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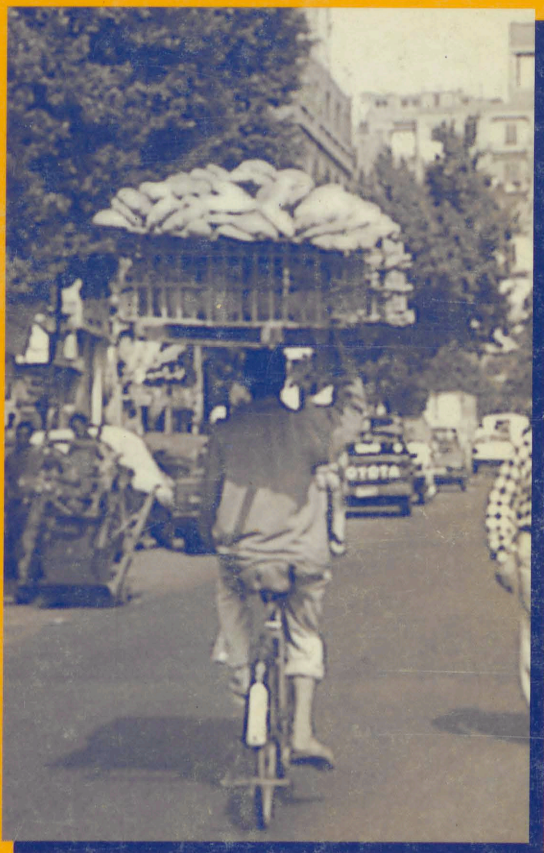
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Fiscal Policy Measures in Egypt

Public Debt and Food Subsidy



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Introduction¹

The objective of this study is to assess the impact of the food subsidy policy on the low income and poor households in Egypt. Throughout this study, the poor are not defined according to a specified income (or expenditure) poverty line. Rather, they are acknowledged as a sub-group of the low income (or low expenditure) households, falling in the lowest income (or expenditure) intervals because of the non-availability of income distribution data.

THE IMPACT OF FOOD SUBSIDY POLICY ON LOW INCOME PEOPLE AND THE POOR IN EGYPT

KARIMA KORAYEM

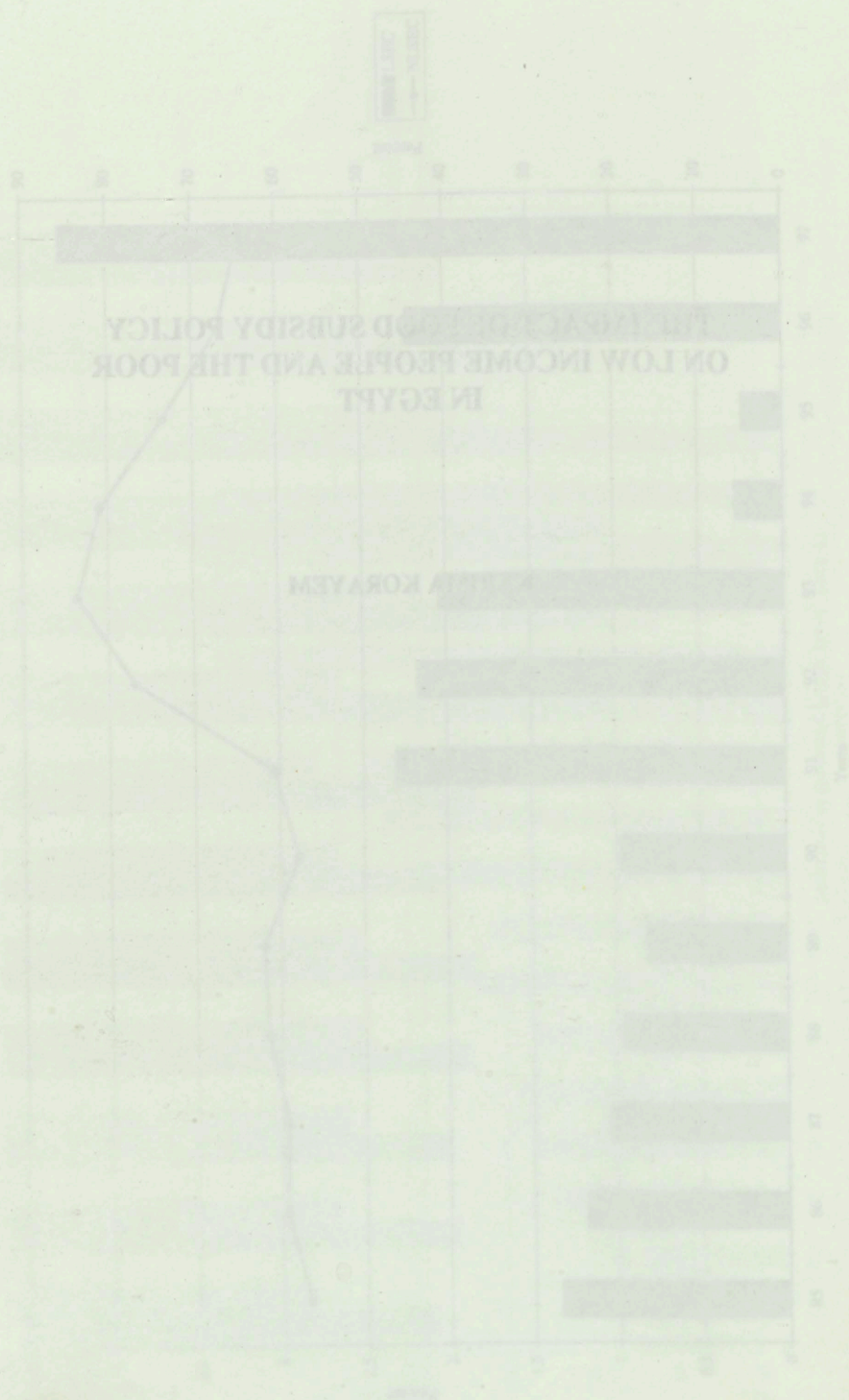
To assess the impact of the food subsidy policy on the low income people in Egypt, we have to be acquainted with the food subsidy system; its evolution, and operation. The other requirement is to identify the low income people in Egypt using the 1995/96 Egyptian Sample Survey. To do this, a methodology has to be developed with which one can differentiate between the low income and the poor income household groups, since such a measure is not available in the literature.

Two aspects of the food subsidy system are to be assessed: the success of food subsidy policy in targeting the low income and poor households in Egypt and the impact of food subsidy on the cost of living. For assessing the first aspect (the success), the study will try to assess: the necessity of the subsidized commodities as a necessity; the importance of the subsidized commodities in the budget of the poor and the low income households in general; and the efficiency of the operation of the subsidy system in reaching the target groups. For assessing the second aspect (the impact), we shall evaluate the direct and indirect effects of the removal of food subsidy on the cost of living of the low income households and the poor.

The study will consist of five parts as well as the introduction and conclusion. Part one will focus on the evolution and operation of the food subsidy system in Egypt. Part two will deal with the identification of the low expenditure households in Egypt. Part three will examine how

¹This study has been done for *Egypt: Human Development Report 1997*, The Institute of National Planning, Cairo, 1997.

Figure 6
Share of Food and Non-Food Expenditure in Government Budget



Introduction¹

The objective of this study is to assess the impact of the food subsidy policy on the low income and poor households in Egypt. Throughout this study, the poor are not defined according to a specified income (or expenditure) poverty line. Rather, they are acknowledged as a subgroup of the low income (or low expenditure) households, falling in the lowest income (or expenditure) intervals. Because of the non-availability of income distribution data after 1990/91, expenditure data will be used in defining the low income and the poor households. Low expenditure and low income households will be used interchangeably throughout the study.

To assess the impact of the food subsidy policy on the low income people in Egypt, we have to be acquainted with the food subsidy system, its evolution, and operation. The other prerequisite is to identify the low income people in Egypt using the Households Expenditure Sample Survey 1995/96. To do this, a measurement criteria has to be developed with which one can differentiate between low, middle, and upper income household groups, since such a measure is not available in the literature.

Two aspects of the food subsidy system will be assessed: the success of food subsidy policy in targeting the low income and poor households in Egypt and the impact of food subsidy on their cost of living. For assessing the first aspect (the success), three criteria will be used: the necessity of the subsidized commodities as consumer goods; the importance of the subsidized commodities in the budget of the poor and the low income households in general; and the efficiency of the operation of the subsidy system in reaching the targeted group. For assessing the second aspect (the impact), we shall evaluate the direct and indirect effects of the removal of food subsidy on the cost of living of the low income households and the poor.

The study will consist of four parts as well as the introduction and conclusion. Part one will cover the evolution and operation of the food subsidy system in Egypt. Part two will deal with the identification of the low expenditure households group in Egypt. Part three will examine how

¹This study has been made for *Egypt: Human Development Report 1997*, The Institute of National Planning, Cairo, Egypt.

successful the food subsidy system has been in targeting the low income people. Part four will cover the impact of food subsidy on the cost of living of the low income people.

Food Subsidy in Egypt: Evolution and Operation

Allocations for cost of living subsidy through state budget was insignificant in the fifties and sixties; it was only LE 9 million in the sixties and covered very few commodities, which included wheat, sugar, and rationed kerosene. It increased gradually during the sixties, reaching LE 20 million in 1970. The largest share of the cost of living subsidy was always allocated to food items; food subsidy represented more than 75% of the cost of living subsidy during most of the seventies (Korayem 1980: Table 1). The first big jump in food subsidy occurred in 1973 due to both the increase in international prices, and the government policy of keeping the prices of staple items unchanged. As presented in Table 1, the subsidy increased from LE 41.9 million in 1972 to LE 393.2 million in 1974, i.e., it increased more than nine fold over this two-year period. Consequently, the burden on the government budget has increased considerably. It has increased from 0.7% in 1972 to 16.5% in 1974 and continued the trend in the seventies and eighties, reaching a peak (in absolute term) of LE 2,446 million in 1984/85-18.4% of government expenditure.² In 1985/86, it started a declining trend, falling to LE 1,341 million in 1987/88, representing only 6.8% of

²The relative peak with respect to government expenditure was in 1981/82, where the percentage of food subsidy to government expenditure reached 19.5% (Table 1).

Table 1
Subsidy on Bread & Wheat Flour, Edible Oil, and Sugar; and
Total Food subsidy (1970/71-1996/97)

(LE million)

Year	Bread & Wheat Flour	Edible Oil	Sugar	% of the four commodities to total food subsidy	Total food subsidy (1)	% of food subsidy to government expenditure
1970/71	20.9	10.4	8.0	94.0	41.8	0.2
1972	15.1	15.8	6.0	88.1	41.9	0.7
1973	79.0	16.8	19.0	84.3	136.2	5.5
1974	216.0	55.3	68.9	86.6	393.2	16.5
1975	260.9	72.2	20.8	83.5	423.7	16.9
1976	171.6	43.2	6.1	78.5	281.4	9.8
1977	149.1	54.6	n.a.	-	343.2	10.9
1978	222.8	137.4	n.a.	-	452.4	11.9
1979	588.3	200.2	n.a.	-	996.8	16.2
1980/81	511.0	125.4	97.8	67.1	1094.3	16.9
1981/82	807.1	259.7	169.3	67.6	1828.0	19.5
1982/83	758.0	201.5	133.7	64.0	1707.0	14.3
1983/84	861.5	337.5	119.5	65.6	2009.0	16.8
1984/85	614.7	395.3	134.7	46.8	2446.0	18.4
1985/86	448.7	331.5	195.7	49.2	1982.0	12.3
1986/87	289.8	263.6	258.5	48.6	1671.0	10.6
1987/88	235.6	204.5	341.8	58.3	1341.0	6.8
1988/89	543.3	243.5	470.4	63.0	1995.0	9.2
1989/90	645.4	245.2	643.8	87.8	1747.0	7.1
1990/91	1255.0	368.0	600.0	92.6	2400.0	7.4
1991/92	1057.0	629.0	698.0	96.1	2482.0	5.0
1992/93	1308.0	542.3	600.4	100.0	2450.0	5.5
1993/94	1424.0	424.9	579.7	97.7	2486.0	5.3
1994/95	1486.0	433.0	573.0	100.0	2492.0	5.8
1995/96	1848.1	625.0	624.9	100.0	3098.0	6.0
1996/97	2273.0	606.2	788.8	100.0	3668.0	5.9

n.a. = not available.

