy-makers in reforming the universal subsidy program. The three-pronged reform program adopted by the Tunisians makes use of available information and the existing institutions developed by the universal subsidy system. With careful management of reform implementation (see Box C), this approach has also proved to be a politically acceptable way of cutting budgetary expenditures while protecting the consumption of the poor. Despite these successes, there are several ways in which the CGC reform program could be sharpened in its effectiveness.

¹⁸/Simulations assume that factors such as GDP and population growth are held constant.

¹⁹/In 1985, the rich benefitted two times more from the CGC program than the poor (in per capita terms for the lowest- and highest-income groups which represented 13 percent and 12 percent of the population respectively). In 1990, the program transferred 1.1 times more absolute benefits to the rich than the poor (in per adult equivalent terms for the lowest- and highest-income quintiles, each representing 20 percent of the population). In 1993, the poor benefitted 1.2 times more from CGC subsidies than the rich (in per adult equivalent terms for the lowest- and highest-income quintiles).

Box C - MANAGING THE ON-GOING REFORM PROCESS

Policy-makers should take into account the political consequences of food subsidy reforms, in addition to their impact on the poor. Past experience in Tunisia and in numerous other countries demonstrates the potentially explosive nature of food subsidy reforms. Careful management of the on-going reform program has facilitated the Tunisian Government's efforts to carry out reforms. Similar steps should be taken to manage additional reform measures, including:

- *Adopting a gradual approach to reforms*
- *Instituting price increases in a timely and staggered manner*
- *"Sensitizing" the population (including various government ministries, parastatal agencies, organized interest groups and the general public) about the necessity and rationale for reforms via media campaigns and timely press releases (for example, with articles demonstrating the opportunity cost of existing policies)*
- *Simultaneously introducing targeted compensating measures (with appropriate publicity about these efforts)*
- *Appointing a team of "public-relations" experts to manage the "sensitization" aspects of the reform process*

Reform Measures

Self-Targeting. Self-targeting efforts in Tunisia could be reinforced by strengthening the application of both the "inferior goods" and the "superior goods" approaches. A summary of these measures is presented in Box D below.

Incidence analysis indicates that the application of the "superior goods" approach has been very successful in diverting the demand of wealthier households away from subsidized products. Liberalizing government controls on "superior goods" and allowing unsubsidized goods to enter the market through private channels to siphon off the demand of wealthier consumers should be intensified in all subsectors. Recent efforts to introduce new varieties of unsubsidized "superior" breads, imported pure grain oils, and locally-produced fresh milk should be encouraged. The Tunisian experience demonstrates that the availability of attractive alternatives is a necessary condition for the success of self-targeting (see Box B).

The analysis also reveals that the "inferior goods" approach can be an effective way to self-target food subsidies. A prime example of this success in the Tunisian program is semolina, which has been targeted for subsidies because it is consumed disproportionately more by the poor than the rich. For other product categories, however, the application of the "inferior goods" approach has stumbled to a certain degree over a variety of public health (pasteurized milk, bulk oil), consumer acceptance (brown sugar), and political (high-extraction rate bread) obstacles. It seems that the targeting of semolina as an "inferior good," as compared with other attempts to apply this approach, is facilitated by the fact that semolina is a traditional product in the diets of the Tunisians, and does not involve the introduction of a *new* good that is perceived to be of lower-quality. Indeed, creating *new* higher quality products via the "superior goods" approach (such as the new local fresh milk) appears to be more technically and politically feasible than introducing new "lower" quality items.

For durum-wheat products, expenditure patterns clearly support a targeting of subsidies towards semolina and away from pasta and couscous. Semolina is by far the best targeted item in the CGC subsidy program. It is also nutritionally rich and highly important in terms of its contribution to

the diets and total expenditures of the poor. Indirect subsidies on pasta and couscous (from the subsidy on semolina which is an input into their production) should be gradually eliminated via the establishment of a "*redevance*" payment system whereby *pastiers*, which process pasta and couscous from semolina, reimburse the CGC an equivalent unit amount for the subsidy on semolina used to make these items.²⁰ Policy-makers might also consider possibilities for self-targeting pasta subsidies (via differentiation of shapes and colors), which contribute substantially to the total expenditures and nutrient intake of the poor (despite their currently untargeted incidence).

For bread-wheat products, steps should be taken to carry out the Government's plans to replace *gros pain* subsidies with a subsidy on a single bread (*pain unique*), which preserves the features (size, shape and weight) that make *gros pain* less attractive to wealthier consumers, but which is made from a distinct, higher-extraction rate flour. Implementation of these plans has been slow, despite evidence that this measure would be technically feasible and would result in improved targeting, due to policy-makers' fears that the darker, rougher bread would invoke a negative "stigma" effect for what is arguably the most politically sensitive product subsidized by the CGC and due to their perceptions that political resistance to such a shift would erupt. These reforms are apparently still programmed, though implementation is being delayed until policy-makers carry out an active public relations campaign (*campagne de sensibilisation*) intended to "sensitize" various parties (ministries within the Government, agents involved in the bread-wheat market, and the general public) about the rationale for such measures.

For cooking oils, expenditure patterns indicate that subsidies should be shifted towards generic grain oil sold in small quantities from bulk oil retailers because this variety is consumed disproportionately by lower-income groups. Reports of oil becoming rancid or contaminated in bulk oil drums, however, should be thoroughly explored. If a sanitation investigation reveals that bulk oil sales are unhygienic, or if it appears that leakages of subsidized bulk generic oil to the production of other cooking oils (such as bottled oil) would jeopardize targeting efforts, these subsidies should be gradually eliminated or shifted towards generic grain oil packaged in cheap, low-quality bottles with plain labels which simply identify their contents as "cooking oil" (as opposed to unsubsidized oil which is packaged in attractive bottles which clearly identify their contents).

For sugar, the apparent rejection of subsidized, less-refined brown sugar by consumers should be examined. If necessary, a greater subsidy/price differential should be created between white and brown sugar to entice lower-income consumers to purchase the more heavily-subsidized brown sugar. Otherwise, sugar subsidies, which are currently placed only on domestically-produced sugar (and hence largely benefit producers) should be eliminated.

²⁰/A similar system already exists for bread-wheat, whereby millers reimburse the CGC for subsidies on bread-wheat grain that is used to make pastry flour (which is not intended to be subsidized under the CGC program). See Chapter 1 for details.

Box D - SUMMARY OF RECOMMENDATIONS FOR FURTHER TARGETING REFORMS		
	INFERIOR GOODS APPROACH	SUPERIOR GOODS APPROACH
Durum-Wheat Products	<ul style="list-style-type: none"> ● Maintain consumer subsidies on semolina in the medium-term, since semolina is well-targeted and is particularly important to low-income groups from a welfare and nutritional standpoint 	<ul style="list-style-type: none"> ● Institute a <i>redevance</i> system whereby <i>pastiers</i> reimburse the subsidy received on semolina that is used to make pasta and couscous, which are not well targeted; regularly adjust the prices of pasta and couscous so as to ensure that these items are not subsidized (either explicitly or implicitly) ● Explore possibilities for self-targeting pasta subsidies whereby the <i>pastiers</i> reimburse the indirect subsidy on semolina used to produce "superior" varieties of pasta (attractive shapes, colors) so that these varieties are not subsidized (even indirectly)
Bread-Wheat Products	<ul style="list-style-type: none"> ● Shift subsidies to a new bread made from a distinct high extraction rate flour (that incorporates bran particles) that maintains the features of <i>gros pain</i> that are well-targeted to the poor (size, shape, weight) ● Carefully examine the impact of any subsidy reductions for <i>gros pain</i> on the poor since existing survey data indicate that subsidies on <i>gros pain</i> are particularly important to the poor, in terms of protecting the purchasing power and the nutritional status of low-income groups 	<ul style="list-style-type: none"> ● Liberalize the prices of <i>baguettes</i>, or, if their prices remain administratively determined, continue to increase them regularly so as to ensure that <i>baguettes</i> do not become subsidized again
Cooking Oil	<ul style="list-style-type: none"> ● Shift subsidies to unpackaged generic grain oil sold from bulk retailers, which is well-targeted to the poor, provided that (i) this variety does not entail hygienic problems (such as the oil becoming rancid in bulk drums); and (ii) leakages of subsidized bulk generic grain oil to the production of other oils (such as bottled generic grain oil) do not jeopardize targeting efforts; <i>or</i> ● If the above conditions do not hold, shift subsidies to generic grain oil packaged in cheap, unattractive bottles with plain labels which simply identify their contents as "cooking oil" 	<ul style="list-style-type: none"> ● Encourage private operators to market pure grain oils packaged in attractive bottles with labels clearly indicating the type of oil being sold by eliminating the tariff differential between imports of pure grain oils by private importers (currently 43%) and imports of generic grain oil (soy, canola) by the ONH (preferential tariff rate is currently 15%)
Milk	<ul style="list-style-type: none"> ● Shift subsidies to pasteurized-reconstituted milk packaged in <i>berlingot</i> cartons provided that the milk is adequately refrigerated along distribution channels 	<ul style="list-style-type: none"> ● Gradually eliminate subsidies on sterilized milk (both reconstituted and local fresh), which is currently packaged in Tetrabrik cartons and plastic bottles
Sugar	<ul style="list-style-type: none"> ● Review the apparent rejection of heavily subsidized, less-refined brown sugar, by low-income consumers; conduct product trials, testing the less-refined sugar at various price differentials, and monitor consumption patterns ● If poorer consumers reject the less-refined variety even with larger price differentials between white and brown sugar, subsidies on both white and brown sugar should be gradually eliminated, but the impact of these cuts on the welfare and caloric intake by low-income consumers should be monitored 	<ul style="list-style-type: none"> ● Gradually eliminate subsidies on white granulated sugar, while monitoring the impact of these cuts on the welfare and caloric intake of the poor

For milk, expenditure patterns clearly support a shifting of subsidies towards pasteurized-reconstituted milk packaged in less attractive containers (e.g., *berlingot* tetrahedron cartons), because it is the only variety of milk that is consumed disproportionately by the poor. However, this product was eliminated from the subsidy program via a ministerial order in 1994. The reasons given for this reform reversal include: (i) public health concerns regarding potentially inadequate refrigeration of the pasteurized-reconstituted milk along the various distribution channels (particularly in poor neighborhoods) and the very limited shelf-life of this type of milk;²¹ and (ii) the relatively small importance of pasteurized-reconstituted milk subsidies and the wide range of available substitutes (sterilized-reconstituted milk and local fresh milk). Unless the technical aspects regarding the refrigeration of pasteurized-reconstituted milk can be overcome, or unless policy-makers are unable to identify an alternative well-targeted variety of milk, all remaining milk subsidies (which are currently placed on sterilized-reconstituted and local fresh milk, neither of which are well-targeted) should be eliminated.

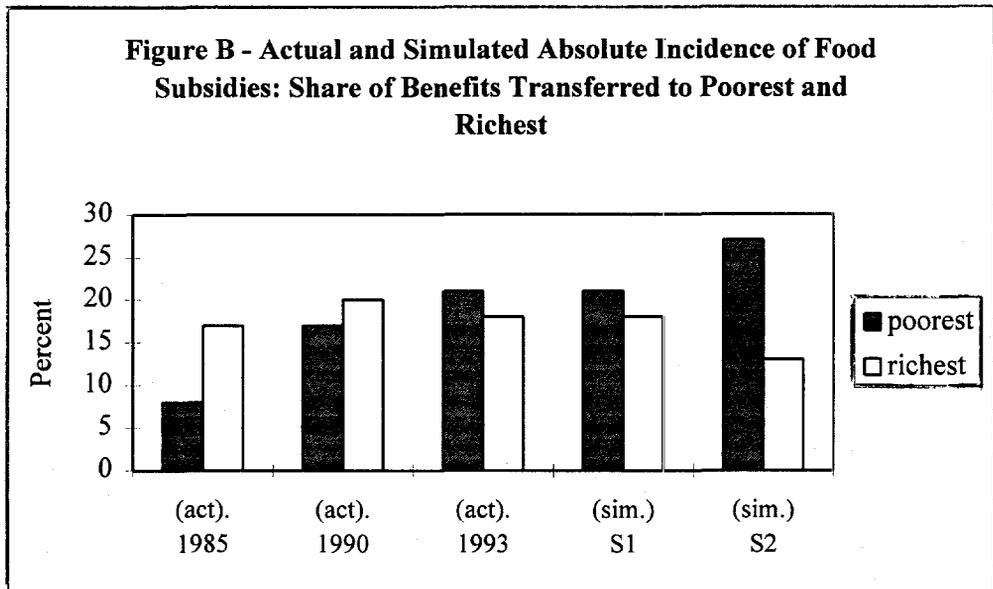
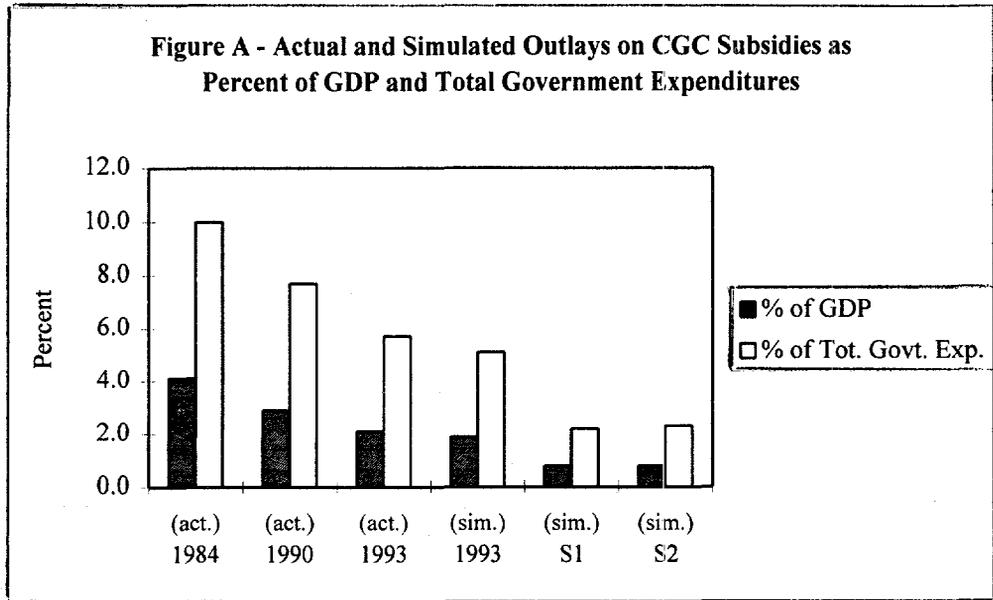
Price Increases. In general, price increases should be gradual but should at least keep pace with inflation to control budgetary costs. Faster price increases should be reserved for goods consumed disproportionately by higher-income groups. The Government should nonetheless pay close attention to the impact of any price increases on the poor. Compensating measures, or increases in subsidies on well-targeted products, to cushion this impact might also be considered.

Liberalization. An issue related to cost reduction involves the liberalization of production and distribution channels for subsidized products. Close monitoring of operators' production claims relative to their known capacity should permit privatization and liberalization of subsidized subsectors without allowing private operators to fraudulently receive higher subsidy payments. In fact, self-targeting efforts could actually reinforce monitoring by creating more distinct and easily recognizable subsidized products. A gradual, but significant, liberalization of these subsectors is advised, beginning with pilot programs with licensed private firms.

Data Requirements and Monitoring. The information necessary to design a self-targeted subsidy program includes, *inter alia*, household expenditure data. The Tunisian Government should seek to collect this information regularly to monitor the progress of the on-going reform program. This could be done using frequent, small-scale surveys as opposed to the larger, five year surveys.²² In addition, marketing studies which test consumer acceptance of self-targeted products should be conducted prior to wide spread introduction of new targeted goods. Moreover, policy-makers should seek to establish an explicit, consistent definition of the target group and then coordinate monitoring the standard of living of this group.

²¹/Unlike other varieties, pasteurized milk requires the milk to be refrigerated prior to opening and has a shelf-life of about two days).

²²/In fact, a small-scale household consumption survey, *Enquête Restreinte sur la Consommation des Produits Subventionnés*, funded by the World Bank Research Support Budget was conducted in 1993 and was designed specifically to follow-up with quantitative and qualitative questions regarding the products that have been the focus of self-targeting reforms. This survey could serve as a pilot for future program monitoring.



Note: The simulations in the above charts represent the predicted values (outlays, incidence) that arise from various reform scenarios, holding all other factors constant. "Sim. 1993" presents the simulated outlays for that year arising from self-targeting reforms instituted between 1990 and 1993, *ceteris paribus*. "Sim. S1" and "Sim. S2" indicate the simulated values (outlays, incidence) arising from alternative hypothetical reform scenarios (Scenario 1 involves a 50% across-the-board cut in all subsidies from their 1993 levels; Scenario 2 involves a set of hypothetical targeted subsidy cuts). These scenarios are described in more detail below.

Impact of Recommended Reforms

The fiscal, distributional and nutritional effects of the reforms recommended above were simulated²³ using demand elasticities and data from two household expenditure surveys.²⁴ To demonstrate the benefits of self-targeting, the effects of a hypothetical across-the-board 50 percent cut in all subsidies from their 1993 levels (**Scenario 1**) were compared with the impact of a hypothetical targeted reform scenario (**Scenario 2**), involving an elimination of subsidies on sterilized milk (both reconstituted and local fresh); bottled generic grain oil, pasta and couscous, as well as an 80 percent cut in subsidies on *gros pain*.²⁵

As shown in Figure A above, simulation results reveal that both scenarios would yield comparable -- and substantial -- reductions in outlays on the CGC subsidy program, cutting outlays from over two percent of GDP and close to six percent of total Government expenditures in 1993 to less than one percent of GDP and roughly two percent of Government expenditures.²⁶

i. Although both scenarios would entail virtually identical effects on program outlays, simulations reveal that their distributional impact would differ substantially (as shown in Figure B above). The across-the-board cuts (from their 1993 levels) under Scenario 1 would simply duplicate the distributional incidence observed for 1993 (in which the bottom quintile benefitted 1.1 times more than the top quintile in absolute terms roughly seven times more in relative terms). Simulation results for Scenario 2, however, clearly demonstrate that it is indeed possible to sharpen the self-targeting of food subsidies. With Scenario 2, the poorest quintile would benefit 2.1 times more from CGC subsidies than the richest in absolute terms and 13.2 times more in relative terms. By reducing subsidies on specific products, the distributional incidence of CGC subsidies would be strengthened in favor of poorer consumers. With these refinements, self-targeting can be pushed beyond the situation observed in 1993, which presented a "mid-term snapshot" of the incidence of the CGC reform program.²⁷

²³/See Annex 6 for details on the methodology used for estimation and simulations.

²⁴/INS 1990 Household Expenditure Survey, which shows expenditure patterns under the universal subsidy program (prior to reforms); INS 1993 *Enquête Restreinte sur la Consommation des Produits Subventionnés*, which was funded by a grant from the World Bank Research Support Budget and which reveals expenditure patterns under the self-targeted reform program.

²⁵/Both scenarios assume that subsidies *baguettes* and PS-7 flour, as well as direct subsidies on pasta and couscous, which were eliminated under the CGC reform program because of their untargeted incidence, were held constant at zero in the simulations. For obvious reasons, the simulations do not incorporate the effects of targeted reforms that were implemented after the 1993 survey was carried out (summer 1993), including the introduction of: (i) "superior" breads which were liberalized in 1991 but were not widely available at the time of the 1993 survey; (ii) subsidies on a single bread (*pain unique*) made from a high extraction rate flour; (iii) unsubsidized pure grain oils; and (iv) *zit sannafa*, a new "fixed mixed" cooking oil which was not widely available at the time of the survey. In addition, because the 1993 survey did not cover consumption patterns for sugar, the simulations do not include the effects of reforms pertaining to sugar subsidies. Finally, because less than one percent of those households sampled in the 1993 survey actually purchased pasteurized-reconstituted milk packaged in *coussin* pouches, this variety of milk was grouped together with pasteurized-reconstituted milk packaged in *berlingot* cartons for the purposes of policy simulations.

²⁶/Holding all other factors constant at 1993 levels, including GDP and total Government expenditures.

²⁷/In fact, by completely eliminating subsidies on *gros pain* and generic grain oil (*both* bulk and bottled), in conjunction with the other reforms in Scenario 2, simulations reveal that it is possible to improve the targeting of food subsidies to an even greater degree. With this additional reform, the poorest quintile would receive 3.1 times more absolute transfers

Simulation results reveal that targeted subsidy cuts under Scenario 2 would produce smaller and more equitable losses in calorie and protein intake than the across-the-board subsidy cuts under Scenario 1. Moreover, the significant losses in nutritional intake associated with the 80 percent cut in subsidies on *gros pain* under Scenario 2 could be offset by replacing the subsidy on the flour used to make *gros pain* with subsidies on *pain unique*, made from a high extraction rate flour that re-incorporates bran particles.²⁸

CONCLUSIONS

The Tunisian case study provides a useful example for other countries which are contemplating similar reforms but are concerned about the practicalities involved in implementing self-targeting reforms. It is important to note, however, that Tunisian self-targeting efforts are part of an effort to reform an existing program. Self-targeting via quality differentiation is appropriate in Tunisia precisely because a system of food price subsidies was already in place. The goal of the self-targeting component is to modify existing institutions in order to reduce leakages to the non-poor, cut the scope of the program, and yet protect the welfare and consumption of the poor. Self-targeting of food products may not be suitable in countries where the institutional framework of food subsidies did not previously exist. In cases where self-targeting is deemed appropriate, the technicalities of the program, such as particular quality features of targeted products, are likely to be specific to the region or country in question. The Tunisian experience offers an example of the method by which these reforms are implemented and illustrates the information requirements necessary for the design of an effective self-targeting reform program.

than the richest, and would benefit 20.1 times more in relative terms. A complete elimination of subsidies on *gros pain* and generic oil (bulk as well as bottled) would, however, result in larger losses in purchasing power and caloric intake than under Scenario 2 (which involves an 80% cut in subsidies on *gros pain* and an elimination of subsidies on bottled generic oil while maintaining subsidies on bulk generic oil).

²⁸Although *pain unique* is believed to be well-targeted to the poor because of its dark color and rough texture, the presence of bran particles in the flour used to make this new bread actually improves the nutritive quality of *pain unique* because it contains more protein, dietary fibers and other nutrients than *gros pain*.

CHAPTER I

FOUNDATIONS FOR REFORM: THE UNIVERSAL SUBSIDY PROGRAM¹

Through the *Caisse Générale de Compensation* (CGC), the Tunisian Government has subsidized the consumption of basic foodstuffs and a variety of other items since 1970. Subsidies have been uniformly available to anyone who chooses to purchase subsidized commodities in any quantity desired.

CGC subsidies were introduced to meet a multitude of somewhat conflicting objectives. The initial aims of the CGC included: (i) stabilizing the fluctuating prices of basic staples; (ii) preserving the purchasing power of the poor; (iii) keeping salary increases low to promote employment, production, and international competitiveness; and (iv) redistributing income towards low-income groups. Over time, further objectives were added, including: (i) encouraging production to achieve self-sufficiency in basic staples; (ii) promoting exports, particularly of olive oil; and (iii) improving the nutritional status of the population, particularly vulnerable groups.

Since its inception, the subsidy program has maintained extensive commodity coverage. The range of products covered by CGC subsidies includes food staples, such as cereals (bread wheat, durum wheat), cooking oil, sugar and milk, and several non-food items, such as animal feed (barley, maize and soybean meal), acid oils², fertilizers and school supplies. Although CGC intervention has not been limited to foodstuffs, this analysis concentrates on the subsidy issues associated with the food items in the program.

INSTITUTIONAL ARRANGEMENTS³

Under the Tunisian food subsidy program, consumer prices are fixed below market prices. The program allows for unrestricted access to subsidized commodities, meaning that effective income transfers are available to anyone who chooses to purchase the subsidized goods, and the welfare costs associated with rationing and queuing are not incurred. The magnitude of the income transfer to any individual is limited only by the amount of subsidized products he or she chooses to consume.

¹The "universal subsidy" program covers the period until 1990, after which the Government launched a series of reforms designed explicitly to improve the targeting of CGC subsidies. Under the universal subsidy program, subsidies were placed on a broad range of products, and the subsidized commodities were generally the only varieties available on the market. The program during this period (1970-90) experienced virtually universal "take-up" across income groups; hence the term "universal." The program after 1990, however, is referred to as the "reform" program or the "self-targeted" program due to the efforts of policy makers to introduce quality differentiation in order to improve the targeting of food subsidies. These reforms are discussed in Chapter 3.

²Acid oils are used for making soap and have been subsidized in Tunisia with the objective of promoting hygiene.

³Generally, the institutional arrangements developed under the pre-reform program have been maintained under the reform program. Specific modifications to simplify subsidy payments under the reform program are discussed in Chapter 3.

Subsidies are extra-marginal and have an impact on consumer welfare and nutritional intake via the marginal price as well as through an implicit income transfer.

Although the CGC manages the program, many other institutions are involved in the payment of subsidies and the distribution of subsidized goods. Several ministries and agencies are responsible for monitoring the CGC, determining prices and financing the subsidies, including the Ministries of Commerce (formerly the Ministry of the National Economy) and Finance. In most subsectors, the universal subsidy system has perpetuated an elaborate array of marketing boards and state-controlled distribution networks. In fact, liberalization and privatization of these subsectors has been slower than in other subsectors due to fears that the private sector could not be entrusted with the responsibility of handling the subsidies.

The Cereals Subsector

The cereals subsector is the most politically sensitive, complex, and costly part of the subsidy system. Subsidies are injected at three points along the marketing chain: the collection of local production, imports, and milling. Until August 1989, they were also paid at the bakery level.

L'Office des Céréales (OC), which was created in 1962 under the supervision of the Ministry of Agriculture, dominates cereal marketing channels. The OC manages all subsidy payments in the cereals subsector on behalf of the CGC. The OC has a monopoly on cereal imports. It also collects locally produced cereals from farmers at collection centers throughout the country, paying them official producer prices after making adjustments for margins, taxes and other allowances.⁴ Both imported and locally produced wheat are sold to the mills at the same officially determined price (*prix de rétrocession*). Since this price is below the cost of procurement and delivery, the OC receives a subsidy from the CGC to cover the difference.

Along with the OC, two cooperatives, the *Coopérative Centrale de Blé* (COCEBLE) and the *Coopérative Centrale des Grandes Cultures* (CCGC), have traditionally dominated storage, handling, and delivery services for locally produced cereals. Though technically private, these cooperatives are highly regulated and work on behalf of the OC. They purchase wheat from farmers at the official producer price and sell it to the mills at the official *prix de rétrocession*. The OC pays the cooperatives a subsidy to cover the difference, and is reimbursed by the CGC.

The collection of cereals was liberalized in 1990 under the Second Agricultural Sector Adjustment Loan.⁵ Since then, additional cooperatives are being allowed to collect cereals from farmers, but they too are subject to very strict licensing standards (*cahier des charges*). Three new cooperatives have been licensed.⁶ They receive a subsidy similar to that paid to the two original cooperatives and the OC.

⁴Since the mid-1980s, producer prices have been set above their border equivalents.

⁵ASAL II, Loan 3078-TUN.

⁶Comète Engineering (March 1995).

A more widespread liberalization of collection services has been rejected by authorities on the grounds that private collection agents and private mills might collude to fraudulently overstate the quantities handled and thereby receive illegitimate subsidy payments. Imports also remain monopolized, in part for the same reason.

There are some 22 mills in Tunisia (1989). They are private, but strictly regulated. Millers pay a fixed price (*prix de rétrocession*) for their purchases of wheat. Until recently, millers paid transport-cost equalization charges (*péréquation de transport*) which were intended to standardize producer prices across the country. The *péréquation de transport* was eliminated in 1991 because of chronic deficits in the transport accounts and the economic distortions caused by these charges.

The mills transform bread wheat into baking flour, at a 78 percent extraction rate (PS), and pastry flour, at a 71 percent extraction rate (PS-7).⁷ Durum wheat is transformed into semolina (PS-10, with a 67 percent extraction rate), couscous and pasta.

Millers sell the processed bread wheat and durum wheat to bakeries and durum-wheat processors (*pastiers*) at government-determined prices. They receive a fixed milling margin for processing. The sales price at which they are allowed to sell their products is less than the cost of the (already subsidized) grain plus the margin. The difference is compensated by the OC which is, in turn, reimbursed by the CGC. The millers reimburse the OC a "*redevance*" payment, which is in turn paid to the CGC, for use of subsidized bread-wheat grain to produce PS-7 pastry flour (which is not intended to be subsidized under the CGC program).⁸

The primary role of the some 2000 bakeries across Tunisia is to purchase bread-wheat flour from millers to transform it into two types of bread: *gros pain* (700 grams before 1986, then 600 grams, and 500 grams since 1989) and *baguettes* (300 grams before 1986 and 250 grams since), which are both made from 78 percent extraction rate flour (PS).⁹ The sales price of bread is set officially to allow bakers to cover costs plus a margin. Bakeries no longer receive a direct subsidy. Many bakeries also produce pastries with pastry flour (PS-7), which is not subsidized.

Unit subsidies are intended to be higher on *gros pain* than on *baguettes* because *gros pain* is consumed disproportionately by lower-income groups. However, the same flour is used for both types of bread and only the flour is subsidized. Therefore, to maintain a subsidy differential between *gros pain* and *baguettes*, the sales price of flour is set with the assumption that bakers use 85 percent of the

⁷The abbreviation "PS" refers to the specific weight, or *poids spécifique*, which is a percentage of the mass (in kilograms) of a hectoliter of wheat. Theoretical extraction rates are somewhat lower than actual rates. The rates reported here are actual rather than theoretical.

⁸The CGC team in the Ministry of Commerce (formerly the Ministry of the National Economy) monitors this *redevance* payment system by verifying supporting documents (*pièces justificatives*) submitted by the mills via the OC. Mills provide supporting documents to the OC for review on a monthly basis, reporting acquired quantities of grain and the quantities of various processed grain products that are sold for each period. In recent years (1994-95), the total amount collected by the CGC in *redevance* payments averaged TD7.5 million (or roughly 15 percent of total bread-wheat subsidies). Sources: Ministry of Commerce and Redjeb et. al. (February 1990).

⁹Ministère de l'Économie Nationale (1991).

subsidized flour for *gros pain* and only 15 percent for *baguettes*. In reality, some bakers make extra profits from this differential by using more than 15 percent of the subsidized flour to produce *baguettes*. The actual allocation of subsidized PS flour between the two types of bread by each baker cannot be controlled and no attempt has been made to do so. (See Annex 1 for a more detailed explanation.)

Several leakages of the subsidy also occur at the bakery level because subsidized PS flour is often put to uses other than the intended *gros pain* and *baguettes*, such as pizza, pastries, and biscuits. Unsubsidized pastry flour (PS-7) is virtually impossible to distinguish from subsidized PS flour and it is not difficult for pastry makers (particularly those who also produce bread) to substitute PS flour into the manufacturing of these pastry products.

There are 21 durum-wheat manufacturers (*pastiers*) in Tunisia.¹⁰ Their primary role is to purchase semolina from the millers and transform it into couscous and pasta sold in bulk form to wholesale and retail intermediaries.¹¹ The direct subsidy on pasta and couscous was eliminated as part of the reform program in 1993 (as discussed in greater detail in Chapter 3), but these products are still subsidized indirectly via the subsidy on semolina.

The Cooking Oil Subsector

The institutional arrangements for the cooking oil subsector are less complex than for cereals. Tunisia is one of the world's major producers of olive oil. Due to international price differentials, it mainly reserves olive oil for export, and imports grain oil,¹² mostly soybean or rapeseed (the price ratio for olive oil to grain oil is between 2:1 and 3:1 depending on the year).

L'Office National de l'Huile (ONH) controls the import and refining of cooking oil. The ONH imports and stores unrefined grain oils which are allocated to the twelve existing private refineries according to quotas based on installed refining capacity. Existing quota mechanisms do not favor efficient refineries nor do they provide incentives for cost minimization. Rather, they create incentives to continually expand capacity through investments which are often unnecessary. The ONH repossesses the refined oil from refineries for sale to wholesalers and bottlers. The consumer price for cooking oil is fixed below cost and the ONH is reimbursed by the CGC for the difference.

Until 1989, the ONH used olive oil left over from the export campaign to mix with generic grain oil (zero to 15 percent olive oil), creating what was called *huile de mélange* (mixed oil). The objective of incorporating olive oil into the mix was purportedly to satisfy consumer tastes for olive oil, which is considered a luxury product and part of the traditional heritage in Tunisia. Since olive oil export prices are considerably higher than grain oil prices, the incorporation of grain oil raised the subsidy cost of the *huile de mélange*. Blending olive oil with grain oils was suspended in 1989, and

¹⁰In 1989.

¹¹Semolina, which is a processed form of finely ground durum wheat, is processed to create couscous and pasta.

¹²For convenience, the term "grain oil" will be used loosely to describe a variety of cooking oils throughout the analysis, including corn oil as well as rapeseed, sunflower, and soybean oil (which are technically classified as oilseeds).

subsidized cooking oil now consists of generic grain oils (soybean or rapeseed oil, depending on which oil is the cheapest to import at the time of procurement).

Roughly two-thirds of cooking oil is sold in bulk oil drums (*en vrac*) to retailers who, in turn, dispense small quantities of unpackaged oil to their clients.¹³ The poor primarily purchase unpackaged cooking oil in this manner. The remainder of the cooking oil is sold to bottlers (*conditionneurs*) who cater primarily to higher-income consumers by packaging the oil in glass bottles which are more attractive and convenient than the storage containers used by the retailers for bulk oil.

The Sugar Subsector

There are three state-owned or operated institutions involved in collecting, refining, and distributing sugar in Tunisia: *L'Office du Commerce de Tunisie* (OCT), the *Société Tunisienne de Sucre* (STS), and the *Complexe Sucrier de Tunisie* (CST).

The primary function of the OCT, which was established in 1962, is to import refined white and unrefined brown sugar. It sells the white sugar directly to wholesalers and the raw brown sugar to the STS. The STS, which was created in 1960, refines brown sugar and transforms sugar beets from local production into white sugar. The STS sells the refined sugar back to the OCT which sells it wholesale. The CST, which was established in 1980, produces white sugar from local beet production and sells it to wholesalers, cube manufacturers and industrial users, such as soft drink producers.

The CGC subsidizes sugar by making direct payments to the parastatal agencies. The STS and the CST are compensated for the difference between their total revenues and their total costs over a year, rather than per unit of product. Until 1992, when the subsidy on imported sugar was eliminated, the CGC paid a subsidy to compensate the OCT for the difference between the import price and the fixed sales price.

The Milk Subsector

Until recently, subsidies were only injected on reconstituted milk (both pasteurized and sterilized) made from imported powder. Two parastatals, the *Société Tunisienne des Industries Laitières* (STIL) and *Tunisie-Lait*, have dominated the collection, processing, and distribution of subsidized reconstituted milk. These parastatals import powdered milk, which serves as the raw material for reconstituted milk.¹⁴ STIL, which was established in 1967, produces over three-fourths of this milk, while Tunisie-Lait, which was established in 1973, supplies the rest.¹⁵

¹³In 1990, bulk oil sales accounted for approximately 79 percent of total subsidized cooking oil.

¹⁴Powdered milk imports were controlled exclusively by STIL and Tunisie-Lait until they were liberalized under the ASAL II in 1990. Despite this liberalization, STIL and Tunisie-Lait are still the only processors eligible to receive the subsidy on reconstituted milk made from imported powder.

¹⁵In 1990, total sales of subsidized reconstituted milk were 184 million liters. STIL supplied 144 million liters and Tunisie-Lait sold 40 million. Source: Ministère de l'Economie Nationale.

Consumers purchase reconstituted milk at fixed prices which vary according to different types of processing and packaging and are all sold below cost. The CGC compensates STIL and Tunisie-Lait by reimbursing them for the difference between the fixed price and their unit cost, plus a profit margin. Until 1989, this margin was calculated as a 15 percent markup. As a result, neither company had an incentive to operate efficiently or to adopt innovative processing techniques that would reduce costs.¹⁶ In an effort to promote efficiency, reforms have since fixed operating margins at their 1989 levels.

Reconstituted milk from imported powder is available in both sterilized and pasteurized varieties.¹⁷ Sterilized milk is processed at ultra-high temperatures and can be stored without refrigeration for approximately six months until opened, whereas pasteurized milk has a limited shelf-life of 48 hours and requires refrigeration at all times. Sterilized-reconstituted milk is packaged by STIL in plastic bottles and aseptic tetrabrik cartons and by Tunisie-Lait in plastic bottles. Pasteurized-reconstituted milk, which is processed exclusively at STIL, is packaged in half-liter *berlingot* tetrahedron cartons. STIL, the larger parastatal, imports tetrabrik and *berlingot* cartons from Europe under a Swiss patent. Plastic bottles are manufactured domestically from imported plastic granules.

Under the reform program, a small subsidy was recently granted on sales of sterilized local fresh milk (as discussed in more detail in Chapter 3).¹⁸ In contrast to subsidies on other products in the CGC program (which are calculated as the difference between cost- and sales-prices), the subsidy on local fresh milk is set at a fixed pre-determined value.¹⁹ Consumers purchase local fresh milk at retail prices which equal the ex-factory cost-prices minus the fixed unit subsidy. In addition, unlike subsidies on reconstituted milk, which are restricted to STIL and Tunisie-Lait, private processors are eligible to receive the subsidy on this variety of milk. In fact, LAINO, a private dairy processor, was the first to produce subsidized local fresh milk; three new private firms have recently been authorized to receive the subsidy. STIL and Tunisie-Lait have also begun marketing subsidized local fresh milk. With the exception of STIL, which markets this variety of milk in both tetrabrik cartons and plastic bottles, all sterilized local fresh milk is packaged in plastic bottles.

SUBSIDY PAYMENTS UNDER THE UNIVERSAL PROGRAM (1981-1990)

Tables 1-3 indicate the magnitude of subsidy payments for each of the subsectors. Cereals absorb the largest part of total subsidies, claiming 54 percent of CGC expenditures in 1990. Durum wheat received the most support, with subsidies averaging 26 percent of total program outlays

¹⁶A recent study comparing Tunisian processing costs to American dairy plants of similar capacity found that, on average, Tunisian dairy processing costs were three to four times higher than those of comparable American dairy plants. Ericksen et. al. (1990).

¹⁷All subsidized milk (both reconstituted and local fresh, which is discussed below) is low-fat, with 15.5 grams of fat per liter.

¹⁸Consumers also purchase unprocessed raw milk, generally from milk peddlers, but this is not covered by the subsidy program.

¹⁹The subsidy on local fresh milk was set at 80 millimes per liter in 1991, and 70 millimes per liter for each year since then.

in 1990, followed by bread wheat, for which subsidies accounted for an average of 22 percent of total subsidy expenditures in that same year. Sugar subsidies claimed about twelve percent in 1990. Subsidies on cooking oils and milk subsidies accounted for approximately nine and seven percent respectively in that same year.

Unit subsidies for products covered by the CGC are presented in Table 4 in current millimes, and in Table 5 as a share of *unsubsidized* prices.²⁰ Subsidies account for a substantial share of the value of most products in the program. In 1990, subsidies on *gros pain* and *baguettes* represented 39 and 18 percent of the value of each good respectively. Semolina subsidies were notably large, contributing close to one-half of the product's value, as were subsidies on pasta and couscous, which each represented 38 percent. Cooking oil subsidies accounted for over one-third of the value of the goods. Milk subsidies ranged from 19 percent of the product's value for sterilized-reconstituted milk packaged in tetrabrik cartons to 38 percent for pasteurized-reconstituted milk sold in *berlingot* cartons. Unit subsidies on locally produced sugar were the largest, contributing 69 percent of the product's value.

²⁰Calculated as: $\text{unsubsidized price} = \text{subsidized price} + \text{unit subsidy for each good}$.

Table 1 - TOTAL NOMINAL FOOD SUBSIDY EXPENDITURES BY PRODUCT, 1984-95												
Million Dinars (Current)												
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Cereals - Total:	143	136	122	112	131	172	170	162	195	212	191	189
Durum Wheat	58	53	48	50	58	74	84	101	118	124	137	114
Bread Wheat	48	50	46	43	53	72	69	51	64	82	48	67
Processing Margins	37	34	28	18	20	26	16	10	13	6	6	9
Cooking Oil	32	50	20	14	30	38	30	30	26	27	56	63
Bulk	na	na	na	7	20	27	24	22	19	20	38	43
Bottled	na	na	na	7	10	11	6	7	7	7	17	19
Sugar	12	8	20	20	22	32	37	19	13	14	15	19
Milk	8	16	9	12	20	31	22	22	24	27	21	26
Meat	8	0	0	0	0	0	0	0	0	0	0	0
Total Food Subsidies	203	210	171	158	203	273	258	232	258	280	283	297

Source: Ministère de l'Economie Nationale, Yusuf. Numbers may not add due to rounding.

Table 2 - TOTAL REAL FOOD SUBSIDY EXPENDITURES BY PRODUCT, 1984-95												
Million Dinars (Constant 1980 prices)												
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Cereals - Total:	98	86	73	62	68	84	78	68	78	82	70	66
Durum Wheat	40	33	29	28	30	36	39	43	47	48	51	40
Bread Wheat	33	31	27	24	27	35	32	21	26	32	18	23
Processing Margins	25	22	17	10	10	13	7	4	5	2	2	3
Cooking Oil	22	32	12	8	16	18	14	13	10	10	20	22
Bulk	na	na	na	4	10	13	11	9	8	8	14	15
Bottled	na	na	na	4	5	5	3	3	3	3	6	7
Sugar	8	5	12	11	12	15	17	8	5	5	6	7
Milk	6	10	6	7	10	15	10	9	10	10	8	9
Meat	5	0	0	0	0	0	0	0	0	0	0	0
Total Food Subsidies	139	133	103	88	106	133	118	98	103	108	104	103
CPI (1980=100)	146	158	167	179	191	205	218	236	250	260	272	289

Source: Ministère de l'Economie Nationale, Yusuf. Numbers may not add due to rounding.

Table 3 - CGC FOOD SUBSIDY EXPENDITURES BY PRODUCT, PERCENT OF TOTAL, 1984-95												
Percent												
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Cereals - Total:	70%	65%	71%	71%	64%	63%	66%	70%	75%	76%	67%	64%
Durum Wheat	29%	25%	28%	32%	29%	27%	33%	44%	46%	44%	49%	38%
Bread Wheat	24%	24%	27%	27%	26%	26%	27%	22%	25%	29%	17%	22%
Processing Margins	18%	16%	17%	11%	10%	10%	6%	4%	5%	2%	2%	3%
Cooking Oil	16%	24%	12%	9%	15%	14%	12%	13%	10%	10%	20%	21%
Bulk	na	na	na	5%	10%	10%	9%	10%	7%	7%	14%	15%
Bottled	na	na	na	4%	5%	4%	2%	3%	3%	3%	6%	7%
Sugar	6%	4%	12%	13%	11%	12%	14%	8%	5%	5%	5%	6%
Milk	4%	7%	5%	8%	10%	11%	8%	9%	9%	10%	8%	9%
Meat	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Food Subsidies	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Ministère de l'Economie Nationale, Yusuf. Numbers may not add due to rounding.

Table 4 - CGC UNIT SUBSIDIES BY PRODUCT, 1986-95										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CEREALS										
Gros pain (mil/gram) ^a	0.11	0.11	0.12	0.16	0.14	0.12	0.10	0.10	0.12	0.10
(mil/unit) unit=500 grams	57	53	60	79	70	58	50	50	60	50
Baguette (mil/gram) ^b	0.06	0.04	0.06	0.09	0.08	0.03	0.01	0.00	0.00	0.00
(mil/unit) unit=250 grams	16	10	14	23	20	8	3	0	0	0
Flour (mil/kg)	64	67	62	83	31	0	0	0	0	0
Semolina (mil/kg)	114	125	144	131	191	183	210	210	251	250
Pasta (mil/kg) ^c	163	133	153	184	225	204	218	218	261	260
Couscous (mil/kg) ^c	166	136	157	188	231	209	227	227	271	270
COOKING OIL (mil/liter)										
-bulk/vrac	172	102	208	253	225	229	210	210	387	463
-bottled/conditionnée	172	143	250	284	225	223	210	210	387	463
MILK (mil/liter)										
Sterilized-Reconstituted										
Tetrabrik cartons	100	79	181	158	100	103	130	155	146	191
Plastic bottles	47	39	95	136	95	96	166	142	146	193
Pasteurized-Reconstituted										
Berlingot tetrahedrons	134	134	154	207	200	183	166	155	155	0
Coussin pouches	na	na	na	na	na	na	109	122	122	0
Sterilized Local Fresh Milk										
Plastic Bottles	na	na	na	na	na	80	70	70	70	70
Tetrabrik cartons	na	na	na	na	na	na	70	70	70	70
SUGAR (mil/kg)										
White, granulated, local prod'n	900	721	688	910	887	706	520	450	477	400
White, granulated, imported	17	-18	0	38	78	22	0	0	0	0
White, cube	57	73	73	28	2	0	0	0	0	0
Brown, granulated	na	na	na	na	130	137	137	0	0	0
OTHER										
Barley (D/Q)	1.2	2.2	3.8	5.9	4.8	4.6	2.7	2.0	na	na
Corn (D/Q)	1.8	0.7	2.1	6.2	3.6	3.6	0.6	0.0	na	na
Soybean Meal (D/Q)	4.1	4.0	14.7	15.6	5.1	3.1	0.0	0.0	na	na
Urea (D/T)	63	37	35	59	44	36	19	0	0	0
Super 16 (D/T)	34	29	20	36	29	26	0	0	0	0
Super 45 (D/T)	79	64	75	103	84	54	25	7	20	18.5
DAP (D/T)	110	127	130	173	85	78	8	6	na	36

Source: Ministère de l'Economie Nationale.

a/The weight of gros pain was reduced in 1986 from 700 to 600g, and in 1989 to 500g.

b/The weight of baguettes was reduced in 1986 from 300 to 250g.

c/Direct subsidies on pasta and couscous were eliminated in 1992. These products were subsidized indirectly, however, via the subsidy on semolina (which is an input into the production of pasta and couscous). Roughly 1.04 kg and 1.08 kg of semolina is needed to produce 1 kg of pasta and couscous respectively.

Table 5 - CGC UNIT SUBSIDIES AS A SHARE OF PRODUCT VALUE, 1986-95										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CEREALS										
Gros pain (mil/gram) ^a	41%	39%	42%	44%	39%	33%	28%	26%	29%	25%
(mil/unit) unit=500 grams	41%	39%	42%	44%	39%	33%	28%	26%	29%	25%
Baguette (mil/gram) ^b	19%	13%	17%	22%	18%	7%	3%	0%	0%	0%
(mil/unit) unit=250 grams	19%	13%	17%	22%	18%	7%	3%	0%	0%	0%
Flour (mil/kg)	25%	26%	24%	25%	10%	0%	0%	0%	0%	0%
Semolina (mil/kg)	42%	45%	48%	43%	49%	47%	49%	48%	52%	52%
Pasta (mil/kg) ^c	38%	33%	37%	37%	38%	34%	35%	34%	37%	37%
Couscous (mil/kg) ^c	38%	33%	37%	37%	38%	34%	35%	35%	38%	38%
COOKING OIL (mil/liter)										
-bulk/vrac	36%	24%	39%	43%	38%	38%	36%	34%	47%	52%
-bottled/conditionnée	34%	28%	41%	40%	33%	33%	30%	30%	42%	46%
MILK (mil/liter)										
Sterilized-Reconstituted										
Tetrabrik cartons	25%	21%	36%	29%	19%	19%	22%	24%	23%	26%
Plastic bottles	15%	13%	25%	29%	21%	20%	29%	25%	25%	29%
Pasteurized-Reconstituted										
Berlingot tetrahedrons	36%	36%	37%	40%	38%	34%	31%	28%	28%	na
Coussin pouches	na	na	na	na	na	na	23%	24%	24%	na
Sterilized Local Fresh Milk										
Plastic Bottles	na	na	na	na	na	17%	13%	12%	11%	11%
Tetrabrik cartons	na	na	na	na	na	na	13%	12%	11%	11%
SUGAR (mil/kg)										
White, granulated, local prod'n	79%	73%	70%	72%	69%	64%	53%	48%	48%	41%
White, granulated, imported	7%	-7%	0%	10%	16%	5%	0%	0%	0%	0%
White, cube	14%	16%	15%	5%	0%	0%	0%	na	na	na
Brown, granulated	na	na	na	na	30%	31%	30%	na	na	na
OTHER										
Barley (D/Q)	10%	17%	29%	38%	28%	23%	14%	11%	na	na
Corn (D/Q)	15%	5%	14%	33%	19%	16%	3%	na	na	na
Soybean Meal (D/Q)	19%	17%	42%	44%	17%	10%	0%	na	na	na
Urea (D/T)	43%	25%	24%	34%	25%	18%	na	na	na	na
Super 16 (D/T)	45%	36%	28%	41%	31%	23%	na	na	na	na
Super 45 (D/T)	63%	37%	41%	49%	44%	27%	13%	4%	10%	9%
DAP (D/T)	51%	52%	53%	60%	33%	29%	3%	2%	0%	13%

Source: Ministry of Commerce. Calculated as a percent of unsubsidized prices, where unsubsidized price = subsidized price + unit subsidy.

a\The weight of gros pain was reduced in 1986 from 700 to 600g, and in 1989 to 500g.

b\The weight of baguettes was reduced in 1986 from 300 to 250g.

c\Direct subsidies on pasta and couscous were eliminated in 1992. These products were subsidized indirectly, however, via the subsidy on semolina (which is an input into the production of pasta and couscous). Roughly 1.04 kg and 1.08 kg of semolina is needed to produce 1 kg of pasta and couscous respectively.

CHAPTER II

IMPACT OF THE UNIVERSAL FOOD SUBSIDY PROGRAM (1981-1990)

FISCAL IMPACT

CGC Expenditures and other Macroeconomic Indicators

Government outlays on the universal subsidy program were substantial throughout the 1980s, amounting to 3.3 percent of GDP in 1981, 4.1 percent in 1984, and 2.9 percent in 1990, as indicated in Table 6. Total CGC expenditures were TD139 million (US\$281 million) in 1981 and climbed to TD317 million (US\$361 million) by 1990, rising by close to nine percent p.a. in real terms between 1981 and 1985, and an average of 1.4 percent p.a. in real terms between 1985 and 1990. Per capita expenditures on the subsidy program averaged TD32.3, rising from TD21.7 (US\$44) in 1981 to TD39.3 (US\$45) in 1990.

The universal subsidy program has also claimed a large share of public resources. Outlays on consumer subsidies averaged roughly nine percent of total government expenditures during the 1980s, rising from just under nine percent in 1981, peaking at ten percent in 1984 and then falling to just under seven percent in 1990.

Subsidy Costs in Relation to other Assistance Programs

The Tunisian Government spends a large share of its budget, over one-half in 1990, on social transfers which, in addition to the CGC subsidy program, include spending on education, public health, social insurance, regional development, employment and training schemes, programs for youths, social housing schemes and direct assistance programs for the poor.²¹ Expenditures on these programs amounted to roughly 20 percent of GDP in 1990.

The food subsidy program claims a larger share of total social spending than the direct assistance programs that are aimed specifically at aiding the poor. As Table 7 indicates, CGC food subsidies account for a considerable share of these expenditures, close to 15 percent in 1990, whereas direct assistance programs, including cash transfers for "Needy Families" and food rations for low-income pre-school-aged children and students, represented only one percent of total spending on transfers that year.

²¹For a thorough discussion of the social protection system in Tunisia, see World Bank (April 1993).

Table 6 - TOTAL CGC SUBSIDIES, MACROECONOMIC INDICATORS, 1981-95															
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Current TD:															
Nominal Subsidies (MD)	139	161	174	258	262	218	201	275	362	317	290	291	314	304	343
Subsidies Per Capita (D)	21.7	23.9	25.3	36.7	36.4	29.6	26.6	35.5	45.8	39.2	35.1	34.5	36.5	34.6	38.7
Subsidies as % of:															
GDP	3.3	3.4	3.2	4.1	3.8	3.1	2.5	3.2	3.8	2.9	2.4	2.1	2.1	1.9	2.0
Gov't Expenditures	8.8	9.0	8.6	10.0	9.5	7.2	6.5	8.1	9.5	7.7	6.3	6.1	5.7	5.1	5.2
Constant 1980 TD															
Real Subsidies (MD)	127	130	129	176	166	131	112	144	177	145	123	116	121	112	119
Subsidies Per Capita (D)	19.9	19.3	18.8	25.1	23.0	17.7	14.8	18.6	22.4	17.9	14.8	13.8	14.0	12.7	13.4
Current TD:															
Nominal GDP (MD)	4162	4804	5497	6240	6910	7021	7997	8685	9590	10816	12029	13706	14606	15867	17215
GDP Per Capita (D)	651	713	799	888	958	951	1059	1124	1212	1335	1456	1626	1698	1805	1941
Total Gov't Expenditure	1583	1793	2028	2579	2757	3019	3073	3405	3808	4133	4610	4771	5467	5974	6595
Constant 1980 TD															
Real GDP (MD)	3736	3718	3774	4005	4281	4202	4474	4581	4726	5061	5258	5669	5799	5994	6201
Memo:															
CPI 1980=100	109	124	135	146	158	167	179	191	205	219	236	250	260	272	289
GDP Deflator 1980=100	111	129	146	156	161	167	179	190	203	214	229	242	252	265	278
Exch. Rate: Av. TD/US\$	0.494	0.591	0.679	0.777	0.835	0.794	0.829	0.858	0.949	0.878	0.925	0.884	1.004	1.013	0.970
Population (million)	6.39	6.74	6.88	7.03	7.21	7.38	7.55	7.73	7.91	8.10	8.26	8.43	8.60	8.79	8.87
Source: Ministère de l'Economie Nationale, IMF (IFS), the World Bank. Numbers may not add due to rounding.															

Table 7 - FISCAL COSTS OF SOCIAL SPENDING PROGRAMS, 1986-93								
Million Dinars (Current)	1986	1987	1988	1989	1990	1991	1992	1993
Total CGC Subsidies^a	218	201	275	362	317	290	291	314
CGC Food Subsidies	171	158	203	273	258	232	258	280
Education	435	449	476	545	642	731	805	875
Public Health	162	175	198	221	240	270	296	319
Social Insurance	264	295	335	379	440	492	575	664
Regional Development	112	102	171	184	189	224	199	179
Direct Assistance	11	13	15	19	24	29	32	36
UTSS ^b	7	7	7	6	8	9	8	9
Needy Families ^c	4	6	8	13	16	20	24	27
Other Social Spending ^d	189	228	210	312	307	325	349	412
Total Transfers	1390	1463	1679	2022	2160	2361	2547	2798
Share of Total Transfers %								
Total CGC Subsidies^a	15.7	13.7	16.4	17.9	14.7	12.3	11.4	11.2
CGC Food Subsidies	12.3	10.8	12.1	13.5	11.9	9.8	10.1	10.0
Direct Assistance	0.8	0.9	0.9	0.9	1.1	1.2	1.2	1.3
UTSS	0.5	0.4	0.4	0.3	0.4	0.4	0.3	0.3
Needy Families	0.3	0.4	0.5	0.6	0.7	0.9	0.9	0.9
Memo: Total Transfers as Share of Total Government Outlays %	46.1	47.6	49.3	53.1	52.3	53.7	53.0	52.4
Memo: Total Government Outlays as Share of GDP %	43.0	38.4	39.2	39.4	37.6	36.1	34.3	35.5
Sources: World Bank (April 1993), Ministry of Planning and Regional Development, Ministry of the National Economy (1991), Redjeb et. al. (1990), Staff estimates. Numbers may not add due to rounding.								
a) Total CGC subsidies includes food + non-food subsidies.								
b) UTSS (<i>Union Tunisienne de Solidarité Sociale</i>) is responsible for the low-income food ration programs and cash transfers to the elderly and handicapped.								
c) The Needy Families Program provides cash transfers to 100,000 needy families.								
d) Other social spending includes programs for youths, social housing subsidies, employment and training programs, price stabilization funds, etc.								

DISTRIBUTIONAL IMPACT (INCIDENCE)

The Target Group

An analysis of the incidence of food subsidies and the effect of the program on the poor requires a rigorous definition of the poor. Although the objectives of the CGC program refer to protecting the poor, the Government has never formally defined the intended beneficiaries of CGC subsidies. While absolute poverty lines have been estimated by the National Statistics Office (INS), these have not been used for program design. Moreover, the methodology for calculating poverty lines has been the subject of considerable debate and has recently been revised by the INS in collaboration with the World Bank. For these reasons, rather than adopting the poverty line as a definition of the target group, this analysis identifies the poor as the lowest-income group (in 1985) or quintile (in 1990), where expenditures are used as a proxy for income.

Target Group: 1985. In 1985, the poorest-income group represented 13 percent of the population with per capita incomes²² below TD150.²³ The average level of per capita income for this group was TD113, which is slightly lower than the level used to identify the "core poor" according to the new methodology for defining poverty lines. Average daily caloric intake for the poorest-income group was 1990 kcal per capita in 1985, which is lower than the recommended minimum intake estimated by the INS.²⁴

Target Group: 1990. Available survey data for 1990 permit ranking by income quintiles, which has the advantage of allowing for comparisons of income groups of similar sizes.²⁵ These data also permit adjusting expenditure and consumption data to take into account household economies of scale by calculating *adult equivalence scales*, whereby children (for whom food consumption expenditures are generally lower) are given smaller weights than adults.²⁶ The 1990 target group, therefore, is defined as the poorest quintile of the population with income less than TD616 per adult equivalent and with a mean income of TD454 per adult equivalent. The estimated average daily caloric intake for this group was 2031 kcal per adult equivalent, which is lower than the minimum requirement estimated by the INS.

Incidence of the Universal Subsidy Program

Because the 1985 and 1990 Household Expenditure Surveys were conducted prior to the implementation of most targeting reforms, their results reflect the distributional consequences of the

²²Defined as total household expenditure divided by household size.

²³Tunisian expenditure data for 1985 is reported by expenditure *group* rather than by deciles or quintiles of the population. Income groups for 1985 are defined as follows: less than TD150 (13 percent of population with mean per capita income of TD113); TD150-TD250 (22 percent of population with mean per capita income of TD199); TD250-TD350 (19 percent of population with mean per capita income of TD299); TD350-TD500 (18 percent of population with mean per capita income of TD419); TD500-TD800 (16 percent of population with mean per capita income of TD627); and greater than TD800 (12 percent of population with mean per capita income of TD1150). Source: INS, National Household Expenditure Survey (1985).

²⁴The INS estimates average caloric requirements of Tunisians to be 2,165 kcal per person per day. INS (1990 Volume B), p. 38.

²⁵Income quintiles for 1990 are defined as follows: income per adult equivalent less than TD616 (with mean income per adult equivalent of TD454); income per adult equivalent between TD617 and TD873 (with mean income per adult equivalent of TD751); income per adult equivalent between TD874 and TD1173 (with mean income per adult equivalent of TD1006); income per adult equivalent between TD1174 and TD1749 (with mean income per adult equivalent of TD1416); and income per adult equivalent greater than TD1750 (with mean income per adult equivalent of TD2837). Source: INS, Household Expenditure Survey, District of Tunis Component (1990). For more information on the INS 1990 Household Expenditure Survey, see Annex 3.

²⁶In terms of adult equivalents, children less than seven years old are assigned a weight of 0.2, children between the ages of seven and twelve are given a weight of 0.3 and children between the ages of 13 and 17 receive weights of 0.5. Adults over age 18 are assigned a weight of 1.0. Although a rigorous construction of adult equivalent scales for Tunisia is beyond the scope of this study, these weights are consistent with those estimated for Sri Lanka, Indonesia and Côte d'Ivoire. Deaton and Muellbauer (1986), Glewwe (1988).

universal subsidy program.²⁷ Data from both surveys indicate that consumer price subsidies under this system increased absolute income disparities, but tended to reduce them in relative terms.

Incidence of the Universal Subsidy Program: 1985. Table 8 shows that the universal subsidy program as a whole in 1985 benefitted the rich more than the poor in absolute terms. The poorest-income group (thirteen percent of the population) received eight percent of food subsidy expenditures whereas the wealthiest income group (twelve percent of the population) received more than double that (17 percent of food subsidy outlays). The highest-income group received 2.3 times more of the subsidies on foodstuffs than the lowest, with average per capita subsidies of TD40 and TD17 respectively.

The disparities in absolute benefits were especially evident for milk and bread-wheat subsidies. In 1985, the rich benefitted close to 16 times more than the poor from milk subsidies, and almost five times more from subsidies on bread-wheat products (in per capita terms). The only subsector for which the poor received more of the absolute subsidies than the rich was durum-wheat products, which had a subsidy ratio of 0.8 for richest to poorest in per capita terms.

Despite granting larger absolute benefits to the rich than the poor, survey results reveal that the universal subsidy program was progressive in relative terms. Table 8 shows that in 1985, food subsidies constituted a meaningful source of income for the poor, amounting to over 15 percent of total expenditures for the lowest-income group, and that the contribution to total expenditures declined monotonically with increases in income, to 2.7 percent for the highest-income group.²⁸

Subsidies on durum-wheat products in particular represented a large share of total expenditures for the poorest-income group; in 1985, these subsidies contributed to over six percent of total purchasing power for the poorest group, and were 16 times more important for the poor than the rich as a share of total expenditures. Sterilized-reconstituted milk was the only product category in which subsidies contributed more to total expenditures of the wealthy than lower-income groups, thus making the transfers regressive in both absolute and relative terms for milk.

²⁷Subsidy analysis includes purchased products only. The INS expenditure data include on-farm consumption as an imputed value. Unless otherwise noted, throughout this analysis these data have been adjusted so that the consumption of *subsidized* goods is derived from marketed products only (excludes on-farm consumption) so as to capture only the effects of the purchased products that benefit from the subsidy program. *Total* consumption figures, however, include on-farm consumption as an imputed value.

²⁸Figures on the importance of subsidies as shares of total expenditures for 1985 may be somewhat overestimated. This is due to the fact that total subsidy bill is allocated proportionately across income groups according to their expenditures on subsidized products. However, some of the subsidized products are consumed by tourists and some by institutions (such as the army, which may have a very different income distribution than the population as a whole). These estimates have, however, been adjusted to include purchased products only and to exclude on-farm consumption.

Table 8 - DISTRIBUTION OF FOOD SUBSIDIES PER CAPITA, BY INCOME GROUP: UNIVERSAL SUBSIDY PROGRAM - 1985									
	POOR 1	2	3	4	5	RICH 6	AVG	RATIO 6/1	RATIO 1/6
ABSOLUTE INCIDENCE OF FOOD SUBSIDIES Mean Subsidies Per Capita (Current TD)									
DW Products	7.2	8.1	7.9	7.6	7.0	5.8	7.4	0.8	1.2
BW Products	3.9	7.9	11.4	13.7	15.8	18.7	11.7	4.8	0.2
Cooking Oil	4.9	6.0	6.9	7.7	8.2	8.4	7.0	1.7	0.5
Sugar	0.7	0.9	1.1	1.2	1.3	1.6	1.1	2.4	0.4
Milk (SRM)	0.3	0.8	1.8	2.4	3.6	5.0	2.2	15.9	0.1
Total Above Subsidies	16.9	23.7	29.0	32.5	35.8	39.5	29.4	2.3	0.4
% of Food Subsidies	8%	18%	18%	20%	20%	17%	100%	..	..
RELATIVE INCIDENCE OF FOOD SUBSIDIES Subsidies as Share of Mean Total Expenditures Per Capita (Percent)									
DW Products	6.4	4.0	2.6	1.8	1.1	0.4	1.6	0.1	15.9
BW Products	3.5	4.0	3.8	3.3	2.5	1.3	2.5	0.4	2.7
Cooking Oil	4.3	3.0	2.3	1.8	1.3	0.6	1.5	0.1	7.5
Sugar	0.6	0.4	0.3	0.3	0.2	0.1	0.2	0.2	5.6
Milk (SRM)	0.3	0.4	0.6	0.6	0.6	0.3	0.5	1.3	0.8
Total Above Subsidies	15.1	11.9	9.7	7.8	5.7	2.7	6.2	0.2	5.5
Mean Total Expenditures Per Capita	113	199	299	419	627	1450	471	12.8	0.1
Population (%)	13	22	19	18	16	12	100	..	..
Source: INS, Household Expenditure Survey, 1985. AVG = average; DW = durum wheat; BW = bread wheat; SRM = sterilized-reconstituted milk. Numbers may not add due to rounding.									

Incidence of the Universal Subsidy Program: 1990. By 1990, the situation remained virtually unchanged, and the rich still benefitted more from the program than the poor, with subsidies per adult equivalent of TD45.7 and TD39.6 for the top and bottom quintiles respectively. In 1990, the poorest quintile of the population received just 17 percent of total food subsidies whereas the wealthiest quintile received 20 percent.

Table 9 suggests that, overall, durum-wheat subsidies were the best targeted to low-income consumers and milk the worst. Within product categories, however, absolute disparities varied. Semolina subsidies were the best-targeted item among durum-wheat products, with the poorest quintile benefitting roughly two times more from semolina subsidies than the wealthiest. In terms of the share of absolute subsidies accruing to low-income consumers, couscous and pasta were not well targeted. Among bread-wheat products, *gros pain* subsidies were somewhat well targeted in their distribution of program benefits. Subsidies on other bread-wheat products, however, were regressive in absolute terms: in particular, the wealthiest quintile benefitted over 20 times more from *baguette* subsidies than the

poorest. Sugar and cooking oil subsidies were not particularly well targeted, transferring more absolute benefits to wealthier consumers than to lower-income groups. For milk, subsidies on pasteurized-reconstituted milk packaged in *berlingot* cartons were better targeted than subsidies on sterilized-reconstituted milk in plastic bottles and tetrabrik cartons, in terms of the share of subsidies going to the poor as opposed to the rich.

As was the case in 1985, although the rich benefitted more from the universal subsidy scheme in absolute terms, the program in 1990 was progressive in relative terms. Table 9 reveals that food subsidies contributed close to nine percent of total expenditures by the poor, as compared with less than two percent for the rich.

Incidence of Program Financing. It is beyond the scope of this report to examine the distributional consequences of revenue collection for the funding of the CGC program. The Government has avoided placing the burden of financing the consumer subsidy program on agricultural producers by fixing producer prices for domestically produced foodstuffs (cereals and sugar) independently of world or consumer prices.²⁹ Consumer subsidies are financed entirely through the budget of the Central Government. Initially, financing came from earmarked sources collected specifically for the CGC. However, the inadequacy of these funds to match spending on the subsidy program forced the CGC to rely on additional resources from the general budget. Since 1987, all pretenses of earmarked funding have been abandoned. The bulk of Government revenues is collected through indirect taxes, such as import tariffs and value-added taxes on luxury products, alcoholic beverages, tobacco products and fuel. Only a small percentage accrues from direct income taxes.³⁰

A Government-commissioned study found that the collection of total tax revenues (of which CGC subsidies claim a share) is slightly progressive in relative terms, claiming roughly 33.4 percent of total expenditures of individuals in the poorest-income group and 39.2 percent of total expenditures of those in the highest-income group.³¹

²⁹In fact, since the mid-1980s, producer prices for these commodities have been above their border equivalents. This analysis estimates consumer subsidies as the difference between producer prices and consumer prices. (For a more detailed discussion of producer subsidies, see Annex 2.) The analysis also assumes that producer revenues are held constant.

³⁰As of 1987, 58.7 percent of government revenues was collected in the form of indirect taxes, 14.6 percent accrued from direct income taxation, and 26.7 was raised from "non-fiscal" sources (revenues generated from the petroleum industry). Redjeb et. al. (1990).

³¹Redjeb et. al. (1990). This study analyzed the incidence of public finances using the 1985 INS Household Expenditure Survey and data on revenue collection from 1987. A lack of data on the incidence of the collection of revenues generated by the petroleum industry ("non-fiscal" revenues) meant that the authors could only allocate total non-fiscal revenue collection on a per capita basis across income groups. This allocation would automatically result in regressive incidence results, since these transfers would claim a larger share of total expenditures for individuals in the poorest income group than the richest, even if individuals in all groups "contribute" the same absolute amount. The above results, therefore, only include the incidence of direct and indirect taxation.

Table 9 - DISTRIBUTION OF FOOD SUBSIDIES PER ADULT EQUIVALENT BY QUINTILE, UNIVERSAL SUBSIDY PROGRAM - 1990								
	POOR				RICH		Ratio 5/1	Ratio 1/5
	1	2	3	4	5	Average		
Absolute Incidence of Food Subsidies, Mean Subsidies Per Adult Equivalent								
Total DW	14.6	12.3	13.0	13.2	11.4	12.9	0.8	1.3
Semolina	8.9	5.8	6.0	6.0	4.7	6.3	0.5	1.9
Couscous	1.4	1.6	1.7	2.2	1.8	1.8	1.3	0.8
Pasta	4.3	4.9	5.3	5.0	4.9	4.9	1.1	0.9
Total BW	15.1	18.5	20.0	19.6	16.6	18.0	1.1	0.9
Gros Pain	14.9	18.1	19.4	18.4	13.6	16.9	0.9	1.1
BW Flour	0.1	0.1	0.1	0.1	0.2	0.1	2.0	0.5
Baguette	0.1	0.2	0.4	1.0	2.8	0.9	21.3	0.0
Generic Cooking Oil	4.8	7.6	5.9	6.3	6.3	6.2	1.3	0.8
Sugar	1.2	1.7	1.8	1.9	2.3	1.2	1.9	0.5
Total Milk	3.8	6.2	7.2	8.5	9.1	7.0	2.4	0.4
PST	1.9	2.2	2.0	2.7	1.8	2.1	1.0	1.0
SRM	2.0	4.0	5.2	5.8	7.3	4.9	3.7	0.3
Total Above	39.6	46.2	47.8	49.6	45.7	45.2	1.2	0.9
Percent of Subsidies	17%	20%	21%	22%	20%	100%	1.2	0.9
Relative Incidence of Food Subsidies, Subsidies as Share of Total Expenditures PAE								
Total DW	3.2%	1.6%	1.3%	0.9%	0.4%	1.0%	0.1	8.0
Semolina	2.0%	0.8%	0.6%	0.4%	0.2%	0.5%	0.1	11.9
Couscous	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.2	4.8
Pasta	0.9%	0.6%	0.5%	0.4%	0.2%	0.4%	0.2	5.4
Total BW	3.3%	2.5%	2.0%	1.4%	0.6%	1.4%	0.2	5.7
Gros Pain	3.3%	2.4%	1.9%	1.3%	0.5%	1.3%	0.1	6.8
BW Flour	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3	3.1
Baguette	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	3.4	0.3
Generic Cooking Oil	1.1%	1.0%	0.6%	0.4%	0.2%	0.5%	0.2	4.8
Sugar	0.3%	0.2%	0.2%	0.1%	0.1%	0.1%	0.3	3.3
Total Milk	0.8%	0.8%	0.7%	0.6%	0.3%	0.5%	0.4	2.6
PST	0.4%	0.3%	0.2%	0.2%	0.1%	0.2%	0.2	6.4
SRM	0.4%	0.5%	0.5%	0.4%	0.3%	0.4%	0.6	1.7
Total Above	8.7%	6.2%	4.8%	3.5%	1.6%	3.5%	0.2	5.4
Total Expenditures	454	751	1006	1416	2837	1292.8	6.2	0.2

Source: INS, Household Expenditure Survey, District of Tunis, 1990. Sugar consumption patterns extrapolated from 1990 National Survey (adjusted for adult equivalent). DW = durum wheat; BW = bread wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent. Numbers may not add due to rounding.

Incidence of Direct Transfer Programs

As mentioned in above, there are several direct assistance programs in Tunisia which, like the CGC subsidy program, are aimed at protecting the poor. The most important direct transfer program is the Needy Families (NF) program, which is designed specifically to reach the "poorest of poor." In 1990, approximately 100,000 Needy Families³² received cash payments of TD56 per family per quarter, or TD34 per person per year.³³ In terms of coverage, the Needy Families program is modest in comparison to the CGC food subsidy program: while both programs transferred roughly TD34 per person to the poor in 1990,³⁴ the Needy Families program reached roughly 500,000 people as compared with the CGC subsidy scheme which benefitted an estimated 1.7 million low-income individuals.

The direct transfer programs, such as the Needy Families Scheme, suffer from the traditional difficulties that arise in targeting assistance to the poor using means tests and specific eligibility criteria. Administration of the programs is complex, and eligibility lists are rarely updated. When they are, coverage is not always extended. As a result, many of the truly needy do not benefit from the program, while others receive multiple benefits from various social insurance programs. Errors of exclusion are particularly visible in the Needy Families program, where at least 40,000 families remain on the waiting lists. Moreover, the screening process has completely bypassed the transitional and newly poor. Meanwhile, of the 100,000 families participating in the program, 23 percent receive overlapping support from other programs, and an additional three to five percent are covered by the social insurance system, implying that they should not be eligible to receive benefits from the NF program.

General food price subsidies such as the CGC food subsidy scheme, on the other hand, have several advantages over the direct assistance programs. They are flexible enough to reach the newly and transitional poor. Eligibility for food subsidies is not determined by social workers, and hence there is no need to continuously update beneficiary lists. Finally, they do not rely on information about incomes, which is generally unavailable in any case, to determine eligibility.³⁵

³²Or 500,000 people, assuming that the average family size is roughly 5 members.