(1) Total food subsidies include financial losses of food marketing companies.

Source: Ali & Adams Jr., 1996; and the last two years are taken from: Ali, Abdel Rahman & Ibrahim, 1998.

total government expenditure. Despite the fact that food subsidy has undergone some increases during the rest of the eighties and in the nineties, it continued at a level below 10% of government expenditure (Table 1). This is essentially attributed to the IMF Structural Adjustment Program in 1987³ and the Economic Reform and Structural Adjustment Program (ERSAP), adopted by the Egyptian government in 1991/92; both programs called for the reduction in the subsidy bill (Korayem 1987; and Korayem 1993).

In 1960, food subsidy covered few commodities, which included wheat and sugar. In the seventies, the number of subsidized food commodities increased considerably, reaching about 20 food items in 1980 (Ali & Adams Jr. 1996). Wheat, refined flour, maize, beans, lentils, vegetable oil, vegetable and animal fats, frozen meat, frozen fish, and tea were subsidized in the seventies (Korayem 1980). The subsidy on most of those commodities was removed gradually. As shown in Table 1, starting in 1992/93, i.e., one year after the adoption of ERSAP, the subsidy of bread and wheat flour (82% extraction), edible oil, and sugar form 100% of food subsidy (except in 1993/94, when it was 98%). In other words, the food subsidy was limited to four food items beginning in 1992/93. The subsidy on bread included both *baladi* (82% extraction) and *shami* (76% extraction). The subsidy on a third type of bread, *fino* (72% extraction), was removed in 1991/92 and the subsidy on *shami* bread was removed later. In 1995, the subsidy covered only *baladi* bread, wheat flour (82% extraction), edible oil, and sugar (Ali & Adams, Jr., 1996). Those four food items always formed the largest share in total food subsidy; they represented an average of 71% and 62% of the food subsidy in the seventies and eighties respectively (bread including the three types: *baladi*, *shami*, and *fino*).⁴

There has been more than one mechanism for distributing the subsidized food commodities in the seventies. The first mechanism was to make the commodities available to consumers at fixed prices without any quantity limitation. This was applied mainly to bread. The second delivery mechanism was the use of ration cards. Certain quotas of some commodities were regularly sold to consumers at low subsidized prices.

³ The implementation of this program was not completed; it was discontinued for social, political, and economic reasons.

⁴ Calculated from Table 1.

These commodities were edible oil, sugar, and tea. The consumer could buy additional quantities if he wanted, but at a higher price. The third method of distribution was to use the ration card as a determinant of the intermittent distribution of some commodities. Such items were not available on a regular basis. Subsidized rice was distributed in this way. The fourth method was simply applying the rule "first come, first served," until the supply was exhausted. This was applied, for example, to frozen meat and fish (Korayem 1980). Currently, only the first two mechanisms are applied to the four subsidized commodities. *Baladi* bread is still distributed without quantity limitation while the ration cards are used for regularly distributing fixed quotas of edible oil (0.5 kg per person), and sugar (1 kg), and (starting in 1996) for distributing regular wheat flour (82% extraction). With the exception of some cities in Upper Egypt, regular wheat flour is distributed mostly in the rural sector (see Table C.4 in Appendix C). As presented in Table 2, ration cards covered the majority of the Egyptian population, about 90% of them up to 1988. The scale of ration card coverage was reduced in the nineties to reduce the subsidy bill. In 1997, only 69.2% of the Egyptian population were ration cards holders. In its effort to reduce the subsidy bill, the Egyptian government applied four measures: (i) Reducing gradually the number of commodities covered by the subsidy system, e.g., the subsidy on maize, beans, lentils, frozen meat and other food commodities was removed. (ii) Increasing the price of some subsidized commodities. For example, after keeping the price of *baladi* bread unchanged for about 30 years, the price was raised in 1983/84 and then again in 1988/89 and its weight was reduced from 150 gms a loaf to 125 gms. Other examples are rationed oil and sugar. The price of the former was raised in 1991/92, 92/93 and 93/94, while the price of the latter was raised in 1992/93 (for these, and other price rises of food commodities, see Ali & Adams Jr., 1996: 1781). (iii) In 1981, the government divided the ration card holders into fully subsidized (green card holders) and partially subsidized (red card holders). The holders of the green cards are government and public sector employees, the owners of 10 feddans and less, and those whose incomes are below the tax exemption level of LE 2000 a year; the red ration card holders are individuals with high income, such as businessmen, owners of buildings, shops, cars, and owners of more than 10 feddans. The red ration card can be obtained by any Egyptian and, hence, partial subsidy can be guaranteed to

anyone (Ali & others, date n.a.; and Ali & Adams Jr. 1996). The difference between the fully subsidized and partially subsidized price is 50%. One kilo of ration card sugar is sold for LE 0.50 for green card holders and LE 0.75 for red card holders, while half a kilo of rationed edible oil is sold at LE 0.50 for fully subsidized card holders and LE 0.75 for partially subsidized ones. The majority of the ration card holders are fully subsidized; they represent at least 96%, except for 1997 (Table 2). (iv) To reduce the ration card numbers, the government revised the lists of ration card holders in 1981 and again in 1994, by removing the names of the people who were abroad and the deceased. In addition, starting in 1989, newly born children were not registered on the ration cards of their parents to prevent increasing the subsidy quota of the ration card holders (Ali & Adams Jr. 1996). The outcome of these measures was a reduction in the number of the ration card holders (fully and partially subsidized) from 87.3% of the population in 1990 to 69.2% in 1997 (Table 2).

Identification of the Low expenditure (and Low income) Households

Methodology. To identify the low income households group in Egypt, a measurement criteria needed to be developed which could differentiate between low, middle, and upper income household groups and determine the income distribution of each. The mathematical formulation of such an indicator--the income inequality index (III)--is presented in Appendix A.

Conceptually, this index is based on the equal income distribution share as the measurement norm. Income is equally distributed among the population. If a given percentage of the population receives an equal percentage of the national income, e.g., five percent of the population receives five percent of the national income, then ten percent of the population receives ten percent of national income, etc. Accordingly, income is unequally distributed if a given percentage of the population receives a smaller percentage share of the national income, while another equal percentage of the population receives a greater percentage share of the

Table 2
Fully & Partially Subsidized Ration Card Holders in Egypt
(1981-1997)

Year	Ration Card Holders		% of Ration Card Holders to the Population
	Fully subsidized (%)	Partially subsidized (%)	
1981	97.4	2.6	91.4
1982	97.5	2.5	91.4
1983	97.5	2.5	91.3
1984	97.5	2.5	91.1
1985	97.6	2.4	90.9
1986	97.2	2.8	90.7
1987	97.2	2.8	91.6
1988	97.2	2.8	90.2
1989	97.0	3.0	89.4
1990	97.1	2.9	87.3
1991	97.1	2.9	84.7
1992	97.2	2.8	82.4
1993	97.2	2.8	80.5
1994	97.2	2.8	78.7
1995	96.3	3.7	77.3
1996	95.9	4.1	76.6
1997	92.7	7.3	69.2

Source: Taken & calculated from: Ali & Adam Jr., 1996; and the last three years are taken from: Ali & others, 1998.

national income. The former group is the population who falls in the lower income intervals, while the latter group includes those who belong to the upper income intervals.

In the decile income distribution, one may differentiate between three groups: the household deciles whose shares of the national income are less than 10 percent for each decile; the household deciles whose shares of the national income are around 10 percent for each decile; and those household deciles whose relative shares are greater than 10 percent of national income for each decile. Hence, in the decile income distribution, a 10 percent share of the national income is the equal income distribution share (EIDS) while

in the quintile income distribution pattern, the EIDS will refer to 20 percent of the national income, etc. The EIDS will be used in identifying the three household groups: the lower income households, the middle income households, and the upper income households; the first group includes the poor and the last group includes the rich.

When the income distribution data are not available, the expenditure data in the Household Expenditure Surveys can be used to identify the low income households group in the society. In this case, the equal expenditure distribution share (EEDS), instead of the EIDS, will be used to differentiate between the three household groups: the lower expenditure households group, which includes all deciles whose expenditure shares are below the EEDS; the middle expenditure households group, which consists of all deciles whose expenditure shares are around the EEDS; and the upper expenditure households group, which encompasses all deciles whose expenditure shares in the total expenditure are higher than the EEDS.

Low Expenditure Households in 1995/96. Because of the lack of income distribution data, the expenditure data in the Household Expenditure Sample Survey 1995/96 are used to identify the low income households group in Egypt. Since household expenditure and income are closely related, the terms lower expenditure and lower income households will be used interchangeably throughout the study; the same applies to the terms middle expenditure (middle income) and upper expenditure (upper income) households.

Table 3 presents the decile distribution of household expenditure in urban and rural sectors in Egypt, as computed from the Household Expenditure Sample Survey 1995/96. The EEDS is at 10 percent of the total percent of total household expenditure as explained above. An arbitrary equal expenditure distribution range (EEDR) is assigned around the EEDS to identify the middle expenditure households group. We shall define the EEDR at 20% around the EEDS; i.e., the EEDR will be higher than 8% and lower than 12% of the total expenditure. Thus, $8\% < \text{EEDR} < 12\%$ of the total expenditure. The three household groups are: the lower expenditure (and lower income) households with decile expenditure share equal to, or less than, 8 percent of the total expenditure; the middle expenditure (and middle income) households with decile expenditure share higher than 8

percent and lower than 12 percent of the total expenditure; the upper expenditure (and upper income) households with decile expenditure share equal to, or greater than 12 percent of the total expenditure. The first group is expected to include the poor who live at the poverty line and below and the non-poor who live at low income level (above the poverty line); the second group is expected to include the lower middle income and middle income households; the third group is expected to include the upper middle income and high income households. The decile expenditure distribution of urban and rural households in 1995/96 are presented in Figures 1 & 2.

According to the decile expenditure presented in Table 3 and Figures 1 & 2, the lowest five household deciles in the urban sector and the lowest four deciles in the rural sector represent the lower expenditure (and lower income) households; the next three household deciles in the urban and rural sectors represent the middle expenditure (and middle income) households; the last two household deciles in the urban sector and the three last household deciles in the rural sector represent the upper expenditure (and upper income) households. In other words, in 1995/96, the lower income households represent 50% of the urban households and 40% of the rural households; the middle income group represents 30% of the households in both sectors, and the upper income households represent 20% of the urban households and 30% of the rural households.

The next step was to identify the expenditure intervals in the Household Expenditure Sample Survey 1995/96 for the lower expenditure, middle expenditure, and upper expenditure households, guided by the relative size of each of the three household groups as identified above. In other words, one would need to locate the expenditure brackets in the Household Survey within which the lower income households who represent 50% of the households in the urban sector and 40% of the households in the rural sector fall. According to the Household Expenditure data in 1995/96, the lower expenditure households whose average expenditure falls below the EEDS are those who fall in the expenditure intervals below LE 6800 in the urban sector and LE 5600 in the rural sector, representing 46% of the households in both sectors (see Tables 8 & 9). Those are the closest figures to the estimated lower income group size of 50% in the urban sector and 40% in the rural sector. The middle expenditure (and middle income) households whose expenditures are around the EEDS, are those who fall in the

expenditure intervals LE 6800 and LE 8000 in the urban sector and LE 5600 and LE 6800 in the rural sector. Those figures represent 29% and 32% of households in the two sectors respectively. Those are the closest figures to the estimated size of the middle income households group in both sectors; the estimated size is 30% of households. Consequently, the upper income households belong to the expenditure intervals of LE 10000 and above in the urban sector and LE 8000 and above in the rural sector. Those figures represent 25% and 23% of urban and rural households (see Tables 8 & 9). It should be emphasized that our objective here is to find out the expenditure intervals in which most of the households of the lower expenditure group fall in order to examine their expenditure pattern with respect to the food subsidy, education, and health. The same applies to the households in the middle expenditure and upper expenditure groups. Thus, the identified size of each group derived from the household expenditure deciles in Table 3 is only used as a mean to reach this objective.