³³The program was established in 1986 and is monitored by the Ministry of Social Affairs. To be eligible, at least one of the following criteria must be satisfied: (a) the head of household is not productive (unemployed or inactive for physical reasons); (b) the head of household has no financial resources (including informal earnings and income from other assistance programs); (c) the head of household is not covered by the social insurance system. Screening of potential beneficiaries is initiated by the "Hamda," a local authority, and assessment is made by a local committee of social workers.

³⁴The CGC subsidy program transferred TD34 per person (TD40 per adult equivalent) to the poorest quintile (twenty percent) of the population and an average of TD40 per person (TD45 per adult equivalent) to the population as a whole in 1990.

³⁵Difficulties in monitoring the practice of under-reporting make existing data on incomes questionable. Approximately 70 percent of the poorest Tunisian heads of households are not wage earners and do not have regular incomes, which are used in eligibility screening for direct assistance programs.

Incidence of Universal Food Subsidy Programs: International Comparison

Table 10 shows that Tunisia's untargeted subsidy program was typical of similar *universal* programs in other countries in its distributional impact. In fact, the poor in Tunisia received slightly more of total outlays on food subsidies than their counterparts in Algeria and Egypt.

Table 10 - ABSOLUTE INCIDENCE OF UNIVERSAL FOOD SUBSIDIES, INTERNATIONAL COMPARISON						
% of Benefits Accruing to Quintile						
Country	Product	POOR 1	2	3	4	RICH 5
Tunisia (1990)	Food Subsidies	17	20	21	22	20
Algeria (1988)	Food Subsidies	13	17	20	23	27
Sri Lanka (1978/79)	Wheat, Bread	14	17	21	23	25
	Sugar	16	17	19	21	27
Brazil (1974)	Rice	19	66			15
	Wheat	15	62			23
Jamaica (1988)	Powdered Milk, Wheat, and Cornmeal	14	20	20	21	26
Egypt (1982)	Cereals	Quartile Group				
	Urban	10	30	42	18	
	Rural	13	30	27	39	

Sources: Brazil, Jamaica, Egypt, Sri Lanka: Reproduced from Grosh (June 1992).
Tunisia: INS, 1990 Household Expenditure Survey, District of Tunis (quintiles per adult equivalent); total covers durum-wheat products, bread-wheat products, cooking oil, sugar and milk.
Algeria: World Bank (1991), 1988 Household Expenditure Survey (per capita quintiles); total food subsidies covers durum- and bread-wheat products, cooking oil, sugar and milk.
Numbers may not add due to rounding.

NUTRITIONAL IMPACT

Improving the nutritional status of the poor is an explicit objective of the food subsidy program in Tunisia. The impact of the program on nutritional intake, therefore, merits investigation.

Many factors determine nutritional status, including the ability of households to obtain food, the quantities and types of food available, the tendency of households to allocate resources toward the acquisition of additional food, the intra-household distribution of food, health considerations, the

physiological utilization of food, knowledge about nutrition, eating habits, weaning practices and fertility rates. Subsidies influence food availability as well as the ability of households to acquire food, and therefore have the potential to improve per capita consumption levels. The impact of food subsidies on nutritional status depends on the extent to which insufficient acquisition of food is the binding constraint to improved nutrition. The extent and distribution of undernutrition also determines the potential impact of food subsidies. Nutritional benefits from income transfers tend to be maximized for those with the largest nutritional deficiencies, which are generally the lower-income groups.³⁶

Several prominent patterns emerge from the nutrition profile of Tunisia.³⁷ First, chronic undernutrition in Tunisia is significantly more common in lower-income groups. Second, it is more frequent in rural areas. Third, the occurrence of undernutrition has declined over time. Finally, a lion's share of calorie and protein intake is derived from subsidized commodities.

Data on nutrient intake in Tunisia are available from INS Household Expenditure and Nutrition Surveys. The estimated average human energy requirement for Tunisia is 2165 calories per day. This level was derived by the INS using the 1990 age/sex population distributions to weight requirements, and assumes a moderate activity level. The recommended level of protein intake is 41.5 grams.³⁸ While calorie and protein intake is not synonymous with nutrition, it is often used to assess the prevalence of undernutrition. Indeed, protein-energy malnutrition can have a substantial impact on morbidity, infant and child mortality, brain development, aptitude, exploratory behavior, productivity, strength, endurance, and reproduction.³⁹

³⁶Kumar and Alderman (1988) and Pinstrup-Andersen (1989). Children up to age five and women of reproductive age tend to be at a higher risk from a nutritional standpoint because of their special requirements. This is particularly the case in rural areas, where fertility generally exceeds the national average and where the maternal depletion syndrome caused by closely spaced pregnancies is likely to be more devastating.

³⁷There are few recent time-series estimates of nutritional conditions in Tunisia. Most available assessments use various anthropometric and dietary intake indicators, but even the existing estimates have considerable limitations. A rigorous assessment of the impact of food subsidies on the nutritional status of women and young children and on the prevalence of micronutrient deficiencies is not available; neither is an assessment of the role of parasitic infections, high fertility, and intra-household food distribution habits in determining the nutritional status of the population.

³⁸Source: INS (1993 vol. B). This figure (41.5 grams) does not take into account the quality of protein intake based on amino acid content.

³⁹McGuire (1990).

Box 1 - NUTRITIONAL STATUS USING THE BODY MASS INDEX (1980,85)			
<p>One anthropometric indicator of nutritional status estimated for Tunisia is the <i>Body Mass Index</i> (BMI), which is used to assess thinness by calculating weight for squared height (in metric units). The BMI is essentially a different way of presenting the same information as weight for height.^a The standard cut-off point for chronic energy deficiency in adults is a value of the BMI less than 18.5.</p>	% Below Cut-Off	1980	1985
	TOTAL	4.5	3.3
<p>The BMI was estimated for Tunisia for 1980 and 1985, permitting an assessment of nutritional trends over time. The average index for the nation as a whole was 23.4 in 1980 and 24.1 in 1985, both well above the BMI cut-off point for energy deficiency. BMI estimates indicate that the frequency of undernutrition is falling, which is reflected in the downward trend of the percent of people with chronic energy deficiencies at all income levels. The BMI reveals that 4.5 percent of the population was energy deficient in 1980, but that, by 1985, this share had fallen to 3.3 percent.</p> <p>The share of people suffering from energy deficiency appears to be negatively correlated with income. In general, larger nutritional deficits occur in the lowest-income groups. In 1985, 4.4 percent of the poorest-income group suffered from chronic energy deficits, whereas only 1.8 percent of those in the highest-income group experienced such deficiencies.</p> <p>Evidence of an urban-rural differential also emerges, with energy deficiencies being more common in rural areas (for all income groups). Four percent of those living in rural areas experienced such deficits, as compared with 2.8 percent for urban areas. Undernutrition was slightly more prevalent among females than males. Approximately 3.6 percent of females registered below the cutoff point, compared to 2.9 percent for males.</p>	Income Group^b		
	< TD150	5.7	4.4
	TD150-TD250	4.4	4.2
	TD250-TD350	5.2	2.9
	TD350-TD500	4.3	3.4
	TD500-TD800	3.1	3.3
	> TD800	2.8	1.8
	Region		
	Urban	3.0	2.8
	Rural	5.6	4.0
Sex			
Male	4.1	2.9	
Female	4.8	3.6	
<p>^aThe main advantage of BMI is that its calculation does not require population-specific reference values since it is a self-contained ratio. It thus becomes a standardized indicator for international comparison. The BMI covers Tunisians who were at least 20 years of age at the time of the household surveys. For more information on the Body Mass Index, see Fourati - FAO (1992).</p> <p>^bIncome groups in 1985 prices.</p>			

Survey data reveal that, on average, daily per capita caloric intake exceeded the recommended minimum requirement, with a mean daily intake of 2277 kcal per person in 1990 as compared with the recommended minimum of 2165 kcal (see Table 11 below). Daily caloric intake in rural areas was higher than in urban areas, with 2412 and 2184 calories per person respectively in that same year. Average per capita protein intake, which was 46.4 grams in 1990, surpassed the recommended daily allowance of 41.5 grams. Unlike calorie consumption, daily protein intake was slightly higher in urban areas than rural, with 46.8 and 45.8 grams per person respectively in 1990. Although protein intake was sufficient for the population on average, the bottom two quintiles consumed less than the recommended daily allowance (with intakes of 33 and 38 grams for the poorest and second-poorest quintiles respectively).

Table 11 indicates that the consumption of calories, protein and micronutrients in Tunisia increases monotonically with income. In 1990, the average per capita caloric intake for the highest-income group was 2610 calories per day as compared with 1938 for the lowest-income group (which falls below the INS recommended daily allowance). Protein consumption was also higher for wealthier income groups, as was the intake of micronutrients.

Survey data indicate that in 1990, there were several micronutrient deficiencies in Tunisia, particularly among low-income groups (as shown in Table 11 below). Intake of calcium and vitamin B2 was deficient for the population as a whole and markedly so for the poor. Average intake of iron was slightly deficient, and again, the situation was worse for lower-income groups. Iron deficiencies are associated with anemia which has historically been widespread in Tunisia, affecting close to one-third of all children in 1980. Vitamin A, which is critical in averting blindness, was consumed in sufficient quantities on average, but lower-income groups tended to consume less than recommended amounts. In particular, the poorest group consumed only slightly more than two-thirds of the recommended daily allowance. The highest-income group consumed over two times as much calcium and close to three times as much vitamin C and vitamin A as the poorest-income group. Subsidized foods contributed substantially to the intake of micronutrients, accounting for 39 percent of calcium, 49 percent of iron, 68 percent of vitamin B1 and 38 percent of vitamin B2 consumption. Subsidized bread- and durum-wheat products in particular were also the primary sources of iron, *each* accounting for 24 percent of total iron intake. Although iron intake in Tunisia is theoretically high because of the cereal-based diet, the phytic acid and polyphenols contained in cereals makes the bioavailability of iron low. Vitamins A and C were primarily derived from fruits and vegetables, which are not subsidized.

	< than 250D	250- 350D	350- 500D	500- 700D	700- 1200D	> than 1200D	Average	Ratio 6/1
	1	2	3	4	5	6		
Calcium (mg)	303	376	430	493	566	651	476	2.2
Iron (mg)	12.4	13.3	14.0	14.7	15.6	17.2	14.6	1.4
Vitamin A (micrograms)	434	569	655	735	902	1158	748	2.7
Vitamin B1 (mg)	1.37	1.43	1.46	1.52	1.58	1.66	1.51	1.2
Vitamin B2 (mg)	0.61	0.71	0.80	0.89	1.03	1.24	0.88	2.0
Vitamin C (mg)	51.5	68.4	78.9	93.6	112.1	141.1	91.9	2.7
Memo: Calories (kcal) ^a	1938	2125	2203	2284	2428	2610	2277	1.4
Memo: Protein ^a	33.3	38.4	42.3	46.8	53.2	61.4	46.4	1.8
Population (%)	13	18	18	19	22	13	100	1.0

^aNote that these data for daily calorie and protein intake differ from those in Table 12 in that they present consumption calculated in *per capita* terms (rather than *per adult equivalent*), they plot consumption against income *groups* (rather than income *quintiles*) and they are derived from the 1990 national household nutrition survey (rather than the 1990 expenditure survey component covering the district of Tunis).

Recommended Daily Allowance (RDA): 2165 calories; 41.5 protein; 504 calcium; 14.7 iron; 628 Vitamin A; 0.87 Vitamin B1; 1.19 Vitamin B2; 26 Vitamin C. Source: INS Household Expenditure and Nutrition Surveys 1990, (1990 Vols. A and B). Numbers may not add due to rounding.

Table 12 reveals that the contribution of food subsidies to calorie and protein intake was substantial in 1990.⁴⁰ *On average*, roughly 58 percent of total caloric intake and 62 percent of total protein intake was derived from food subsidies. CGC subsidies were particularly important to the nutritional intake of *the poor*, contributing to 60 percent of caloric intake and 73 percent of protein consumption for the lowest-income quintile in 1990.⁴¹

The Tunisian diet is dominated by cereals, oils, and sugar, which are all heavily subsidized. *On average* subsidies on bread- and durum-wheat products contributed 23 and 18 percent of total caloric intake per adult equivalent respectively in 1990 (as shown in Table 12).⁴² These products were also the main sources of protein, with subsidies on bread- and durum-wheat products accounting for roughly 35 percent and 24 percent of average total protein consumption per adult equivalent respectively. Subsidies on these cereals were especially important to *the poor*, contributing to 45 percent of caloric intake and 71 percent of protein consumption for the lowest-income quintile.

Because subsidized food accounts for a substantial share of total dietary intake in Tunisia, it is clear that the CGC program plays an important role in maintaining nutritionally sufficient consumption levels. Insufficient income (an inability to acquire food) is clearly an important contributor to undernutrition among the poor in Tunisia. The impact of food subsidies on nutritional status is therefore potentially significant.

⁴⁰Note that these tables differ from the data in Box 2 in that they present consumption calculated as *per adult equivalent* (rather than *per capita*), they plot consumption against income *quintiles* (rather than income *groups*), and the data are derived from the 1990 household expenditure survey component covering the District of Tunis (rather than the entire 1990 national nutrition survey).

⁴¹Figures on total calorie and protein intake, as well as the nutritional importance of food subsidies, come from the INS household expenditure surveys (rather than the national food and nutrition survey). Consequently, these data refer to *acquisitions* of calories and protein (including those derived from purchases and on-farm consumption), rather than actual *intake* of these nutrients. These figures do not, therefore, take into account leftovers (portions uneaten) or portions allocated to guests or household animals.

⁴²Regional variations are slight, and result mainly from differences in cereal intake. Soft wheat products dominate urban diets, whereas durum wheat products dominate rural diets.

Table 12 - CALORIE AND PROTEIN INTAKE FROM FOOD SUBSIDIES AS SHARE OF TOTAL INTAKE, PAE, BY QUINTILE: UNIVERSAL SUBSIDY PROGRAM - 1990								
	POOR				RICH		Ratio 5/1	Ratio 1/5
	1	2	3	4	5	Average		
Calories Per Adult Equivalent								
Total DW	23.7%	17.4%	17.7%	17.4%	14.0%	18.0%	0.6	1.7
Semolina	17.5%	10.7%	10.7%	10.4%	7.7%	11.4%	0.4	2.3
Couscous	1.5%	1.6%	1.6%	2.0%	1.6%	1.7%	1.1	0.9
Pasta	4.8%	5.1%	5.3%	4.9%	4.6%	5.0%	1.0	1.0
Total BW	21.6%	24.8%	25.8%	24.2%	18.8%	23.0%	0.9	1.2
Gros Pain	21.3%	24.4%	25.3%	23.3%	16.4%	22.1%	0.8	1.3
BW Flour	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	1.7	0.6
Baguette	0.1%	0.2%	0.3%	0.8%	2.1%	0.7%	18.0	0.1
Generic Cooking Oil	12.4%	18.3%	13.9%	14.4%	13.7%	14.5%	1.1	0.9
Sugar	1.2%	1.5%	1.6%	1.6%	1.9%	1.6%	1.6	0.6
Total Milk	0.9%	1.3%	1.4%	1.7%	1.7%	1.4%	1.9	0.5
PST	0.5%	0.5%	0.4%	0.6%	0.4%	0.5%	0.8	1.2
SRM	0.4%	0.8%	1.0%	1.1%	1.3%	0.9%	3.1	0.3
Total Above	59.8%	63.2%	60.4%	59.3%	49.9%	58.5%	0.8	1.2
Total Calories	2551	2716	2802	2890	3026	2797	1.2	0.8
Protein Per Adult Equivalent								
Total DW	34.1%	23.8%	23.3%	21.8%	15.9%	23.8%	0.5	2.1
Semolina	24.2%	13.9%	13.4%	12.4%	8.3%	14.4%	0.3	2.9
Couscous	2.0%	2.0%	2.0%	2.4%	1.7%	2.0%	0.8	1.2
Pasta	7.8%	7.8%	7.9%	6.9%	5.9%	7.3%	0.8	1.3
Total BW	36.6%	39.2%	39.3%	35.2%	24.6%	35.0%	0.7	1.5
Gros Pain	36.2%	38.6%	38.6%	33.8%	21.6%	33.7%	0.6	1.7
BW Flour	0.2%	0.3%	0.2%	0.2%	0.3%	0.2%	1.3	0.7
Baguette	0.2%	0.3%	0.5%	1.1%	2.7%	1.0%	14.0	0.1
Generic Cooking Oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Sugar	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Total Milk	2.3%	3.2%	3.4%	3.7%	3.4%	3.2%	1.5	0.7
PST	1.2%	1.3%	1.0%	1.3%	0.8%	1.1%	0.6	1.6
SRM	1.1%	1.9%	2.3%	2.4%	2.6%	2.1%	2.4	0.4
Total Above	73.0%	66.2%	66.0%	60.7%	44.0%	61.9%	0.6	1.7
Total Protein	44.7	50.9	54.6	59.1	68.3	55.5	1.5	0.7

Source: INS, Household Expenditure Survey, District of Tunis, 1990. Sugar consumption patterns extrapolated from 1990 National Survey (adjusted for adult equivalent). Note that these data for daily intake differ from those in Table 11 in that they present consumption calculated as per adult equivalent (rather than in per capita terms), they plot consumption against income quintile (rather than income groups), and they are derived from the 1990 expenditure survey component covering the District of Tunis (rather than the 1990 national household nutrition survey). DW = durum wheat; BW = bread wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent. Numbers may not add due to rounding.

LABOR MARKET EFFECTS AND WAGE LEVELS

An explicit objective of the food subsidy program in Tunisia is to limit salary increases in order to promote employment, production, and international competitiveness. While a lack of empirical evidence prevents an analysis of the extent to which wages are affected by food subsidies, it is clear that linking subsidies to basic staples, or wage-goods, could potentially dampen wage increases. The effect is believed to manifest itself most clearly in public sector wages for which food subsidies are often seen as wages-in-kind. This wage effect could offset the income effects of the implicit income transfer.

Increases in official wages in Tunisia were, in fact, rather modest during the 1980s. During the Development VII Plan, minimum wages rose by 4.5 percent per year, and average annual public sector wages rose by 7.5 percent, compared to the consumer price index which also increased by an average of 7.5 percent over that period.

Lack of sufficient data limits the analysis of whether food subsidies played a substantial role in reducing pressure for wage increases. Public sector wages, thought most likely to reflect the depressing effect of food subsidies, rose faster than minimum wages, though adjustments in both were fairly restrained. While a precise conclusion regarding the effect of food subsidies on wages and employment is not possible, it is likely that the fact that food subsidies were used to keep food prices from rising was indeed an important factor in ensuring that wages did not rise at all in real terms over the period.

CHAPTER III

THE REFORM PACKAGE: TOWARD A SELF-TARGETED PROGRAM

Despite the explicit objectives of the CGC to protect the consumption of vulnerable groups, by the mid-1980s, substantial leakages to the non-poor made it clear that the universal subsidy program had not proven to be a cost-effective way of transferring income to the poor. In addition, the extensive system of universal subsidies had perpetuated inefficient, centralized distribution networks, particularly in the cereals subsector. Production costs for subsidized commodities were often excessive or unnecessary, and institutional arrangements were not transparent. Subsidies were injected at multiple levels making the program unnecessarily complex. State-dominated distribution channels discouraged competition, provided few incentives to improve efficiency, and created numerous possibilities for fraud.

Moreover, the subsidy program had become a large burden on public finances. Although the Government could select the goods to be subsidized and set retail prices, most other determinants of actual subsidy outlays were beyond its control, including international prices, input costs, technical coefficients and quantities consumed. These latter in fact have increased much faster than population growth, reflecting healthy GDP (income) growth, urbanization, a reduction in on-farm consumption (as farmers realized it was cheaper to sell their produce at market prices and purchase their food at subsidized prices), and leakages (as operators became more adept at manipulating the system to their own economic benefit).

By 1984-85, the high and rising costs of the program made an overhaul of the subsidy program an urgent priority. Other macro-imbalances were also reaching worrisome levels, prompting the Government to introduce a structural adjustment program the following year. This program included an important component to reduce the budget deficit. In compliance with that effort, the Government decided that an attempt should be made to cut CGC expenditures. A reform package was developed under the Structural Adjustment Loan in 1988, and implementation began under the Economic and Financial Reforms Support Loan in 1991.⁴³

POLITICAL ECONOMY OF REFORM

Early Attempts to Eliminate Cereals Subsidies

The political economy of reform has been fundamentally shaped by negative experiences with early reform efforts. At the end of December 1983, the Government doubled prices of cereals products (in particular bread, semolina, pasta, and couscous) in an effort to eliminate the fiscally burdensome subsidy program.⁴⁴

⁴³Structural Adjustment Loan, Loan 2962-TUN; Economic and Financial Reforms Support Loan, Loan 3424-TUN.

⁴⁴The price of *gros pain*, which is consumed disproportionately by lower-income groups, was increased by over 112 percent (from 80 millimes per loaf to 170). Price increases on *baguettes*, consumed primarily by the rich, were not as dramatic. For semolina, mainly consumed by the poor, especially in southern regions, prices were increased over 86 percent (from 145 millimes per kilogram to 270). Flour prices spiraled, rising from 120 millimes per kilogram to

Although plans to raise food prices had been discussed for several weeks in Government circles, the details of the price hikes were announced to the public only 24 hours in advance. The increases, which were the first in fifteen years, took consumers by surprise.

The shock at the sudden doubling of cereals prices rapidly turned into violence in the southern regions. The South West, which has historically been one of the poorest regions, was badly hurt by the price increases. Spontaneous riots erupted in the poor towns of Douz, Kebili, and el Hamma. They quickly spread north to Gafsa, Kasserine, Sfax and Tunis, particularly to lower-income neighborhoods (*les quartiers populaires*).

The source of protest was primarily the mass of the poor and disinherited: peasants, shopkeepers, seasonal workers, the unemployed and students. Many of the protesters were young, low-income teenagers. Though the violence originated in the southern regions, it quickly expanded to poor neighborhoods throughout the country, rural and urban alike. The protest came from those most hurt by the price hikes: those with lower incomes for whom expenditures on food represent a large share of their budget. Schools and universities went on strike, as students sided with the poor in the name of solidarity.

In an effort to ease tensions, the Government responded with television announcements of compensatory measures, including wage and benefit increases of 1.5 dinars per month per person. But, as one southern Tunisian pointed out, "compensation was directed only towards those with regular employment. It did not affect peasants, shopkeepers, seasonal and casual workers, or the unemployed."⁴⁵ The Government's compensatory measures appeased trade unions and organized labor, from whom it feared the most unified protest. These measures were misdirected, however, and failed to reach the students and lower-income groups from whom the protest actually erupted. The result was the worst violence since independence in 1956, with some 60-100 killed and many more injured.

One week later, President Bourghiba rescinded the measures, announcing a reversal of the price hikes and a restoration of subsidies. He emphasized the importance of recognizing and improving plight of the poor. "I do not want the poor to pay," he declared in his televised speech. "I have asked the Government to prepare a new budget within three months time that takes into account the interests of the poor."⁴⁶ Moments after the announcements the rioters filled the streets praising the President and his actions. Peace was restored. Contrary to conventional wisdom, the poor had become politically important in Tunisia.

The protest by lower-income groups forced the Government to abandon its effort to eliminate the food subsidy program. Yet reform of the costly system was still necessary. The Tunisian Government had to find an alternative path for reform that was more politically feasible.

295 (over 149 percent).

⁴⁵ *Le Monde*, January 31, 1984.

⁴⁶ *Le Monde*, January 7 and 8, 1984.

The Transition to Self-Targeted Subsidies

The response of the poor in the "January bread riots" of 1984 continues to condition policy deliberations about the course of reform. Indeed, the transition from a universal subsidy system to one which better targets the needs of the poor bears testimony to this influence. A targeted subsidy program reconciles the dual objectives of reducing the economic costs of subsidies without sacrificing the political necessity of protecting vulnerable groups.

The adoption of a subsidy program reliant on *self-targeting* mechanisms, rather than administratively targeted direct assistance programs, is also significant. Politically, a reformed program had to reach the groups that had been active in the "January bread riots." These constituencies include students, low- and middle- income groups, and the unemployed. A direct assistance program based on a social-worker screening process would risk excluding certain groups (including students). With a self-targeting scheme, however, consumers themselves choose whether or not to purchase the subsidized foodstuffs. Hence only those who so choose are excluded from subsidy coverage. Policy-makers select items to be subsidized based on an analysis of expenditure patterns. Self-targeting is politically attractive in that it is flexible, it avoids the exclusion of entire critical groups, and it relies on individual consumer choice for participation.

In making the transition towards a targeted subsidy system, the *method* by which Government implements reforms has also been influenced by the previous reaction of low-income groups. Specifically, there are several ways in which the Government has changed its approach to implementing reforms.

Gradual price increases. Rather than relying on sudden and discrete price hikes, the Tunisian Government has recognized the value of steady price increases. In fact, since the violent reaction to abrupt measures in 1984, all price increases have been moderate and gradual.

Timely and staggered reforms. The Government has also developed an appreciation for the political power of the students who were instrumental in the revolts in 1984. Since the January riots, most price increases have been implemented during the summer months, when the students are not in school. Price increases were even accepted without protest in July 1984, just months after the riots. Moreover, the Government has adopted a practice of staggering price increases across the summer months so as to avoid increasing the prices of food staples all at once. For example, in recent years, the prices of milk and sugar were increased on separate dates in May, cooking oil prices were raised in July and the prices of bread- and durum-wheat products (the most politically sensitive items) were increased at different dates in August (the peak vacation month).

Advance preparation. In contrast to the surprise price hikes of 1983/84, policy-makers have learned to strategically prepare the country for price increases months in advance. In fact, increased communication about the role of the CGC and the rationale for policy changes, such as price increases,

was one of the key recommendations of a Government-commissioned study on public perceptions of the CGC and the role of the state in Tunisia.⁴⁷

An example of this strategy is the "awareness campaign" that preceded price adjustments in 1989.⁴⁸ As early as the spring of that year, newspaper articles began emphasizing the heavy burden of the CGC budget on the economy. The need to ease this burden was even a focus of the President's independence day speech. Plans to target subsidies to the more sensitive products, milk, oil and cereals, while gradually eliminating support for fertilizers and animal feed, were announced almost three months in advance.

In early August, one week before price adjustments were implemented, another wave of newspaper articles hit the press, calling the reform of the CGC "a strategic necessity." The inequitable aspects of existing subsidies were also emphasized, playing on the egalitarianism that characterizes most Tunisians, particularly the young. To illustrate the burden of the CGC, one announcement even included a discussion of the opportunity cost of the CGC budget in terms of the 10,000 hospital beds, 20,000 classrooms, 5,000 kilometers of roads, five dams, or 10,000 manufacturing jobs that could have been obtained had the CGC been eliminated and the savings so spent. The proposed measures in no way called for an elimination of CGC subsidies, but rather sought to better channel its benefits to the truly needy.

Immediately following the price increases, front page headlines carried the slogans "We must do the necessary" (*il faut ce qu'il faut*), and other strategic articles. One displayed a statistical table comparing Tunisian bread, oil, and milk prices to those in other Maghreb countries, showing that, even after the price increases, food prices were lowest in Tunisia.⁴⁹ The country was well-prepared for the price increases. Polls showed that most Tunisians believed that "CGC expenditures had become intolerable for the national budget."⁵⁰ Those interviewed stated that the adjustments were understood, accepted and perceived as necessary.

Compensating measures. To ease political pressure and the impact of adjustment on the poor, compensating measures are now usually announced at the same time as price increases. Though similar attempts had been made in January 1984, these measures had been directed at organized labor and not specifically at low-income groups, including students and the unemployed. Since the riots, a number of compensating measures aimed at assisting low- and middle-income groups facing higher prices have been introduced each time retail prices are increased. Allowances for beneficiaries of direct assistance

⁴⁷"La Caisse Générale de Compensation et le Rôle de l'Etat," *Projet de Mise en Oeuvre de la Politique Agricole, Direction Générale de la Planification, du Développement et des Investissements Agricoles*, Ministry of Agriculture, February 1990. The study included the results of a public opinion poll that was conducted in December 1989 and covered a representative sample of 1016 households residing in some 50 districts (*localités*) throughout Tunisia.

⁴⁸In 1989, the prices for most subsidized products were increased in real terms.

⁴⁹*Le Défi* August 13, 1989.

⁵⁰*La Presse*, August 13, 1989.

programs are typically raised.⁵¹ Other measures aim at appeasing the students, including improvements in direct aid programs for school cafeterias. Still others include measures intended to placate organized labor and the middle classes, such as raising construction workers' salaries and minimum wages. Strategic press coverage often accompanies the dual announcements of price increases and compensating measures.

THE REFORM PACKAGE

Scarred by the political impact of the riots, the Government made only a few price adjustments during the late 1980s. Few attempts were made to explore the possibilities for better targeting the subsidies. The prices of many basic staples remained fixed in nominal terms. As a result, budgetary costs continued to rise, and the universal subsidy system remained fundamentally unchanged. More ambitious measures were clearly necessary, and a reform program was developed for incorporation into the VIII Development Plan (1991-96).

A central theme of the Tunisian approach to reform is its reliance on existing institutions. Rather than fundamentally altering the methods for channelling benefits to the poor, reforms seek to fine-tune existing mechanisms in order to improve the distribution of subsidies across income groups. The intention is to avoid the dislocations associated with drastically transforming the existing set of institutions by switching from price subsidies to some other mechanism, such as means-tested food stamps. The program currently under implementation consists of a three-pronged approach to contain CGC expenditures while protecting the poor, including: (i) improving the targeting of subsidies, (ii) raising retail prices, particularly on items consumed disproportionately by the rich, and (iii) reducing production and distribution costs for subsidized products.

Targeting

The first component of the reform package entails a gradual transition towards a more targeted program. The rationale for targeting food subsidies is based on the premise that, while the costs of the program are essentially the same for all beneficiaries, the marginal benefits from the transfers differ across members of society. Targeting is attractive because it concentrates expenditures on those who need them most. Experience with targeted programs in other countries has shown that they are much more progressive than general food price subsidies (see Table 10 in Chapter 2 above and Table 20 in Chapter 4 below).⁵²

Targeted subsidy programs generally require some sort of screening mechanism to determine eligibility. With regard to food subsidies, techniques for targeting public expenditures often involve food stamps, school lunch rations (particularly in poor neighborhoods), food distribution programs to needy families, and so forth. These conventional approaches for targeting food policy usually rely on some form of individual or group assessment (means-testing, targeting by indicators, geographic area, etc.) to screen participants.

⁵¹Direct assistance programs, however, are small in comparison to expenditures on food subsidies. For a discussion of these programs, see Chapter 2.

⁵²For an extensive discussion and several case studies, see Grosh (September 1992).

Self-Targeting. Tunisia has opted for a self-targeting mechanism whereby the decision to participate is made by individuals themselves rather than by social workers or other Government agents. Self-targeting occurs when benefits are available to all, but the program is designed so that only the poor elect to participate. Time costs, stigma, and quality differentiation are the principal devices used to encourage self-targeting. The Tunisian program has implemented self-targeting through quality differentiation which exploits consumers' preferences for product quality in order to discourage higher-income groups from consuming subsidized goods.

Self-targeting via quality differentiation is particularly appropriate in countries, such as Tunisia, where a system of food price subsidies is already in place and where the goal is to reduce leakages to the non-poor, cut the costs and scope of the program, and yet protect the welfare and consumption of the poor. It may not be suitable in cases where the institutional framework of food subsidies did not previously exist. Furthermore, a greater degree of target accuracy than is attainable under self-targeting may be possible in cases where there are opportunities for tying eligibility to the screening devices of other already existing transfer programs (such as providing food rations to users of public health clinics).

Self-targeting has several advantages. First, it minimizes the costs of administration, eligibility identification, and monitoring without sacrificing coverage. Second, self-targeting does not rely on information about individuals' income levels to determine eligibility. Accurate data on income levels are generally unavailable, making explicit identification of the poor difficult. Rather, with self-selection, the choice of goods to be subsidized exploits existing household survey data on budget shares and elasticities. As a result, self-selection avoids the problems of asymmetric information regarding income levels. Third, self-targeting is one of the least divisive and most politically acceptable methods of reform because participation is based on the choice of the individual rather than the bureaucracy. Fourth, self-selection mechanisms have the flexibility to respond to changing economic conditions. They are more easily phased out as the country develops because people voluntarily reduce their consumption of subsidized commodities as higher incomes allow them to purchase what they perceive to be higher-quality food. A potential drawback to self-targeting mechanisms is that they can be less precise than other more rigorous methods of distinguishing the needy from the non-needy and could therefore result in greater leakage.

Most consumer subsidy programs contain a rudimentary degree of self-targeting, as witnessed in the fact that subsidies are frequently placed on *food* items. Since, by Engel's Law, food represents a larger share of the total expenditures of the poor than the rich, there is a *de facto* element of self-targeting inherent in all food subsidy programs. Indeed, even Tunisia's pre-reform universal subsidy program contained a degree of self-targeting at this level.

Programs can be targeted to an even greater degree by selecting *certain* foodstuffs to carry higher subsidies than others. Designing a self-targeted food subsidy program typically involves examining household expenditure survey data to determine whether there are significant differences in consumption behavior across income groups. If the poor consume a different basket of goods from higher-income groups, this basket can be selected for subsidization. "Inferior" goods constitute excellent

candidates for self-targeted subsidies because the consumption of these goods falls as income rises.⁵³ The use of existing survey data to identify goods for subsidies allows self-targeted programs to economize on information costs by avoiding the cumbersome task of assessing incomes to differentiate between the needy and the non-needy.

In practice, however, there may be no existing inferior goods in the local diet and consumption patterns may not differ significantly across income groups. In fact, the difficulty in identifying items consumed disproportionately by the poor has proved to be an obstacle in the development of self-targeted programs in many countries. This does not mean that self-targeting is out of the question, but rather that it may require some creativity to develop a range of goods that represent distinct "quality" grades to consumers of different incomes.

Self-Targeting Reforms in Tunisia. As a first step in improving the self-targeting of the program in Tunisia, expenditure patterns were examined to identify which products merited relatively higher subsidies. The criteria used were based on budget shares, consumption by the poor, and the share of consumption derived from on-farm production. Recent survey data on expenditure patterns are presented in Tables 13 and 14.⁵⁴ Subsidies were then eliminated on goods clearly consumed disproportionately by the rich. Remaining subsidies were focused on basic staples, and currently all of the commodities selected for subsidization, with the possible exception of certain types of milk, are consumed in substantial quantities by the poor.

The reform program in Tunisia has extended self-targeting efforts still further by explicitly *creating* commodities that could carry targeted subsidies. Two new approaches to self-selection are currently being implemented.

⁵³This approach has led to the subsidization of yellow maize in Mozambique, where the rich prefer white maize, and millet in West Africa, where the rich primarily consume rice.

⁵⁴For more information on the 1990 and 1993 expenditure surveys, see Annex 3.

Table 13 - EXPENDITURE PATTERNS, SELECT PRODUCTS: UNIVERSAL PROGRAM - 1990								
Mean Expenditures on Select Products, Per Adult Equivalent by Quintile								
	POOR				RICH		Ratio	Ratio
	1	2	3	4	5	Average	5/1	1/5
Absolute Expenditure Patterns (Current TD)								
DW PRODUCTS								
Semolina (S)	9.3	5.9	6.1	6.3	4.8	6.5	0.5	1.9
Couscous (S)	2.2	2.6	2.9	3.5	2.8	2.8	1.3	0.8
Pasta (S)	7.9	9.1	9.9	9.4	9.3	9.1	1.2	0.8
SW PRODUCTS:								
Gros Pain (S)	22.6	28.2	30.3	28.4	21.4	26.2	0.9	1.1
Baguette (S)	0.5	1.0	1.9	4.5	12.5	4.1	25.0	0.0
Flour (S)	0.9	1.3	1.2	1.3	2.0	1.3	2.2	0.5
GENERIC COOKING OIL: (S)	9.5	14.8	11.4	12.2	12.5	12.1	1.3	0.8
SUGAR:								
Cube (S)	0.0	0.0	0.0	0.2	0.4	0.1	..	..
Granulated (S)	4.0	5.4	6.0	6.3	7.5	5.8	1.9	0.5
MILK:								
Pasteurized-Reconstituted (Berlingot) (S)	3.5	4.3	3.8	5.1	3.6	4.0	1.0	1.0
Sterilized - Reconstituted (SRM) (S)	9.3	18.4	24.4	26.8	35.0	22.8	3.8	0.3
OTHER:								
Raw Unprocessed Milk	7.9	9.0	9.2	13.2	16.6	11.2	2.1	0.5
Olive Oil	0.6	2.1	4.4	6.7	15.0	5.8	25.0	0.0
Mutton	20.7	29.3	36.1	47.7	88.8	44.5	4.3	0.2
Beef	5.2	11.9	17.2	26.3	58.3	23.8	11.2	0.1
Eggs/Chicken	0.9	2.0	3.2	4.3	7.0	3.5	7.8	0.1
Soap	0.5	0.6	0.7	0.7	0.8	0.7	1.6	0.6
School Supplies	1.3	1.6	2.0	2.3	2.7	2.0	2.1	0.5
Relative Expenditure Patterns (Expenditures on above products as share of total expenditures)								
TOTAL DW								
Semolina (S)	2.0%	0.8%	0.6%	0.4%	0.2%	0.8%	0.1	12.2
Couscous (S)	0.5%	0.3%	0.3%	0.2%	0.1%	0.3%	0.2	4.9
Pasta (S)	1.7%	1.2%	1.0%	0.7%	0.3%	1.0%	0.2	5.3
SW PRODUCTS:								
Gros Pain (S)	5.0%	3.8%	3.0%	2.0%	0.8%	2.9%	0.2	6.6
Baguette (S)	0.1%	0.1%	0.2%	0.3%	0.4%	0.2%	4.0	0.2
Flour (S)	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.4	2.8
GENERIC COOKING OIL (S)	2.1%	2.0%	1.1%	0.9%	0.4%	1.3%	0.2	4.7
SUGAR:								
Cube (S)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Granulated (S)	0.9%	0.7%	0.6%	0.4%	0.3%	0.6%	0.3	3.3
MILK:								
Pasteurized - Reconstituted (Berlingot) (S)	0.8%	0.6%	0.4%	0.4%	0.1%	0.4%	0.2	6.1
Sterilized - Reconstituted (SRM) (S)	2.0%	2.5%	2.4%	1.9%	1.2%	2.0%	0.6	1.7
OTHER:								
Raw Unprocessed Milk	1.7%	1.2%	0.9%	0.9%	0.6%	1.1%	0.3	3.0
Olive Oil	0.1%	0.3%	0.4%	0.5%	0.5%	0.4%	4.0	0.2
Mutton	4.6%	3.9%	3.6%	3.4%	3.1%	3.7%	0.7	1.5
Beef	1.1%	1.6%	1.7%	1.9%	2.1%	1.7%	1.8	0.6
Eggs/Chicken	0.2%	0.3%	0.3%	0.3%	0.2%	0.3%	1.2	0.8
Soap	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.3	3.9
School Supplies	0.3%	0.2%	0.2%	0.2%	0.1%	0.2%	0.3	3.0
Mean Total Expenditures PAE	454	751	1006	1417	2837	1293	6.2	0.2

Source: INS, Household Expenditure Survey, District of Tunis, 1990.

Sugar and "other" consumption patterns extrapolated from 1990 National Survey (adjusted for adult equivalent). PAE = per adult equivalent;

S = Subsidized in 1990; AVG = average; DW = durum wheat; BW = bread wheat. Numbers may not add due to rounding.

Table 14 - EXPENDITURE PATTERNS, SELECT PRODUCTS: REFORM PROGRAM - 1993								
Mean Expenditures on Select Products, Per Adult Equivalent by Quintile								
	POOR				RICH	Average	Ratio	Ratio
	1	2	3	4	5		5/1	1/5
Absolute Expenditure Patterns (Current TD)								
DW PRODUCTS								
Semolina (S)	12.5	7.4	6.2	5.6	4.2	7.2	0.3	3.0
Couscous	2.7	3.5	3.8	3.5	3.7	3.4	1.1	0.7
Pasta	10.6	10.4	11.2	10.3	10.1	10.5	1.1	1.0
SW PRODUCTS:								
Gros Pain (S)	22.6	28.2	30.3	28.4	21.4	30.1	0.8	1.1
Baguette	0.5	1.0	1.9	4.5	12.5	4.1	10.0	0.0
Flour	0.9	1.3	1.2	13.3	2.0	1.4	2.0	0.5
GENERIC COOKING OIL: (S)								
Unpackaged, sold by bulk retailers (S)	8.4	8.8	9.0	8.5	5.0	7.9	0.6	1.7
Bottled (S)	5.2	5.3	5.7	6.6	8.7	6.3	1.6	0.6
SUGAR (Granulated) (S)	4.9	6.6	7.3	8.0	9.7	23.9	2.0	0.5
MILK:								
Pasteurized-Reconstituted (Berlingot) (S)	7.3	4.2	6.2	3.5	2.3	4.7	0.3	3.1
Sterilized - Reconstituted (SRM) (S)								
SRM - bottled (S)	1.4	3.9	3.4	4.6	3.7	3.4	2.5	0.4
SRM - tetrabrik (S)	7.0	11.1	10.9	13.6	15.1	11.5	2.0	0.5
Sterilized Local Fresh (LF)								
LF - bottled (S)	2.0	4.9	4.4	5.3	11.0	5.5	5.0	0.2
LF - tetrabrik (S)	2.6	5.7	7.6	10.0	19.0	9.0	10.0	0.1
Relative Expenditure Patterns (Expenditures on above products as share of total expenditures)								
DW PRODUCTS								
Semolina (S)	2.4%	0.9%	0.5%	0.3%	0.1%	0.8%	0.1	19.1
Couscous	0.5%	0.4%	0.3%	0.2%	0.1%	0.3%	0.2	4.6
Pasta	2.0%	1.2%	0.9%	0.6%	0.3%	1.0%	0.2	6.6
SW PRODUCTS:								
Gros Pain (S)	4.3%	3.2%	2.6%	1.7%	0.6%	2.5%	0.1	6.7
Baguette	0.1%	0.1%	0.2%	0.3%	0.4%	0.2%	3.8	0.3
Flour	0.2%	0.1%	0.1%	0.8%	0.1%	0.3%	0.3	2.9
GENERIC COOKING OIL								
Unpackaged, sold by bulk retailers (S)	1.6%	1.0%	0.8%	0.5%	0.2%	0.8%	0.1	10.7
Bottled (S)	1.0%	0.6%	0.5%	0.4%	0.3%	0.5%	0.3	3.8
SUGAR (Granulated) (S):	0.9%	0.8%	0.6%	0.5%	0.3%	0.6%	0.3	3.2
MILK:								
Pasteurized - Reconstituted (Berlingot) (S)	1.4%	0.5%	0.5%	0.2%	0.1%	0.5%	0.0	20.2
Sterilized - Reconstituted (SRM) (S)								
SRM - bottled (S)	0.3%	0.4%	0.3%	0.3%	0.1%	0.3%	0.4	2.4
SRM - tetrabrik (S)	1.3%	1.3%	0.9%	0.8%	0.5%	1.0%	0.3	3.0
Sterilized Local Fresh (LF)								
LF - bottled (S)	0.4%	0.6%	0.4%	0.3%	0.3%	0.4%	0.9	1.1
LF - tetrabrik (S)	0.5%	0.7%	0.6%	0.6%	0.6%	0.6%	1.1	0.9
Mean Total Expenditures PAE	524	869	1184	1684	3345	1521	6.4	0.2

Source: INS, Enquete Restreinte sur la Consommation des Produits Subventionnees, District of Tunis, 1993.

Total Expenditure and sugar consumption patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent).

S = Subsidized in 1993; AVG = average; DW = durum wheat; BW = bread wheat; PAE = per adult equivalent.

Numbers may not add due to rounding.

The first tactic for extending self-targeting, a variant of the "*inferior goods*" approach, involves shifting subsidies to narrowly-defined items within a product line that are perceived by consumers to be of a lower quality because they possess certain unattractive features in their packaging or ingredients. Although the intrinsic value of these products is preserved, these perceived "inferior" characteristics discourage consumption by wealthier households.⁵⁵

The second method, the "*superior goods*" approach, is appropriate when a government has traditionally subsidized a particular commodity and no other varieties or qualities are available on the market at cost (usually because of official marketing regulations or restrictions). In Tunisia, the quality of subsidized products is generally reasonable, but not exceptional. Since markets have otherwise been tightly controlled by state marketing boards, the subsidized product has often been the only variety available on the market. To reduce subsidy costs while maintaining benefits to the poor, authorities have liberalized the sale of higher-quality versions of these products, which are sold at cost and attract the demand from wealthier households who then consume less of the subsidized products. This "superior goods" approach is consistent with the pursuit of a general liberalization strategy designed to increase efficiency in the subsector, but has the added benefit, in this context, that it promotes self-targeting.

The two approaches are mutually reinforcing. A summary of self-targeting measures being introduced in Tunisia is presented in Box 2 below.

Cereals products offer a number of opportunities for targeting subsidies both because they represent a larger budgetary outlay for the poor than for the rich (seven percent of total expenditures compared with less than one percent respectively),⁵⁶ and because several individual cereals products are consumed more by the poor than the rich in absolute terms.

For durum-wheat products (semolina, couscous, pasta), absolute consumption per adult equivalent was roughly 1.5 times higher for the poorest-income quintile than for the richest in 1993. As a share of total budgetary outlays, the lowest-income quintile spent close to ten times more than the highest on durum-wheat products. From a nutrition standpoint, durum-wheat products are also important vehicles for channelling benefits to the poor, contributing substantially to both calorie and protein intake (as discussed in Chapter 2).

Semolina appears to be particularly well-targeted to the poor. Survey data reveal that, in 1993, semolina consumption per adult equivalent was three times higher for the poorest-income quintile than for the richest. Semolina also accounted for 2.4 percent of total budgetary outlays for the poor, as compared with just 0.1 percent of total expenditures for the rich. Pasta and couscous are less well-targeted: consumption patterns for these items do not differ significantly across quintiles: the top and bottom quintiles spent roughly the same amount on pasta and couscous (in 1990 and 1993). Both

⁵⁵It is important to note that *perceived* inferior characteristics, and not any true downgrading in nutritional value, make a particular item well targeted. In fact, as discussed in para. 110, some "inferior" products that are targeted for CGC subsidies are actually nutritionally richer than their "superior" counterparts, although they possess certain features (such as color, texture, taste or packaging) that make them unattractive to wealthier consumers.

⁵⁶Budget shares from INS 1993 *Enquête Restreinte sur la Consommation des Produits Subventionnés*; data on total expenditures extrapolated from INS 1990 Household Expenditure Survey.

products, however, contributed more to the total expenditures of the poor than the rich; pasta, in particular, accounted for two percent of total outlays by the poorest-income quintile, versus less than one percent for the highest.

As part of the CGC reform program, these expenditure patterns were used to improve the targeting of subsidies on durum-wheat products. In fact, subsidies have been shifted to semolina and direct subsidies on pasta and couscous were eliminated in 1993, although these products remain subsidized indirectly via the subsidy on semolina, which serves as an input into their production.

For the category as a whole, bread-wheat products (*gros pain*, flour, *baguettes*) are not as well-targeted as durum-wheat products. Overall, the rich consumed more bread-wheat products than did the poor (1.5 times more in both 1990 and 1993), although outlays on bread-wheat products claimed a larger share of total expenditures for the poor than the rich (roughly four times more).

Baguettes, in particular, are not well-targeted to the poor. In absolute terms, the highest-income quintile consumed 25 times more *baguettes* than the lowest in 1990 and ten times more in 1993.⁵⁷ In addition, *baguettes* were one of the few items that represented a larger share of total expenditures for the rich than the poor. Low-income groups consumed virtually no *baguettes*, indicating that, from a distributional perspective, *baguettes* are not appropriate commodities for targeted subsidy coverage. Because of this, the subsidy on *baguettes* was gradually reduced, until it was completely eliminated in 1993.

With regard to *gros pain*, absolute consumption per adult equivalent was slightly higher for the poorest-income quintile than the richest. Outlays on *gros pain* also comprised a larger share of total expenditures for the poor than the rich. *Gros pain*, therefore, seems more suited to carry a CGC subsidies than *baguettes*.

The drawback to targeting *gros pain* for greater subsidy coverage is that both types of bread are made from the same flour (PS baking flour with a 78 percent extraction rate). In addition, since subsidies are paid at the milling level, subsidized flour can be used illegally for other purposes, such as for the production of pastries, biscuits and pizza (which are generally made from PS-7 pastry flour with an extraction rate of 71 percent). In fact, leakages of subsidized flour are a common occurrence (as discussed in Chapter 1).

To improve the Government's ability to control unauthorized uses of subsidized flour for products consumed primarily by the rich, a campaign to intensify monitoring was adopted in 1991. This effort includes establishing a computerized system for tracking flour sales, suspending deliveries of subsidized baking flour to more than 100 offending bakeries, and conducting surveys on the sources of the supply of flour for non-bakery users. Another measure, which was adopted in 1992, involves introducing sacks with different colored stripes (red, blue) which distinguish between subsidized baking flour (PS) and unsubsidized pastry flour (PS-7) flour to clearly identify their contents and to discourage leakages of the subsidized flour to these other products.

⁵⁷In per adult equivalent terms.

Additional reform measures are under consideration to further reduce these problems and improve targeting. Current plans entail eliminating the subsidy on PS baking flour for *gros pain* and *baguettes* and simultaneously introducing a subsidy on a new flour destined for the production of a single new bread (*pain unique*). Bakeries would be permitted to continue producing *gros pain* and *baguettes*, but subsidies would no longer be placed on the PS baking flour used to produce them. This would remove the problem of trying to differentiate subsidies between two products that are made from the same subsidized flour (as discussed in Chapter 1 and Annex 1).

The new quality of flour to be subsidized for the production of *pain unique* would use the same raw material input (bread-wheat grain), but would be milled at a higher extraction rate and would reincorporate bran particles. Beginning in 1990, a series of pilot operations at the milling and baking levels were carried out to examine the technical feasibility of producing bread with new types of flour for the purposes of self-targeting.⁵⁸ The resulting candidate for self-targeting was a distinct baking flour "PS+2" with a higher extraction rate (80 percent as opposed to 78 percent for the typical PS baking flour), and a two percent re-incorporation of bran particles. These tests have been successful, indicating that the production of this new flour is technically feasible.

Shifting subsidies to a single bread made from PS+2 flour generates several potential benefits for the purposes of self-targeting. *Pain unique* is differentiated from the traditional breads primarily by its color, which is darker, and its texture, which is rougher. It is believed that the darker color is unattractive to Tunisian consumers because a dark bread (*pain noir*) was used for rationing during the Second World War. Moreover, the presence of rough bran particles makes PS+2 flour easily distinguishable from PS baking flour and PS-7 pastry flour, which reduces the possibilities for leakages of the subsidized flour to unintended uses. Besides being made from a different quality of flour, the *pain unique* would preserve the characteristics of the *gros pain* (size, shape, weight), and would thus maintain features that make it better suited for self-targeting than a bread with the shape and size of *baguettes*. While this is considered to be an application of the "inferior goods" approach to targeting because the commodity in question is less-preferred by wealthier consumers, in fact, the presence of bran particles actually improves the nutritive quality of the bread because it contains more dietary fibers, proteins, phosphates, calcium, iron, and vitamins B1 and B2.⁵⁹

A consumer survey was conducted in December 1992 to explore consumer acceptance of bread made from PS+2 flour.⁶⁰ Over one-thousand consumers were given samples of the new bread (*pain unique*) at many bakeries throughout the greater Tunis area. The results of this survey show that,

⁵⁸Bureau de Conseils, D'Etudes et de Formation (1992). Several varieties of new flour were tested, with differing extraction rates and varying percentages of reincorporated bran particles. Some varieties also incorporated a percentage of *gruau*, or hulled durum wheat, which is a by-product of semolina processing.

⁵⁹Bureau de Conseils, D'Etudes et de Formation, Final Report (1992) p. 43.

⁶⁰The survey was conducted by Bureau de Conseils, D'Etudes et de Formation (1992).

in general, the new bread would be accepted by Tunisian consumers.⁶¹ Survey results are disaggregated according to income group.⁶² The correlation between income and the consumption of *pain unique* was weaker than expected. However, of those who *preferred* the new bread to their standard bread purchases, and would hence be likely to substitute consumption in favor of the new bread, over 25 percent were among the poorest-income group whereas less than eight percent were among the highest.⁶³

Although the differences in attitudes towards the new bread were not as sharp as expected across income groups, shifting subsidies towards a *pain unique* made from the easily distinguishable PS+2 flour has the potential to improve targeting by reducing the leakages of subsidies to wealthier consumers. Extrapolations from survey results indicate that reforms which improve targeting by shifting subsidies to *pain unique* while simultaneously eliminating subsidies on *gros pain* and *baguettes* could result in an estimated savings of TD10 million, or over three percent of the CGC budget, per year.⁶⁴

The "superior goods" approach to self-targeting is also being applied to breads. Production of other breads was liberalized in 1991, allowing several attractive new varieties to be sold at cost by private merchants. These breads include whole wheat bread (*pain complet*) with a 100 percent extraction rate, rye bread, a *brioche*-style bread (*pain de mie*) and *mbassis*. With the exception of whole wheat bread, they are all made from the finer PS-7 flour. These products provide alternatives that appeal to the rich and hence siphon off demand by wealthier households and reduce the consumption of subsidized bread. Anecdotal evidence suggests that this approach has been successful in areas where these "superior" breads have been introduced.

Like cereals, cooking oils offer several possibilities for improved targeting. They are particularly important as a vehicle for channelling income transfers to the poor since they account for close to three percent of total expenditures of the lowest-income quintile.

⁶¹Overall, only eight percent rejected the new bread, while 23 percent found it acceptable but not as good as their traditional bread purchases, 33 percent found it equivalent to the other breads and 35 percent preferred it. The primary source of dissatisfaction involves the texture of the new bread, followed by odor, color and, to a lesser extent, taste. A substantial share, over one-half of all consumers, actually preferred the darker color of *pain unique*, which is somewhat surprising given historical preferences for fine white bread in Tunisia.

⁶²Socio-professional categories were used as proxies for income levels since a private organization rather than the INS (which has exclusive access to income-expenditure data) carried out the survey. The approximate income groups for these categories were the following: greater than TD600 (7.1 percent of sample), TD400 to TD600 (16.3 percent), TD200 to TD400 (51.1 percent), and less than TD200 (24.2 percent) per *household* per month.

⁶³Unfortunately, the possibilities for exploiting differences in the size and shape of the new bread were not incorporated into the consumer acceptance survey. The bread made from PS+2 flour used in the survey was made into 250 gram loaves - the size of *baguettes*. This test size could have biased results in favor of greater acceptance by the rich who tend to purchase *baguettes* rather than *gros pain*. When *pain unique* is actually introduced on the market, most likely in 1993, it should preserve the size and shape of *gros pain*, traditionally purchased by the poor, to further exploit its potential for self-targeting.

⁶⁴Bureau de Conseils, D'Etudes et de Formation (1992). Compared to 1992 CGC expenditures.

One application of self-targeting in the cooking oils subsector employs the "inferior goods" approach. As described in Chapter 1, subsidies were previously placed on *huile de mélange*, a blend of grain oils with a variable amount of olive oil blended into it (up to 15 percent). Olive oil is an expensive, luxury product preferred by all income groups in Tunisia, but purchased primarily by the rich. In fact, the rich consume on average 25 times more olive oil than the poor (in per adult equivalent terms). The incorporation of olive oil into the subsidized cooking oil has recently been eliminated. The generic⁶⁵ cooking oil, which currently benefits from subsidies, typically consists of a variable mix of soybean and canola oils (depending on which is cheaper). While the introduction of this measure was intended primarily to reduce costs for the CGC, it also has the effect of improving targeting because the resulting product is less preferred by wealthier consumers.

The second method used for targeting cooking oil subsidies involves the use of different packaging methods. The wealthy tend to purchase cooking oil in bottles, whereas the poor tend to buy very small quantities of unpackaged (less-refined) oil from retailers who sell from bulk drums (*en vrac*). Table 14 indicates that, in 1993, the poor purchased close to two times more "bulk oil" than the rich, whereas for the same blend of generic grain oil packaged in bottles, the pattern was exactly reversed, with the rich purchasing roughly two times more bottled oil than the poor. Consumer prices of bottled oil are being increased somewhat faster than those on oil purchased from bulk drums. The unit subsidies on bulk and bottled oil, however, have not been significantly differentiated. The lower prices for bulk oil do not result from explicit attempts to target bulk oil, but simply reflect the fact that the cost structure for bulk oil is lower than for bottled oil since it is sold to consumers without any packaging (the consumers provide their own containers).

Yet another self-targeting tactic for cooking oil involves applying the "superior goods" approach, whereby the private sector is allowed to import high-quality, pure grain oils for sale at cost to appeal to wealthier consumers. This step would significantly reinforce the targeting of generic cooking oil by presenting the consumers with a wider range of quality gradations. In 1989, a feasibility survey was conducted to test potential demand for unsubsidized pure grain oils as an alternative to the subsidized generic product available on the market at that time.⁶⁶ The price used in the survey for these high-cost alternatives was 58 percent higher than the price of the generic oil sold in bulk drums and 25 percent higher than the price of the generic oil sold in bottles. Over one-half of the households surveyed indicated a preference for pure, imported grain oils (mostly corn and sunflower) over the current generic product. The most important explanations for this preference were: (i) that people wanted to know the type of oil being purchased, either to use various oils for different cooking purposes or because the different oils have different health effects; and (ii) that the imported oils benefitted from French and Italian advertising shown on Tunisian television. Imports of pure grain oils were liberalized in 1992, and private operators have since imported varying quantities of pure corn and sunflower oil. Despite the liberalization of these imports, the existing tariff differential between imports of pure grain oils (corn, sunflower) by private operators (currently 43 percent) and imports of generic grain oil (soy, canola) by

⁶⁵The term "generic" refers to a product in which the exact content/ingredients are not revealed to consumers (or, in the case of many "generic" products marketed in the U.S., the "brand name", or identity of the manufacturer, is not displayed). In the case of Tunisian generic cooking oil, the oil is either soy or canola oil (or a mix of the two), but the type of oil is not indicated, and the label simply states "cooking oil" (or *huile de graine*).

⁶⁶ Survey conducted by Comète Engineering (1989).

the ONH (preferential tariff rate is currently 15 percent) has effectively hampered a more widespread introduction of these pure grain oils through private channels. This differential should be eliminated in order to encourage a more active implementation of the superior goods approach.

A recent measure intended to diversify the range of cooking oil products available and redirect the demand of wealthier consumers involves the introduction of a new "fixed mixed" (*zit sannafa*, which means "oil for the good cook" or "*huile de la bonne cuisinière*") cooking oil in early 1993. This new mixed oil blends a fixed amount of unsubsidized olive oil (40 percent) with a fixed portion of generic grain oil (60 percent).⁶⁷ It is believed that wealthier consumers will prefer this new "fixed mixed" oil over generic grain oil for several reasons. First, it is packaged in glass bottles with attractive labels that clearly identify the ingredients and their fixed shares, whereas the labels on bottled generic oil simply describe their contents as "cooking oil" (or "grain oil"). Second, the new oil contains a fixed amount of olive oil which is largely preferred by wealthier consumers. Although the generic grain oil component of the "fixed mixed" oil is subsidized at the same rate as generic cooking oil, the unit subsidy on the "fixed mixed" oil is, in fact, lower because the subsidized grain oil represents only a fraction of the total contents of the new mixed oil. It is estimated therefore that CGC expenditures on cooking oil subsidies will be reduced by this application of the "superior goods" approach and that the targeting of cooking oil subsidies will be improved.

Sugar subsidies have primarily been justified as a means to preserve the purchasing power of the poor, and not on the basis of any nutritional rationale (although sugar does provide a significant caloric input). Granulated sugar claims roughly one percent of total expenditures by the lowest-income quintile. This is in contrast to the rich who spend just 0.3 percent of their total budget on sugar, although in absolute terms wealthier consumers purchase greater quantities (in per adult equivalent terms).

The CGC has made several attempts to improve the targeting of sugar subsidies. In 1991, subsidies on sugar cubes, which are consumed virtually exclusively by the rich, were completely eliminated.

Another reform effort involves the application of the "inferior goods" approach by introducing a heavily-subsidized new variety, a less-refined brown sugar, that is unattractive to high-income consumers. Brown sugar was introduced in 1990 with an initial unit subsidy that was considerably higher than the subsidy on white sugar.⁶⁸ Despite being over 43 percent cheaper, brown sugar was not readily accepted by consumers and demand remained low. Even poorer consumers evidently rejected less-refined brown sugar at existing price differentials, apparently because the darker sugar was perceived to be "dirty." They even resisted purchasing white sugar when grains of brown sugar were mixed in. This experience presents an important lesson regarding the practicalities involved in designing a self-targeted program and the importance of consumer acceptance. Indeed, there is a fine

⁶⁷The initial price of this new mixed oil is 900 millimes per liter which is intended to serve as a promotional price. It will soon be increased to 1.3 dinars per liter, as compared with 480 millimes per liter for bottled generic oil and 1.9 dinars per liter for unsubsidized olive oil.

⁶⁸This brown sugar should not be confused with "brown sugar" in the United States which is a white sugar with molasses added back in. "Brown sugar" in Tunisia is a less-refined, "raw" sugar.

line between designing a product to be unappealing to wealthier consumers and preventing its rejection by the poor.

In contrast to the other subsidized food products, milk, as a category, is not particularly well-suited to carry subsidies for the purposes of targeting. Tables 13 and 14 reveal that the rich consumed approximately three times more processed milk than the poor (in per adult equivalent terms for both 1990 and 1993).⁶⁹ Yet for perceived nutritional, and perhaps political, reasons, the Government has classified milk as an essential product for subsidy coverage. To improve the balance between the dual objectives of protecting the nutritional status and preserving the purchasing power of the poor, several measures were adopted to improve the targeting of milk subsidies using both the "superior goods" approach and the "inferior goods" approach.

A "superior good" in the form of fresh milk from local production was introduced to attract the demand of wealthier consumers. Locally-produced fresh milk, called *lait frais* or *lait naturel*, is considered a natural, high-quality product for which households are willing to pay premium prices. It is highly preferred over milk that is reconstituted from imported milk powder.⁷⁰ In the past, local fresh milk was sold at cost. However, consumer preferences were not strong enough to overcome the huge price differential relative to reconstituted milk which benefited from a significant subsidy. As a result, the effective demand for local fresh milk was low.

In 1991, however, LAINO, a private dairy processing firm, was granted a small promotional subsidy of 80 millimes per liter (which was later reduced to 70 millimes per liter) by the CGC on its sales of sterilized local fresh milk in plastic bottles.⁷¹ This subsidy, which compares to unit subsidies on reconstituted milk of up to 183 millimes per liter (for that same year), was introduced to narrow the price differential between fresh milk from local production and milk that is reconstituted from imported powder. The small subsidy allows local producers to compete with the more heavily subsidized imports. It also entices consumers, particularly the more well-to-do, to consume more local fresh milk (with a low unit subsidy) and less reconstituted milk (with a high unit subsidy), thereby reducing CGC expenditures.

The response by consumers to this new measure has been extremely positive, and actual sales of local fresh milk have far exceeded projections. As a result of LAINO's success in selling this milk, Tunisie-Lait introduced sterilized local fresh milk in plastic bottles in 1992. STIL likewise introduced sterilized local fresh milk in both plastic bottles and tetrabrik cartons. Three new private dairy processors have recently been granted an "*accord de principe*" allowing them to receive the subsidy for the production of local fresh milk. Total sales of sterilized local fresh milk by all three processors

⁶⁹They also consumed more raw milk, which is either consumed on-farm or purchased from milk-peddlers making home deliveries or from milk distribution centers, and is thus not the subject of CGC subsidies.

⁷⁰In fact, most consumers cited *taste* as the reason for purchasing local fresh milk (roughly three-quarters and two-thirds of consumers of local fresh milk in plastic bottles and tetrabrik cartons respectively). See Annex 4 for details.

⁷¹The fresh local milk undergoes a sterilization process to give it the same long-life properties of the sterilized-reconstituted milk.

accounted for over one-third of all subsidized milk sales in 1993 (compared to no sterilized local fresh milk sales in 1990). By 1995, this share had risen to close to 70 percent of all subsidized milk sales.

Survey data on consumption patterns indicate that this application of the "superior goods" approach has been highly successful in diverting the demand of wealthier consumers away from the more heavily subsidized varieties. In fact, the highest-income quintile consumed five times more local fresh milk in plastic bottles and ten times more local fresh milk packaged in tetrabrik cartons than did the poorest quintile in 1993. Perhaps even more striking is the fact that the introduction of the small subsidy on local fresh milk has resulted in a marked substitution by wealthier consumers away from the more heavily-subsidized reconstituted varieties: survey data reveal that from 1990 to 1993, the highest-income quintile reduced its consumption of heavily subsidized reconstituted milk by close to 50 percent.⁷²

The "inferior goods" approach has also been implemented in the milk subsector, both through the type of milk being targeted and through packaging differentials.⁷³ Using ingredients and packaging as mechanisms for targeting has the advantage that the intrinsic quality of the final product, low-fat milk, remains good, and thus nutritional benefits are not compromised with self-targeting.⁷⁴

To better target subsidies, the CGC reform program has sought to gradually shift milk subsidies towards pasteurized-reconstituted milk packaged in half-liter plastic film pouches (*coussin*) and in *berlingot* tetrahedron cartons. In this case, both the content and the packaging are thought to be well-targeted to the poor. Pasteurized-reconstituted milk is the least-preferred variety of subsidized milk because of its taste and limited shelf-life.⁷⁵ The packaging used for pasteurized-reconstituted milk is also designed to discourage consumption by the rich. Whereas sterilized milk (both reconstituted and fresh) is available in traditional tetrabrik cartons and plastic bottles, pasteurized-reconstituted milk is packaged

⁷²In absolute per adult equivalent terms.

⁷³Although these reforms were later modified (for reasons discussed in Chapter 5), this application of the inferior goods approach was in effect at the time of the 1993 survey, and highlights many important "lessons-learned" associated with self-targeting.

⁷⁴As mentioned in Chapter 1, all subsidized milk is low-fat, with 15.5 grams of fat per liter.

⁷⁵Indeed, survey data show that roughly 20 percent cited *taste* as the reason for not consuming pasteurized milk (see Annex 4 for details). Limited *shelf-life* was the most commonly cited reason for deterring consumption of pasteurized-reconstituted milk (pasteurized milk must be refrigerated at all times and its shelf-life is limited to 48 hours as opposed to six months for sterilized milk). For *berlingot* cartons and *coussin* pouches respectively, 30 and 40 percent of those households did not consume pasteurized-reconstituted milk because of its limited shelf-life (see Annex 4 for details). This feature is particularly unattractive to high-income consumers, who often purchase large quantities of long-life sterilized milk which does not require refrigeration for storage prior to opening. The fact that pasteurized milk requires constant refrigeration could also possibly discourage poorer consumers who have less access to refrigeration (although *all* types of milk, even sterilized, require refrigeration once their containers have been opened). Results from the 1993 survey indicate that roughly one-half of respondents observed pasteurized milk for sale without refrigeration. It should be noted, however, that pasteurized milk is sometimes intentionally left unrefrigerated in order to allow it to curdle (within the 48 hour limits of its shelf-life). Tunisians sometimes consume curdled milk (*lait caillé*), particularly with couscous. *Berlingot* cartons are apparently the preferred container for preparing curdled milk because the milk stays intact, whereas with *coussin* pouches, which are flimsy and do not maintain a definite shape or structure, the milk becomes chunky in the curdling process.

in two types of cheaper, less attractive containers: *berlingot* tetrahedron-shaped cartons and plastic film pouches known as *coussin*.⁷⁶

Berlingot cartons, which have existed since the mid-1980s, contain only one-half liter of milk, and thus favor poorer consumers who make smaller budgetary outlays at any given time. These half-liter cartons are less attractive to the rich, however, who tend to purchase large quantities, generally at supermarkets in cases of 8-12 one-liter tetrabrik cartons.

Coussin packages are flimsy, plastic pillow-shaped milk pouches that were created explicitly for the purposes of self-targeting. Like *berlingot* tetrahedrons, *coussin* are half-liter pouches that are designed for consumption by the poor who tend to make small budgetary outlays on any given purchase.⁷⁷ *Coussin* pouches possess additional features that make them even more "inferior" than *berlingot* cartons because (i) they lie flat and are not stored upright in refrigerators; and (ii) once *coussin* pouches are opened, the milk must be transferred to another container. Survey results indicate that *coussin* packaging was a stronger consumption deterrent for the rich than for the poor: in the 1993 survey, wealthier households cited packaging as the reason for not consuming pasteurized-reconstituted milk in *coussin* pouches two times more than households among the poorest-income quintiles.

Pasteurized-reconstituted milk carries the same price for both containers (*berlingot* tetrahedrons and *coussin* pouches), which is well over 20 percent cheaper than sterilized milk (both reconstituted and local fresh) packaged in tetrabrik cartons and plastic bottles. Unit subsidies on pasteurized-reconstituted milk, however, were not explicitly targeted, and were similar to those placed on sterilized-reconstituted milk, which is more preferred by wealthier consumers. The lower prices for pasteurized-reconstituted milk simply reflect cheaper packaging costs for *berlingot* cartons and *coussin* pouches.⁷⁸

Survey data indicate that pasteurized-reconstituted milk packaged in *berlingot* tetrahedron cartons is indeed well-targeted to the poor. In 1993, the lowest-income quintile consumed over three times more of this variety than the highest (in absolute per adult equivalent terms), as shown in Table 14.⁷⁹ Pasteurized-reconstituted milk in *berlingot* cartons also contributed more as a share of total

⁷⁶Both *coussin* pouches and *berlingot* cartons bear the same green and white labels that have become familiar signals for Tunisian consumers, indicating pasteurized-reconstituted milk.

⁷⁷The type of milk (pasteurized-reconstituted milk which must be refrigerated at all times and has a short shelf-life) and the size of the *berlingot* and *coussin* packages (half-liter) both make these varieties more appropriate for prompt consumption. Indeed, anecdotal evidence suggests that they have primarily been sold in poorer neighborhoods and to low-income workers on public works projects (*les travailleurs des chantiers*) for immediate consumption.

⁷⁸As discussed in para. 145 below and in Annex 5, *coussin* pouches are the cheapest form of packaging, followed by *berlingot* tetrahedron cartons.

⁷⁹It is interesting to note that this result was not as strong in 1990. In that year, the highest- and the lowest-income quintiles consumed roughly the same amount of pasteurized-reconstituted milk in *berlingot* cartons, whereas consumers in the middle-income quintiles consumed the most. Although 1993 survey data reveal that pasteurized-reconstituted milk in *berlingot* cartons is indeed "inferior" (in the sense that it is consumed more by the poor than the rich), this tendency was not as robust until the distinctly "superior" sterilized local fresh milk had been introduced to attract the demand of

spending by the poor than the rich (1.4 percent of total outlays for the lowest-income quintile as compared with 0.1 percent for the highest in 1993).

Survey results suggest that the targeting of *coussin* was less successful: of the households covered by the 1993 expenditure survey, less than one percent actually purchased pasteurized-reconstituted milk in *coussin* pouches.⁸⁰ It seems that, with both varieties of pasteurized-reconstituted milk carrying the same price, the poor opted to purchase the milk packaged in the slightly less inferior *berlingot* carton rather than in the plastic film pouches.

This pattern highlights the practical difficulties that arise in developing "inferior" goods for the purposes of targeting. If two products are priced at the same level but one item is perceived to be of higher quality, consumers (rich and poor alike) will inevitably purchase the more attractive variety. Moreover, pricing differentials constitute a key variable for effective self-targeting, the products selected to serve as the vehicles through which transfers are channeled to the poor must not be perceived to be so inferior that they discourage consumption by the intended beneficiaries. Although the fact that *coussin* pouches do not stand upright and require the milk to be transferred to another container upon opening discourages the wealthy from purchasing them, these features may likewise be prohibitively inconvenient for the low-income worker. In addition, the resemblance of *coussin* pouches to a familiar laundry detergent package ("OMO") could also lead to its rejection, even by poorer consumers. Another possible drawback for *coussin* pouches that has not yet been investigated is that the sanitation of the containers into which the milk is transferred is not always adequate.

wealthier consumers away from the less-preferred, more heavily subsidized varieties. This highlights the mutually reinforcing nature of the "superior" and "inferior" goods approaches.

⁸⁰In the qualitative section of the 1993 survey, however, over five percent of households responded that they do *tend* to purchase pasteurized-reconstituted milk in *coussin* pouches. This discrepancy, between households that were recorded as actually consuming the product and those that tend to purchase it, could arise because pasteurized-reconstituted milk in *coussin* pouches is not always regularly available in all neighborhoods. Responses to qualitative questions in the 1993 survey indicate that availability (or lack of it) was a stronger deterrent for the consumption of pasteurized-reconstituted milk in *coussin* pouches than for any other milk product. See Annex 4 for details.