Table 3
The Decile Distribution of Household Total Expenditure
in Urban and Rural Sectors in Egypt
1995/96

Household Distribution Deciles	Relative Expenditure Shares	
	Urban	Rural
I	2.9	3.2
II	4.6	5.2
III	5.7	6.3
IV	6.7	7.7
V	7.9	8.6
VI	8.8	9.5
VII	10.3	10.8
VIII	11.7	12.1
IX	14.9	14.4
X	26.4	22.1
Income Inequality Indicator (III)*	0.259	0.216
Gini coefficient	0.326	0.275

* Calculated by applying equation (1) in Appendix A

Source: Calculated from Table C.3 in Appendix C

How Successful is the Food Subsidy Policy in Targeting the Low Income People and the Poor in Egypt

As mentioned above, the four subsidized commodities (wheat flour, sugar, cooking oil, and kerosene) are distributed to households through a network of subsidized shops, while subsidized commodities (rice, meat, and eggs) are distributed through a network of subsidized shops.

The distribution of the four subsidized commodities (wheat flour, sugar, cooking oil, and kerosene) is targeted to the low income people and the poor in Egypt. The distribution of the four subsidized commodities (wheat flour, sugar, cooking oil, and kerosene) is targeted to the low income people and the poor in Egypt. The distribution of the four subsidized commodities (wheat flour, sugar, cooking oil, and kerosene) is targeted to the low income people and the poor in Egypt.

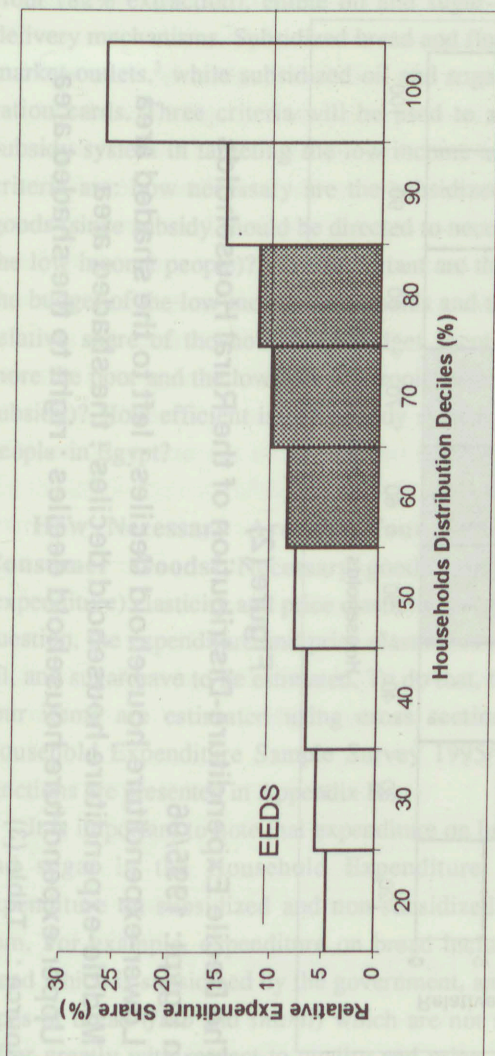


Figure (1)
The Decile Expenditure-Distribution of the Urban Households in Egypt; 1995/96
 - Lower-expenditure household deciles : left to the shaded area
 - Middle-expenditure household deciles : the shaded area
 - Upper-expenditure household deciles : right to the shaded area
 Source: Table (3)

* Starting 1996, subsidized wheat flour is distributed by retail cards according to Ministry of Trade and Supply concept.

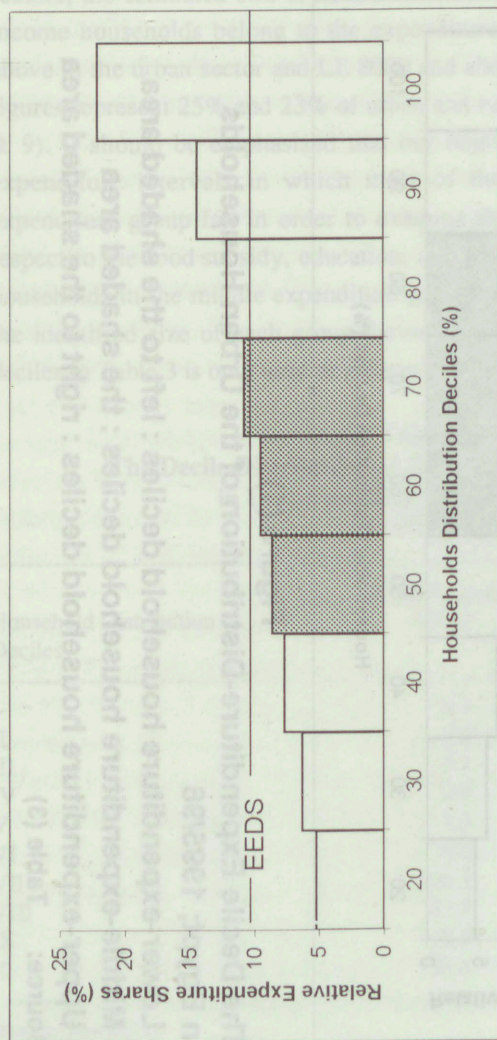


Figure (2)

The Decile Expenditure-Distribution of the Rural Households in Egypt: 1995/96

- Lower-expenditure household deciles : left to the shaded area
- Middle-expenditure household deciles : the shaded area
- Upper-expenditure household deciles : right to the shaded area

Source : Table (3)

How Successful Is the Food Subsidy Policy in Targeting the Low Income People and the Poor in Egypt

As mentioned above, the four subsidized commodities--*baladi* bread, wheat flour (82% extraction), edible oil and sugar--are subject to two types of delivery mechanisms. Subsidized bread and flour are distributed through the market outlets,⁵ while subsidized oil and sugar are distributed through the ration cards. Three criteria will be used to assess how successful is the subsidy system in targeting the low income and the poor in Egypt. Those criteria are: how necessary are the subsidized commodities as consumer goods (since subsidy should be directed to necessary commodities to benefit the low income people)? How important are the subsidized commodities in the budget of the low income households and the poor (since the higher the relative share of the household budget spent on those commodities, the more the poor and the low income people in general are benefiting from the subsidy)? How efficient is the subsidy system in reaching the low income people in Egypt?

How Necessary Are the Four Subsidized Commodities as Consumer Goods? Necessary goods are those which have income (expenditure) elasticity and price elasticity less than one. Thus to answer the question, the expenditure and price elasticities of bread, wheat flour, edible oil, and sugar have to be estimated. To do that, the demand functions for the four items are estimated using cross section expenditure data in the Household Expenditure Sample Survey 1995/96. The estimated demand functions are presented in Appendix B.

It is important to note that expenditure on bread, wheat flour, edible oil, and sugar in the Household Expenditure Sample Survey includes expenditure on subsidized and non-subsidized commodities of the same item. For example, expenditure on bread includes expenditure on *baladi* bread which is subsidized by the government, and also expenditure on other types of bread (*fino* and *shami*) which are not subsidized, and which also differ greatly with respect to quality and price. The same applies to wheat

⁵ Starting 1996, subsidized wheat flour is distributed by ration cards according to Ministry of Trade and Supply sources.

flour which includes two types, the regular type of wheat flour (82% extraction) which is subsidized and the super type which is sold at market price. Regarding the two other commodities--edible oil and sugar--they are sold at three prices: the fully and partially subsidized ration card prices, and the non-subsidized market price. Thus, one cannot claim that the estimated demand functions, and the derived expenditure and price elasticities, are for the subsidized bread, wheat flour, edible oil, and sugar only. They are also for subsidized and non-subsidized components making up the four items.

The expenditure elasticities derived from the estimated demand functions (in Appendix B) are presented in Table 4. These elasticities are positive and less than one, indicating that the four items are necessary normal goods. Having an absolute value not much below the 'unity' level may be attributed to including market-priced, high quality types of commodities side by side with the subsidized type under the same item, as explained above. In 1974/75, when wheat and bread, vegetable oil, and sugar were totally subsidized along with other commodities, the estimated expenditure elasticities of those commodities in the urban sector were considerably below unity (Korayem 1980: Table 9).⁶

Table 4

**Expenditure Elasticities of the Food Items
With Subsidized Components in Urban and
Rural Sectors, 1995/96**

	Bread	Wheat Flour	Edible Oil	Sugar
Urban	0.901	0.803	0.847	0.807
Rural	0.822	0.874	0.930	0.881

Source: Appendix B and Tables C.1 & C.2 in Appendix C.

⁶ The expenditure elasticities were derived by estimating the demand functions of wheat flour and bread, vegetable oil, and sugar for the urban households, using the expenditure data in the Household Expenditure Sample Survey, 1974/75.

In estimating the price elasticities of the four food items, it is assumed that the substitution effect is zero since empirically the latter effect cannot be separated from other influences.⁷ Thus, price elasticity in this context takes into account only the income (or expenditure) effect of the price change. The assumption of zero substitution effect implies that the price elasticities of the commodities with positive expenditure elasticities (i.e., normal goods) are underestimated. This is because for a normal good, the substitution effect reinforces the income (expenditure) effect, thus increasing the absolute value of the price elasticity.⁸

Tables 5 and 6 include the estimated price elasticities of the four food items in the urban and rural sectors, assuming that the substitution effect is zero.⁹ Under this assumption, the price elasticity is the product of the expenditure elasticity and the average propensity to spend; the negative sign reflects, of course, the reciprocal relationship between prices and expenditures. It is clear from the Tables that the price elasticities of the four food items are small, much below unity, indicating that bread, wheat flour, edible oil, and sugar are necessary consumer goods. It is worth noting, also, that the price elasticity of the four food commodities is slightly higher in the lower expenditure group as compared to the elasticities in the middle expenditure and upper expenditure groups, with the lowest level in the last group. This is explained by the relatively higher values of the average propensity to spend on this group in the price elasticity formula.¹⁰ The small price elasticity means that the increase in prices of these commodities will not reduce their consumption; i.e., the consumers will continue to buy

⁷ Price elasticities cannot be estimated the conventional way--i.e., computing the change in demand for food items as the result of the change in their prices--because of the lack of data. No data are available in Egypt on the quantity demanded and prices of commodities at different points of time, including the four food items under consideration.

⁸ In the case of inferior good (where the expenditure elasticity is negative), assuming zero substitution effect will give us a positive and overestimated value of price elasticity. For the inferior good, the income (or expenditure) effect and the substitution effect work in opposite directions, and hence the positive sign of the price elasticity, which we get in this case, is uncertain.

⁹ For the mathematical derivation of the price elasticity formula with zero substitution effect (cited under Table 4), see Korayem (1980), Appendix B.

¹⁰ For the values of the average propensity to spend in the different household expenditure intervals, see Tables 8 and 9 in the text.

these goods at the high unsubsidized prices and, hence, will spend more on them. With zero or small savings in the low and average income households, the increase in the expenditure on the four food commodities will be at the expense of other food and non-food items, leading necessarily to a decrease in their standard of living. Also there will be a restructuring in their food expenditure patterns towards less expensive items, which may adversely affect their nutrition intake and their health condition.

It should be noted that in another study the expenditure elasticities of eleven subsidized and non-subsidized food commodities were estimated, using the data of the Household Income and Expenditure Sample Survey 1990/91 (Ali & Adams Jr., 1996). The study reported negative expenditure elasticities for bread (*baladi*, *shami* and *fino*) and sugar, implying that they are inferior goods. As already mentioned above, our estimates reveal positive expenditure elasticities for the same two items using data of the Household Expenditure Sample Survey 1995/96 (Table 4). How does one reconcile these seemingly contradictory results? According to economic theory, the pattern of consumption is stable over a relatively long period of time; hence, it is difficult to accept that the demand characteristics for the same two items have changed over just a five-year period! To test the validity of the negative expenditure elasticities of bread (*baladi*, *shami*, and *fino*) and sugar for the Egyptian consumers,¹¹ the average individual expenditure on bread and sugar have been calculated from the Household Income and Expenditure Sample Survey 1990/91 in the different expenditure intervals, and in urban and rural sectors. As presented in Table 7, the average individual's expenditure on the two items increases with the increase in total expenditure. This means that the two items are normal goods, and their expenditure elasticity should be positive.¹²

¹¹The negative expenditure elasticity for bread would have not been surprising if it was estimated for *baladi* bread only since at high income levels people shift to better quality types of bread. However, the estimated expenditure elasticity was for all types of bread including *shami* and *fino*, which in 1990/91 were available in subsidized and non-subsidized types of better quality. The negative expenditure elasticity of sugar was also surprising, since sweets and delicatessen items which use sugar intensively as inputs, are consumed frequently in higher income-brackets.