Box 2 - SUMMARY OF SELF-TARGETING EFFORTS UNDERWAY OR UNDER CONSIDERATION IN TUNISIA		
	INFERIOR GOODS APPROACH	SUPERIOR GOODS APPROACH
Durum-Wheat Products	<ul style="list-style-type: none"> ● Maintain subsidies on semolina (continuous) 	<ul style="list-style-type: none"> ● Eliminate direct subsidies on couscous and pasta (1993)
Bread-Wheat Products	<ul style="list-style-type: none"> ● Replace subsidies on <i>gros pain</i> with subsidies on a single subsidized bread (<i>pain unique</i>) made from a distinct high extraction rate flour (1995/96) 	<ul style="list-style-type: none"> ● Eliminate subsidies on baguettes (1993) ● Eliminate subsidy on pastry flour (1991) ● Liberalize production of other breads that attract the demand of high-income consumers (1991-present)
Cooking Oils:	<ul style="list-style-type: none"> ● Eliminate olive oil from subsidized <i>huile de mélange</i> resulting in the creation of a subsidized generic grain oil (1989) ● Shift subsidy toward generic oil sold mostly to the poor in small quantities from large drums (<i>en vrac</i>) and away from bottled oil which is mainly purchased by the rich (oil type differentials: since 1989; packaging differentials: proposed) 	<ul style="list-style-type: none"> ● Liberalize imports of pure grain oils packaged in glass bottles sold at cost to attract demand of high-income consumers and reduce consumption of subsidized oils (1992) ● Create "fixed mixed" cooking oil with 40 percent olive oil and 60 percent grain oil to diversify range of products on market and reduce unit subsidies per liter (1993) ● Olive oil also serves as a "superior" good (continuous)
Sugar:	<ul style="list-style-type: none"> ● Shift subsidy toward a less-refined brown sugar which is not preferred by upper-income groups (1990) 	<ul style="list-style-type: none"> ● Eliminate subsidies on cube sugar which is consumed virtually exclusively by the rich (1991)
Milk:	<ul style="list-style-type: none"> ● Shift subsidies to pasteurized-reconstituted milk (least-preferred type of milk) packaged in cheaper cartons that are less attractive to wealthy consumers, such as <i>berlingot</i> cartons and <i>coussin</i> milk pouches (1991-94) 	<ul style="list-style-type: none"> ● Apply a small, temporary, promotional subsidy to fresh, locally-produced sterilized milk (a luxury) which is consumed primarily by the rich (1992)

Retail Price Increases (1990-95)

The second component of the three-pronged reform package involves increasing retail prices to reduce budgetary costs to the CGC. The prices of some subsidized products, including both types of bread, sugar, and some types of milk, were increased in real terms from 1990 to 1993, as Table 16 indicates. CGC price data, however, indicate that the prices of several subsidized products, including durum-wheat products, flour, cooking oil, and some types of milk fell in real terms over the same period, despite several nominal adjustments. Moreover, the Government's failure to increase the nominal prices of subsidized cereals products and cooking oil in 1995 resulted in a substantial fall in the real prices of these goods from 1994 to 1995.

Table 15 - NOMINAL CONSUMER PRICES OF SUBSIDIZED GOODS, 1986-95										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CEREALS										
Gros pain (mil/gram) ^a	0.17	0.17	0.17	0.20	0.22	0.24	0.26	0.28	0.30	0.30
(mil/unit) unit=500 grams	83	83	83	100	110	120	130	140	150	150
Baguette (mil/gram) ^b	0.28	0.28	0.28	0.32	0.36	0.40	0.44	0.48	0.52	0.52
(mil/unit) unit=250 grams	70	70	70	80	90	100	110	120	130	130
Flour (mil/kg)	195	195	195	245	265	265	265	285	305	305
Semolina (mil/kg)	155	155	155	175	195	205	215	225	235	235
Pasta (mil/kg) ^c	265	265	265	315	365	395	410	425	440	440
Couscous (mil/kg) ^c	270	270	270	320	370	400	415	430	445	445
COOKING OIL (mil/liter)										
-bulk/vrac	300	320	320	340	360	370	380	400	430	430
-bottled/conditionnée	340	360	360	420	450	460	480	500	540	540
MILK (mil/liter)										
Sterilized-Reconstituted										
Tetrabrik cartons	300	300	320	380	420	440	460	480	500	530
Plastic bottles	260	260	280	330	360	380	400	420	440	470
Pasteurized-Reconstituted										
Berlingot tetrahedrons	240	240	260	310	330	350	370	390	390	na
Coussin pouches	na	na	na	na	na	na	370	390	390	na
Sterilized Local Fresh Milk										
Plastic Bottles	na	na	na	na	na	400	480	500	540	560
Tetrabrik cartons	na	na	na	na	na	na	480	500	560	580
SUGAR (mil/kg)										
White, granulated, local prod'n	240	270	300	350	400	400	460	490	520	570
White, granulated, imported	240	270	300	350	400	400	460	490	520	570
White, cube	340	370	430	500	560	560	650	free	free	free
Brown, granulated	na	na	na	na	300	300	320	na	na	na
OTHER										
Barley (D/Q)	11	11	10	10	13	16	17	17	free	free
Corn (D/Q)	10	13	13	13	16	19	21	free	free	free
Soybean Meal (D/Q)	18	20	20	20	26	27	29	free	free	free
Urea (D/T)	84	113	113	113	133	163	free	free	free	free
Super 16 (D/T)	42	51	51	51	66	88	free	free	free	free
Super 45 (D/T)	46	109	109	109	109	148	163	193	176	184
DAP (D/T)	107	116	116	116	176	195	225	262	218	250
CPI (1980=100)	167.2	179.2	190.6	204.6	218.5	236.5	250.1	260.1	271.8	288.7
Source: Ministère de l'Economie Nationale.										
a\The weight of gros pain was reduced in 1986 from 700 to 600g, and in 1989 to 500g.										
b\The weight of baguettes was reduced in 1986 from 300 to 250g.										
c\Direct subsidies on pasta and couscous were eliminated in 1992. These products were subsidized indirectly, however, via the subsidy on semolina (which is an input into the production of pasta and couscous). Roughly 1.04 kg and 1.08 kg of semolina is needed to produce 1 kg of pasta and couscous respectively.										

Table 16 - REAL CONSUMER PRICES OF SUBSIDIZED GOODS, 1986-95

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CEREALS										
Gros pain (mil/gram) ^a	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
(mil/unit) unit=500 grams	49.6	46.3	43.5	48.9	50.3	50.7	52.0	53.8	55.2	52.0
Baguette (mil/gram) ^b	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
(mil/unit) unit=250 grams	41.9	39.1	36.7	39.1	41.2	42.3	44.0	46.1	47.8	45.0
Flour (mil/kg)	116.6	108.8	102.3	119.7	121.3	112.1	106.0	109.6	112.2	105.7
Semolina (mil/kg)	92.7	86.5	81.3	85.5	89.2	86.7	86.0	86.5	86.5	81.4
Pasta (mil/kg) ^c	158.5	147.9	139.0	154.0	167.0	167.0	163.9	163.4	161.9	152.4
Couscous (mil/kg) ^c	161.5	150.7	141.7	156.4	169.3	169.1	165.9	165.3	163.7	154.2
COOKING OIL (mil/liter)										
-bulk/vrac	179.4	178.6	167.9	166.2	164.8	156.5	151.9	153.8	158.2	149.0
-bottled/conditionnée	203.3	200.9	188.9	205.3	205.9	194.5	191.9	192.2	198.7	187.1
MILK (mil/liter)										
Sterilized-Reconstituted										
Tetrabrik cartons	179.4	167.4	167.9	185.7	192.2	186.1	183.9	184.5	184.0	183.6
Plastic bottles	155.5	145.1	146.9	161.3	164.8	160.7	159.9	161.5	161.9	162.8
Pasteurized-Reconstituted										
Berlingot tetrahedrons	143.5	133.9	136.4	151.5	151.0	148.0	147.9	149.9	143.5	na
Coussin pouches	na	na	na	na	na	na	147.9	149.9	143.5	na
Sterilized Local Fresh Milk										
Plastic Bottles	na	na	na	na	na	169.1	191.9	192.2	198.7	194.0
Tetrabrik cartons	na	na	na	na	na	na	191.9	192.2	206.0	200.9
SUGAR (mil/kg)										
White, granulated, local prod'n	143.5	150.7	157.4	171.1	183.1	169.1	183.9	188.4	191.3	197.5
White, granulated, imported	143.5	150.7	157.4	171.1	183.1	169.1	183.9	188.4	191.3	197.5
White, cube	203.3	206.5	225.6	244.4	256.3	236.8	259.9	free	free	free
Brown, granulated	na	na	na	na	137.3	126.9	127.9	na	na	na
OTHER										
Barley (D/Q)	6.4	6.0	5.0	4.6	5.7	6.6	6.6	6.3	free	free
Corn (D/Q)	6.0	7.0	6.6	6.1	7.2	7.8	8.2	free	free	free
Soybean Meal (D/Q)	10.8	11.2	10.5	9.8	11.7	11.2	11.4	free	free	free
Urea (D/T)	50.3	62.9	59.1	55.1	60.7	68.9	free	free	free	free
Super 16 (D/T)	24.8	28.5	26.8	24.9	30.2	37.2	free	free	free	free
Super 45 (D/T)	27.2	60.8	57.2	53.3	49.9	62.6	65.2	74.2	64.8	63.7
DAP (D/T)	64.2	64.7	60.9	56.7	80.5	82.5	90.0	100.7	80.2	86.6
CPI (1980=100)	167.2	179.2	190.6	204.6	218.5	236.5	250.1	260.1	271.8	288.7

Source: Ministère de l'Economie Nationale.

^aThe weight of gros pain was reduced in 1986 from 700 to 600g, and in 1989 to 500g.

^bThe weight of baguettes was reduced in 1986 from 300 to 250g.

^cDirect subsidies on pasta and couscous were eliminated in 1992. These products were subsidized indirectly, however, via the subsidy on semolina (which is an input into the production of pasta and couscous). Roughly 1.04 kg and 1.08 kg of semolina is needed to produce 1 kg of pasta and couscous respectively.

The Government has attempted to increase prices faster for goods consumed disproportionately by the rich in order to reinforce the targeting efforts under the first component of the reform package. For example, the prices of *baguettes*, which are consumed 25 times more by the wealthiest income quintile than the poorest,⁸¹ increased faster than *gros pain* over the period from 1990 to 1993. In fact, the gradual increases in the price of *baguettes* eventually led to the elimination of *baguette* subsidies in 1993. The prices of other program goods were also adjusted enough to eliminate subsidies on several goods that contributed more to the consumption of the rich than the poor, including direct subsidies on pasta and couscous (in 1993), cube sugar (in 1991), and granulated imported sugar (in 1992). The prices of most milk products, however, fell in real terms despite the fact that most varieties are clearly consumed more by the rich than the poor (with the exception of pasteurized-reconstituted milk in *berlingot* cartons and *coussin* pouches).

Cost Reduction Measures

For the third component of the three-pronged reform program, the Government has taken a number of steps to reduce unnecessary costs in the production and marketing of commodities subsidized by the CGC, particularly those caused by specific regulations or Government policies. Efforts are being made to simplify subsidy channels and to ensure better resource management. Price adjustments and many targeting reforms also serve as cost reduction measures.

In the cereals subsector, several reforms that are specifically intended to reduce unnecessary costs involve streamlining the way subsidies are paid. Subsidies at the bakery level were eliminated in 1989, thus reducing the number of subsidy payment points in that subsector. The complex nature of the method of calculating subsidies for flour and semolina has also been simplified, resulting in an estimated savings of TD1.2 million. Transport-cost equalization charges (*péréquation de transport*) were abolished in 1991, resulting in an estimated savings of TD1.3 million.⁸² Future reforms include limiting CGC intervention to one level in the marketing chain, probably the miller level.

Other cost reduction measures focus on dismantling the OC monopoly by liberalizing and privatizing collection channels. Collection, storage, handling, and delivery services were liberalized in 1990 as part of the conditions of the ASAL II. To date, three new private cooperatives have been licensed for these operations (as discussed in Chapter 1).

Several of the proposed targeting reforms would also serve to reduce subsidy costs. For example, eliminating subsidies on *baguettes* and *gros pain* and placing them on a new bread (*pain unique*) made from PS+2 flour would result in an estimated savings of approximately TD10 million, or over three percent of the CGC budget due to improved targeting, as discussed above.

In addition to improving targeting, the introduction of PS+2 flour offers other possibilities for reducing costs even further, despite the fact that this new flour would require modifications to the current production process. The one-time costs of machinery investments for the introduction of PS+2 flour have been estimated and weighed against the on-going gains from arising from

⁸¹In 1990 per adult equivalent terms.

⁸²Ministry of the National Economy.

a higher extraction rate. Real investment costs are estimated to range from TD180,000 to TD292,000 depending on the production technique adopted, which translate into an average cost of 60 to 80 millimes per quintal of flour over a period of ten years.⁸³ However, a higher extraction rate would result in an estimated gain of 80 millimes per quintal of flour. These costs and savings would therefore offset each other, with a possible slight net gain.

A more substantial source of savings would arise from reducing the leakages of subsidized flour to unauthorized uses, such as pastries, pizza and biscuits. These leakages are estimated to represent from seven to ten percent of subsidized PS flour.⁸⁴ The new PS+2 flour is easily distinguishable from PS baking flour and PS-7 pastry flour because of its distinct color and texture. It has a darker brownish-creme color and contains rough bran particles, whereas the traditional types of flour are very white and finely textured. Reducing leakages to unauthorized uses by shifting the subsidies to the distinct PS+2 flour would result in an estimated savings to the CGC of between TD6 million and TD10 million per year.⁸⁵ When combined with the savings due to improved targeting, it is estimated that shifting subsidies to *pain unique* made from PS+2 flour would save the CGC between TD16 million and TD20 million per year (between 5.5 and 6.9 percent of the total CGC budget in 1992).

For cooking oils, several targeting reforms are also cost reduction measures. Most notably, the elimination of olive oil in *huile de mélange* has resulted in a generic mix of grain oils that is less attractive to high-income consumers and cheaper for the CGC to subsidize. Since olive oil prices, calculated as the average annual export value, are considerably higher than grain oil prices, eliminating olive oil has substantially lowered the cost of cooking oil subsidies.

In addition to reducing subsidy costs, removing olive oil from the mix eliminated several inefficiencies in the system. With *huile de mélange* the ONH had to physically repossess grain oil for mixing because it did not trust the refineries to add the proper variable amount of olive oil. This resulted in cumbersome and costly movements of oil. Removing olive oil from the mix has eliminated the need for these movements and refineries now sell directly to local markets.⁸⁶

In the milk subsector, several cost reduction measures have been incorporated into the reform of the subsidy program, primarily shifting subsidies on milk away from milk packaged in the relatively more expensive containers. Tetrabrik cartons, by far the most expensive form of packaging, are 1.6 times more expensive than plastic bottles, 1.7 times more costly than *berlingot* cartons, and close to five times more expensive than *coussin* pouches (see Annex 5 for more details on milk packaging costs). STIL is quickly switching its sterilized milk (both reconstituted and local fresh) from tetrabrik

⁸³Costs figures are in real terms. These estimates are based on a production of 300,000 quintals per day. Bureau de Conseils, D'Etudes et de Formation (1992).

⁸⁴Bureau de Conseils, D'Etudes et de Formation (1992).

⁸⁵Ibid.

⁸⁶These problems do not apply to the new mixed oil since the proportions of its ingredients are fixed and are controlled by state standards.

cartons to plastic bottles.⁸⁷ Before the end of the VIII Development Plan, virtually all sterilized milk from STIL will be sold in plastic bottles.⁸⁸ This switch will result in an estimated savings of TD2.6 million annually. In addition, the move to shift subsidies to pasteurized-reconstituted milk packaged in *berlingot* cartons and *coussin* milk pouches is, in part, an effort to better self-target milk subsidies, and, in part, a cost reduction measure since these products are unattractive to wealthier consumers and are the cheapest forms of packaging.⁸⁹ Currently, proposals have also been made to switch to high-capacity packaging for sale to large consumers, such as hospitals, universities and military establishments.

Fixing operating margins for STIL and Tunisie-Lait in absolute terms at their 1989 levels is another measure introduced by the Government to reduce costs. While this is an important step towards reducing expenditures of the CGC, arbitrarily linking margins to their level in one particular year rather than to appropriate financial indicators could lead to distortions in the incentive structure.

⁸⁷STIL is the only dairy processor which uses Tetrabrik cartons.

⁸⁸With the exception of sterilized milk packaged at the Sfax factory, which produces a very small share of sterilized milk (five percent).

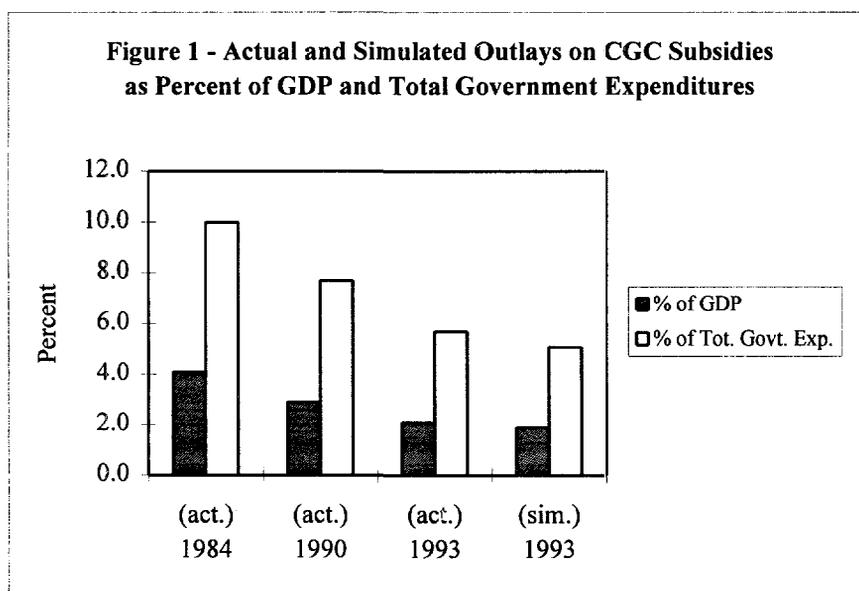
⁸⁹Although increasing the capacity of *coussin* production could entail additional investment costs.

CHAPTER IV

IMPACT OF THE REFORM PROGRAM (since 1990)

ESTIMATED FISCAL IMPACT

Despite the difficulties, both political and economic, experienced during the 1980s, reforms under the VIII Development Plan (1991-96) are fairly ambitious in their efforts to reduce outlays on the subsidy program. Indeed, the reform program has been successful in reducing the budgetary costs of the CGC: the subsidy program was cut from over four percent of GDP and ten percent of Government expenditures in 1984 to two percent of GDP and less than six percent of Government expenditures in 1993 as indicated in Table 17 below. Moreover, simulations suggest that self-targeting reforms would have led to a 34 percent drop in outlays on the CGC subsidy program from 1990 to 1993, to 1.9 percent of GDP and 5.1 percent of public expenditures, *if other factors, such as population and GDP, had been held constant* (see Figure 1).



Note: "Sim. 1993" represents the simulated level of outlays for that year arising from self-targeting reforms instituted between 1990 and 1993, holding all other factors constant.

Many aspects of the three-pronged reform strategy have the potential to reduce fiscal costs. In fact, many targeting reforms also serve as cost reduction measures, price increases result in lower subsidy costs, and steps to reduce inefficiencies in the production and distribution of subsidized products also reduce CGC expenditures.

In 1991, the Ministry of National Economy (now called the Ministry of Commerce) attempted to quantify and project the effect of proposed reforms on predicted expenditures during the VIII Development Plan.⁹⁰ The results of these projections are presented in Table 17 and are compared to a "base-case" scenario that projected program outlays in the absence of reforms.

⁹⁰Ministère de l'Économie Nationale (1991).

The scenario "without reforms" illustrates the need for decisive measures to reduce subsidy expenditures. This "base case" scenario assumed that costs and quantities consumed would follow past trends, but that subsidies and retail prices would remain at their 1991 levels. Without reforms, by 1996, total annual expenditures were projected to be more than double their level in 1991 (in nominal terms) so that the cost of the subsidy program under the VIII Development Plan would be over 1.5 times more than outlays under the VII Plan. Without reforms, CGC outlays were projected to climb back to three percent of GDP and eight percent of total Government expenditures by 1996. These projected costs clearly demonstrate the need for extensive cost saving reforms.

An alternative "with reforms" scenario projected the savings that would occur with implementation of the three-pronged reform program.⁹¹ Implementing the reform package was forecast to reduce the total cost of the subsidy program from roughly TD2300 million to less than TD1300 million, resulting in a projected savings of over TD1000 million (or 44 percent) for the duration of the VIII Development Plan.

The Ministry of the National Economy made these projections in 1991, using estimated data for later years. Data on actual CGC expenditures on the program have since become available. Actual outlays exceeded the projected "with reform" scenario in all years, but were substantially less than the projected outlays under the scenario "without reforms." Comparing actual outlays with those under the "without reforms" scenario reveals an actual savings of TD621 million (or 27 percent) for the duration of the VIII Development Plan.

These deviations in actual outlays from the projected "with reform" levels arose primarily due to additional modifications to the CGC reform program (beyond those assumed at the time the projections were made), and due to the fact that factors beyond the control of policy planners (including world prices, exchange rates, input costs and the quantities consumed/produced) differed from those used in the estimates.

In particular, more recent estimates of outlays for 1995 and 1996 substantially exceed the Ministry's original 1991 "with reform" projections (though these estimates are still far below outlays under the projected scenario "without reforms"), as shown in Table 18. These divergences in projected outlays arise due to differences in actual and projected quantities consumed for all products.

⁹¹ The scenario with reforms is based on the implementation of the three-pronged reform program (discussed in Chapter 3) using the reform measures (including proposed price adjustments, cost reduction measures, and several qualitative reforms) that were planned and proposed as of 1991 when the projections were estimated. Other hypotheses included the following: For all commodities, CIF prices and exchange rates were assumed to increase by 3%. Additional assumptions included: for cereals: quantities would increase by 3%, while domestic procurement prices would rise by 5%; for cooking oils: quantities and costs would rise by 3% and the allocation of oil between bulk and bottled oil sales would remain constant, at 70 and 30 percent respectively; for milk, the cost of powdered milk imports, and processing and packaging costs would all increase by 5%; for sugar and fertilizer, quantities would rise by 3% and costs by 2%. It was also assumed that animal feed subsidies would be eliminated by 1993 and fertilizer subsidies by 1996.

Table 17 - FISCAL IMPACT OF REFORMS							
	1984	1992	1993	1994	1995	1996	Total VIII Plan
With Reforms							
Actual Outlays (with)	258	291	314	304	343	419	1671
As % of GDP	4.1%	2.1%	2.1%	1.9%	2.0%	2.2%	..
As % of Total Gov't Exp.	10.0%	6.1%	5.7%	5.1%	5.2%	5.8%	..
Predicted Outlays (with)	..	271	263	244	247	257	1282
As % of GDP	..	2.0%	1.8%	1.5%	1.4%	1.3%	..
As % of Total Gov't Exp.	..	5.7%	4.8%	4.1%	3.7%	3.5%	..
Without Reforms							
Predicted Outlays (w/o)	..	334	391	453	520	594	2292
As % of GDP	..	2.4%	2.7%	2.9%	3.0%	3.1%	..
As % of Total Gov't Exp.	..	7.0%	7.2%	7.6%	7.9%	8.2%	..
Savings From Reforms							
Actual	..	43	77	149	177	175	621
Predicted	..	63	128	209	273	337	1010
Memo:							
GDP	6240	13706	14606	15867	17215	19201	..
Total Gov't Expenditures	2579	4771	5467	5974	6595	7281	..

Source: Ministère de l'Economie Nationale (1991), recent estimates. The VIII Plan covers the period from 1992-96.
Numbers may not add due to rounding.

Table 18 - FISCAL IMPACT OF WORLD PRICE HIKES								
	Actual Outlays		1995 - Estimated			1996 - Projected		
	1993	1994	With Refs. proj. 1991	Revised est. 5/95	Current est. 10/95	With Refs. proj. 1991	Revised proj. 5/95	Current proj. 10/95
Cereals - Total	212	183	172	182	200	182	186	274
Durum-Wheat	124	137	..	114	121	..	115	145
Bread-Wheat	82	40	..	59	71	..	61	119
DW & BW processing	6	6	..	9	9	..	9	10
Cooking Oils	27	56	35	63	68	36	64	64
Sugar	14	15	9	19	14	10	16	12
Milk	27	21	9	26	24	8	27	25
Meat	0	0	0	0	0	0	0	0
Sub-Total: Food Subsidies	280	275	226	290	305	236	292	375
Other	34	29	21	37	38	21	40	44
Total CGC	314	304	247	327	343	257	332	419
CGC as % of:								
GDP	2.1%	1.9%	1.4%	1.9%	2.0%	1.3%	1.7%	2.2%
Total Gov't Expenditures	5.7%	5.1%	3.7%	5.0%	5.2%	3.5%	4.6%	5.8%
Memo:								
GDP	14606	15867	17215	17215	17215	19201	19201	19201
Total Gov't Expenditures	5467	5974	6595	6595	6595	7281	7281	7281

Source: Ministry of Commerce (formerly the Ministère de l'Economie Nationale).
Initial "With Reform" projections made by the Ministry of the National Economy in 1991.
Revised estimates/projections made in May 1995. Current estimates/projections made in October 1995.
1996 projections assume that unit subsidies remain at their 1995 levels.

For cooking oils and cereals, additional factors account for the difference between current data and earlier projections. In the case of cooking oils, nominal prices have been maintained in 1995-96 for subsidized generic oil at their 1994 levels, and outlays on oil subsidies increased accordingly. In addition, a poor olive crop in 1995 caused the price of olive oil to increase, encouraging a shift in consumption towards subsidized grain oil, and a corresponding increase in CGC outlays on cooking oil subsidies.

For cereals products, a lack of nominal price increases (and corresponding subsidy reductions) from their 1994 levels has increased CGC outlays on cereals subsidies in 1995-96 over and above earlier projections. In addition, the recent upward spiral in world cereals prices has caused CGC outlays on cereals subsidies to balloon. Recent estimates indicate that international cereals price hikes have increased CGC outlays cereals subsidies by roughly ten percent for 1995 and by close to 50 percent for 1996 (projected).⁹² These increases are projected to cause total outlays on CGC subsidies to inch back up to 2.2 percent of GDP and 5.8 percent of total Government expenditures in 1996. The impact of these recent trends demonstrates the fiscal vulnerability of outlays on food-price subsidy schemes like the CGC program to variations in international prices.

DISTRIBUTIONAL IMPACT (INCIDENCE)

To assess the impact of targeting measures and price increases under the CGC reform program, a small-scale household expenditure survey was conducted in 1993 covering roughly one thousand households in the District of Tunis region. The survey was specifically designed cover quantitative and qualitative questions regarding the products that have been the focus of self-targeting reforms.⁹³

Distributional Impact of Reform Program: 1993

A clear conclusion that can be derived from the 1993 survey is that self-targeting is indeed an effective way to redistribute income to the poor. Figure 2 shows that **self-targeting reforms transformed program incidence from a situation in which the universal CGC program transferred more absolute subsidies to the rich than the poor, to one in which the poor benefitted more from food subsidies than the rich.**⁹⁴

⁹²These figures compare estimates made in May 1995 (prior to the world price hikes) with those made in October 1995. Source: Ministry of Commerce.

⁹³To avoid having to estimate the total income (proxied by total expenditures) of each household, which would have required a much larger and more comprehensive household budget survey, the same households as those sampled in the District of Tunis area in 1990 were included and data on total income (expenditures) come from the 1990 survey. Total income (expenditures) was, however, explicitly adjusted for 1993 household composition using equivalence scales. See Annex 3 for more details on the 1990 and 1993 surveys.

⁹⁴1985 calculated as per capita subsidies for the lowest and highest income groups which represented 13 percent and 12 percent of the population respectively; 1990 and 1993 calculated as subsidies per adult equivalent for the lowest and highest income quintiles (each representing 20 percent of the population).

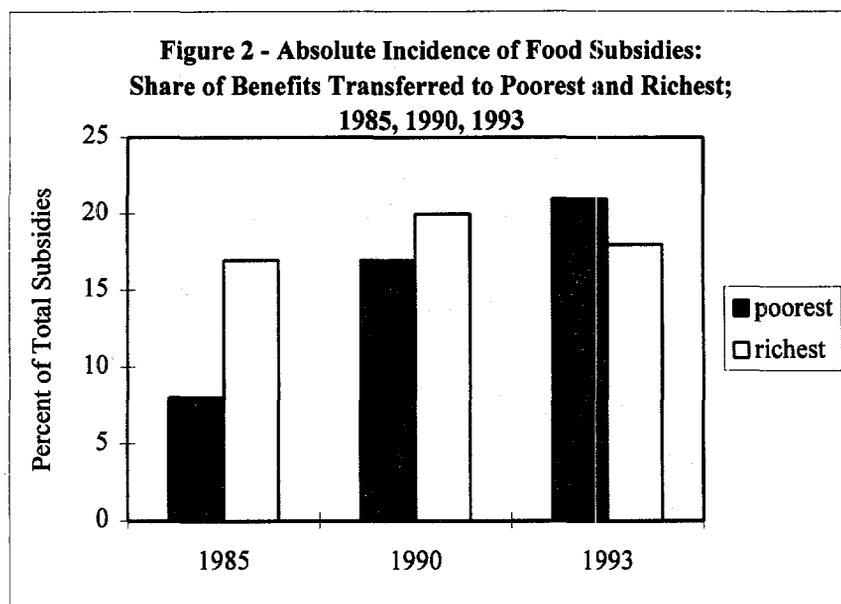


Table 19 shows the details for 1993. In contrast to 1985 and 1990 when the rich received two and 1.2 times more subsidies respectively than the poor in absolute terms,⁹⁵ in 1993 the poor benefitted 1.1 times more from the CGC program than the rich (the poor benefitted more in relative terms in all three years). Specifically, in 1993, the poorest quintile of the population received 21 percent of total food subsidies whereas the wealthiest quintile received 18 percent, with annual subsidies per adult equivalent of TD36 and TD41 for the top and bottom quintiles respectively. In relative terms, even though subsidies were already progressive under the universal subsidy program (accounting for over five times more of total expenditures for the poor than the rich in 1990), self-targeting reforms strengthened this result: by 1993, subsidies contributed over six times more to the total annual expenditures of the lowest quintile than to those of the highest.

For durum-wheat products, although reforms eliminated direct subsidies on pasta and couscous (which were not particularly well-targeted),⁹⁶ the rich did not substitute consumption in favor of semolina (which is well-targeted and remains subsidized), and the incidence of durum-wheat subsidies improved. By 1993, the poor benefitted from durum-wheat subsidies 1.7 times more than the rich, whereas in 1990 overall durum-wheat subsidies transferred just 1.3 times more absolute benefits to the lowest-income quintile than the highest.

⁹⁵The poor is defined as the bottom quintile of the population, with annual incomes less than TD721 per adult equivalent and with a mean income per adult equivalent of TD524. The estimated average daily caloric intake for this group was 2122 kcal per adult equivalent, which is lower than the minimum requirement of 2165 kcal estimated by the INS.

⁹⁶As discussed in Chapter 3, however, despite the elimination of direct subsidies on pasta and couscous, these items continued to benefit from indirect subsidies on semolina (an input into their production). The magnitude of the total unit subsidy on these items did decrease with the elimination of direct subsidies.

Table 19 - DISTRIBUTION OF FOOD SUBSIDIES PER ADULT EQUIVALENT, BY QUINTILE, REFORM PROGRAM - 1993								
	POOR				RICH		Ratio	Ratio
	1	2	3	4	5	Average	5/1	1/5
Absolute Incidence of Food Subsidies, Mean Subsidies Per Adult Equivalent								
Total DW	18.5	13.7	13.2	12.1	10.6	13.6	0.6	1.7
Semolina	12.1	7.0	6.0	5.4	4.0	6.9	0.3	3.1
Couscous	1.4	1.8	2.0	1.8	1.9	1.8	1.4	0.7
Pasta	4.9	4.9	5.2	4.9	4.7	4.9	1.0	1.0
Total BW	10.7	12.3	13.2	12.1	9.1	11.5	0.9	1.2
Gros Pain	10.7	12.3	13.2	12.1	9.1	11.5	0.9	1.2
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	5.9	6.1	6.3	6.5	5.6	6.1	1.0	1.0
Unpackaged (bulk)	3.9	4.1	4.2	3.9	2.3	3.7	0.6	1.7
Bottled	2.0	2.0	2.2	2.5	3.3	2.4	1.7	0.6
Sugar	0.5	0.7	0.8	0.9	1.1	0.8	2.0	0.5
Total Milk	5.3	6.7	7.3	8.1	9.7	7.4	1.8	0.5
PST	2.4	1.4	2.1	1.2	0.9	1.6	0.3	2.9
SRM	2.3	4.1	3.8	5.0	5.2	4.1	2.2	0.4
Loc. Fresh Bottle	0.2	0.6	0.5	0.6	1.3	0.7	5.7	0.2
Loc. Fresh Tetrab.	0.3	0.7	0.9	1.2	2.3	1.1	7.2	0.1
Total Above	40.8	39.5	40.8	39.6	36.1	39.4	0.9	1.1
Percent of Subsidies	21%	20%	21%	20%	18%	100%	0.9	1.1
Relative Incidence of Food Subsidies, Subsidies as Share of Total Expenditures, PAE								
Total DW	3.5%	1.6%	1.1%	0.7%	0.5%	0.9%	0.1	11.1
Semolina	2.3%	0.8%	0.5%	0.3%	0.1%	0.5%	0.1	19.5
Couscous	0.3%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2	4.7
Pasta	0.9%	0.6%	0.4%	0.3%	0.1%	0.3%	0.2	6.6
Total BW	2.0%	1.4%	1.1%	0.7%	0.3%	0.8%	0.1	7.5
Gros Pain	2.0%	1.4%	1.1%	0.7%	0.3%	0.8%	0.1	7.5
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	1.1%	0.7%	0.5%	0.4%	0.2%	0.4%	0.2	6.6
Unpackaged (bulk)	0.7%	0.5%	0.4%	0.2%	0.1%	0.2%	0.1	10.7
Bottled	0.4%	0.2%	0.2%	0.1%	0.1%	0.2%	0.3	3.8
Sugar	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.3	3.2
Total Milk	1.0%	0.8%	0.6%	0.5%	0.3%	0.5%	0.3	3.5
PST	0.5%	0.2%	0.2%	0.1%	0.0%	0.1%	0.1	18.3
SRM	0.4%	0.5%	0.3%	0.3%	0.2%	0.3%	0.4	2.8
Loc. Fresh Bottle	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.9	1.1
Loc. Fresh Tetrab.	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	1.1	0.9
Total Above	7.8%	4.5%	3.4%	2.4%	1.1%	2.6%	0.1	7.2
Total Expenditures	524	869	1184	1684	3345	1521	6.4	0.2

Source: INS, Household Expenditure Survey, District of Tunis, 1990. Total expenditure & sugar cons. patterns extrapolated from 1990 Survey (adjusted for adult equivalent). DW = durum wheat; BW = bread wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; ES = subsidy eliminated; PAE = per adult equivalent. Numbers may not add due to rounding.

The reform program was also successful in improving the incidence of bread-wheat subsidies by eliminating subsidies on *baguettes* and bread-wheat flour which were poorly targeted. Despite the elimination of these subsidies, the rich did not substitute consumption in favor of *gros pain*, and bread-wheat subsidies became progressive in absolute terms, as shown in Table 19.

Regarding cooking oil, as mentioned in Chapter 3, although generic grain oil sold from bulk vendors is better targeted to the poor than the same type of oil packaged in bottles, the unit subsidies for these items have not been very different and targeting would be strengthened by differentiating subsidies accordingly. Moreover, imported pure grain oils, which were liberalized in 1992 to serve as superior alternatives to the subsidized varieties, have not been widely marketed and were therefore not captured in the 1993 survey.⁹⁷

Sugar was not included in the 1993 survey, so evidence of efforts to improve the incidence of sugar subsidies is largely anecdotal.⁹⁸ As discussed in Chapter 3, with the exception of the elimination of subsidies on cube sugar in 1991, attempts to improve the targeting of sugar subsidies by introducing an inferior less-refined brown sugar failed because even poorer consumers rejected it.

Reform efforts did achieve the intended results for milk subsidies, however. The "superior goods" approach was particularly effective in shifting the demand by wealthier consumers away from the more heavily subsidized varieties and toward local fresh milk which carries a lower unit subsidy. As discussed in Chapter 3, survey data indicate that the highest-income quintile reduced its consumption of reconstituted milk by 50 percent, substituting consumption in favor of local fresh milk.

In addition, the introduction of "superior" alternatives (local fresh milk) strengthened the targeting of the more "inferior" pasteurized-reconstituted milk. Although pasteurized-reconstituted milk was available in *berlingot* cartons under the universal subsidy program and was thus captured by the 1990 survey, the targeting of *berlingot* subsidies was not very strong at that time because of an absence of highly-preferred superior alternatives (although it was better targeted than other varieties of milk). By 1993, however, the targeting of *berlingot* was greatly improved by the introduction of local fresh milk which served to siphon off the demand of the rich. These results demonstrate the mutually reinforcing nature of the "superior" and "inferior" goods approaches.

As discussed in Chapter 3, the targeting of *coussin* was less effective than *berlingot*, however, because, although *coussin* pouches are the most unattractive form of packaging and contain the least-preferred type of milk, *coussin* pouches were priced the same as *berlingot* cartons. While both packages contained the same type of milk (pasteurized-reconstituted) *berlingot* is a slightly more convenient form of packaging (as discussed in Chapter 3). With similar prices for both varieties of pasteurized-reconstituted milk, the poor apparently opted to purchase the slightly less inferior version (*berlingot*) instead of *coussin*.

⁹⁷One possible explanation for the lack of wide-spread response from the private sector to the liberalization of imports of pure grain oils is that they cannot compete with generic grain oil (which is imported by the *Office National de l'Huile*) which is not only subsidized, but also benefits from a preferential customs duty. The customs duty for imports of pure grain oils is 43 percent, whereas the tariff for imports of generic grain oil (soy or canola) by the ONH is only 15 percent.

⁹⁸Consumption patterns for sugar in Table 19 were extrapolated from the 1990 National Household Expenditure Survey.

**Box 3 - "LESSONS LEARNED:" PRACTICAL ISSUES INVOLVED IN
IMPROVING THE INCIDENCE OF FOOD SUBSIDIES VIA SELF-TARGETING**

Several lessons emerge from the 1993 snapshot of the impact of self-targeting via quality differentiation on the incidence of food subsidies in Tunisia.

- *Introducing a small promotional subsidy on a superior variety can actually decrease total outlays on the subsidy program.* For example, to encourage private operators to market a higher-quality milk, the Government placed a small promotional subsidy on sterilized local fresh milk which is highly-preferred by wealthy consumers but which has historically been unable to compete with heavily subsidized milk reconstituted from imported milk powder. The injection of this minimal subsidy on local fresh milk has actually reduced program costs and improved targeting by shifting demand of high-income consumers away from reconstituted milk which receives a much larger unit subsidy.
- *There is a fine line between creating a product to be unattractive to wealthier consumers and having it also be unappealing to the poor.* For example, although heavily-subsidized less-refined brown sugar was over 43 percent cheaper than refined white sugar, brown sugar has not been readily accepted by consumers, rich and poor alike. Even poorer consumers have rejected less-refined brown sugar, apparently because the darker sugar is perceived to be "dirty."
- *Subsidies should be set so that consumer prices appropriately reflect perceived quality differences.* For example, pasteurized-reconstituted milk, which is the least-preferred variety of milk, is packaged in two types of half-liter containers: *berlingot* tetrahedron cartons and flimsy plastic film pouches called *coussin*. While both varieties are perceived to be unattractive to wealthier consumers, *coussin* possesses additional features (see Chapter 3) that make them even more "inferior" than *berlingot* cartons. However, they both carry the same price; even the poor rejected the variety packaged in *coussin* pouches and opted to purchase pasteurized-reconstituted milk in *berlingot* cartons instead.

Incidence of Targeted Food Subsidy Programs, International Comparison

Table 20 presents the incidence of targeted food subsidy programs in various developing countries. A comparison of Table 10 in Chapter 2 and Table 20 below reveals that targeted programs are far more effective in reducing leakages to the non-poor than universal schemes. The very effort of targeting, however, entails program costs that are generally not associated with universal programs, including: identification of beneficiaries, screening, maintaining eligibility lists, preventing fraud, etc. Considerable research has focused on the trade-off between reduced program costs from directing benefits exclusively to intended recipients and the increased costs associated with narrow targeting, and found that there is little correlation between improved incidence and the share of administrative cost in total program expenditures.⁹⁹

Although the poor benefitted more from CGC subsidies than the rich in 1993, Table 20 shows that the Tunisian reform program was not as well-targeted as targeted schemes in other countries. "Hybrid" self-selection programs, such as the self-targeted Jamaican program which distributes food stamps at strategically-chosen health clinics, might result in greater target accuracy than self-targeted food price subsidy programs because they use additional information about consumer behavior to supplement their emphasis on staples. The relatively poorer standing of the Tunisia program is also partly due to the fact that the 1993 Tunisian survey presents a "mid-term snapshot" of the incidence of the CGC program as self-targeting reforms are being implemented. These results do not demonstrate the final degree to

⁹⁹For a thorough treatment of the trade-off between target accuracy and administrative costs, see Grosh (June 1992).

which targeting can be achieved using quality differentiation. In fact, as discussed in Chapter 5, several additional reforms could be undertaken to fine-tune the menu of goods eligible for CGC subsidies and further improve program incidence.

Table 20 - ABSOLUTE INCIDENCE OF TARGETED FOOD PROGRAMS, INTERNATIONAL COMPARISON						
Country	Program	% of Benefits Accruing to Quintile				
		1	2	3	4	5
Tunisia (1993)	SELF-SELECTION: Food Price Subsidies (total)	21	20	21	20	18
Morocco	SELF-SELECTION: Food price subsidies, High Extraction Rate Flour (FNBT)	23	24	22	18	13
Jamaica	SELF-SELECTION: Food Stamps at Health Clinic	44	31	18	5	2
Chile	SELF-SELECTION: Food Supplement at Health Clinic	41	28	18	10	3
Peru	GEOGRAPHIC TARGETING: Food Supplement by neighborhood	42	30	20	6	3
Jamaica	MEANS TEST: Food Stamps	47	29	15	6	3

Jamaica, Chile, Peru: Reproduced from Grosh (June 1992).
Tunisia: Quintiles per adult equivalent. INS 1993 *Enquête Restreinte sur la Consommation des Produits Subventionnés*; District of Tunis. Total expenditure and sugar consumption patterns extrapolated from 1990 household expenditure survey (adjusted for inflation and adult equivalent); total food subsidies covers durum-wheat products, bread-wheat products, cooking oil, sugar and milk. Morocco: Living Standards Survey, 1990/91 (per capita quintiles). Numbers may not add due to rounding.

NUTRITIONAL IMPACT

The contribution of food subsidies to calorie and protein intake have remained substantial under the reform program, despite the reduction and elimination of subsidies on many products, as discussed in Chapter 3 above. Table 21 indicates that, *on average*, roughly 44 percent of total calorie and protein intake was derived from food subsidies in 1993 (as compared with 59 and 62 percent respectively in 1990, see Chapter 2 for details).¹⁰⁰ Food subsidies under the reform program are especially important to *the poor*, contributing to approximately 54 and 62 percent of total calorie and

¹⁰⁰As discussed in Chapter 2, figures on total calorie and protein intake, as well as the nutritional importance of food subsidies, come from the INS household expenditure survey (rather than the national food and nutrition survey). Consequently, these data refer to *acquisitions* of calories and protein (including those derived from purchases and on-farm consumption), rather than actual *intake* of these nutrients. These figures do not, therefore, take into account leftovers (portions uneaten) or portions allocated to guests or household animals.

protein intake respectively by the poorest quintile in 1993. The importance of food subsidies to nutritional intake drops monotonically with increases in income; this is likely due to the fact that wealthier consumers tend to have more diversified diets (with greater consumption of meat, for example) and rely less on the basic staples supported by the CGC subsidy program.

Although Table 21 provides a useful "snapshot" of the importance of food subsidies to nutritional intake under the self-targeted program, it does not isolate the nutritional impact of CGC reforms. The nutritional effects of these reforms¹⁰¹ can be simulated using estimated demand elasticities which determine the direction and magnitude of quantities consumed of individual goods.¹⁰² Unit calorie and protein coefficients are then applied to simulated changes in quantities, and the total effect of reforms on intake is calculated as the sum of the effects on individual products as a share of total intake. A *negative* result indicates a *loss* in calorie and protein consumption.

The results of these simulations are presented in Table 22. *On average*, CGC reforms from 1990 to 1993 caused in a drop in caloric intake of roughly 14 percent and a loss in protein intake of 16 percent, with all other factors held constant.¹⁰³ Cuts in subsidies on bread-wheat products,¹⁰⁴ followed by reforms involving durum-wheat subsidies, had the strongest adverse effect on the nutritional intake for all consumers. These losses were only partially offset by increases in subsidies on reconstituted milk and the introduction of subsidies on local fresh milk.

¹⁰¹Reforms captured by the simulations include: (i) for durum wheat: the elimination of *direct* subsidies on pasta and couscous; (ii) for bread wheat: the elimination of subsidies on *baguettes* and flour, and the reduction of subsidies on *gros pain*; (iii) for cooking oil: the reduction of subsidies on generic grain oil (both "bulk" and bottled); and (iv) for milk: the increase in subsidies on sterilized-reconstituted milk (in both plastic bottles and tetrabrik cartons) and the introduction of promotional subsidies on local fresh milk packaged in plastic bottles and tetrabrik cartons ("new goods"). Because less than one percent of those households included in the 1993 survey actually purchased pasteurized- reconstituted milk packaged in *coussin* pouches, this variety of milk was grouped together with pasteurized-reconstituted milk packaged in *Berlingot* cartons for the purposes of policy simulations. For obvious reasons, the simulations do not incorporate the welfare effects of reforms that were implemented after the 1993 survey was carried out (summer 1993). These reforms include the introduction of: (i) "superior" breads that were liberalized in 1991 but were not widely available at the time of the 1993 survey (see para. 50); (ii) subsidies on a single bread (*pain unique*) made from a high extraction rate flour (see paras. 45-49); (iii) unsubsidized pure grain oils (see para. 54); and (iv) *zit sanafa*, a new "fixed mixed" cooking oil which was not widely available at the time of the survey (see para. 55). In addition, because sugar was not included in the 1993 survey, the simulations do not include the effects of sugar price changes and targeting reforms.

¹⁰²See Annex 6 for details on the methodology used for estimation and simulations.

¹⁰³*Actual* changes in consumption differ from these *simulated* responses because of changes in other variables. These simulations isolate the effects of price changes and targeting reforms holding all other factors constant (including the prices of other goods).

¹⁰⁴Although semolina prices did not vary substantially in real terms from 1990 to 1993, semolina consumption was nonetheless affected by reforms via cross-price effects of pasta and couscous (for which subsidies were eliminated) and via indirect income-effects arising from changes in total expenditures allocated to durum-wheat products.

Table 21 - CALORIE AND PROTEIN INTAKE FROM FOOD SUBSIDIES AS SHARE OF TOTAL INTAKE, PAE, BY QUINTILE: REFORM PROGRAM - 1993								
	POOR		3	4	RICH		Ratio 5/1	Ratio 1/5
	1	2			Average	5		
Calories Per Adult Equivalent								
Total DW	26.9%	17.3%	15.5%	13.7%	11.0%	16.9%	0.4	2.4
Semolina	20.9%	11.4%	9.3%	8.1%	5.7%	11.1%	0.3	3.6
Couscous	1.3%	1.5%	1.6%	1.4%	1.5%	1.5%	1.1	0.9
Pasta	4.8%	4.4%	4.6%	4.1%	3.8%	4.3%	0.8	1.2
Total BW	12.1%	13.0%	13.5%	12.1%	8.6%	11.9%	0.7	1.4
Gros Pain	12.1%	13.0%	13.5%	12.1%	8.6%	11.9%	0.7	1.4
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	13.7%	13.3%	13.4%	13.2%	11.0%	12.9%	0.8	1.2
Unpackaged (bulk)	10.2%	10.1%	9.9%	9.1%	5.1%	8.9%	0.5	2.0
Bottled	4.1%	4.0%	4.1%	4.6%	5.8%	4.5%	1.4	0.7
Sugar	0.4%	0.5%	0.6%	0.6%	0.7%	0.6%	1.7	0.6
Total Milk	1.0%	1.2%	1.2%	1.3%	1.4%	1.2%	1.4	0.7
PST	0.5%	0.3%	0.4%	0.2%	0.1%	0.3%	0.3	3.4
SRM	0.4%	0.7%	0.6%	0.8%	0.8%	0.7%	1.9	0.5
Loc. Fresh Bottle	0.0%	0.1%	0.1%	0.1%	0.2%	0.1%	4.8	0.2
Loc. Fresh Tetrab.	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	6.0	0.2
Total Above	54.2%	45.3%	44.3%	40.9%	32.8%	43.5%	0.6	1.6
Total Calories	2531	2700	2792	2884	3020	2785	1.2	0.8
Protein Per Adult Equivalent								
Total DW	38.8%	23.6%	20.5%	17.2%	12.7%	22.6%	0.3	3.1
Semolina	29.2%	14.8%	11.7%	9.7%	6.2%	14.3%	0.2	4.7
Couscous	1.8%	2.0%	2.0%	1.7%	1.6%	1.8%	0.9	1.1
Pasta	7.9%	6.8%	6.8%	5.8%	4.9%	6.4%	0.6	1.6
Total BW	20.7%	20.8%	20.7%	17.6%	11.4%	18.2%	0.6	1.8
Gros Pain	20.7%	20.8%	20.7%	17.6%	11.4%	18.2%	0.6	1.8
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Unpackaged (bulk)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Bottled	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Sugar	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Total Milk	2.7%	2.9%	2.9%	2.9%	3.0%	2.9%	1.1	0.9
PST	1.4%	0.7%	0.9%	0.5%	0.3%	0.7%	0.2	4.4
SRM	1.1%	1.7%	1.5%	1.8%	1.6%	1.6%	1.5	0.7
Loc. Fresh Bottle	0.1%	0.2%	0.2%	0.2%	0.4%	0.2%	3.7	0.3
Loc. Fresh Tetrab.	0.1%	0.3%	0.3%	0.4%	0.7%	0.4%	4.7	0.2
Total Above	62.2%	47.3%	44.1%	37.7%	27.0%	43.7%	0.4	2.3
Total Protein	44.0	50.2	54.2	58.8	67.9	55.0	1.5	0.6

Source: INS, Household Expenditure Survey, District of Tunis, 1990. Total expenditure & sugar cons. patterns extrapolated 1990 Survey (adjusted for adult equivalent). DW = durum wheat; BW = bread wheat; PST = pasteurized-reconstituted milk SRM = sterilized-reconstituted milk; ES = subsidy eliminated; PAE = per adult equivalent. Numbers may not add due to rounding.

Table 22 - SIMULATED IMPACT OF REFORMS ON CALORIE/PROTEIN INTAKE: CHANGE IN CALORIE/PROTEIN INTAKE AS SHARE OF TOTAL INTAKE, BY QUINTILE								
	POOR				RICH		Ratio 5/1	Ratio 1/5
	1	2	3	4	5	Average		
Calories Per Adult Equivalent								
Total DW	-3.6%	-3.5%	-3.2%	-3.0%	-4.2%	-3.5%	1.2	0.9
Semolina	-2.0%	-1.6%	-1.4%	-1.1%	-2.1%	-1.6%	1.1	0.9
Couscous	-0.7%	-0.8%	-0.8%	-0.8%	-1.1%	-0.8%	1.7	0.6
Pasta	-0.9%	-1.1%	-1.1%	-1.1%	-0.9%	-1.0%	1.0	1.0
Total BW	-7.2%	-7.8%	-7.2%	-6.9%	-7.2%	-7.3%	1.0	1.0
Gros Pain	-6.3%	-5.8%	-6.1%	-5.5%	-4.2%	-5.6%	0.7	1.5
BW Flour	-0.7%	-1.5%	-0.7%	-0.3%	0.5%	-0.5%	-0.8	-1.2
Baguette	-0.2%	-0.5%	-0.4%	-1.2%	-3.5%	-1.2%	18.1	0.1
Generic Cooking Oil	-2.4%	-3.4%	-3.6%	-3.8%	-4.0%	-3.4%	1.6	0.6
Total Milk	-0.4%	-0.4%	-0.5%	-0.5%	1.2%	-0.1%	-2.6	-0.4
PST	-0.2%	-0.2%	-0.3%	-0.2%	-0.2%	-0.2%	0.7	1.5
SRM	-0.9%	-1.6%	-1.7%	-2.1%	-2.3%	-1.7%	2.6	0.4
Loc. Fresh Bottle	0.3%	0.7%	0.6%	0.7%	1.3%	0.7%	4.8	0.2
Loc. Fresh Tetrab.	0.4%	0.8%	1.0%	1.3%	2.3%	1.1%	6.0	0.2
Total Above	-13.7%	-15.1%	-14.5%	-14.1%	-14.2%	-14.3%	1.0	1.0
Total Calories	2531	2700	2792	2884	3020	2785	1.2	0.8
Protein Per Adult Equivalent								
Total DW	-5.2%	-4.8%	-4.3%	-3.8%	-4.7%	-4.6%	0.9	1.1
Semolina	-2.8%	-2.0%	-1.7%	-1.3%	-2.3%	-2.0%	0.8	1.2
Couscous	-0.9%	-1.0%	-0.9%	-1.0%	-1.2%	-1.0%	1.3	0.8
Pasta	-1.5%	-1.8%	-1.6%	-1.5%	-1.2%	-1.5%	0.8	1.3
Total BW	-12.2%	-12.2%	-10.9%	-10.0%	-9.6%	-11.0%	0.8	1.3
Gros Pain	-10.8%	-9.2%	-9.3%	-8.0%	-5.6%	-8.6%	0.5	1.9
BW Flour	-1.0%	-2.2%	-1.0%	-0.3%	0.6%	-0.8%	-0.6	-1.6
Baguette	-0.3%	-0.8%	-0.6%	-1.7%	-4.7%	-1.6%	14.0	0.1
Generic Cooking Oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Total Milk	-1.2%	-1.1%	-1.1%	-1.0%	2.4%	-0.4%	-2.0	-0.5
PST	-0.6%	-0.6%	-0.6%	-0.6%	-0.3%	-0.5%	0.5	2.0
SRM	-2.3%	-4.0%	-4.1%	-4.8%	-4.7%	-4.0%	2.0	0.5
Loc. Fresh Bottle	0.7%	1.6%	1.3%	1.5%	2.7%	1.6%	3.7	0.3
Loc. Fresh Tetrab.	1.0%	1.9%	2.3%	2.9%	4.7%	2.5%	4.7	0.2
Total Above	-18.6%	-18.0%	-16.3%	-14.8%	-11.9%	-15.9%	0.6	1.6
Total Protein	44.0	50.2	54.2	58.8	67.9	55.0	1.5	0.6
Changes in intake arising from real price (subsidy) changes from universal subsidy program (in 1990) to reform program (in 1993).								
Changes simulated, ceteris paribus, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6).								
Data from: INS, Household Expenditure Survey, District of Tunis, 1990. Total intake & expenditure extrapolated from 1990 Survey								
(adjusted for adult equivalent). DW = durum wheat; BW = bread wheat; PST = pasteurized-reconstituted milk								
SRM = sterilized-reconstituted milk; ES = subsidy eliminated; PAE = per adult equivalent. Numbers may not add due to rounding.								

In terms of caloric intake, the measures taken under the reform program had a slightly larger adverse impact on wealthier consumers than the poorest households. Other things equal, the simulations show that the reforms resulted in a loss in caloric intake of 14.2 percent and 13.7 percent for the top and bottom quintiles respectively. In particular, reductions in the subsidies on couscous, cooking oil, and especially *baguettes* resulted in calorie losses that were disproportionately higher for the richest quintile than for the poorest. This result is not insignificant, given the substantially lower level of total caloric intake for the poorest quintile (which was below the INS recommended daily level) as compared with the richest, and it demonstrates the role of targeting in shielding the poor from subsidy cuts.

In contrast to the more equitable impact on caloric intake, the reforms resulted in a larger reduction in protein intake for the poor than for the rich. Other things equal, the resulting drop in protein intake that was 1.6 times greater for the lowest-income quintile than for the richest. Wider diversity in diets and greater consumption of meats (which are not subsidized) helped shield the protein intake of wealthier consumers from subsidy cuts under the reform program. The rich also gained more in terms of nutritional intake from increases in milk subsidies and the introduction of subsidies on local fresh milk, because, with the exception of pasteurized-reconstituted milk, higher-income consumers consume more milk than poorer households.

The simulations reveal that the reforms succeeded in *increasing the share of the poor's consumption of subsidized calories and protein* from 1990 to 1993. Table 23 indicates that a greater share of subsidized calories and protein was consumed by the poor in 1993 than in 1990 (with a gain of over four percentage points for total subsidized calories and protein).

Table 23 - CHANGE IN EACH QUINTILE'S SHARE OF CONSUMPTION OF SUBSIDIZED CALORIES AND PROTEIN, FROM UNIVERSAL SUBSIDY PROGRAM (1990) TO REFORM PROGRAM (1993)				
POOR 1	2	3	4	RICH 5
CHANGE IN EACH QUINTILE'S SHARE OF SUBSIDIZED CALORIES Change in Percentage Points				
4.1	-0.6	-0.1	-1.4	-2.0
CHANGE IN EACH QUINTILE'S SHARE OF SUBSIDIZED PROTEIN Change in Percentage Points				
4.3	0.5	-0.7	-2.1	-2.0
<p>Source: INS 1990 and 1993 household expenditure surveys; District of Tunis. All figures in per adult equivalent terms. Numbers may not add due to rounding. Percentage points calculated as: [consumption of subsidized calories (protein) by quintile X / consumption of total subsidized calories (protein)]₉₃ - [consumption of subsidized calories (protein) by quintile X / consumption of total subsidized calories (protein)]₉₀. For example, the poorest quintile's share of the consumption of subsidized calories rose by five percentage points from 1990 to 1993 (using calories as an example; the same formulas and interpretation apply for protein intake).</p>				

CHAPTER V

RECOMMENDATIONS

APPROACH TO ON-GOING REFORMS

In the Tunisian political context, a complete elimination of food subsidies is not likely to be feasible in the foreseeable future. A clear demonstration of the possible consequences of such an action was given during the 1984 "January bread riots." Eliminating the transfers also seems unwise from a poverty alleviation standpoint, given the relative importance of food subsidies to the welfare and nutritional status of the poor.

Despite the significance of food subsidies to the poor, the high costs of the program combined with substantial leakages to the non-poor made an overhaul of the universal subsidy system an urgent priority for the 1990s. Tunisian policy-makers have rejected the possibility of replacing the food subsidy program with means-tested food stamps or direct income transfers. A primary justification for this is political: according to several officials, food stamps are politically unpopular in Tunisia. Moreover, given informational constraints and the inability to discern individuals' incomes efficiently and accurately, efforts to institute means-tested transfer programs in Tunisia have not proven to be effective or efficient alternatives to food subsidies. Indeed, direct assistance programs, such as the Needy Families Program which was designed to provide cash transfers to the poorest of the poor, have been plagued with administrative difficulties, substantial leakages, and errors of exclusion.¹⁰⁵

Geographic targeting mechanisms, which select specific regions or neighborhoods in which subsidized commodities should be sold, have been explored for application, but do not appear to be appropriate in Tunisia. Proposals were recently made to establish geographical boundaries on sales of bulk oil, limiting them to the poorer neighborhoods by selling quotas to merchants operating in designated areas. However, it appears that in many areas, distinctions between neighborhoods are too obscure to make geographic targeting effective. In addition, there are the usual questions as to whether there would have been shortages, due to the quotas placed on sales, or leakages of subsidized bulk oil to unintended neighborhoods.

Given political and administrative constraints, the foundations provided by the universal food subsidy system favor reforms that seek to reduce costs and improve incidence within the existing framework of generalized food price subsidies over those requiring an entirely new institutional structure to channel transfers to intended beneficiaries. The three-pronged reform program (which includes improved targeting, gradual price increases, and cost reduction measures) adopted by the Tunisians makes use of available information and the existing institutions developed by the universal subsidy system. This

¹⁰⁵Another example of inefficient income-based transfers involves health care, whereby the Tunisian Government provides free or subsidized health care to the poor through two health care schemes (*Assistance Médicale Gratuite - Type I*, AMG I, and *Assistance Médicale Gratuite - Type II*, AMG II). Although intended for the poor, access to these programs, in particular AMG II, is easy: roughly 660,000 families or 40 percent of the population, benefit from AMG II, although official Tunisian poverty lines define the poor as representing approximately 6.7 percent of the population. The availability of these programs to the non-poor has weakened incentives to contribute and participate in the health insurance system. For more information on these health care schemes, see World Bank (April 1993).

approach has also proved to be a politically acceptable way of cutting budgetary expenditures while protecting the consumption of the poor.

Reforms have indeed been effective in reducing the fiscal burden of the CGC program and in improving the targeting of subsidies. From over four percent of GDP and ten percent of total Government expenditures in 1984, the subsidy program was cut to two percent of GDP and six percent of total public outlays by 1993. Reforms have also transformed program incidence from a situation in which the universal program transferred more absolute benefits to the rich, to one in which the poor benefitted more from food subsidies than the rich.

Despite these successes, additional reforms using the three-pronged approach could further sharpen the effectiveness of the CGC program. Several poorly targeted products remain in the subsidy program, and a phasing out of these subsidies would further improve the incidence of the CGC program and generate substantial fiscal savings. Retail prices should be increased according to targeting priorities so as to remove any remaining untargeted items from the Caisse. In addition, the Government should seek to reduce unnecessary costs associated with the injection of subsidies and the regulation of subsidized foods. The current ballooning of subsidy outlays due to the recent rise in world cereals prices makes these additional reforms an urgent priority from a fiscal standpoint.

MANAGING THE ON-GOING REFORM PROCESS

Policy-makers should take into account both the impact on the poor and the political consequences of additional reforms. In fine-tuning the current reform program, Tunisian policy-makers must pay close attention to the genuine trade-off that exists between reducing budgetary costs and protecting the poor. Any adjustments which increase prices in real terms can have an adverse effect on the welfare and nutritional intake of the poor. Although "targeted" price adjustments which seek to reduce or eliminate subsidies on specific products could dampen these effects, they still hurt the poor to the extent that the poor consume the goods in question. This means that measures to reduce program costs via price increases can only be achieved by rendering the subsidy program more regressive in relative terms and by reducing the welfare of the poor. In cutting subsidies, therefore, consideration should be given to possible compensating measures that could cushion the impact of price increases on the poor and to maintain the existing level of transfers to lower-income groups. To a certain extent, self-targeting reforms which introduce heavily subsidized "inferior" goods could offset the adverse welfare and nutritional effects of subsidy reductions on other products. To reduce poverty, other complementary measures may be necessary, however, since the magnitude of subsidy benefits is limited by the quantity of subsidized products consumed.

In general, policy-makers should also consider the issue of political support for, or opposition to, food subsidy reforms by a variety of actors, including, *inter alia*: the government itself (e.g. the degree of political commitment to reforms among the various ministries); parastatal agencies (which often have vested interests in existing institutional arrangements); organized interest groups (labor unions, agricultural lobbies, etc.); and the public. Past experience in Tunisia and in numerous other countries demonstrates the potentially explosive nature of food subsidy reforms. As discussed in Chapter 3, careful management of the on-going reform program has facilitated the Tunisian Government's efforts to implement reforms and to successfully avoid a repeat of the "food riots" which had characterized previous attempts at reform. Similar steps should be taken to manage additional reform

measures, including: (i) adopting a gradual approach to reforms; (ii) instituting price hikes in a timely and staggered manner (e.g., at different times during the summer months); (iii) "sensitizing" the population about the necessity and rationale for the reforms through media campaigns (demonstrating well in advance, for example, the need for reforms by illustrating the opportunity cost of existing policies); and (iv) simultaneously phasing in targeted compensating measures (with appropriate publicity about these efforts). The use of public-relations experts could be an additional way to help manage the reform process and "sensitize" various actors about the rationale behind the measures.

RECOMMENDED REFORM MEASURES

A number of additional reforms could be taken to reduce the costs of the CGC subsidy program and sharpen the targeting of these transfers. The recommended reforms follow the three-pronged approach adopted by the Government under the VIII Development plan, including additional measures to better target the subsidies, gradual price increases, and cost reduction measures.

Targeting

Self-targeting efforts in Tunisia could be reinforced by strengthening the application of both the "inferior goods" and the "superior goods" approaches. A summary of these measures is presented in Box 4 below.

Incidence analysis indicates that the application of the "superior goods" approach has clearly been successful in diverting the demand of wealthier households away from subsidized products. Liberalizing government controls on "superior goods" and allowing unsubsidized goods to enter the market through private channels to siphon off the demand of high-income consumers, should be intensified in all subsectors. Indeed, the availability of attractive alternatives is a necessary condition for the success of self-targeting.

The analysis also reveals that the "inferior goods" approach can be an effective way to self-target food subsidies. A prime example of this success in the Tunisian program is semolina, which has been targeted for subsidies because it is consumed disproportionately more by the poor than the rich. For other product categories, however, the application of the "inferior goods" approach has stumbled to a certain degree over a variety of public health (pasteurized milk, bulk oil), consumer acceptance (brown sugar), and political (high-extraction rate bread) obstacles, as discussed in greater detail below.¹⁰⁶ It seems that the targeting of semolina as an "inferior good," as compared with other attempts to apply this approach, is facilitated by the fact that semolina is a traditional product in the diets of the Tunisians, and

¹⁰⁶ Another interesting example of the difficulty of shifting subsidies to new "inferior" goods involves the targeting of subsidies to lower-quality school notebooks (*les cahiers scolaires*), which are also covered by the CGC program. *Stigma* appears to be the main obstacle in this case. Policy-makers have attempted to self-target school notebooks by shifting subsidies to a lower-quality notebook (with lower-quality paper and ink lines, and a less attractive cover), while allowing higher-quality notebooks (with higher-quality paper and ink lines, and attractive, colorful cartoons on the cover) to be marketed at less-subsidized prices. The price differential between the two types of notebooks is huge (50 millimes for the lower-quality notebook versus 450 millimes for the superior item). But the targeted "inferior" notebooks are not apparently being rejected by consumers and policy-makers alike. Policy-makers argue that the *stigma* associated with visibly separating the rich from the poor, particularly for a *durable* item consumed by children, is unacceptable, and apparently this distinction is to be eliminated.

does not involve the introduction of a *new* good that is perceived to be of lower-quality. Indeed, creating *new* higher quality products via the "superior goods" approach (such as the new local fresh milk) appears to be more technically and politically feasible than introducing new "lower" quality items.

For durum-wheat products, expenditure patterns clearly support a targeting of subsidies towards semolina and away from pasta and couscous. Semolina is by far the best targeted item in the CGC subsidy program. It is also nutritionally rich and highly important in terms of its contribution to the diets and total expenditures of the poor.

A potential drawback to targeting subsidies on semolina is that it is used as an input into the production of pasta and couscous. Although direct subsidies on pasta and couscous, which are not well-targeted to the poor (see Tables 13 and 14), were eliminated in 1993, these items remain subsidized indirectly via the subsidy on semolina. To eliminate these indirect untargeted transfers, the Government could gradually phase in a "*redevance*" payment system whereby *pastiers*, which process pasta and couscous from semolina, reimburse the CGC an equivalent unit amount for the subsidy on semolina used to make these items. Such a system has already been adopted for PS-7 flour, whereby millers reimburse the CGC for the subsidies accruing from the use of subsidized bread wheat for the production of unsubsidized PS-7 flour.

In addition, the Government is currently exploring the possibility of self-targeting pasta subsidies in light of their importance in the diets and budgets of the poor. This option includes the introduction of unsubsidized higher-quality "superior" varieties of pasta (via nicer packaging, attractive pasta shapes, and multi-colored spinach-tomato pasta varieties). If such a system were instituted, the less attractive "inferior" pasta varieties could continue to benefit from the indirect subsidy (via the subsidy on semolina), whereas the "*redevance*" payment system, described in para. 185 above, could apply to the "superior" varieties.

For bread-wheat products, *gros pain* subsidies should be gradually phased out, despite the fact that they are somewhat well-targeted, because of the observed leakages of the subsidized flour that used to make *gros pain* to other "unsubsidized" poorly targeted products (*baguettes*, pastries, biscuits and pizza). Steps should be taken to implement the Government's plans to replace *gros pain* subsidies with a subsidy on a single bread (*pain unique*), which preserves the features (size, shape and weight) that make *gros pain* less attractive to wealthier consumers, but which is made from a distinct, higher-extraction rate flour.¹⁰⁷

¹⁰⁷As discussed in Chapter 3, this higher-extraction rate flour is actually nutritionally superior to the traditional flour used to make *gros pain* and *baguettes*.

Box 4 - SUMMARY OF RECOMMENDATIONS FOR FURTHER TARGETING REFORMS		
	INFERIOR GOODS APPROACH	SUPERIOR GOODS APPROACH
Durum-Wheat Products	<ul style="list-style-type: none"> ● Maintain consumer subsidies on semolina in the medium-term, since semolina is well-targeted and is particularly important to low-income groups from a welfare and nutritional standpoint 	<ul style="list-style-type: none"> ● Institute a <i>redevance</i> system whereby <i>pastiers</i> reimburse the subsidy received on semolina that is used to make pasta and couscous, which are not well targeted; regularly adjust the prices of pasta and couscous so as to ensure that these items are not subsidized (either explicitly or implicitly) ● Explore possibilities for self-targeting pasta subsidies whereby the <i>pastiers</i> reimburse the indirect subsidy on semolina used to produce "superior" varieties of pasta (attractive shapes, colors) so that these varieties are not subsidized (even indirectly)
Bread-Wheat Products	<ul style="list-style-type: none"> ● Shift subsidies to a new bread made from a distinct high extraction rate flour (that incorporates bran particles) that maintains the features of <i>gros pain</i> that are well-targeted to the poor (size, shape, weight) ● Carefully examine the impact of any subsidy reductions for <i>gros pain</i> on the poor since existing survey data indicate that subsidies on <i>gros pain</i> are particularly important to the poor, in terms of protecting the purchasing power and the nutritional status of low-income groups 	<ul style="list-style-type: none"> ● Liberalize the prices of <i>baguettes</i>, or, if their prices remain administratively determined, continue to increase them regularly so as to ensure that <i>baguettes</i> do not become subsidized again
Cooking Oil	<ul style="list-style-type: none"> ● Shift subsidies to unpackaged generic grain oil sold from bulk retailers, which is well-targeted to the poor, provided that (i) this variety does not entail hygienic problems (such as the oil becoming rancid in bulk drums); and (ii) leakages of subsidized bulk generic grain oil to the production of other oils (such as bottled generic grain oil) do not jeopardize targeting efforts; <u>or</u> ● If the above conditions do not hold, shift subsidies to generic grain oil packaged in cheap, unattractive bottles with plain labels which simply identify their contents as "cooking oil" 	<ul style="list-style-type: none"> ● Encourage private operators to market pure grain oils packaged in attractive bottles with labels clearly indicating the type of oil being sold by eliminating the tariff differential between imports of pure grain oils by private importers (currently 43%) and imports of generic grain oil (soy, canola) by the ONH (preferential tariff rate is currently 15%)
Milk	<ul style="list-style-type: none"> ● Shift subsidies to pasteurized-reconstituted milk packaged in <i>berlingot</i> cartons provided that the milk is adequately refrigerated along distribution channels 	<ul style="list-style-type: none"> ● Gradually eliminate subsidies on sterilized milk (both reconstituted and local fresh), which is currently packaged in Tetrabrik cartons and plastic bottles
Sugar	<ul style="list-style-type: none"> ● Review the apparent rejection of heavily subsidized, less-refined brown sugar, by low-income consumers; conduct product trials, testing the less-refined sugar at various price differentials, and monitor consumption patterns ● If poorer consumers reject the less-refined variety even with larger price differentials between white and brown sugar, subsidies on both white and brown sugar should be gradually eliminated, but the impact of these cuts on the welfare and caloric intake by low-income consumers should be monitored 	<ul style="list-style-type: none"> ● Gradually eliminate subsidies on white granulated sugar, while monitoring the impact of these cuts on the welfare and caloric intake of the poor

As discussed in Chapter 3, feasibility trials and a consumer survey were conducted in December 1992 and revealed that (i) production of this bread/flour was technically feasible; and (ii) such a reform would entail an improvement in the self-targeting of bread-wheat subsidies and would reduce leakages of subsidized flour to unintended uses. Despite these results, the Government has been hesitant to implement the planned shift in subsidies from *gros pain* to this higher-extraction rate *pain unique*. The slow pace of implementation seems to arise from policy-makers' fears that the darker, rougher bread would invoke a negative "stigma" effect for what is arguably the most politically sensitive product in the CGC program and from their perceptions of resulting political resistance to such a shift. These reforms are apparently still under consideration, though policy-makers perceive a need to precede their implementation with a public relations campaign (*campagne de sensibilisation*) intended to "sensitize" various parties (ministries within the Government, agents involved in the bread-wheat market, and the general public) about the rationale for such measures.