¹² For an inferior good, the expenditure on it decreases with the increase in total expenditure.

Table 5

Price Elasticity (PE) of the Food Items with Subsidized Components in the Urban Sector, 1995/96

Expenditure Intervals (LE)	Bread	Wheat Flour	Edible Oil	Sugar
Group 1; lower expenditure households				
Less than 1000	-0.086	-0.031	-0.035	-0.052
1000-	-0.081	-0.013	-0.030	-0.043
1200-	-0.058	-0.034	-0.027	-0.033
1600-	-0.061	-0.015	-0.028	-0.029
2400-	-0.074	-0.014	-0.025	-0.030
3200-	-0.068	-0.020	-0.023	-0.027
4000-	-0.072	-0.015	-0.023	-0.027
4800-	-0.072	-0.014	-0.023	-0.025
5600-	-0.068	-0.014	-0.020	-0.023
Average of Group 1	-0.071	-0.019	-0.026	-0.032
Group 2; middle expenditure households				
6800-	-0.068	-0.014	-0.019	-0.023
8000-	-0.065	-0.012	-0.019	-0.020
Average of Group 2	-0.067	-0.013	-0.019	-0.022
Group 3; upper expenditure households				
10000-	-0.061	-0.009	-0.017	-0.018
12000-	-0.055	-0.009	-0.015	-0.019
14000-	-0.052	-0.005	-0.014	-0.015
Average of Group 3	-0.056	-0.008	-0.015	-0.017

Source: Calculated from Tables 4 and 8, applying the price elasticity formula:

$$PE_i = -k_i EE_i$$

Where PE_i is price elasticity of the i th commodity; k_i is the average propensity to spend of the i th commodity; and EE_i is the expenditure elasticity of the i th commodity.

Table 6

Price Elasticity (PE) of the Food Items with Subsidized Components in the Rural Sector, 1995/96

Expenditure Intervals (LE)	Bread	Wheat flour	Edible Oil	Sugar
Group 1; lower expenditure households:				
Less than 1000	-0.044	-0.073	-0.019	-0.039
1000-	-0.059	-0.054	-0.019	-0.040
1200-	-0.045	-0.043	-0.025	-0.045
1600-	-0.039	-0.055	-0.023	-0.041
2400-	-0.035	-0.059	-0.022	-0.041
3200-	-0.034	-0.051	-0.020	-0.037
4000-	-0.030	-0.048	-0.020	-0.033
4800-	-0.031	-0.045	-0.019	-0.032
Average of Group 1	-0.040	-0.054	-0.021	-0.039
Group 2, middle expenditure households:				
5600-	-0.028	-0.042	-0.019	-0.030
6800-	-0.030	-0.038	-0.018	-0.028
Average of Group 2	-0.029	-0.040	-0.019	-0.029
Group 3, upper expenditure households:				
8000-	-0.030	-0.036	-0.018	-0.026
10000-	-0.025	-0.037	-0.018	-0.026
12000-	-0.017	-0.034	-0.017	-0.026
14000-	-0.020	-0.034	-0.016	-0.026
Average of Group 3:	-0.023	-0.035	-0.017	-0.026

Source: Calculated from Tables 4 and 9, applying the same formula as in Table 5.

The negative expenditure elasticities for bread and sugar arrived at by Ali and Adams Jr. (1996) may be attributed to the assumptions underlying the model applied in the estimation. The model used is a "food characteristic demand system" proposed by Bouis. Six assumptions--five assumed values for parameters of the utility function and one elasticity--were made in the estimation of the model. The authors borrowed the values of the utility function parameters from Bouis' model, which he applied to seven developing countries in a 1991 study (Ali & Adams Jr. 1996). No

modification has been made to those parameters, and no justification has been provided for their assumed values before applying them to Egypt.¹³ The arbitrary values assigned to those parameters seem to be inappropriate to the Egyptian case, which resulted in getting negative expenditure elasticities for bread and sugar. For the same reasons, the estimated expenditure elasticities of the other nine food commodities should be taken with caution.

How Important are the Subsidized Commodities to the Low income People and the Poor? To establish the importance of the subsidized commodities to the lower income people and the poor, the percentage spent on the four food items with subsidized components with respect to total food expenditure is estimated from the Household Expenditure Sample Survey 1995/96. Results are reported separately for the average urban and rural household member in the lower expenditure, middle expenditure and the upper expenditure households presented in Tables 8 and 9 respectively. It has been found that the lower expenditure households, which represent 46% of urban and rural population, use 13.3%-9.2% of their food expenditure in the urban sector, and 13.8%-8.9% in the rural sector on bread and wheat flour, with the highest percentage spent on bread in the former and on wheat flour in the latter. The average ratio of expenditure on bread and wheat flour in the lower expenditure group is about 9.5% in the urban and rural sectors as compared to a ratio of about 7% for the household member in the upper expenditure group in both sectors. This indicates that the ratio spent on bread and wheat flour in the lower expenditure households is 36% higher than the ratio spent by the upper expenditure households.

¹³ Bouis, applying his model on Pakistan in a recent article (Bouis 1996), made some modifications on some of the parameters used in his 1991 study on other developing countries, which were borrowed by Ali & Adams Jr. (1996) in their application of Bouis model on Egypt. For example, Ali & Adams Jr.--following Bouis' study of 1991--assigned one value for the level of calories consumption where the marginal utility from energy intake is zero, while Bouis -when applying his model on Pakistan- assumed more than one value for this parameter, depending on rural/urban dimension and on the expenditure intervals. No such modifications were attempted for any of the parameters in the Egyptian case.

Table 7

Annual Average Individual Expenditure on Bread and Sugar, 1990/91 (LE)

Individual's Expenditure Intervals	Less than 250	250- 300-	300- 400-	400- 600-	600- 800-	800- 1000-	1000- 200-
Bread*							
Urban	10.4	28.2	34.2	39.3	42.6	47.1	47.9
Rural	5.2	7.8	10.5	11.4	14.5	16.6	21.3
Sugar							
Urban	5.7	9.8	10.1	11.9	13.2	14.9	15.8
Rural	3.9	6.6	7.2	10.6	13.7	15.5	17.3

* Includes *baladi*, *shami*, and *fino*.

Source: Calculated from: CAPMAS, Household Income and Expenditure Sample Survey 1990/91, vol. 2, Part 1, Table (19-1), and vol. 3, Part 1, Table (19-1).

The percentage of the food budget spent on edible oil and sugar by the lower expenditure households in the two sectors is close also, with the exception of the lowest two expenditure intervals which represent less than 0.5% of the population in each sector. Starting with the expenditure interval of LE 1200, 7.3%-5.2% of the food expenditure of the average household member is spent on oil and sugar in the urban sector and a ratio of 7.8%-5.6% is spent in the rural sector, with the largest share spent on sugar in both sectors (see Tables 8 and 9). The average ratio spent on oil and sugar per household member in the lower expenditure households group is 5.8% in the urban sector and 6.2% in the rural sector as compared to 3.9% and 4.9% for the upper expenditure group in the two sectors respectively. This means that the relative share spent on edible oil and sugar in the lower expenditure households as compared to the relative share spent on the two commodities in the upper expenditure households is 49% and 27% higher in the urban and rural sectors respectively.

Table 8

**Ratio of Expenditure on the Items with Subsidized Components to Food
Expenditure Per Urban Household Member, 1995/96 (%)**

Annual Households Expenditure Intervals (LE)	Relative Share of Individuals in Population Sample (%)	Bread	Wheat Flour	Oil	Sugar	Total (=2+3+4+5)	Food Expend/ Total Consumpt. Expenditure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Group 1; lower expenditure households:							
Less than 1000	0.04	9.5	3.8	4.1	6.5	23.9	71.8
1000-	0.09	9.0	1.6	3.6	5.3	19.6	64.7
1200-	0.21	6.4	4.2	3.2	4.1	17.9	63.4
1600-	1.60	6.8	1.9	3.3	3.6	15.6	60.9
2400-	3.64	8.2	1.8	2.9	3.7	16.6	57.9
3200-	5.92	7.5	2.5	2.7	3.4	16.2	55.9
4000-	9.01	8.0	1.9	2.7	3.4	16.1	54.3
4800-	10.16	8.0	1.8	2.7	3.1	15.5	53.5
5600-	15.46	7.5	1.7	2.4	2.8	14.4	52.5
Average *	46.3	7.7	1.9	2.6	3.2	15.4	54.3
Group 2; middle expenditure households:							
6800-	12.93	7.5	1.8	2.3	2.8	14.3	50.2
8000-	16.00	7.2	1.5	2.2	2.5	13.4	48.4
Average *	28.9	7.3	1.6	2.2	2.6	13.7	49.2
Group 3; upper expenditure households:							
10000-	8.74	6.8	1.1	2.0	2.2	12.1	45.6
12000-	5.09	6.1	1.1	1.8	2.3	11.3	44.4
14000-	11.11	5.8	0.6	1.7	1.9	10.1	36.2
Average *	24.9	6.2	0.9	1.8	2.1	11.0	41.2

Source: calculated from Table C.1 in Appendix C.

* It is weighted average. The weights used are the relative share of individuals in the population sample in column 1 in the Table.

Table 9

**Ratio of Expenditure on the Items with Subsidized Components to
Food Expenditure Per Rural Household Member, 1995/96 (%)**

Annual Households Expenditure Intervals (LE)	Relative Share of Individuals in the Population Sample (%)	Bread	Flour	Oil	Sugar	Total (=2+3+4+5)	Food Expend/ Total Consump. Expend.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Group 1; lower expenditure households							
Less than 1000	0.18	5.4	8.4	2.0	4.4	20.2	70.2
1000-	0.12	7.2	6.2	2.0	4.5	19.9	67.9
1200-	0.52	5.5	4.9	2.7	5.1	18.2	65.6
1600-	2.33	4.7	6.3	2.5	4.6	18.2	62.9
2400-	5.79	4.2	6.8	2.4	4.7	18.1	60.8
3200-	9.60	4.1	5.8	2.2	4.2	16.3	59.6
4000-	13.07	3.7	5.5	2.1	3.8	15.1	59.5
4800-	14.02	3.8	5.1	2.0	3.6	14.5	58.5
Average*	45.63	4.0	5.7	2.2	4.0	15.9	59.7
Group 2; middle expenditure households							
5600-	18.74	3.4	4.8	2.0	3.4	13.6	57.9
6800-	12.99	3.6	4.4	1.9	3.2	13.1	56.7
Average*	31.73	3.5	4.6	2.0	3.3	13.4	57.4
Group 3; upper expenditure households							
8000-	11.49	3.6	4.1	1.9	3.0	12.7	54.2
10000-	4.93	3.1	4.2	1.9	3.0	12.2	52.3
12000-	2.41	2.1	3.9	1.8	2.9	10.8	53.0
14000-	3.72	2.4	3.9	1.7	3.0	10.9	44.1
Average*	22.55	3.1	4.1	1.9	3.0	12.1	52.0

Source: Calculated from Table C.2 in Appendix C.

* It is weighted average. The weights used are the relative share of individuals in the population sample in column 1 in the Table.

Thus in total, the percentage of food expenditure spent on the four items--bread, wheat flour, edible oil, and sugar--by the lower expenditure households group, which represents 46% of the households, ranges between 23.9%-14% in the urban sector and 20.2%-14.5% in the rural sector. The average ratio of the four items in the lower expenditure group is 15.4% in the urban sector and 15.9% in the rural sector as compared to a ratio of 11% and 12.1% in the upper expenditure households in the two sectors respectively (Tables 8 and 9). This means that the ratio spent on the items with subsidized components is 40% and 31% higher in the lower expenditure households group as compared to the upper expenditure group in the two sectors respectively.

To recapitulate, comparing the relative share of the food budget spent on the four items with subsidized components in the lower expenditure and upper expenditure households, it is higher in the former group as compared to the latter. This indicates that those commodities are relatively more important in the budget of the lower-income people as compared to those with higher income.