For cooking oils, expenditure patterns indicate that subsidies should be shifted towards generic grain oil sold in small quantities from bulk oil retailers because this variety is consumed disproportionately by lower-income groups. However, shifting subsidies to bulk generic oil, as opposed to bottled generic oil, suffers the drawback that bottlers could potentially divert subsidized bulk oil towards the production of bottled oil (which is consumed more by wealthier consumers), thereby jeopardizing targeting efforts. Moreover, policy-makers have apparently recently retreated from plans to target bulk oil, due to reports of sanitation problems associated with bulk oil sales.¹⁰⁸ Such hygienic problems violate the intentions of self-targeting, in that they result in a true down-grading of the intrinsic value of the subsidized "inferior good" rather than a mere perception on behalf of consumers that the item is "less attractive."

These public health concerns should be thoroughly investigated. If a sanitation investigation reveals that bulk oil sales are contaminated or unhygienic, or if it appears that leakages of subsidized bulk generic oil to the production of other cooking oils (such as bottled oil) would jeopardize targeting efforts, cooking oil subsidies should be gradually eliminated or shifted towards generic grain oil packaged in cheap, low-quality bottles with plain labels which simply identify their contents as "cooking oil" (as opposed to unsubsidized oil which is packaged in attractive bottles which clearly identify their contents).

For sugar, the apparent rejection of subsidized, less-refined brown sugar by consumers should also be examined. If necessary, a greater price differential should be created between white and brown sugar to entice lower-income consumers to purchase the more heavily-subsidized brown sugar. Otherwise, sugar subsidies, which are currently injected only on domestically-produced sugar (and hence largely benefits producers) should be eliminated.

¹⁰⁸Several factors have been identified as potential causes of contamination and/or rancidity of bulk oil, including (i) potentially poor sanitation of the oil drums (at the wholesale and retail levels), which have been observed to be rusty and banged up and which are not always thoroughly cleaned at the time of replenishing; (ii) the slow turnover of oil stored in bulk drums (with new oil being added to old, resulting in the oil becoming rancid); (iii) possible contamination at the time the unpackaged oil is purchased at the retail level, arising from unclean handling and potentially polluted containers into which the oil is transferred. In fact, bulk oil sales have been banned in other countries due to similar public health concerns.

For milk, expenditure patterns clearly support a shifting of subsidies towards pasteurized-reconstituted milk because it is the only type of milk that is consumed disproportionately by the poor (as shown in Table 14). Packaging differentials have been used to strengthen the targeting of this type of milk. The relatively inexpensive half-liter containers (*berlingot* cartons and *coussin* pouches) used to package pasteurized-reconstituted milk favor consumption by the poor (who tend to make smaller budgetary outlays at any given time) over the rich (who prefer to buy large quantities of milk with long-life storage properties). As discussed in Chapters 3 and 4, survey data reveal that *berlingot* is a more suitable than *coussin* as a package for the targeted milk because of the observed rejection of *coussin* by consumers across-the-board (rich and poor alike) who were apparently deterred by the additional inconvenient attributes of the milk pouches.¹⁰⁹

Although expenditure patterns support a shifting of subsidies towards pasteurized-reconstituted milk packaged in *berlingot* cartons, this product was eliminated from the subsidy program via a ministerial order in 1994. The reasons given for this reform reversal include: (i) public health concerns regarding potentially inadequate refrigeration of the pasteurized-reconstituted milk along various distribution channels (particularly in poor neighborhoods) and the very limited shelf-life of this type of milk;¹¹⁰ and (ii) the relatively small importance of pasteurized-reconstituted milk subsidies and the wide range of available substitutes (sterilized-reconstituted milk and local fresh milk), which seem to have facilitated the elimination of this subsidy from a political standpoint.

Unless the technical aspects regarding the refrigeration of pasteurized-reconstituted milk can be overcome, or unless policy-makers are unable to identify an alternative well-targeted variety of milk, all remaining milk subsidies (which are currently injected on sterilized-reconstituted and local fresh milk, neither of which are well-targeted) should be eliminated.

Retail Price Increases

The prices of all commodities in the CGC should be adjusted regularly to keep pace with inflation. Beyond that, attempts should be made to ensure that prices are increased faster on goods consumed disproportionately by higher income groups. However, evidence that even these "targeted" price adjustments reduce the purchasing power and consumption of the poor should be weighed against the gains from reduced outlays on the program. The Government should especially refrain from ambitiously increasing prices on commodities heavily consumed by the poor, such as semolina, large loaf breads (e.g., *gros pain*, or eventually, *pain unique*), bulk oil, and pasteurized-reconstituted milk packaged in *berlingot* cartons or *coussin* pouches. Increases in the price of semolina, in particular, were shown to have potentially detrimental effects on the levels of per capita calorie and protein consumption by lower-income groups.

¹⁰⁹*Coussin* pouches, unlike *berlingot* cartons, do not stand upright and require the milk to be transferred to another container upon opening. In addition, the flimsy plastic film milk pouches resemble a popular laundry detergent package used in Tunisia ("OMO").

¹¹⁰Unlike other varieties, pasteurized milk requires the milk to be refrigerated prior to opening and has a shelf-life of about two days).

The sensitivity surrounding the issue of price hikes requires careful attention to political considerations, without sacrificing economic and targeting effectiveness. Price increases should be gradual and well publicized. In particular, increases in the prices of the more politically sensitive goods should be implemented gradually and cautiously. For example, in the case of *baguettes*, which are not well-targeted, political considerations (in light of the violent reactions to previous attempts increases in the price of bread) implied a need for a gradual approach to subsidy cuts; after several years of incremental reductions, *baguette* subsidies were successfully eliminated in 1993. Similar steps should be taken so as to reduce (and eventually eliminate) the subsidy on sterilized milk (both reconstituted and local fresh) packaged in tetrabrik cartons and plastic bottles. Prices should also be adjusted to gradually eliminate subsidies on white sugar.

Cost Reduction Measures

Within the existing framework of food subsidies, there remains a large scope for further cost reduction and liberalization measures. In general, to reduce the costs of the subsidy program, the calculation of subsidies should be made as simple and as transparent as possible. The practice of calculating margins as a percent markup over costs should be modified to encourage cost minimization. Payments should be made as fixed subsidies per unit of each product sold, irrespective of production costs. Subsidies in all subsectors should be limited to payments at a single, easily observable, level.

For cereals, the possibility for bakers to earn additional subsidy payments by producing more than 15 percent of their bread in the form of *baguettes* should be removed by concentrating subsidies on a single bread, such as *pain unique*, made from an easily distinguishable flour, such as PS+2. This flour would also serve to reduce leakage of subsidized flour into other products.

For oils, efficiency could be improved by eliminating the current practice of allocating oils among the private refineries according to installed capacity and allocating it instead according to a competitive bid system.

Subsidies on milk packaged in tetrabrik cartons and plastic bottles should be gradually phased out over the medium term because they are the most expensive forms of packaging (see Annex 5).

Liberalization

An issue related to cost reduction involves the liberalization of production and distribution channels within the context of a targeted food subsidy system. Tunisian authorities have limited liberalization in several subsidized food subsectors due to concerns that private operators might collude to fraudulently manipulate the system in order to receive higher subsidy payments. Close monitoring of capacity, however, combined with privatization could quell these fears and encourage greater efficiency. A gradual, but significant liberalization is advised beginning with pilot programs with licensed private firms. The existence of a targeted subsidy program should not delay liberalization provided that subsidies are injected at a single, transparent level and that capacity and subsidy payments are monitored.

To some extent, privatization has already begun in the milk subsector, although this process is by no means complete. As discussed in Chapter 3, LAINO, a private firm, has been entrusted with the production of locally-produced sterilized fresh milk which benefits from a small subsidy to allow

for competition with the more heavily subsidized reconstituted milk produced by parastatal dairy processors. Rather than calculating the subsidy on fresh milk as a percentage markup over costs, to encourage efficiency, the subsidy granted to LAINO is a fixed subsidy per unit of fresh milk sold. Three new private dairy processors have recently been granted an "accord de principe" to produce subsidized local fresh milk. Further liberalization along these lines, including streamlining existing parastatal dairy processors (STIL and Tunisie-Lait), should be explored.¹¹¹

Similar reforms should be considered in the cereals sector which is currently dominated by the parastatal marketing board, the *Office des Céréales*. A rather fundamental step in liberalizing this sector involves streamlining the OC and transforming its role from collection and distribution to one of regulation. Monitoring subsidy payments in the context of a privatized marketing system would greatly be facilitated if subsidies were injected at a single level, preferably the milling level. Milling capacity and electricity and water use provide indicators for monitoring the quantities of subsidized flour. Customs records also provide systematic data for monitoring imported cereals. Self-targeting efforts could actually reinforce monitoring within the context of a privatized distribution system since these measures create more easily distinguishable subsidized products (such as darker, rougher PS+2 flour).

IMPACT OF RECOMMENDED REFORMS

Reform Scenarios

The fiscal, distributional and nutritional effects of various reforms recommended above were simulated, holding all other factors constant, using demand elasticities and household-level data from the INS 1990 and 1993 surveys.¹¹² To demonstrate the benefits of self-targeting, the effects of a hypothetical across-the-board 50 percent cut in subsidies from their 1993 levels (**Scenario 1**) were compared to the impact of a hypothetical targeted reform scenario (**Scenario 2**).¹¹³

Scenario 2 involves a complete elimination of subsidies on pasta, couscous, sterilized milk (both reconstituted and local fresh), and bottled generic oil. Under this scenario, subsidies are maintained at 100 percent of their 1993 levels for semolina, bulk generic oil, and pasteurized-reconstituted milk

¹¹¹In fact, a study to explore possibilities for privatizing the milk subsector is currently underway in Tunisia.

¹¹²See Annex 6 for details on the methodology used for estimation and simulations.

¹¹³Both scenarios assume that subsidies *baguettes* and PS-7 flour, as well as direct subsidies on pasta and couscous, which were eliminated under the CGC reform program because of their untargeted incidence, were held constant at zero in the simulations. For obvious reasons, the simulations do not incorporate the effects of targeted reforms that were implemented after the 1993 survey was carried out (summer 1993), including the introduction of: (i) "superior" breads which were liberalized in 1991 but were not widely available at the time of the 1993 survey; (ii) subsidies on a single bread (*pain unique*) made from a high extraction rate flour; (iii) unsubsidized pure grain oils; and (iv) *zit sannafa*, a new "fixed mixed" cooking oil which was not widely available at the time of the survey. In addition, because the 1993 survey did not cover consumption patterns for sugar, the simulations do not include the effects of reforms pertaining to sugar subsidies. Finally, because less than one percent of those households sampled in the 1993 survey actually purchased pasteurized-reconstituted milk packaged in *coussin* pouches, this variety of milk was grouped together with pasteurized-reconstituted milk packaged in *berlingot* cartons for the purposes of policy simulations.

packaged in *berlingot* cartons,¹¹⁴ because these items are well-targeted to the poor, and at 20 percent of their 1993 levels for *gros pain*. Despite the slightly targeted incidence of *gros pain*, the subsidy on the flour used to make this large loaf bread was assumed to be reduced by 80 percent in light of observed leakages of this flour to the production of other untargeted items (as discussed above).

Estimated Fiscal Impact of Recommended Reforms

Table 24 below presents estimates of fiscal savings associated with the two scenarios, using actual outlays on the 1993 program as a basis for comparison.¹¹⁵ Simulation results reveal that both scenarios would yield substantial reductions in spending on the CGC subsidy program, cutting outlays from over two percent of GDP and close to six percent of total Government expenditures in 1993 to less than one percent of GDP and roughly two percent of Government expenditures.¹¹⁶ These savings would be comparable for both scenarios, with both scenarios generating program savings of just over 60 percent.

Table 24 - SIMULATED SAVINGS ON CGC SUBSIDIES FROM VARIOUS HYPOTHETICAL REFORM SCENARIOS, AS COMPARED WITH ACTUAL 1993 PROGRAM OUTLAYS			
	Actual 1993	Scenario 1 ^a	Scenario 2 ^b
Actual Outlays on CGC program, Million TD	314	..	..
Simulated Savings on CGC program, (% of 1993 outlays)	..	62%	61%
Simulated Outlays on CGC program, Million TD	..	119	122
Outlays on CGC program as Percent of: (%)			
- 1993 Nominal GDP	2.1%	0.8%	0.8%
- 1993 Total Government Expenditures	5.7%	2.2%	2.3%
<p>Changes in outlays arising from the two reform scenarios were simulated, <i>ceteris paribus</i>, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6 for details). Data come from INS 1990 Household Expenditure Survey and INS 1993 <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i>; District of Tunis.</p> <p>a) Scenario 1 involves a 50 percent across-the-board cut in all subsidies (from their 1993 levels).</p> <p>b) Scenario 2 involves a hypothetical elimination of subsidies on sterilized milk (reconstituted + local fresh), bottled generic oil, pasta and couscous, and an 80% cut in subsidies on <i>gros pain</i>. Subsidies are assumed to be maintained at 100% of their 1993 levels for pasteurized-reconstituted milk, semolina, and bulk generic oil, and at 20% for <i>gros pain</i>.</p>			

¹¹⁴ If investigation validates concerns about potential inadequate refrigeration of pasteurized-reconstituted milk and possible contamination or rancidity of bulk oil, the subsidies on these items should also be eliminated.

¹¹⁵ It is important to note that these estimates of "national" fiscal savings have been extrapolated from survey data, which are only available for the District of Tunis region.

¹¹⁶ Holding all other factors constant at 1993 levels, including GDP and total Government expenditures.

Distributional Incidence of CGC Program with Recommended Reforms

Although both scenarios would have virtually identical effects on total expenditures on the CGC program, simulations reveal that their distributional impact would differ substantially. Tables 25 and 26 below present the relative and absolute distributional incidence that would result from each scenario, holding all other factors constant.

Both scenarios would generate situations in which program incidence is progressive in absolute and relative terms. Even Scenario 1, which involves a hypothetical across-the-board 50 percent cut in all subsidies, would yield greater transfers to the poor than the rich (transferring 1.1 times more benefits to the poorest quintile than the richest). This is not due to any explicit effort to target subsidy cuts, however. It merely reflects the fact that overall subsidies were reasonably well targeted to the poor in 1993, since Scenario 1 involves an even cut in all subsidies from their 1993 levels. In fact, the distribution of subsidies across quintiles under Scenario 1 would duplicate incidence patterns observed for the CGC program in 1993, with the poorest quintile receiving 21 percent of benefits and the richest receiving 18 percent (as shown in Table 25 below and Table 19 in Chapter 4), although the magnitude of total transfers would be much more modest under Scenario 1.

A clear conclusion that can be derived from simulation results for Scenario 2 (presented in Table 26) is that it is indeed possible to sharpen the self-targeting of food price subsidies. With Scenario 2, the poorest quintile would benefit 2.1 times more from CGC subsidies than the richest in absolute terms, and 13.2 times more in relative terms. By reducing subsidies on select products, the distributional incidence of CGC subsidies would be strengthened in favor of poorer consumers. With these refinements, self-targeting can be pushed beyond the situation described in Table 19, which presented a "mid-term snapshot" of the incidence of the CGC reform program in 1993.¹¹⁷

Nutritional Impact of Recommended Reforms

Tables 27 and 28 below reveal that reforms under the two scenarios would have differing effects on calorie and protein intake across quintiles. The 50 percent across-the-board subsidy cut under Scenario 1 would have a larger adverse affect on the nutritional intake of the poor, reducing the poorest quintile's consumption of calories and protein by roughly 24 percent and 28 percent respectively. Under this scenario, reductions in nutritional intake would be much larger for the poor than the rich: the poorest quintile's consumption of calories and protein would both fall two times more than the richest quintile's intake.

Targeted subsidy cuts under Scenario 2 would produce more even effects on nutritional intake across quintiles. In fact, reforms under Scenario 2 would result in equal losses in the richest and

¹¹⁷In fact, by completely eliminating subsidies on *gros pain* and generic grain oil (both bulk and bottled), in conjunction with the other reforms in Scenario 2, simulations reveal that it is possible to improve the targeting of food subsidies to an even greater degree. With this additional reform, the poorest quintile would receive 3.1 times more absolute transfers than the richest, and would benefit 20.1 times more in relative terms. A complete elimination of subsidies on *gros pain* and all generic oil (bulk as well as bottled) would, however, result in larger losses in purchasing power and caloric intake than with Scenario 2 (which involves only an 80 percent cut in subsidies on *gros pain* and an elimination of subsidies on bottled generic oil while maintaining subsidies on bulk generic oil).

poorest quintiles' *caloric* intake. This result is significant, given the substantially lower level of total caloric intake for the poorest quintile as compared with the richest, and it demonstrates the role of targeting in shielding the poor from subsidy cuts. Although targeted reforms would result in slightly larger reductions in *protein* intake for the lowest-income quintile than the highest for Scenario 2, these losses would be distributed more equitably across quintiles than under Scenario 1, and losses in protein intake by the poorest quintile would be roughly 1.2 times smaller under Scenario 2 than under Scenario 1.

The significant losses in calorie and protein intake arising from the 80 percent cut in subsidies on *gros pain* under Scenario 2 could be offset by replacing the subsidy on the flour used to make *gros pain* with subsidies on a single bread (*pain unique*) made from a high extraction rate flour (PS+2) with bran particles mixed in (as suggested in above). Although *pain unique* is believed to be well targeted to the poor because of its dark color and rough texture,¹¹⁸ the presence of bran particles actually improves the nutritive quality of this new bread because it contains more protein, dietary fibers and other nutrients than *gros pain* (as discussed in Chapter 3).¹¹⁹

DATA REQUIREMENTS AND MONITORING

An explicit definition of the target group for CGC subsidies is imperative. Although several objectives refer to protecting the poor, the Government has never formally defined the intended beneficiaries of the CGC program. One option is to define the target group in terms of an official poverty line. In fact, the methodology for calculating poverty lines is currently being revised by the INS in collaboration with the World Bank. An alternative definition of the target group would be to focus on the poorest 20 percent of the population, provided that data are available by decile or quintile.¹²⁰

Once a formal definition of the target group is adopted, the effect of food subsidy reforms and price increases on the welfare and nutritional status of that group should be carefully monitored. In addition to expenditures, nutritional surveillance indicators could usefully be included in surveys. The impact of reforms on both the poor and the non-poor, once identified, should be monitored to ensure that coverage of the target group is maximized and leakages to unintended beneficiaries are minimized.

Monitoring the impact of the food subsidy program could be improved. Though policy design is undertaken by the CGC and various other ministerial departments, data collection and survey design are performed independently by the INS. There are few formal links between the CGC and the INS. The official identification of a target group could be facilitated by greater cooperation between these two agencies. Improved information about the "poor" and a better understanding of the impact of policy reforms on the "poor" would result from a coordinated and clearly communicated definition of a specific target group.

¹¹⁸As discussed in Chapter 3, *pain unique* would also preserve the characteristics (size, shape, weight) that make *gros pain* well targeted to the poor.

¹¹⁹Although this additional reform would help compensate for the calorie and protein losses associated with reforms that reduce subsidies on *gros pain*, it was not included in the simulations for Scenarios A and B because *pain unique* had not been marketed at the time of the 1993 survey (and data were therefore not available for this new product).

¹²⁰This is the definition used in the above analysis of program incidence.

The data requirements for self-selection are minimal relative to the information necessary for direct assistance programs based on means-testing. Most of the data are readily available in existing surveys. There are some ways, however, in which the collection of data could be improved to better monitor the impact of food subsidy reforms. Reporting survey data according to deciles or quintiles of the population, rather than expenditure groups of varying sizes, would facilitate analysis of the impact of the program on various income groups. In addition to the larger Household Expenditure Surveys that are conducted by the INS every five years, occasional small-scale, disaggregated surveys, would allow policy-makers to ascertain whether reforms are achieving their objectives and to make any necessary modifications to the on-going program. In fact, a small-scale survey,¹²¹ funded by a grant from the World Bank Research Support Budget, was conducted by the INS in 1993 in collaboration with the Ministry of the National Economy (which oversees the CGC); the survey was designed specifically to follow-up with quantitative and qualitative questions pertaining to subsidized foods. This survey could serve as a pilot for future program monitoring.

Of particular importance is the need to harmonize the information collected by INS' Household Expenditure Survey with the specific products subsidized by the CGC. For example, in the milk subsector, the CGC differentiates subsidies among several varieties of milk, including pasteurized-reconstituted milk packaged in *berlingot* cartons and *coussin* pouches, sterilized-reconstituted milk packaged in tetrabrik cartons and plastic bottles, and local fresh milk also packaged in tetrabrik cartons and plastic bottles. The INS classification of milk products in the 1990 Household Expenditure Survey, however, included categories such as curdled fresh cow's milk (product code 1601), pasteurized-reconstituted milk in *berlingot* (1604), milk without any indications (1609), and sterilized milk in bottles or tetrabrik (as an aggregated category with product code 1621).¹²² Another example involving product differentiation arises in the cooking oil subsector. While the CGC distinguishes bulk from bottled generic grain oil, the INS 1990 survey only disaggregated expenditures on cooking oil into olive oil (product code 1821) and mixed oil (*huile mélangée*, product code 1811). Linking program design with survey design by matching these product categories would improve the monitoring of the food subsidy program.

¹²¹INS *Enquête Restreinte sur la Consommation des Produits Subventionnés*, 1993.

¹²²Pasteurized reconstituted milk packaged in *coussin* pouches and local fresh milk packaged in Tetrabrik cartons and plastic bottles had not yet been introduced by the CGC at the time of the 1990 survey.

Table 25 - Scenario 1: SIMULATED INCIDENCE OF FOOD SUBSIDIES WITH A 50% CUT IN UNIT SUBSIDIES FROM THEIR 1993 LEVELS, PAE, BY QUINTILE

	POOR		RICH			Average	Ratio 5/1	Ratio 1/5
	1	2	3	4	5			
Absolute Incidence of Food Subsidies, Mean Subsidies Per Adult Equivalent								
Total DW	5.7	4.4	4.3	4.0	3.6	4.4	0.6	1.6
Semolina	3.3	1.9	1.6	1.5	1.1	1.9	0.3	3.0
Couscous	0.6	0.7	0.8	0.7	0.8	0.7	1.4	0.7
Pasta	1.8	1.7	1.9	1.7	1.7	1.8	1.0	1.0
Total BW	4.7	5.4	5.8	5.3	4.0	5.1	0.9	1.2
Gros Pain	4.7	5.4	5.8	5.3	4.0	5.1	0.9	1.2
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	2.2	2.3	2.4	2.5	2.2	2.3	1.0	1.0
Total Milk	2.3	2.9	3.2	3.5	4.3	3.2	1.8	0.5
PST	1.1	0.6	0.9	0.5	0.4	0.7	0.3	2.9
SRM	1.0	1.7	1.6	2.1	2.1	1.7	2.2	0.4
Loc. Fresh Bottle	0.1	0.3	0.3	0.3	0.7	0.3	5.7	0.2
Loc. Fresh Tetrab.	0.1	0.3	0.4	0.6	1.1	0.5	7.2	0.1
Total Above	14.9	15.0	15.7	15.3	14.0	15.0	0.9	1.1
Percent of Subsidies	20%	20%	21%	20%	19%	100%	0.9	1.1
Relative Incidence of Food Subsidies, Subsidies as Share of Total Expenditures PAE								
Total DW	1.1%	0.5%	0.4%	0.2%	0.1%	0.3%	0.1	10.1
Semolina	0.6%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1	19.3
Couscous	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2	4.7
Pasta	0.3%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2	6.6
Total BW	0.9%	0.6%	0.5%	0.3%	0.1%	0.3%	0.1	7.5
Gros Pain	0.9%	0.6%	0.5%	0.3%	0.1%	0.3%	0.1	7.5
BW Flour	ES	ES	ES	ES	ES	ES	ES	ES
Baguette	ES	ES	ES	ES	ES	ES	ES	ES
Generic Cooking Oil	0.4%	0.3%	0.2%	0.1%	0.1%	0.2%	0.2	6.5
Total Milk	0.4%	0.3%	0.3%	0.2%	0.1%	0.2%	0.3	3.5
PST	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1	18.5
SRM	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.4	2.8
Loc. Fresh Bottle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9	1.1
Loc. Fresh Tetrab.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1	0.9
Total Above	2.8%	1.7%	1.3%	0.9%	0.4%	1.0%	0.1	6.8
Total Expenditures	524	869	1184	1684	3345	1521.2	6.4	0.2

SCENARIO 1: Incidence was simulated, ceteris paribus, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6). Data come from INS 1990 & 1993 Surveys; District of Tunis. Simulations include the effects of a 50% across-the-board cut in unit subsidies from their 1993 levels. Total expenditure was extrapolated from 1990 survey (adjusted for inflation and adult equivalent). BW = bread wheat; DW = durum wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent. Numbers may not add due to rounding.

Table 26 - Scenario 2: SIMULATED INCIDENCE OF FOOD SUBSIDIES WITH A TARGETED REDUCTION IN SUBSIDIES ON VARIOUS PRODUCTS, PAE, BY QUINTILE								
	POOR				RICH		Ratio 5/1	Ratio 1/5
	1	2	3	4	5	Average		
Absolute Incidence of Food Subsidies, Mean Subsidies Per Adult Equivalent								
Total DW	11.4	6.6	5.6	5.0	3.7	6.5	0.3	3.1
Semolina	11.4	6.6	5.6	5.0	3.7	6.5	0.3	3.1
Couscous	ES	ES	ES	ES	ES	ES	ES	ES
Pasta	ES	ES	ES	ES	ES	ES	ES	ES
Total BW	4.3	5.0	5.3	4.9	3.7	4.6	0.9	1.2
Gros Pain	4.3	5.0	5.3	4.9	3.7	4.6	0.9	1.2
BW Flour	AES	AES	AES	AES	AES	AES	AES	AES
Baguette	AES	AES	AES	AES	AES	AES	AES	AES
Generic Cooking Oil	4.0	4.2	4.2	4.0	2.4	3.7	0.6	1.7
Unpackaged (bulk)	4.0	4.2	4.2	4.0	2.4	3.7	0.6	1.7
Bottled	ES	ES	ES	ES	ES	ES	ES	ES
Total Milk	2.3	1.3	1.9	1.1	0.8	1.5	0.3	2.9
PST	2.3	1.3	1.9	1.1	0.8	1.5	0.3	2.9
SRM	ES	ES	ES	ES	ES	ES	ES	ES
Loc. Fresh Bottle	ES	ES	ES	ES	ES	ES	ES	ES
Loc. Fresh Tetrab.	ES	ES	ES	ES	ES	ES	ES	ES
Total Above	21.9	17.0	17.1	15.0	10.6	16.3	0.5	2.1
Percent of Subsidies	27%	21%	21%	18%	13%	100%	0.5	2.1
Relative Incidence of Food Subsidies, Subsidies as Share of Total Expenditures PAE								
Total DW	2.2%	0.8%	0.5%	0.3%	0.1%	0.4%	0.1	19.5
Semolina	2.2%	0.8%	0.5%	0.3%	0.1%	0.4%	0.1	19.5
Couscous	ES	ES	ES	ES	ES	ES	ES	ES
Pasta	ES	ES	ES	ES	ES	ES	ES	ES
Total BW	0.8%	0.6%	0.5%	0.3%	0.1%	0.3%	0.1	7.5
Gros Pain	0.8%	0.6%	0.5%	0.3%	0.1%	0.3%	0.1	7.5
BW Flour	AES	AES	AES	AES	AES	AES	AES	AES
Baguette	AES	AES	AES	AES	AES	AES	AES	AES
Generic Cooking Oil	0.8%	0.5%	0.4%	0.2%	0.1%	0.2%	0.1	10.7
Unpackaged (bulk)	0.8%	0.5%	0.4%	0.2%	0.1%	0.2%	0.1	10.7
Bottled	ES	ES	ES	ES	ES	ES	ES	ES
Total Milk	0.4%	0.1%	0.2%	0.1%	0.0%	0.1%	0.1	18.3
PST	0.4%	0.1%	0.2%	0.1%	0.0%	0.1%	0.1	18.3
SRM	ES	ES	ES	ES	ES	ES	ES	ES
Loc. Fresh Bottle	ES	ES	ES	ES	ES	ES	ES	ES
Loc. Fresh Tetrab.	ES	ES	ES	ES	ES	ES	ES	ES
Total Above	4.2%	2.0%	1.4%	0.9%	0.3%	1.1%	0.1	13.2
Total Expenditures	524	869	1184	1684	3345	1521.2	6.4	0.2
<p>SCENARIO 2: Incidence was simulated, ceteris paribus, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6). Data come from INS 1990 & 1993 Surveys; District of Tunis. Simulations include the effects of an elimination of subsidies on sterilized milk (reconstituted & fresh), bottled generic oil, pasta and couscous, and an 80% cut in subsidies on large loaf bread. Subsidies are maintained at 100% of 1993 levels for semolina, bulk generic oil and PST, and at 20% for large loaf bread. Total expenditure extrapolated from 1990 survey (adjusted for inflation and adult equivalent). BW = bread wheat; DW = durum wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent; ES = subsidy eliminated under scenario; AES = subsidy already eliminated under reform program. Numbers may not add due to rounding.</p>								

Table 27 - Scenario 1: SIMULATED NUTRITIONAL IMPACT OF A 50% CUT IN UNIT SUBSIDIES FROM THEIR 1993 LEVELS, PAE, BY QUINTILE

	POOR				RICH		Ratio 5/1	Ratio 1/5
	1	2	3	4	5	Average		
Change in Caloric Intake as % of Total Caloric Intake Per Adult Equivalent								
Total DW	-13.2%	-8.4%	-7.6%	-6.7%	-5.4%	-8.2%	0.4	2.5
Semolina	-10.1%	-5.5%	-4.5%	-3.9%	-2.7%	-5.3%	0.3	3.7
Couscous	-0.5%	-0.5%	-0.6%	-0.5%	-0.5%	-0.5%	1.2	0.9
Pasta	-2.6%	-2.4%	-2.5%	-2.2%	-2.1%	-2.4%	0.8	1.2
Total BW	-4.4%	-4.7%	-5.0%	-4.7%	-4.7%	-4.7%	1.1	0.9
Gros Pain	-4.1%	-4.3%	-4.5%	-4.0%	-2.9%	-4.0%	0.7	1.4
BW Flour	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	1.4	0.7
Baguette	-0.1%	-0.2%	-0.3%	-0.5%	-1.6%	-0.6%	11.5	0.1
Generic Cooking Oil	-7.1%	-6.9%	-7.0%	-6.7%	-5.4%	-6.6%	0.8	1.3
Total Milk	0.3%	0.9%	1.0%	1.4%	3.0%	1.3%	10.8	0.1
PST	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	-0.1%	0.3	3.1
SRM	-0.2%	-0.4%	-0.3%	-0.4%	-0.4%	-0.3%	1.9	0.5
Loc. Fresh Bottle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3	0.2
Loc. Fresh Tetrab.	0.0%	-0.1%	-0.1%	-0.1%	-0.2%	-0.1%	6.0	0.2
Total Above	-24.3%	-19.1%	-18.5%	-16.8%	-12.5%	-18.2%	0.5	1.9
Total Calories	2531	2700	2792	2884	3020	2785	1.2	0.8
Change in Protein Intake as % of Total Protein Intake Per Adult Equivalent								
Total DW	-19.1%	-11.6%	-10.1%	-8.5%	-6.2%	-11.1%	0.3	3.1
Semolina	-14.1%	-7.1%	-5.7%	-4.7%	-3.0%	-6.9%	0.2	4.8
Couscous	-0.6%	-0.7%	-0.7%	-0.6%	-0.6%	-0.7%	0.9	1.1
Pasta	-4.3%	-3.7%	-3.7%	-3.2%	-2.7%	-3.5%	0.6	1.6
Total BW	-7.4%	-7.5%	-7.6%	-6.9%	-6.2%	-7.1%	0.8	1.2
Gros Pain	-6.9%	-6.9%	-6.9%	-5.8%	-3.8%	-6.1%	0.5	1.8
BW Flour	-0.3%	-0.2%	-0.3%	-0.3%	-0.3%	-0.3%	1.0	1.0
Baguette	-0.2%	-0.3%	-0.4%	-0.8%	-2.1%	-0.8%	8.9	0.1
Generic Cooking Oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Total Milk	-1.0%	-1.2%	-1.2%	-1.3%	-1.3%	-1.2%	1.3	0.8
PST	-0.3%	-0.2%	-0.2%	-0.1%	-0.1%	-0.2%	0.2	4.0
SRM	-0.6%	-0.9%	-0.8%	-1.0%	-0.8%	-0.8%	1.4	0.7
Loc. Fresh Bottle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1	0.2
Loc. Fresh Tetrab.	-0.1%	-0.1%	-0.2%	-0.2%	-0.3%	-0.2%	4.6	0.2
Total Above	-27.5%	-20.3%	-18.9%	-16.6%	-13.7%	-19.4%	0.5	2.0
Total Protein	44.0	50.2	54.2	58.8	67.9	55.0	1.5	0.6

SCENARIO 1: Changes in intake were simulated, ceteris paribus, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6). Data come from INS 1990 & 1993 Surveys; District of Tunis. Simulations include the effects of a 50% across-the-board cut in unit subsidies from their 1993 levels. Total expenditure and calorie/protein intake were extrapolated from 1990 survey (adjusted for inflation and household composition). BW = bread wheat; DW = durum wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent. Numbers may not add due to rounding.

Table 28 - Scenario 2: SIMULATED NUTRITIONAL IMPACT OF TARGETED REDUCTION IN SUBSIDIES FOR VARIOUS PRODUCTS, PAE, BY QUINTILE								
	POOR				RICH		Ratio	Ratio
	1	2	3	4	5	Average	5/1	1/5
Change in Caloric Intake as % of Total Caloric Intake Per Adult Equivalent								
Total DW	-6.4%	-5.9%	-6.0%	-5.4%	-5.1%	-5.8%	0.8	1.3
Semolina	-1.4%	-0.8%	-0.6%	-0.6%	-0.4%	-0.7%	0.3	3.6
Couscous	-1.8%	-2.1%	-2.3%	-2.0%	-2.0%	-2.0%	1.1	0.9
Pasta	-3.3%	-3.0%	-3.1%	-2.8%	-2.6%	-3.0%	0.8	1.2
Total BW	-7.0%	-7.6%	-8.0%	-7.6%	-7.5%	-7.5%	1.1	0.9
Gros Pain	-6.5%	-7.0%	-7.2%	-6.4%	-4.6%	-6.3%	0.7	1.4
BW Flour	-0.3%	-0.3%	-0.3%	-0.3%	-0.4%	-0.3%	1.4	0.7
Baguette	-0.2%	-0.3%	-0.5%	-0.9%	-2.6%	-0.9%	11.5	0.1
Generic Cooking Oil	-7.9%	-7.5%	-8.1%	-8.9%	-11.4%	-8.8%	1.4	0.7
Unpackaged (bulk)	0.4%	0.4%	0.4%	0.3%	0.2%	0.3%	0.5	2.0
Bottled	-8.3%	-7.9%	-8.5%	-9.3%	-11.6%	-9.1%	1.4	0.7
Total Milk	0.1%	0.7%	0.8%	1.0%	2.6%	1.0%	17.7	0.1
PST	-0.1%	-0.1%	-0.1%	0.0%	0.0%	-0.1%	0.3	3.4
SRM	-0.4%	-0.6%	-0.5%	-0.7%	-0.7%	-0.6%	1.9	0.5
Loc. Fresh Bottle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.4	0.2
Loc. Fresh Tetrab.	0.0%	-0.1%	-0.1%	-0.2%	-0.3%	-0.1%	6.0	0.2
Total Above	-21.2%	-20.3%	-21.3%	-20.9%	-21.5%	-21.0%	1.0	1.0
Total Calories	2531	2700	2792	2884	3020	2785	1.2	0.8
Change in Protein Intake as % of Total Protein Intake Per Adult Equivalent								
Total DW	-9.8%	-8.4%	-8.2%	-7.1%	-6.0%	-7.9%	0.6	1.6
Semolina	-2.0%	-1.0%	-0.8%	-0.7%	-0.4%	-1.0%	0.2	4.6
Couscous	-2.5%	-2.8%	-2.8%	-2.4%	-2.2%	-2.5%	0.9	1.1
Pasta	-5.4%	-4.7%	-4.6%	-4.0%	-3.4%	-4.4%	0.6	1.6
Total BW	-11.9%	-12.0%	-12.2%	-11.0%	-9.9%	-11.4%	0.8	1.2
Gros Pain	-11.1%	-11.1%	-11.1%	-9.4%	-6.1%	-9.7%	0.5	1.8
BW Flour	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	1.0	1.0
Baguette	-0.4%	-0.5%	-0.7%	-1.2%	-3.4%	-1.3%	8.9	0.1
Generic Cooking Oil	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Unpackaged (bulk)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Bottled	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	..	..
Total Milk	-1.4%	-1.9%	-1.8%	-2.0%	-2.1%	-1.8%	1.6	0.6
PST	-0.3%	-0.1%	-0.2%	-0.1%	-0.1%	-0.1%	0.2	4.4
SRM	-0.9%	-1.5%	-1.3%	-1.5%	-1.4%	-1.3%	1.4	0.7
Loc. Fresh Bottle	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	4.2	0.2
Loc. Fresh Tetrab.	-0.1%	-0.3%	-0.3%	-0.4%	-0.6%	-0.3%	4.6	0.2
Total Above	-23.1%	-22.3%	-22.2%	-20.1%	-18.0%	-21.1%	0.8	1.3
Total Protein	44.0	50.2	54.2	58.8	67.9	55.0	1.5	0.6
SCENARIO 2: Changes in intake were simulated, ceteris paribus, using elasticities estimated with a nested two-stage AIDS demand system (see Annex 6). Data come from INS 1990 & 1993 Surveys; District of Tunis. Simulations include the effects of an elimination of subsidies on sterilized milk (reconstituted & fresh), bottled generic oil, pasta and couscous, and an 80% cut in subsidies on large loaf bread. Subsidies are maintained at 100% of 1993 levels for semolina, bulk generic oil and PST, and at 20% for large loaf bread. Total expenditure & intake extrapolated from 1990 survey (adjusted for inflation and adult equivalent). BW = bread wheat; DW = durum wheat; PST = pasteurized-reconstituted milk; SRM = sterilized-reconstituted milk; PAE = per adult equivalent. Numbers may not add due to rounding.								

ANNEX 1: SUBSIDY DIFFERENTIAL ON GROS PAIN AND BAGUETTES

As mentioned in the text, subsidies per quintal of flour are intended to be higher on *gros pain* than on *baguettes* because *gros pain* is consumed disproportionately by lower income groups. However, the same flour is used for both types of bread and only the flour is subsidized. Therefore, to maintain a subsidy differential between *gros pain* and *baguettes*, the sales prices are set with the assumption that bakers use 85 percent of the subsidized flour for *gros pain* and only 15 percent for *baguettes*. In reality, most bakers make extra profits from this differential by using more than 15 percent of the subsidized flour to produce *baguettes*. The actual allocation of subsidized PS flour between the two types of bread by each baker cannot be controlled and no attempt has been made to do so.

A hypothetical example, illustrates these incentives and is presented in the table below.¹ One quintal of flour can produce either 182 loaves of *gros pain* or 400 *baguettes*.² The costs of one quintal of flour are the same no matter which of these breads it is used to produce. Other costs are higher for *baguette* production, although, given the fixed sales prices for each bread, the higher revenues from *baguette* production more than offset these additional costs. Before the subsidy is counted in, *baguette* production would generate a profit of 590 millimes, whereas *gros pain* production would generate a loss of 5880 millimes (per quintal of flour). With the assumption that 85 percent of the quintal of flour is used to produce *gros pain* and the remaining 15 percent is used to produce *baguettes*, the net loss for the quintal of flour is 4910 millimes (4998 - 88), as shown in the table below. This loss is exactly compensated for by the subsidy per quintal of flour. If instead bakers use more than the assumed 15 percent flour to produce *baguettes*, extra profits accrue.

Subsidy Differential On <i>Gros Pain</i> and <i>Baguettes</i>		
Millimes per Quintal of flour	Gros Pain	Baguettes
COSTS:		
Flour (1 Quintal)	10500	10500
Other Costs	13580	16910
Total Costs	24080	27410
REVENUES:		
Price * Quantity	100*182=	70*400=
Total Revenue	18200	28000
GAIN/LOSS:		
●With entire Quintal of flour	-5880	+590
●With assumption of using XX% of Quintal of flour	(85%) -4998	(15%) +88
Subsidy per Quintal of flour	4190	
Notes: Bread weight: gros pain=700g, baguette=300g. Quantities are derived from using an entire quintal of flour on one type of bread. Prices based on 1985 prices.		

¹Data for 1985 used when possible. Source: Programme de Développement du Secteur Céréaliier, Ministère de l'Agriculture, 1986.

²Weight of *gros pain* assumed to be 700 grams. Weight of *baguettes* assumed to be 300 grams.

ANNEX 2: PRODUCER SUBSIDIES

While CGC expenditures are often called consumer subsidies, this is a partial misnomer. One of the Government's explicit objectives for the food subsidy program has been to encourage production of basic staples.¹ Not only has the Government avoided the common practice of implicitly taxing agricultural producers to pay for its cheap food policies; it has used the CGC to support many producer prices well above their opportunity costs. Thus CGC expenditures have simultaneously subsidized producers and consumers for the same commodities. Of course, the allocation of the subsidy between these two groups depends on the relative elasticities of demand for, and supply of, the subsidized products. However, the distinction between the two is somewhat academic and for the purposes of this report, CGC expenditures are all considered to be "consumer subsidies."

Nonetheless, if world prices are used as a benchmark for measuring the degree to which producer and consumer prices differ from their opportunity costs, the relative allocation of subsidies between producers and consumers can be calculated.

The table below shows that a large and growing share of subsidies on many locally produced food items should technically be considered producer subsidies. In fact, with the exception of the drought years in 1988/89, producer prices have diverged increasingly from comparable CIF prices since 1986. As a result, the share of total "food" subsidies accruing to producers has risen.

Percent of "Consumer" Subsidies accruing to Producers							
	1986	1987	1988	1989	1990	1991	1992
Durum Wheat ^a	7.5	26.8	13.0	-3.0	29.3	39.0	44.8
Bread Wheat ^b	12.9	24.6	6.3	-0.4	19.5	15.8	32.0
Total Wheat	9.8	25.9	11.0	-2.4	26.9	30.4	42.5
Cooking Oil ^c	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar ^d	14.1	14.4	26.3	39.7	44.9	10.8	13.7
Milk	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL (all five):							
-Producer (%)	8.4	19.2	9.6	5.2	23.3	22.0	28.9
-Consumer (%)	91.6	80.8	90.4	94.8	76.7	78.0	71.1

^a/The producer subsidy for durum wheat was calculated as the difference between the producer price and the world price at the collection center. The world price is constructed from the FOB price for Hard Amber Durum No. 1 Minneapolis (source: USDA Situation and Outlook Report) plus a 15% markup for insurance and freight. Port charges are estimated at 5% of the calculated CIF value and handling, storage and transport to the collection center at an additional 5%. The total producer subsidy was obtained by multiplying the unit subsidy by the total quantity of domestic production (source: CGC) subsidized. The producer subsidy would have been higher had actual CIF prices been used because Tunisia benefits from export subsidies granted by Europe and North American countries.

^b/Producer subsidies for soft wheat were calculated in a manner similar as for durum, but the FOB price is Soft Red Winter No. 2 Gulf of Mexico (source: World Bank Commodity Data). The same caveat about export subsidies applies.

^c/For milk and oil, none of the subsidy went to local producers because both commodities are imported. With the recent introduction of locally produced pasteurized fresh milk, future subsidies on milk will go to both producers and consumers, and will have to be allocated accordingly.

^d/For sugar, none of the subsidy on OCT sugar went to local producers because it is imported. Most of the CST and STS subsidies went to producers (both agricultural and industrial). For CST, the producer subsidy was calculated as the difference between the local and imported unit subsidies, since the consumer price is the same for both. The total producer subsidy was then estimated multiplying the producer unit subsidy by the amount of subsidized CST sugar. The CST producer subsidy was approximately equal to the total subsidy. The STS subsidy was assumed to have accrued entirely to producers.

¹/ For a thorough discussion of the effects of food subsidies on agriculture see von Braun (1988).

ANNEX 3: DATA COLLECTION

At the outset of this study, the most recent Household Expenditure Survey in Tunisia was undertaken by the Tunisian National Statistics Office (*Institut National de la Statistique*, INS) in 1990.¹ Because most self-targeting reforms were implemented after 1990, data from this survey reveal the incidence of the universal subsidy program (as discussed in Chapter 2). To capture incidence of the reform program, a grant from the World Bank Research Support Budget² funded a small-scale survey designed specifically to follow-up with quantitative and qualitative questions regarding the products that have been the focus of self-targeting reforms.³ With the joint collaboration of the World Bank and the Tunisian Ministry of the National Economy, which oversees the CGC subsidy program, the National Statistics Office (INS) prepared the survey and questionnaire in spring 1993. The INS conducted interviews in summer 1993.

Household-level data from the two surveys allow for a comparison of the incidence of the universal subsidy program (1990) with the redistributive gains associated with the self-targeted reform program (1993). Data available for this analysis cover the same 1018 households in the District of Tunis region (the nation's capital) for each year (for a total of 2036 observations).⁴

The 1990 Survey: the Universal Subsidy Program

The Tunisian National Statistics Office (*Institut National de la Statistique*, INS) conducted an extensive Household Expenditure Survey in 1990. Although the 1990 survey covered some 7,500 households throughout the nation, limitations in funding for the 1993 survey constrained the size of the 1993 sample to 1,018 households in the District of Tunis; this analysis therefore uses only these same households from the 1990 survey. Because the survey was conducted prior to most self-targeting reforms, these data permit an evaluation of the universal subsidy program.

Survey Design and Coverage

Sampling was random and was based on geographic zones selected from the national census.⁵ The sample was stratified according to the department (*gouvernorat*) and region of residence (urban, rural). Sampling was conducted in two stages: first, a sample of primary units (districts) was selected with probabilities proportional to district size (number of resident households); second, within each district, clusters of 12 households were selected with probabilities equal to household size plus the number of income earners in each household.⁶

¹/*Enquête Nationale sur le Budget et la Consommation des Ménages*, 1990.

²/Research Support Budget Grant No. RSB 678-14.

³/*Enquête Restreinte sur la Consommation des Produits Subventionnés*, 1993.

⁴/Some households in the District of Tunis sample had to be dropped because of incomplete responses: 28 were dropped from the 1990 sample (bringing the total from 1,046 to 1,018) and 35 were dropped from the 1993 sample (bringing the total from 1,053 to 1,018).

⁵/The national census was conducted in 1984 and updated in 1989.

⁶/INS (1993).

Scope and Data

Data available for the analysis covered 1,018 households in the District of Tunis, and include: (i) demographic data concerning household composition (number of members, gender, age, member occupations, education, location of residence, etc.); (ii) total household expenditures, which are used as a proxy for income; (iii) household expenditures on specific food items in the subsidy program (milk, bread wheat, durum wheat, cooking oil); (iv) household quantities consumed of these products; and (v) unit values for these products.

As shown in Table A3.1 below, 86 percent of these households resided in urban areas. Less than ten percent of these households were headed by a female, most were married, and the majority of household heads (56 percent) were employed as workers, followed by households without a working household head (27 percent) and households with a household head in a professional career (17 percent). Most household heads had no schooling or up to middle school training.

Table A3.1 - DESCRIPTIVE STATISTICS REGARDING HOUSEHOLDS IN THE 1990 SURVEY, BY QUINTILE ^a						
	POOR 1	2	3	4	RICH 5	TOTAL AVG.
% in urban areas	70	83	88	93	97	86
% in professional (high, middle) careers ^b	1	6	16	18	44	17
% in working class careers ^b	69	62	61	54	35	56
% not working (unemployed, student, retired) ^b	30	62	24	28	21	27
% with no schooling or up to middle school training ^b	100	96	91	80	51	83
% with high school education ^b	0	4	8	17	27	11
% with university education ^b	0	0	1	3	22	5
% with female household head ^b	9	9	10	10	8	9
% married ^b	90	87	86	89	91	89
Mean total caloric intake per adult equiv. (kcal) ^c	2131	2245	2343	2500	3045	2453
Mean total protein intake per adult equiv. (grams) ^c	40.8	45.6	49.6	56.2	79.1	54.2
Mean household size	6.6	6.2	5.7	5.4	4.6	5.7
Mean adjusted household size (adult equiv.) ^d	4.7	4.5	4.2	4.0	3.6	4.2
Quintile total exp. (per adult equiv.) cut-offs:						
minimum expenditure cut-off:	0	617	874	1174	1750	..
maximum expenditure cut-off:	< 616	873	1173	1749	..	..
Mean total expenditures per adult equivalent:	454	751	1006	1416	2837	1293
Number of households	204	204	204	204	202	1018
Source: INS, Household Expenditure Survey, District of Tunis, 1990. a) Quintiles ranked by 1990 household total expenditure per adult equivalent. b) Percent of household heads. c) Data on total nutritional intake extrapolated from INS national 1990 Household Food and Nutrition Survey (adjusted for adult equivalent). d) Equivalence Scales: Children less than seven years old are assigned a weight of 0.2, children between the ages of seven and twelve are given a weight of 0.3 and children between the ages of 13 and 17 receive weights of 0.5; adults over age 18 are assigned a weight of 1.0. These weights are consistent with those estimated for Sri Lanka, Indonesia and Côte d'Ivoire; Deaton and Muellbauer (1986), Glewwe (1988). Numbers may not add due to rounding.						

The 1993 Survey: the Reform Program

Interviews for the small-scale follow-up survey were conducted in the summer of 1993 and therefore capture the impact of quality differentiation reforms.

Survey Design and Coverage

The same households as those surveyed in 1990 in the District of Tunis were included in the sample for the 1993 survey. This method has the advantage of allowing for a "with and without policy reforms" comparison of consumption patterns for the same households.

Limitations on the survey budget dictated several assumptions. As discussed above, all 1,018 households covered by the survey reside in the District of Tunis area (the capital). Although a national survey would have been preferable, the inclusion of households in both urban and rural areas within the region allows for extrapolation, albeit limited, to the national level. To avoid having to re-estimate the total income (expenditure) of each household for 1993, which would have required a much larger and more comprehensive household budget survey, data on total income (expenditure) come from the 1990 survey. While this approach provides the necessary data on total expenditures, it has the obvious limitation of assuming a constant distribution of current income. Standard demographic data concerning household composition, such as the age distribution and gender of members, education levels and member occupations, were collected so as to confirm that income profiles have remained relatively stable in the short time since the 1990 survey.

Scope and Data

Data pertaining to the consumption of subsidized products (milk, bread and durum wheat, and cooking oil) were collected. Product categories were highly disaggregated according to the specific goods covered by the self-targeted program. The consumption of these products can also be aggregated into the basic staple classification used in the 1990 survey. Interviewers made four visits to each household over the course of one month to ensure that the survey captured the consumption of both perishable and non-perishable products.

Several qualitative questions were also included in the questionnaire in order to capture the practical issues involved in implementing a self-targeted program based on quality differentiation. During one of the visits to the households, interviewers posed a series of qualitative questions concerning consumer acceptance of specific "inferior" and "superior" goods. These questions were of the following nature (see Annex 4 for results):

Does the household tend to purchase this product? If yes/no, why: price, taste, packaging, shelf-life properties, size of the individual item, etc.? How frequently does the household purchase this good? Where is the product purchased?

Available data generated from the 1993 survey include: (i) demographic data concerning household composition (number of members, gender, age, member occupations, education, location of residence, etc.); (ii) total household expenditures from the 1990 survey, which are used as a proxy for income; (iii) household expenditures on specific food items in the subsidy program (milk, bread wheat,

durum wheat, cooking oil); (iv) household quantities consumed of these products; (v) unit values for these products; and (vi) responses to the qualitative questions, as discussed in para. 11 above.

Table A3.2 indicates that, as was the case in 1990, 86 percent of those households covered by the survey resided in urban areas. Twelve percent were headed by a female member, most were married, and most were employed as workers or were unemployed. Most household heads had no schooling or up to middle school training.

Table A3.2 - DESCRIPTIVE STATISTICS REGARDING HOUSEHOLDS IN THE 1993 SURVEY, BY QUINTILE ^a						
	POOR 1	2	3	4	RICH 5	TOTAL AVG.
% in urban areas	68	87	88	91	97	86
% in professional (high, middle) careers ^b	3	6	9	21	36	15
% in working class careers ^b	64	58	58	52	32	53
% not working (unemployed, student, retired) ^b	33	35	33	27	33	32
% with no schooling or up to middle school training ^b	99	95	91	81	56	84
% with high school education ^b	0	5	8	14	21	10
% with university education ^b	0	0	1	5	22	6
% with female household head ^b	12	10	14	16	10	12
% married ^b	88	87	84	83	89	86
Mean total caloric intake per adult equiv. (kcal) ^c	2122	2230	2330	2487	3009	2435
Mean total protein intake per adult equiv. (grams) ^c	40.3	44.9	49.1	55.6	77.5	53.5
Mean household size	6.4	6.1	5.6	5.1	4.7	5.6
Mean adjusted household size (adult equiv.) ^d	4.8	4.5	4.1	4.0	3.7	4.2
Quintile total exp. (per adult equiv.) cut-offs:						
minimum expenditure cut-off:	0	722	1023	1385	> 2069	..
maximum expenditure cut-off:	< 721	1022	1384	2068	..	..
Mean total expenditures per adult equivalent: ^e	524	869	1184	1684	3345	1521
Number of households	204	204	204	204	202	1018

Source: INS, *Enquête Restreinte sur la Consommation des Produits Subventionnés*, District of Tunis, 1993.

^a Quintiles ranked by 1990 household total expenditures, adjusted for inflation and 1993 household composition (adult equivalent).

^b Percent of households heads.

^c Data on total nutritional intake extrapolated from INS national 1990 Household Food and Nutrition Survey (adjusted for 1993 adult equivalent).

^d Equivalence Scales: Children less than seven years old are assigned a weight of 0.2, children between the ages of seven and twelve are given a weight of 0.3 and children between the ages of 13 and 17 receive weights of 0.5; adults over age 18 are assigned a weight of 1.0. These weights are consistent with those estimated for Sri Lanka, Indonesia and Côte d'Ivoire; Deaton and Muellbauer (1986), Glewwe (1988).

^e Total expenditure patterns extrapolated from 1990 Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.

ANNEX 4: QUALITATIVE SURVEY QUESTIONS AND ANSWERS

As discussed in Chapter 3, the 1993 Household Expenditure Survey,¹ included several qualitative questions to provide information regarding the practical issues involved in implementing a self-targeted program based on quality differentiation. During one of the visits to the households included in the sample, interviewers posed a series of qualitative questions concerning consumer acceptance of specific "inferior" and "superior" goods, particularly processed milk products, included in the CGC subsidy program. A summary of the results of qualitative questions are presented by expenditure quintile below.

Table A4.1 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF BREADS, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
GROS PAIN: REASONS FOR PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase: ^a						
Price	68	68	65	68	58	65
Texture	59	65	65	63	67	64
Other	13	9	10	9	9	9
BAGUETTES: REASONS FOR PURCHASES Percent of Households Purchasing the Item						
Reasons for purchasing: ^a						
Texture	1	2	6	8	25	9
Well-cooked	0	1	4	3	10	4
Availability	3	2	2	4	5	3
Other	0	1	2	2	6	2
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993. ^a Households can rank more than one reason for purchasing item. ^b Total expenditure patterns extrapolated from 1990 Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

¹INS, *Enquête Restreinte sur la Consommation des Produits Subventionnés*, District of Tunis, 1993.

Table A4.2 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF PASTEURIZED-RECONSTITUTED MILK IN COUSSIN POUCHES, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	70	67	79	75	42	66
Availability	30	33	14	13	0	17
Shelf-life	0	0	7	0	8	4
Taste	40	11	21	25	33	26
Size of package	0	0	0	0	0	0
Packaging	0	0	0	0	0	0
Like brand name	10	0	0	0	8	4
Familiar with brand name	0	0	0	0	0	0
Location of purchase:						
Small store (<i>épicerie</i>)	82	63	60	50	..	72
Supermarket	5	0	20	0	..	5
Creamery	5	13	20	0	..	8
Frequency of purchase:						
Daily	77	75	80	75	..	77
Every two days	14	13	0	25	..	13
Every three days	0	13	0	0	..	3
Weekly	0	0	0	0	..	0
Every two weeks	0	0	0	0	..	0
Demographics:						
Percent residing in urban areas	100	100	100	100	100	100
Percent in professional (high, middle) careers	0	11	0	13	42	13
Percent in working class careers	60	89	86	38	25	60
Percent not working (unemployed, student, retired)	40	0	14	50	42	28
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	4	4	4	4	1	3
Availability	10	12	17	9	12	12
Shelf-life	24	32	28	34	29	29
Taste	22	23	16	15	18	19
Size of package	5	4	4	3	4	4
Packaging	8	8	12	13	13	11
Like brand name	5	5	6	4	7	6
Familiar with brand name	5	5	8	6	10	7
Demographics:						
Percent residing in urban areas	71	92	93	95	99	90
Percent in professional (high, middle) careers	4	7	11	23	36	16
Percent in working class careers	64	53	53	50	31	50
Percent not working (unemployed, student, retired)	33	40	37	27	32	34
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
a) Households can rank more than one reason for purchasing/not purchasing item.						
b) Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.3 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF PASTEURIZED-RECONSTITUTED MILK IN BERLINGOT CARTONS, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	60	55	44	41	46	48
Availability	13	11	14	14	3	11
Shelf-life	8	9	16	12	19	13
Taste	55	36	32	24	41	36
Size of package	0	0	0	0	3	0
Packaging	0	0	0	0	0	0
Like brand name	10	9	0	4	14	7
Familiar with brand name	0	0	0	0	0	0
Location of purchase:						
Small store (<i>épicerie</i>)	91	80	93	76	90	87
Supermarket	6	9	4	14	5	7
Creamery	1	5	2	7	0	3
Frequency of purchase:						
Daily	79	73	79	86	90	80
Every two days	13	18	18	10	0	14
Every three days	0	5	2	0	0	1
Weekly	1	2	2	0	0	1
Every two weeks	0	0	0	0	0	0
Demographics:						
Percent residing in urban areas	93	100	96	100	100	98
Percent in professional (high, middle) careers	0	9	7	14	41	13
Percent in working class careers	53	68	60	43	27	51
Percent not working (unemployed, student, retired)	48	23	33	43	32	36
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	2	2	3	0	1	2
Availability	9	5	17	9	12	10
Shelf-life	29	40	37	50	41	39
Taste	26	25	22	19	20	22
Size of package	4	4	2	5	6	4
Packaging	1	1	3	2	0	1
Like brand name	6	7	7	5	11	7
Familiar with brand name	4	4	4	4	5	4
Demographics:						
Percent residing in urban areas	67	90	92	78	99	85
Percent in professional (high, middle) careers	4	7	11	26	36	17
Percent in working class careers	67	50	53	44	31	49
Percent not working (unemployed, student, retired)	29	43	37	23	33	33
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
a) Households can rank more than one reason for purchasing/not purchasing item.						
b) Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.4 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF STERILIZED-RECONSTITUTED MILK IN PLASTIC BOTTLES, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	41	24	46	32	14	31
Availability	28	28	23	32	45	32
Shelf-life	7	16	6	0	5	6
Taste	62	60	60	74	57	62
Size of package	3	4	0	0	0	1
Packaging	3	4	0	0	0	1
Like brand name	14	24	20	10	29	20
Familiar with brand name	31	36	31	13	36	30
Location of purchase:						
Small store (<i>épicerie</i>)	0	11	0	0	0	2
Supermarket	0	0	5	0	0	1
Creamery	92	83	91	94	100	92
Frequency of purchase:						
Daily	67	94	77	88	78	81
Every two days	8	6	18	0	6	8
Every three days	0	0	0	6	0	1
Weekly	0	0	0	0	0	0
Every two weeks	0	0	0	0	0	0
Occasionally	8	0	0	0	0	1
Once per month	8	6	0	6	17	7
Demographics:						
Percent residing in urban areas	66	92	97	90	100	90
Percent in professional (high, middle) careers	10	4	9	6	33	14
Percent in working class careers	59	68	49	58	33	51
Percent not working (unemployed, student, retired)	31	28	43	35	33	35
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	10	12	15	10	10	12
Availability	7	10	11	10	10	10
Shelf-life	5	2	2	3	3	3
Taste	40	43	33	40	38	39
Size of package	1	1	1	1	2	1
Packaging	1	2	1	3	5	2
Like brand name	13	12	18	18	18	15
Familiar with brand name	29	27	31	21	34	28
Demographics:						
Percent residing in urban areas	69	87	86	91	96	85
Percent in professional (high, middle) careers	2	7	9	23	36	15
Percent in working class careers	65	57	60	51	31	53
Percent not working (unemployed, student, retired)	33	36	31	26	33	32
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
^a Households can rank more than one reason for purchasing/not purchasing item.						
^b Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.5 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF STERILIZED-RECONSTITUTED MILK IN TETRABRIK CARTONS, BY QUINTILE, 1993						
	POOR	2	3	4	RICH	TOTAL
	1				5	
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	12	11	13	4	11	10
Availability	28	21	24	45	33	30
Shelf-life	11	18	16	11	6	12
Taste	56	66	59	43	64	58
Size of package	2	1	0	0	1	1
Packaging	0	0	0	0	1	0
Like brand name	12	19	13	20	18	16
Familiar with brand name	0	2	1	0	0	1
Location of purchase:						
Small store (<i>épicerie</i>)	64	68	70	75	67	69
Supermarket	7	3	2	5	0	3
Creamery	25	25	27	17	22	23
Frequency of purchase:						
Daily	61	70	65	80	70	70
Every two days	18	9	13	8	6	10
Every three days	4	7	6	6	2	5
Weekly	0	0	1	0	4	1
Every two weeks	1	0	0	0	1	0
Occasionally	14	13	8	5	11	10
Once per month	0	1	1	0	1	1
Demographics:						
Percent residing in urban areas	69	89	95	96	100	89
Percent in professional (high, middle) careers	4	7	11	23	34	16
Percent in working class careers	70	56	55	60	33	55
Percent not working (unemployed, student, retired)	26	36	35	17	34	30
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	23	22	21	19	21	21
Availability	6	5	9	9	8	8
Shelf-life	5	3	4	3	3	3
Taste	45	35	31	39	36	37
Size of package	0	0	0	1	2	1
Packaging	1	0	0	0	1	0
Like brand name	5	13	15	15	16	13
Familiar with brand name	5	3	5	4	8	5
Demographics:						
Percent residing in urban areas	76	95	93	94	99	92
Percent in professional (high, middle) careers	2	7	9	21	39	16
Percent in working class careers	57	53	56	42	29	47
Percent not working (unemployed, student, retired)	41	39	36	36	32	37
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
^a Households can rank more than one reason for purchasing/not purchasing item.						
^b Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.6 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF STERILIZED LOCAL FRESH MILK IN PLASTIC BOTTLES, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	17	7	10	5	19	11
Availability	13	23	35	33	31	29
Shelf-life	13	10	3	2	10	7
Taste	78	80	68	79	69	74
Size of package	43	50	45	50	50	48
Packaging	4	3	3	2	6	4
Like brand name	22	33	39	33	23	30
Familiar with brand name	57	43	35	31	33	38
Location of purchase:						
Small store (<i>épicerie</i>)	7	3	4	3	2	0
Supermarket	7	0	0	10	4	3
Creamery	93	90	100	87	74	4
						86
Frequency of purchase:						
Daily	86	80	76	58	76	74
Every two days	7	7	16	16	10	11
Every three days	0	3	0	10	2	3
Weekly	0	3	0	3	4	3
Every two weeks	0	0	0	0	2	1
Occasionally	21	3	4	3	10	7
Once per month	0	0	0	0	0	0
Demographics:						
Percent residing in urban areas	83	97	94	95	98	94
Percent in professional (high, middle) careers	0	7	10	21	27	16
Percent in working class careers	65	43	48	52	38	48
Percent not working (unemployed, student, retired)	35	50	42	26	35	37
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	17	20	26	25	15	20
Availability	7	9	10	13	13	10
Shelf-life	1	1	2	1	1	1
Taste	33	36	26	31	27	31
Size of package	2	5	4	7	10	6
Packaging	0	1	1	2	2	1
Like brand name	7	9	10	14	12	10
Familiar with brand name	27	29	32	20	34	28
Demographics:						
Percent residing in urban areas	66	86	87	90	91	83
Percent in professional (high, middle) careers	3	6	9	20	36	15
Percent in working class careers	64	61	60	52	28	53
Percent not working (unemployed, student, retired)	33	33	31	28	30	31
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
^a Households can rank more than one reason for purchasing/not purchasing item.						
^b Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.7 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF STERILIZED LOCAL FRESH MILK IN TETRABRIK CARTONS, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase: ^a						
Price	18	2	8	2	4	6
Availability	24	22	22	39	39	30
Shelf-life	6	13	12	8	6	9
Taste	68	74	63	57	62	65
Size of package	0	0	0	0	0	0
Packaging	2	0	0	0	0	0
Like brand name	16	26	14	18	17	18
Familiar with brand name	0	2	0	0	0	0
Location of purchase:						
Small store (<i>épicerie</i>)	3	8	6	13	14	10
Supermarket	7	2	4	3	4	4
Creamery	87	83	86	79	79	82
Frequency of purchase:						
Daily	53	63	67	79	77	70
Every two days	20	8	16	7	5	10
Every three days	7	8	4	5	0	4
Weekly	3	6	2	2	4	3
Every two weeks	0	0	0	2	1	1
Occasionally	23	8	8	5	13	10
Once per month	0	2	4	3	1	2
Demographics:						
Percent residing in urban areas	72	94	96	97	99	92
Percent in professional (high, middle) careers	4	15	8	30	36	20
Percent in working class careers	68	44	63	56	32	51
Percent not working (unemployed, student, retired)	28	41	31	15	32	29
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing: ^a						
Price	22	28	33	34	25	28
Availability	6	8	7	7	6	7
Shelf-life	2	2	0	0	0	1
Taste	24	25	20	23	20	22
Size of package	0	1	0	2	1	1
Packaging	1	0	0	0	0	0
Like brand name	6	6	5	9	9	7
Familiar with brand name	12	10	13	8	13	11
Demographics:						
Percent residing in urban areas	73	91	92	91	98	89
Percent in professional (high, middle) careers	3	4	11	18	36	14
Percent in working class careers	62	59	52	45	29	49
Percent not working (unemployed, student, retired)	35	37	37	34	33	35
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
a) Households can rank more than one reason for purchasing/not purchasing item.						
b) Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

Table A4.8 - QUALITATIVE QUESTIONS PERTAINING TO THE CONSUMPTION OF RAW MILK, BY QUINTILE, 1993						
	POOR 1	2	3	4	RICH 5	TOTAL
REASONS FOR AND LOCATION/FREQUENCY OF PURCHASES Percent of Households Purchasing the Item						
Reasons for purchase:^a						
Price	15	23	25	13	9	17
Availability	27	33	25	19	16	24
Shelf-life	3	0	0	0	0	0
Taste	64	60	66	74	84	70
Size of package	0	0	0	0	0	0
Packaging	0	0	0	0	0	0
Like brand name	27	18	23	30	33	26
Familiar with brand name	0	0	0	0	0	0
Location of purchase:						
Peddlers (home deliveries)	18	38	36	52	69	42
Distribution Centers	26	38	38	35	27	33
On-Farm (<i>autoconsommation</i>)	0	2	0	2	0	1
Frequency of purchase:						
Daily	84	85	89	88	85	86
Every two days	5	6	4	5	0	4
Every three days	0	0	0	2	2	1
Weekly	0	0	0	2	2	1
Every two weeks	0	0	0	0	0	0
Demographics:						
Percent residing in urban areas	73	93	95	94	74	86
Percent in professional (high, middle) careers	0	5	9	17	42	15
Percent in working class careers	61	45	55	51	26	47
Percent not working (unemployed, student, retired)	39	50	36	32	33	38
REASONS FOR NOT PURCHASING ITEM Percent of Households Not Purchasing the Item						
Reasons for not purchasing:^a						
Price	6	8	10	8	10	8
Availability	44	50	49	42	40	45
Shelf-life	3	6	6	3	5	5
Taste	17	20	12	14	17	16
Size of package	0	0	0	0	0	0
Packaging	1	0	1	0	0	0
Like brand name	7	9	8	10	19	11
Familiar with brand name	0	1	1	1	1	1
Demographics:						
Percent residing in urban areas	72	92	93	96	100	91
Percent in professional (high, middle) careers	4	8	10	24	35	16
Percent in working class careers	64	58	55	49	32	51
Percent not working (unemployed, student, retired)	32	35	35	27	33	32
Mean Total Expenditures Per Adult Equivalent: ^b	524	869	1184	1684	3345	1521
Source: INS, <i>Enquête Restreinte sur la Consommation des Produits Subventionnés</i> , District of Tunis, 1993.						
a) Households can rank more than one reason for purchasing/not purchasing item.						
b) Total expenditure patterns extrapolated from 1990 National Survey (adjusted for inflation and adult equivalent). Numbers may not add due to rounding.						

ANNEX 5: MILK PACKAGING

Table A5.1 - TYPES OF SUBSIDIZED PROCESSED MILK			
	Sterilized Milk (Reconstituted Imports)	Pasteurized Milk (Reconstituted Imports)	Sterilized Fresh Milk (Local Production)
Packaging Type and Producer	<ul style="list-style-type: none"> •Tetrabrik (STIL) •Plastic Bottles (STIL & TLAIT) 	<ul style="list-style-type: none"> •<i>Berlingot</i> (STIL) •<i>Coussin</i> (STIL) 	<ul style="list-style-type: none"> •Plastic Bottles (LAINO, TLAIT, STIL) •Tetrabrik (STIL)

Most liquid milk is packaged in Tetrabrik, plastic bottles, and *Berlingot* cartons. Tetrabrik cartons, which are imported from Europe, are by far the most expensive. They are close to five times as costly as *coussin*, 1.7 times as costly as *Berlingot* and 1.6 as expensive as plastic bottles. Note that the per liter cost of plastic bottles includes the cost of a covering material for transportation of 10 millimes per package.

Table A5.2 - UNIT PACKAGING COSTS	
Tetrabrik	132
Plastic Bottles	82
<i>Berlingot</i>	76
<i>Coussin</i>	28

ANNEX 6: METHODOLOGY FOR ESTIMATION AND SIMULATIONS

The fiscal, distributional and nutritional impact of various reforms was simulated using demand elasticities and data from the INS 1990 and 1993 household expenditure surveys (described in Annex 3). Simulations were conducted using the assumption that all reforms manifest themselves in terms of real price changes, holding all other factors constant. Targeting reforms, which differentiation among goods based on quality characteristics, are incorporated into the analysis by modelling each variety as an individual product. All self-targeting measures and price changes that were implemented by the time of the 1993 survey (summer 1993) are captured in the simulations, including the introduction of "new goods," such as local fresh milk packaged in plastic bottles and tetrabrik cartons, which were not available at the time of the 1990 survey. The analysis treats these "new goods" as if they were rationed in 1990 (so that the budget shares of these goods equal zero for that year). Household-specific reservation prices, which are defined as the lowest price at which individual households would not consume positive quantities of the product in question, were calculated for these items in 1990.

For simplicity, demand elasticities were estimated using the assumption that households first allocate total expenditures across broad product groups (first stage), and then allocate group expenditures across individual products within product groups (second stage). First-stage elasticities were estimated by Matoussi et. al. using the model developed by Deaton (1988 and 1990) based on the spatial variation of prices.¹ Regression equations for this model closely resemble the Almost Ideal Demand System (AIDS), except that, in the spatial variation specification, (i) demand equations are not derived directly from consumer preferences; and (ii) consumers choose both quantity and quality under the spacial-variation model (as opposed to quantities under the AIDS specification).

The second-stage of consumer budgeting was estimated with a linear-approximate AIDS functional form based on Stone's (1953) geometric price index. Demand equations for each product group were estimated as a *system* using Zellner's (1962) Seemingly Unrelated Regression (SUR) technique. Following Heien and Wessells (July 1990), the inverse mills ratio, obtained for each individual product from the estimation of PROBIT equations, was included as a regressor in the product equations of the second-stage group AIDS systems to take into account the potential censoring of budget shares at zero.² With two-stage budgeting, changes in prices affect the quantity consumed of a particular good in two ways (i) through a direct effect via own- and cross-price changes of goods within a products group (e.g., milk); and (ii) through an indirect income effect via changes in total expenditures allocated to that particular product group. First- and second-stage elasticities are thus combined so as to take into account both the direct- and indirect- effects of changes in prices under the various policy scenarios.

¹/Matoussi et. al. used national-level data from the INS 1990 household expenditure survey. Matoussi et. al. conducted separate demand regressions for urban and rural areas. Although available data for the second stage cover both urban and rural areas in the District of Tunis area (as discussed in Annex 3), urban elasticities estimated by Matoussi et. al. are used for the first-stage in this analysis, since the second-stage sample was 86 percent urban (second-stage estimation takes into account regional differences using a regional binary variable).

²/In addition to prices, group expenditures, and the inverse mills ratio, demographic variables (household composition, education levels, gender, seasonal binary variables, etc.) were also included in the demand equations in the second-stage AIDS systems.

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