How Efficient is the Operation of the Subsidy System in Reaching the Low income People in Egypt? In assessing the efficiency of the subsidy umbrella in covering the lower income people and the poor in Egypt, we shall differentiate between bread and wheat flour subsidy on one hand, and edible oil and sugar on the other, because of the difference in their method of distribution as mentioned above, and also because of the state of data availability for the four commodities.¹⁴ The assessment of the subsidy distribution of the four commodities is made on three levels: governorate level, urban/rural level, and household expenditure level.

(i) Assessment of the Distribution of the Subsidy on Bread and Wheat Flour. On the governorate level, the largest share of bread and wheat flour subsidy is allocated to Upper Egypt. This is a positive aspect of the current bread and wheat flour subsidy distribution system since poverty is more

¹⁴ Data on subsidized quantities consumed per household (and household member) are available only for edible oil and sugar (see CAPMAS 1997).

widespread in Upper Egypt than in Lower Egypt and Urban Governorates.¹⁵ In 1996, the relative share of Upper Egypt in the total value of subsidized wheat was 45.5% as compared to 28.6% for Lower Egypt, 22.9% for Urban Governorates, and 2.8% for Border Governorates.¹⁶ This ordering of governorates according to their subsidy shares changes when we take the population into consideration. The average individual share in subsidized wheat in 1996 was LE 60 in Border Governorates, LE 36 in Upper Egypt and Urban Governorates, and LE 19 in Lower Egypt.¹⁷ Thus, on an individual level, Upper Egypt does not take the lion's share of the wheat subsidy; Border Governorates come first, followed by Upper Egypt and Urban Governorates with equal individual shares, and lastly come Lower Egypt Governorates. Perhaps for political reasons, the wheat subsidy per capita in the Border Governorates is significantly high; in Lower Egypt it is about half its level in Upper Egypt and in Urban Governorates.

To assess the efficient distribution of the subsidy on bread and wheat flour on the urban/rural level, we shall compare the urban/rural distribution of the subsidy with the urban/rural decile distribution of household expenditure¹⁸ estimated from the Household Expenditure Sample Survey 1995/96. According to this criteria, the subsidy of bread and flour is distributed efficiently if the largest part of the subsidy is allocated to the sector (urban or rural) where expenditure distribution is relatively unequal and poverty is more widespread.

According to the decile distribution of total household expenditure in 1995/96 as presented in Table 3, the pattern of expenditure distribution in urban and rural sectors is more unequally distributed in the former sector as compared to the latter, as can be seen from the following: First, 50% of the households in the urban sector fall in the lower expenditure households group as compared to 40% of households in the rural sector; i.e., each of the lowest five household deciles in the former sector receives less than 8% of the total expenditure, as compared to the lowest four household deciles in

¹⁵ For the level of poverty on the governorate level, see Korayem (1995/96); and Institute of National Planning (1996).

¹⁶ Calculated from Table C.4 in Appendix C.

¹⁷ Calculated from Tables C.4 and C.5 in Appendix C.

¹⁸ Because of the lack of income distribution data, expenditure distribution of households will be used in this respect.

the latter sector. Second, the concentration of expenditure is larger in the highest decile in the urban sector as compared to the rural sector; the highest expenditure decile of the households receive 26.4% of sector's total expenditure in the urban sector as compared to 22.1% in the rural sector. Third, the expenditure share of the highest decile is 9.1 times the expenditure share of the lowest decile in the urban sector, as compared to 6.9 times in the rural sector.¹⁹ Fourth, the gini coefficient is higher in the urban sector (=0.326) as compared to the rural sector (=0.275).

Despite that, household expenditure distribution is less unequal in the rural sector as compared to the urban sector; the standard of living of the average household is lower in the former sector as compared to the latter, judging by the average household expenditure and the relative spread of poverty in the two sectors. In 1995/96, the average household expenditure is LE 5711.9 in the rural sector as compared to LE 7828.5 in the urban sector (see Table C.3 in Appendix C); i.e., the average expenditure of the rural household is about 3/4 of the average expenditure of the urban household.²⁰ The difference between the two sectors is even greater on a per capita basis since the size of the average household is larger in the rural sector than in the urban sector. The average expenditure of the rural household member is only 58% of the urban one.²¹ Regarding the poverty level in the two sectors, it was estimated that in 1990/91 the percentage of the poor was higher in the rural sector than in the urban sector (Korayem 1996). The same is true for the estimate of the percentage of the poor in the two sectors in 1995/96 (Institute of National Planning 1996; Table 2.6 in p. 29).²²

Comparing the decile distribution of household expenditure in the urban and rural sectors with the distribution of the subsidy on bread and wheat flour in both sectors, one finds the following: In 1996, out of a total

¹⁹ Calculated from Table 3.

²⁰ The difference in the life style of the individuals in the urban and rural sectors, which may involve less cost in some expenditure items (like housing, transportation, entertainment, etc.) still cannot justify the large gap in the average household expenditure between the two sectors.

²¹ Per household member, the average expenditure in the urban sector is LE 1793 as compared to LE 1038 in the rural sector (calculated from: CAPMAS (1997), vol. 2 (Part 1) Table (2-1) and vol. 3 (Part 1), Table (2-1)).

²² No comparison can be made between the level of poverty in 1990/91 and 1995/96 because of the difference in the methodology applied in the two estimates.

amount of LE 1,638.8 million of subsidy on bread and flour, 63% of it is allocated to the urban population (=LE 1,032.1 million) and 37% to the rural population (= LE 606.7 million) (see Table C.4 in Appendix C). This means that urban households receive 70% more of the bread and flour subsidy than rural households. The gap between the two sectors will be more obvious when we compare the two in per capita terms. Having 25.5 million individuals in the urban sector and 33.8 million in the rural sector in 1996 (CAPMAS no date), the per capita bread and flour subsidy in the urban sector is LE 40 as compared to LE 18 for the rural sector; i.e., the average subsidy share of the rural individual is less than half of his counterpart in the urban sector. This large gap between the subsidy share in the two sectors may be partly justified by the more unequal distribution of household expenditure in the urban sector because of more urban households falling in the lowest expenditure deciles as compared to rural households, and by the fact that urban households produce no food of their own. On the other hand, the low average household expenditure level and the relatively high poverty level in the rural sector makes one wonder whether the bread and wheat flour subsidy provide a fair umbrella for equal social protection of urban and rural population in Egypt.

A positive aspect of the current distribution of the bread and wheat flour subsidy between the two sectors is that the urban sector gets most of the bread subsidy, while the flour subsidy is allocated mainly to the rural sector. In 1996, out of the LE 995.8 million bread subsidy, 83% of it is allocated to the urban population (= LE 823.5 million) while from the LE 643 million wheat flour subsidy, 68% of it is allocated to the rural population (= LE 434.4 million) (see Table C.4 in Appendix C). This subsidy distribution of the two commodities conforms to the pattern of consumption of bread and wheat flour in urban and rural sectors (see Tables 8 and 9).

The Household Expenditure Sample Survey 1995/96 contains no data on household consumption of *baladi* bread and regular wheat flour (82% extraction) in the different expenditure intervals. In spite of the data deficiency, one may safely assume that the relative share of the household expenditure on *baladi* bread and regular wheat flour in total household expenditure on bread (all types) and wheat flour (regular and super) is higher for the lower expenditure households. Higher income households

prefer to buy better quality bread (*shami* and *fino*) and wheat (super) at higher prices.

(ii) *Assessment of the Distribution of the Subsidy on Edible Oil and Sugar.* As already mentioned, subsidized edible oil and sugar are distributed through ration cards. The efficiency of the distribution of the two subsidized commodities on the governorate level will be assessed by comparing the distribution of ration cards between Urban Governorates, Lower Egypt, and Upper Egypt with the relative spread of poverty in those governorates.

As shown in Table C.5 (in Appendix C), the percentage of the ration card holders in the population is lower in Upper Egypt than in the rest of the country (with the exception of Border Governorates); it is 74% in Upper Egypt, 77% in Lower Egypt, and 84% in Urban Governorates. This is an indicator of the inefficient distribution of the subsidized edible oil and sugar since the poverty level is higher in Upper Egypt than in the rest of the country and, hence, Upper Egypt is supposed to get the lion's share of ration cards.

Comparing the subsidy distribution of edible oil and sugar on the urban/rural level, one finds that the lower expenditure households consume, on average, a higher share of edible oil in the rural sector (53%) than in the urban sector (48%). For sugar, the average share of subsidized sugar consumed is almost the same in the urban and rural lower expenditure households (about 50%). Having a higher subsidy/total quantity ratio in the rural sector as compared to the urban sector also applies to the middle expenditure and upper expenditure households with respect to edible oil and sugar (see Tables 10 and 11). This indicates that the urban/rural distribution of the subsidy on edible oil and sugar is efficient on the sectoral level since poverty in Egypt is more widespread in the rural sector.

At the household level, the subsidy of edible oil and sugar is efficiently distributed if the share of the subsidized quantity, in total quantity consumed by the household member, is larger in the lower expenditure households, and possibly the middle expenditure households, than in the upper expenditure households, which include the upper middle income and high income strata of the population.

As presented in Table 10, in the urban sector, the average share of the subsidized quantity, in total quantity of edible oil consumed per household

member, is 48% in the lower expenditure households and 43% in the upper expenditure households. The highest share of subsidized oil consumed per household member is in the middle expenditure households group, where it reaches 50%. The average subsidized quantity of sugar represents 51% of total quantity consumed by the urban household members in the lower expenditure and middle expenditure households, as compared to 44% in the upper expenditure households.

As shown in Table 11, in the rural sector, the average share of the subsidized quantity in total quantity of edible oil consumed per household member is almost the same in the lower expenditure and upper expenditure households; it is 53% in the former and 52% in the latter. The highest share of subsidized edible oil consumed is in the middle expenditure households group (55%). The same pattern of subsidy distribution applies to sugar. The share of subsidized sugar in total quantity consumed per rural household member is almost the same in the lower expenditure and upper expenditure households (50% and 51% respectively), as compared to 54% relative share in the middle expenditure households group.

Thus, the subsidy distribution on the household level is more efficient in targeting the poor and the lower expenditure people in the urban sector than in the rural sector. One of the measures that can be taken to improve the situation for rural lower income people, is to change the eligibility condition of getting fully subsidized ration card from being an owner of 10 feddans or less, to being a holder of 5 feddans or less.²³ Now is the right time for this change since the new land tenure law, which became effective at the start of the agricultural season of 1997, increased the return to agricultural land considerably.

To recapitulate, subsidies on *baladi* bread, wheat flour (82% extraction), edible oil, and sugar have been assessed with respect to three dimensions: governorate level, urban/rural level, and household expenditure level. At the governorate level, the subsidy on *baladi* bread and wheat flour (82% extraction) is more efficiently distributed than the subsidy on edible oil and sugar. This is because Upper Egypt, having the highest poverty level in the country, received 45.5% of the total bread and wheat flour subsidy as

²³ It has been estimated that, in 1986, the holders of 3 feddans and less are living at the poverty line (Korayem 1991).

compared to 28.6% for Lower Egypt and 22.9% for Urban Governorates.²⁴ The ratio of ration card holders to total population is the lowest in Upper Egypt, implying that it has the lowest distribution share of subsidized edible oil and sugar in the country.

Regarding the urban/rural distribution of the subsidy on bread and wheat flour, it is difficult to determine whether it is efficiently distributed between the two sectors. Although the average annual share of the subsidy on *baladi* bread and regular wheat flour for the rural individual is less than half the subsidy received by the average urban individual, and poverty is higher in the rural sector than in the urban sector, the rural population are food producers while the urban population are not. For the subsidy on edible oil and sugar, the ratio of subsidized quantities in total quantity of edible oil and sugar consumed is higher in the lower expenditure, middle expenditure and upper expenditure rural households than in urban households, with the exception of subsidized sugar which is almost the same in the lower expenditure households in the two sectors.

For the distribution of the four subsidized commodities at the household level, it has been found that the subsidy on edible oil and sugar is efficiently distributed among urban households but not to the same extent as in rural households. The relative share of subsidized oil and sugar in total consumption is higher for the lower expenditure and middle expenditure urban households as compared to the upper expenditure households. In the rural sector, the subsidized share of the two commodities is almost equal for the lower expenditure and upper expenditure households. The subsidy on *baladi* bread and regular wheat flour is expected to efficiently target the poor and the lower income households, since higher income households prefer buying a better quality of non-subsidized bread and wheat flour.

	50	27	40	30	25
NOO	71.1	9	6.3	2.6	2.2
Average	24.4	9.0	4.3	5.3	4.2

* It is weighted average. The weights used are the relative share of individuals in the population sample in column 1 in the Table.

(1) Includes edible oil bought at fully and partially subsidized prices and at free market price.

(2) Includes sugar bought at fully & partially subsidized prices and at free market price.

Source: CAPMAS, Households Expenditure Sample

²⁴ At the individual level, the subsidy share of Upper Egypt is still relatively good on the country level, excluding Border Governorates.

factors: efficiency of the subsidy in keeping the prices of the subsidized items down, the importance of these subsidized food items in the budget of the people, and the price elasticities of the subsidized food items. The direct impact of the removal of food subsidies on the cost of living will be greater, the greater is the subsidy given to those items compared to their prevailing prices, the greater is the proportion of the consumers' budget spent on subsidized food items, and the lower are the price elasticities of the subsidized items.

The last two factors have been assessed already in the study. It has been found that the average ratio of expenditure on bread, wheat flour, edible oil, and sugar to food expenditure in the lower expenditure households is 15.4% in the urban sector and 15.9% in the rural sector, as compared to a ratio of 11% and 12.1% in the upper expenditure households in the two sectors respectively; i.e., the average share of the food budget allocated to the four items with subsidized components is 40% and 31% higher for the lower expenditure households in urban and rural sectors as compared to the upper expenditure households. The impact of subsidy elimination on the poor will be even worse than what the average share of the lower expenditure group indicates, since the ratio spent on bread, wheat flour, edible oil and sugar by the lowest expenditure households subgroup is as high as 24% in the urban sector and 20% in the rural sector. It has been found, also, that the four food items with subsidized components are necessary consumption goods with price elasticities considerably below unity. This means that the quantity demanded for those commodities will be reduced by a percentage much less than the percentage increase in prices, thus increasing total expenditures allocated to those commodities in the food budget.

Table 10

**Relative Share of Subsidized Quantity of Edible Oil and Sugar Per
Urban Household Member in 1995/96**

Annual Household Expenditure Intervals (LE)	Relative Share of Individuals in the Population Sample (%)	Edible Oil		Sugar	
		Total Quantity (kg) ⁽¹⁾	Subsidized quantity as a percentage of the total (%)	Total Quantity (kg) ⁽²⁾	Subsidized quantity as a percentage of the total (%)
Group 1; lower expenditure households:					
Less than 1000	0.04	8.6	38.8	27.0	38.9
1000-	0.09	10.9	47.8	29.3	41.7
1200-	0.21	10.1	44.5	25.4	46.1
1600-	1.60	9.9	43.0	22.3	46.9
2400-	3.64	7.8	49.2	19.5	49.1
3200-	5.92	7.4	50.2	18.4	51.8
4000-	9.01	7.2	47.6	17.9	49.0
4800-	10.16	7.5	47.9	17.7	51.2
5600-	15.46	7.5	48.3	17.1	51.2
Average*	46.13	7.6	48.2	18.0	50.5
Group 2; middle expenditure households:					
6800-	12.93	7.6	50.3	18.1	51.0
8000-	16.00	8.1	49.6	18.1	50.7
Average*	28.93	7.9	49.9	18.1	50.8
Group 3; upper expenditure households:					
10000-	8.74	8.6	48.1	18.4	50.3
12000-	5.09	8.7	46.3	20.3	46.1
14000-	11.11	9.5	36.8	20.0	37.2
Average*	24.94	9.0	42.7	19.5	43.6

* It is weighted average. The weights used are the relative share of individuals in the population sample in column 1 in the Table.

(1) Includes edible oil bought at fully and partially subsidized prices and at free-market price.

(2) Includes sugar bought at fully & partially subsidized prices and at free-market price.

Source: Taken & calculated from: CAPMAS, Households Expenditure Sample Survey 1995/96, Cairo, Vol. 2, Part 1, Table (16-1).

Table 11

**Relative Share of Subsidized Quantity of Edible Oil and Sugar Per
Rural Household Member in 1995/96**

Annual Households Expenditure Intervals (LE)	Relative Share of Individuals in the Population Sample (%)	Edible Oil		Sugar	
		Total Quantity (kg) ⁽¹⁾	Subsidize d quantity as a percent- age of the total (%)	Total Quantity (kg) ⁽²⁾	Subsidized quantity as a percent- age of the total (%)
Group 1; lower expenditure households:					
Less than 1000	0.18	5.6	65.5	21.6	56.8
1000-	0.12	6.5	61.9	23.7	49.5
1200-	0.52	7.9	49.1	27.1	41.5
1600-	2.33	6.1	48.3	20.4	45.4
2400-	5.79	5.4	50.0	18.5	45.7
3200-	9.60	5.2	49.9	17.2	47.3
4000-	13.07	5.0	53.8	16.5	51.8
4800-	14.12	5.2	55.3	16.9	52.8
Average*	45.73	5.3	52.7	17.4	50.0
Group 2; middle expenditure households:					
5600-	18.74	5.4	54.9	16.9	53.4
6800-	12.99	5.5	55.5	17.1	54.6
Average*	31.73	5.4	55.1	17.0	54.1
Group 3; upper expenditure households:					
8000-	11.49	5.9	54.3	17.4	54.3
10000-	4.93	6.2	51.7	18.7	51.0
12000-	2.41	6.2	47.4	19.3	47.3
14000-	3.72	6.5	48.1	20.4	42.1
Average*	22.55	6.1	52.0	18.4	50.8

* It is weighted average. The weights used are the relative share of individuals in the population sample in column 1 in the Table.

(1) Includes edible oil bought at fully and partially subsidized prices and at free-market price.

(2) Includes sugar bought at fully & partially subsidized prices and at free-market price.

Source: Taken & calculated from: CAPMAS, Households Expenditure Sample Survey 1995/96, Cairo, Vol. 2, Part 1, Table (16-1).

What is left to be done in this section is to assess the third factor which is estimating the subsidy/consumer price ratio of the subsidized bread, wheat flour, edible oil, and sugar. Two factors must be considered in calculating the subsidy/price ratio. First, there are two values of subsidy per ton for the food items that are partly imported and partly provided from local production, such as wheat and sugar. In these cases, a weighted average of the two subsidy values is calculated; the weights are the subsidized quantities that are imported and locally produced. Second, some of the subsidized food commodities--such as edible oil and sugar--are sold at more than one price to the consumer: the ration card fully and partially subsidized prices, and a higher non-subsidized market price.²⁵

(i) *Bread and Wheat flour*: The *baladi* bread and wheat flour (82% extraction) are sold in the market at subsidized prices. The price of one loaf of *baladi* bread is LE 0.05 and is distributed mostly in the urban sector; regular wheat flour (82% extraction) is sold at LE 0.55 a kilo, mostly in the rural sector with some exceptions in Upper Egypt (see Table C.4 in Appendix C). All the wheat supplied by the Ministry of Trade and Supply is subsidized;²⁶ it is allocated to the production of *baladi* bread and wheat flour (82% extraction). A side product of the subsidized wheat flour is bran which is sold at profitable price. This reduces the net amount of the subsidy that the Ministry of Trade and Supply bears for *baladi* bread and regular wheat flour. Hence, there are three subsidy/price ratios for wheat: the subsidy/price ratio of *baladi* bread, the subsidy/price ratio of regular wheat flour, and the subsidy/price ratio of the total amount of wheat supplied by the Ministry of Trade and Supply.

In 1994/95, the actual average cost of a loaf of *baladi* bread was LE 0.152 (Ali & Adams Jr. 1996). This is still the average cost of a loaf of *baladi* bread in 1998 (Ministry of Trade and Supply). The subsidy per a loaf

²⁵ By the market price is meant the higher price at which the consumer can buy any amount of the commodity from the stores. This market price was partially subsidized in the seventies for some food commodities, such as beans and unbottled vegetable oil (Korayem 1980; Table 7).

²⁶ The wheat used in non-subsidized commodities (like pastas, pastries, delicatessen items, high quality types of bread, etc.) is supplied by the private sector in Egypt,

of *baladi* bread and a kilo of regular wheat flour is estimated as the difference between the cost of production and the subsidized price. Thus, the subsidy/price ratio of *baladi* bread is 204%.²⁷ In 1996, and still in 1998, the selling price of a kilo of subsidized wheat flour (82% extraction) is LE 0.55.²⁸ The average cost of one kilo of wheat flour (82% extraction) is about LE 1.5.²⁹ Therefore, the subsidy/price ratio of the regular type of flour will be about 173%.³⁰

In 1995/96, the subsidy/price ratio per ton of subsidized wheat (imported and locally produced) is 36.9% (Table 12), which is considerably below the subsidy/price ratios of *baladi* bread and wheat flour (82% extraction). The average subsidy/price ratio of wheat in the eleven-year period, 1985/86-1995/96, was 40% (calculated from Table 12). This low subsidy/price ratio of wheat as compared to *baladi* bread and wheat flour (82% extraction), is difficult to explain since about 2/3 of wheat supplied by the Ministry of Trade and Supply is allocated to the production of *baladi* bread and 1/3 to wheat flour (82% extraction). Although bran is sold at a profitable price, one finds it difficult to accept that the profit of the small amount of bran extraction per ton of wheat (18% per ton of wheat) can compensate for the large subsidy on *baladi* bread and regular wheat flour, as revealed by the high subsidy/price ratio of the two commodities. It's more likely that the inaccuracy in some data is responsible for this large gap. To check this point, total subsidies on wheat flour (82% extraction) allocated to *baladi* bread production and to the warehouses in 1995/96 are calculated from Table 12 and compared with the figure of total subsidy on wheat flour (82% extraction) allocated to *baladi* bread and warehouses in 1996, presented in Table C.4 in Appendix C. We found that the two figures are

²⁷ Subsidy/price ratio of *baladi* bread = ((cost of production/subsidized price) - 1) 100 = ((0.15 / 0.05) - 1) 100 = 204%

²⁸ Ministry of Supply and Trade, unpublished data.

²⁹ This is based on the assumption that the cost of regular wheat flour (82% extraction) is the same as the cost of *baladi* bread since common wheat flour is used in producing subsidized *baladi* bread. 100 kgs of wheat flour (82% extraction) produce about 1000 loaves of *baladi* bread (Ministry of Trade and Supply). Therefore one kilo of regular wheat flour produces about 10 loaves of *baladi* bread. Thus, having the average cost of production of one loaf of *baladi* bread about LE 0.15, the cost of one kilo of wheat flour (82% extraction) will be about LE 1.50.

³⁰ The subsidy/price ratio of wheat flour (82% extraction) = ((150 / 55) - 1) 100 = 173%.

close.³¹ We, therefore, are inclined to believe that there are inaccuracies in some of the data, which result in overestimating the subsidy on *baladi* bread and regular wheat flour (82% extraction) sold to the warehouses; the data on the cost of production of wheat flour (82% extraction) and *baladi* bread need, probably, to be revised.

The price of locally produced wheat is considerably higher than the imported wheat in most of the years during 1985/86-1995/96 as shown in Table 12. This implies that the subsidy on wheat can be reduced if we succeed in reducing the price of local wheat, by lowering its cost of production while keeping the farmer's profit margin intact. If we do not succeed in reducing the cost of production of local wheat, and hence its price, to the international level, the subsidy problem will become more acute in the future. This is because the ongoing trend, which should be encouraged, is to increase the relative share of local wheat in the total wheat supply;³² this relative share of local wheat has increased from 1.4% in 1985/86 to 22.4% in 1995/96.³³

³¹ In Table 12, in 1995/96, the total quantity of imported and local wheat supplied by the Ministry of Trade and Supply is 5.808 million tons, and the wheat subsidy per ton is LE 279.3. Accordingly, total subsidy on wheat is LE 1,622 million ($=5.808 \times 279.3$). In Table C.4 in Appendix C, in 1996, the total subsidy on wheat flour (82% extraction) allocated to produce *baladi* bread and to be sold at the warehouses is LE 1,638.8 million ($=1032.1 + 606.7$).

³² A counter argument is that the high cost of production of wheat implies that Egyptian farmers are not internationally competitive in producing it. Hence, they should be encouraged to produce other crops in which they are competitive. This view ignores the food security consideration which is of special importance for many countries, including Egypt.

³³ Calculated from Table 12.

Table 12
Quantity, Price, and Subsidy of Imported and Local Wheat*

Years	Imported Wheat			Local Wheat		Total Wheat Supply (imported + local)		Wheat Subsidy Per ton	Subsidy/ Price Ratio %
	Quantity (M.MT) (1)	\$ Per ton (2)	LE Per ton (3)	Quantity (M.MT) (4)	LE Per ton (5)	Quantity (M.MT) (1+4) (6)	LE Per Ton (7)	LE Per Ton (8)	(=8/7) (9)
1985/86	4.695	124.6	165.7	0.068	127.5	4.763	165.2	64.0	38.7
1986/87	5.240	89.1	131.0	0.123	185.8	5.363	132.3	29.4	22.2
1987/88	5.143	101.9	234.4	0.243	205.5	5.386	233.1	32.1	13.8
1988/89	5.738	140.6	364.2	0.148	357.0	5.886	364.0	79.5	21.8
1989/90	6.280	148.6	402.7	0.414	468.2	6.694	406.8	110.5	27.2
1990/91	5.043	112.0	374.1	0.581	468.7	5.624	383.9	174.3	46.7
1991/92	5.532	104.9	348.3	0.613	458.1	6.145	359.3	145.9	40.6
1992/93	4.896	119.7	401.0	1.042	551.6	5.938	427.4	226.5	53.0
1993/94	3.872	87.1	295.3	0.936	580.4	4.808	350.8	257.9	73.5
1994/95	5.151	110.2	373.6	1.120	569.5	6.271	408.6	270.1	66.1
1995/96	4.508	230.4	781.1	1.300	670.0	5.808	756.2	279.3	36.9

* This is the wheat supplied by the Ministry of Trade and Supply.

Source & Notes:

Columns (1), (2), (4) & (5) are taken from the Ministry of Trade and Supply, unpublished data.

Column (3) is calculated by applying the exchange rate in Table C.6 in Appendix C to the \$ price per ton in column (2) of this Table.

Column (7) is the weighted average of the price per ton of imported & local wheat (with imported and local quantities used as weights).

Column (8) is taken from: Ali, Abdel-Rahman & Ibrahim (1998).

(ii) *Edible Oil and Sugar*: The subsidized unbottled oil distributed by the ration cards has two prices: a fully subsidized price of LE 1.00 a kg for the green ration card holders and a partially subsidized price of LE 1.50 a kilo for the red ration card holders. In 1996, the market price of the unbottled oil of higher quality is LE 2.75 per kg. The quantity of the subsidized oil distributed by the ration cards is limited to half a kilo for each individual. Thus, the subsidy/price ratio for the fully subsidized price of oil is 175%, while it is 83.3% for the partially subsidized price.³⁴ These subsidy/price ratios do not represent the total subsidy paid by the government on unbottled edible oil for two reasons: First, the subsidy/price ratios are overestimated because of the difference in quality between ration cards edible oil and free-market oil. Second, part of the subsidy is compensated for by the profits realized by selling edible oil, outside the ration card quota, at free-market price.

The subsidized sugar distributed through the ration cards also has two prices: a fully subsidized price of LE 0.50 a kilo for the green ration card holders, and a partially subsidized price of LE 0.75 a kg for the red ration card holders, as compared to a market price of LE 1.60 a kg in 1996. The quantity sold at the fully subsidized and partially subsidized prices is limited to one kg a person. Thus, the subsidy/price ratio is 220% for a kg of fully subsidized sugar, and 113% for a partially subsidized kg.³⁵ These high subsidy/price ratios should not be taken as an indicator of the amount of the sugar subsidy paid by the government. Sugar is sold at free-market price of LE 1.6 a kilo, while its cost is LE 1.4 a kilo (Ali & Adams Jr. 1996). This realized profit of LE 0.2 a kilo compensates for part of the subsidy paid.

Arranging the subsidy/price ratios of the four food commodities in descending order, the highest subsidy/price ratio per unit of quantity is for the fully subsidized sugar (220%). Next comes the subsidy/price ratio of *baladi* bread (202%), fully subsidized unbottled edible oil (175%), regular

³⁴ Using the market price instead of the cost of production, the subsidy/price ratio of the fully subsidized oil = $((2.75/1.00) - 1) 100 = 175\%$; and the subsidy/price ratio of the partially subsidized oil = $((2.75/1.50) - 1) 100 = 83.3\%$.

³⁵ Using the market price instead of the cost of production, the subsidy/price ratio of the fully subsidized sugar = $((1.60 / 0.50) - 1) 100 = 220\%$; and the subsidy/price ratio of the partially subsidized sugar = $((1.60 / 0.75) - 1) 100 = 113\%$.

wheat flour (173%), partially subsidized sugar (113%), partially subsidized edible oil (83%), and wheat (37%).

Putting the pieces together, the removal of the food subsidy will have a direct impact on the cost of living of the lower income people and the poor, according to the three factors identified above. First, the subsidy/price ratios of the subsidized commodities are high, which means that prices will increase considerably if the subsidy is removed. Second, the relative share of the budget spent on the items with subsidized components is about 15% of the food budget of the lower income households, and reaches 24% and 20% for the urban and rural poor. This indicates that those items are important goods in the budget of this household group. Hence, the lower income people and the poor will be hurt when the prices of those items are raised. Third, being necessary goods, the price elasticities for the four commodities are considerably below unity, indicating that the increase in their prices will not be compensated for by an equal, or greater, reduction in the quantity demanded. Thus, the removal of the subsidy will increase the share of the food budget spent on those necessary commodities, which will hurt the low income people in particular.

Indirect Impact of the Removal of Food Subsidy. Eliminating food subsidy will also have indirect impacts on the cost of living. Although these indirect effects cannot be measured quantitatively, we cannot ignore them. We shall try to spell out these effects and show how they may affect the cost of living, and which of them are applicable to the Egyptian case at present.

One may distinguish two kinds of indirect effects on the cost of living after the removal of the food subsidy. One kind affects it negatively, i.e., it further raises the cost of living. The other is supposed to affect it positively. The first kind is the increase in the cost of production of several goods and services which leads in turn to a further increase in the cost of living. The second kind is the decrease in government expenditure by the amount of the subsidy, which will reduce the budget deficit and decrease the inflationary pressure in the economy.

Regarding the first kind of indirect impact, the removal of the food subsidy leads to an increase in the cost of production of goods and services via two main channels: the use of the subsidized items as intermediate

goods,³⁶ and the expected upward adjustment in returns to self-employed labor to make up for the rise in prices when the subsidy is eliminated.

The first channel is not applicable to the current subsidy system since wheat flour, edible oil, and sugar are not sold at subsidized prices to the producers that use them as ingredients in their final products (e.g., edible oil with respect to margarine, wheat flour and sugar with respect to sweets).³⁷ The indirect impact of the removal of the food subsidy on the cost of living may thus work only through the second channel. An upward adjustment in returns to self-employed labor can be expected. Self-employed labor, especially the low income workers in the informal sector, may raise their incomes through charging higher prices for the goods and services they supply (e.g., the profit margin of the small middleman traders, laundry service, garbage collection, haircutting, etc.) if the food subsidy is eliminated. This will be substantiated on ground that life is getting more expensive and, hence, incomes have to be adjusted up to cope with the upward adjustment of prices. However, this is limited by the nature of the labor market and the ability of self-employed labor to shift the incidence of subsidy elimination to the consumers.

The second kind of indirect impact of the removal of the food subsidy is the positive impact on reducing the budget deficit and, therefore, the inflationary pressure in the economy. This is not applicable at present. The government deficit has been reduced considerably after the application of ERSAP in 1991. Moreover, the subsidy does not represent, at present, the threatening factor in government expenditure that it used to in the seventies and eighties. Currently, the threatening factor in the government budget is the internal public debt because of its large and increasing size. For example, in June 1996, the subsidy amounted to LE 4.1 billion as compared to an internal public debt of LE 150.4 billion (Central Bank of Egypt 1996/97: pp. 162, 165). The budget deficit is already low--LE 2.9 billion and 2.8 billion in 1995/96 and 1996/97--and the inflation rate has been reduced; the increase in the consumer price index (urban) was only 5.4% in 1996 (Central Bank of Egypt 1996/97: pp. 161 & 164).

³⁶ For example, edible oil is an intermediate good in the production of *falafel*, a popular inexpensive meal for low income people.

³⁷ In the seventies, subsidy covered a larger number of commodities which were sold at subsidized prices to the producers (Korayem, 1980).

Thus, the negative indirect impact of the removal of the food subsidy will be limited to the upward adjustment of the incomes of self-employed labor in the informal sector, through the increase in the prices of the goods and services they supply. As consumers of the subsidized food commodities, they will be feeling the pinch of the price increase if the subsidy is eliminated. The positive impact of the elimination of the food subsidy on the government budget deficit and on the inflation rate will be marginal and probably unnoticed because of the small amount allocated to food subsidy in the budget, and the fact that the budget deficit and the inflation rate are already low at present, as mentioned above.

One may sum up the impact of food subsidy removal on the cost of living as follows:

(i) Removing food subsidy will raise considerably the prices of the currently subsidized commodities--*baladi* bread, wheat flour (82% extraction), edible oil and sugar--because of their high subsidy/price ratios.³⁸ The prices of other goods and services that are mostly produced and/or traded in the informal sector and are currently not subsidized, may increase also due to the indirect impact of the removal of food subsidy as explained above.

(ii) The increase in the prices of the subsidized food items will hurt the poor and the low income people especially. This is attributed to the fact that the relative share of the budget spent on the items with subsidized

³⁸ A plausible argument is that subsidy removal may lead to an increase in prices of each of the four subsidized commodities by an amount higher than the subsidy/price ratio because of market imperfection in Egypt. This is because subsidy removal may be followed by an adjustment of relative prices, pushing the prices of better quality substitutes up. Due to the substitution effect, there then will be a shift in demand from the high quality types to the relatively less expensive lower quality item, which includes the previously subsidized commodities. The outcome will probably be an increase in the price of the subsidized items by an amount greater than the subsidy/price ratios. This outcome has happened before with subsidized commodities when the subsidy was removed. A good example is *halawa tehinia*, which is a popular local sweet. When the subsidy on it was removed, its price increased from LE 0.20 a kilo to LE 0.80, which was considerably higher than the subsidy/price ratio (Korayem, 1980).

components is about 15% of the food expenditure of the lower income households, and is as high as 24% and 20% for the urban and rural poor respectively.

(iii) Although the removal of food subsidy, particularly on *baladi* bread and wheat flour (82% extraction), will increase the food cost of the lower income people and the poor as shown above, its impact on the country inflation rate will be marginal. This is because of the weights applied and the set of prices of basic commodities and services used in constructing the cost of living index (e.g., house rent, prices of education and health services, etc.). Thus, wrong signals will be given regarding the impact of the elimination of food subsidy on the cost of living of the poor and the low income people if inflation rate is taken as an indicator in this regard. In other words, inflation rate will not reflect the real impact of the removal of the food subsidy on the cost of living of the low income people and the poor.

Conclusion

One may point out the following concluding remarks:

First, the four food items--bread, wheat flour, edible oil, and sugar--are necessary goods with price elasticities considerably below unity.

Second, the average ratio of the four items in the total food expenditure of the lower expenditure households represents 15% and 16% in the urban and rural sectors, as compared to a ratio of 11% and 12% for the upper expenditure households in the two sectors respectively. Hence, the percentage of the food budget spent on bread, wheat flour, edible oil and sugar is 40% and 31% higher for the lower income people than for the upper income households in the urban and rural sectors.

Third, in assessing the efficiency of food subsidy in targeting the lower income people and the poor on the governorate level, urban/rural level, and household expenditure level, it has been found that: On the governorate level, subsidies on *baladi* bread and wheat flour (82% extraction) are more

efficiently distributed than subsidies on edible oil and sugar. This is expected to be true, also, at the household expenditure level. On the urban/rural level, it is not clear whether the subsidy is inefficiently distributed between the two sectors because of factors pulling in opposite directions. However, the distribution of subsidized edible oil and sugar to rural lower income households can be improved by changing the eligibility condition for receiving fully-subsidized ration card from being an owner of 10 feddans or less to being a holder of 5 feddans or less, given the new land tenure law that considerably increased the return to agricultural land.

Fourth, removing the food subsidy is expected to raise the prices of the currently subsidized commodities considerably because of their high subsidy/price ratios. Prices of other goods and services which are mostly produced and/or traded in the informal sector, and are currently not subsidized, may increase due to the upward adjustment of the incomes of the self-employed labor supplying those commodities to cope with the rise in prices of the subsidized food items.

Fifth, removing the food subsidy, particularly on *baladi* bread and regular wheat flour, will increase the food cost of the poor and the low income people. However, the impact of that on the country inflation rate will be marginal, because of the weight system applied regarding the consumption pattern of the low income people in the population, and the set of prices of basic commodities and services used in constructing the cost of living index (e.g., house rent, prices of health and education services, etc.). In other words, the inflation rate will not reflect the real impact on the cost of living of the low income people and the poor, if the food subsidy is removed.

Sixth, food subsidy in Egypt benefits the lower income people and the poor more than those with high incomes. Thus, it may be considered as one of the policy measures used by the government to redistribute implicitly some of the purchasing power from the rich to the poor, without being exposed to the attacks of the business community and the high income people in general. The government will be vulnerable to those attacks if it does the same thing by using other explicit income distribution measures,

such as changing the tax system in favor of the low income people by making it more progressive, reducing tax holidays, and increasing the exemption of the low income levels.

Finally, although the poor and the low income people benefit from the food subsidy relatively more than the higher income people as shown in the study, some may argue that there is waste involved in the subsidy, since part of it is received by higher income groups in the society. According to this argument, the individual-based subsidy system is more efficient to the current commodity-based system which implies that subsidy should be directed to individuals instead of commodities. Two alternative methods are usually suggested in this respect: either giving cash or offering food stamps to the target group. However, adopting the individual-based subsidy system requires an important prerequisite: the identification of the target group. That necessitates identifying the poor and low income people in Egypt, and determining how to reach them. Giving cash to the low income people should be accompanied by finding a mechanism that will adjust this cash subsidy periodically to cope with the rise in prices of the basic food commodities; inflation rate is not an appropriate tool to use in this respect as explained above. The handling cost of food stamps and cash should also be calculated given that many of the poor and the low income people work in the informal sector and are difficult to reach. Although the current food system entails some waste (represented by the amount of the subsidized commodities consumed by the higher income group in the society), replacing it with the individual-based subsidy system is not recommended unless the target group is well defined and the adjustment mechanism and the handling cost are taken into consideration.

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APPENDIX A

The Construction of the Income-Inequality Index (III); a Measure for Income-Inequality and for the Identification of the Low-Income Households Group in the Society

The income inequality index (III) is presented mathematically as follows:

$$III = \frac{[\sum_{i=1}^N |(X - RS_i)|] / 2}{(100 - X)} \quad (1)$$

where X = fixed population interval = equal income-distribution share (EIDS)

RS_i = relative income share of the i th population interval.

N = number of the population intervals, i.e., $N = 5$ for the quintile distribution

of the population, $N = 10$ for the decile distribution, etc.

The Meaning of the III:

The numerator: $[\sum_{i=1}^N |(X - RS_i)|] / 2$

represents the relative share of national income (or expenditure) that is unequally distributed. Since we are taking the sum of the absolute value of differences from EIDS, it is necessary to divide by 2 in order to avoid double counting.

The denominator: $(100 - X)$

represents the extreme case of inequality in income distribution, when all the national income is received by one population interval (X), i.e., by one quintile, or one decile, etc.

In the extreme case of equality in income distribution, $III = 0$, since in this case

$RS_i = X$ for all i , and hence the numerator in equation (1) is equal to zero. In the extreme case of income inequality, the general solution of equation (1) will be:

$$(2) \quad III = \frac{[\sum_{i=1}^{N-1} |(X_i - 0)| + |(X - 100)|] / 2}{(100 - X)} = 1$$

where $N = 5$ for the quintile distribution of the population; $N = 10$ for the decile distribution, etc.¹

Thus, the value of the income inequality index falls between 0 and 1, i.e. $0 \leq III \leq 1$

The two extreme cases of quintile income distribution are shown in Figures A.1 and A.2. Figure A.1 shows the case of extreme equality in income distribution. In this case, each of the households quintile receives an income share equals to the equal income-distribution share (EIDS), which is equal to 20% of national income; i.e., $EIDS = X$. Figure A.2 shows the case of extreme inequality in income distribution, where all the income quintiles, except one, receive zero income; while one quintile receives all the national income. As shown in Figure A.2, 80% of national income is unequally distributed; this is the share of national income above the EIDS (= the shaded area in Figure A.2).

¹ Applying the general solution (equation 2) to the quintile and decile distribution of the population, we get the following:

(a) For the quintile distribution: $X = 20$, $N = 5$

$$III = \frac{[\sum_{i=1}^4 (X_i - 0) + |(X - 100)|] / 2}{(100 - X)} = [(4X + 80) / 2] / 80 = 80/80 = 1$$

(b) For the decile distribution: $X = 10$, $N = 10$

$$III = [(9X + 90) / 2] / 90 = 90/90 = 1$$

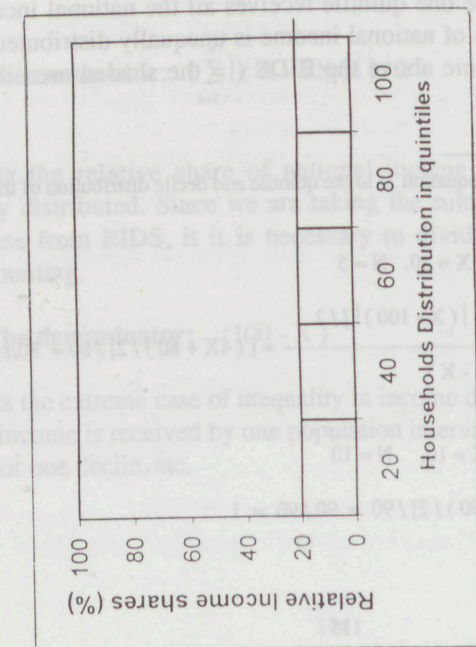


Figure (A.1)

Extreme Equality of Income-Distribution

is the share of national income which is unequally distributed



EIDS = equal income-distribution share

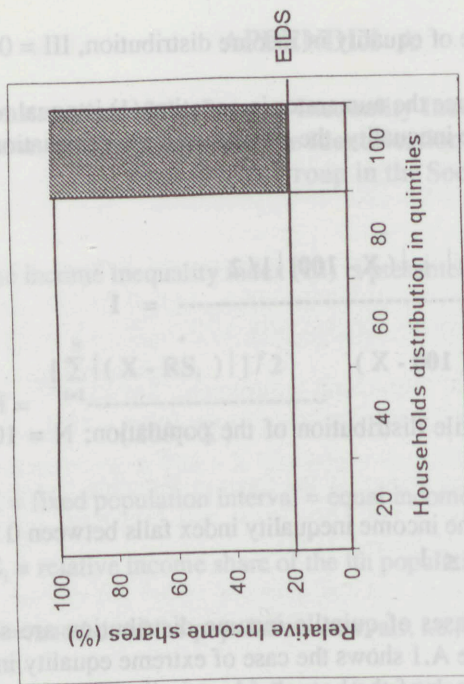


Figure (A.2)

Extreme Inequality of Income-Distribution

APPENDIX B

Estimating the Demand Functions for Bread, Wheat Flour, Edible Oil and Sugar

The demand functions of bread, wheat flour, edible oil and sugar are estimated using cross-section expenditure data in the Household Expenditure Sample Survey 1995/96, as derived from Tables C.1 and C.2 in Appendix C. Five functional forms are attempted in this respect, using weighted regression. The weights used are the relative share of the sample population in the different expenditure intervals¹. The five forms of the demand function are the linear form, the semi-log and double-log forms, the log reciprocal form, and the double-log reciprocal form². The five forms are:

$$x_{ij} = a + by_j \quad (1)$$

$$\log x_{ij} = a + b \log y_j \quad (2)$$

¹The weights used are taken from the first line in Tables C.1 & C.2 in Appendix C.

²Two points may be worth mentioning regarding the functional forms of the demand function. **First**, these five forms of the demand function follow the Keynesian line of thought which states that consumption and saving depend on current income. Other line of thought - which is represented mainly by Friedman "permanent income hypothesis", the Modigliani "life cycle hypothesis" and the Duesenberry "relative income hypothesis" - states that consumption and saving do not depend on current income only but on other factors as well (e.g. expected average income, transitory income, peak income, age). The specification of the functional forms of consumption (and saving) of the latter line of thoughts include lagged variables with respect to consumption (saving) and income (e.g., see Mikesell (1973) and Choudbury (1968)), which needs a set of data that cover several points of time (i.e. time series data). Since we have household consumption and income data at one point of time only - the cross section data of the Households Expenditure Sample Survey 1995/96 - the demand functions applied are specified according to the Keynesian income hypothesis; i.e. current household consumption is a function of current income. This functional relationship may take different forms, linear and non-linear. Since consumption and saving behavior are strongly interrelated, the five functional forms above are commonly used in the literature in estimating consumption and saving functions (Choudbury, 1968; Mikesell, 1973). **Second**, using cross-section data, prices are not included as determinant factor(s) in the estimated demand functions for the four food items implying that at the same point of time all households in the different expenditure brackets are facing the same price for the same commodity.

$$x_{ij} = a + b \log y_j \quad (3)$$

$$\log x_{ij} = a + b / y_j \quad (4)$$

$$\log x_{ij} = a + b / y_j + c \log y_j \quad (5)$$

Where x_{ij} refers to the average expenditure of the household member on the i th commodity in the j th expenditure interval; and y_j refers to total expenditure per household member in the j th expenditure interval.

The double-logarithmic form (equation 2) gave the best fit of the demand functions for the four items. The estimated demand functions are:

Urban Sector:

$$\log (\text{BR}) = -2.409 + 0.901 \log (\text{EXP}) \quad (1)$$

(0.214) (0.025)

$$R = 0.990$$

$$\log (\text{FL}) = -3.006 + 0.803 \log (\text{EXP}) \quad (2)$$

(0.420) (0.049)

$$R = 0.954$$

(0.189) (0.221)

--2

R = 0.991

$$\text{Log (SUG)} = -2.434 + 0.807 \text{ Log (EXP)} \quad (4)$$

(0.197) (0.023)

--2

R = 0.990

Rural Sector:

$$\text{Log (BR)} = -2.339 + 0.822 \text{ Log (EXP)} \quad (5)$$

(0.431) (0.052)

--2

R = 0.951

$$\text{Log (FL)} = -2.465 + 0.874 \text{ Log (EXP)} \quad (6)$$

(0.360) (0.043)

--2

R = 0.969

$$\text{Log (OIL)} = -3.846 + 0.930 \text{ Log (EXP)} \quad (7)$$

(0.281) (0.034)

--2

R = 0.930

$$\text{Log (SUG)} = -2.845 + 0.881 \text{ Log (EXP)} \quad (8)$$

(0.309) (0.037)

--2

R = 0.977

Where BR is the average household member expenditure on bread; FL is the average household member expenditure on flour; OIL is the average household member expenditure on edible oil; SUG is the average household member expenditure on sugar; EXP is total expenditure per household member. The numbers in parentheses are the standard errors of the estimated coefficients.

APPENDIX C

Table C.1
Average Expenditure on the Food Items with Subsidized Components per
Urban Household Member in 1995/96 (L.E)

Annual Household Expenditure Intervals	Less than 1000	1000-	1200-	1600-	2400-	3200-	4000-	4800-	5600-	6800-	8000-	10000-	12000-	14000-
Relative Share of Individuals in the Population Sample (%)	0.042	0.093	0.208	1.598	3.639	5.922	9.014	10.159	15.458	12.926	16.001	8.744	5.085	11.113
1. Bread (All Types : <i>Baladi</i> , Fino & Shami)	49.08	61.44	46.08	48.72	49.59	45.23	48.36	50.61	51.81	55.13	58.25	65.19	64.75	83.03
2. Wheat Flour (Regular & Super).	19.42	11.15	30.13	13.24	11.18	15.17	11.53	11.48	11.10	13.13	12.2	10.61	11.77	8.96
3. Edible Oil (Cotton Seeds Oil).	21.17	24.63	23.38	23.49	17.49	16.16	16.24	16.93	16.70	16.65	17.89	19.34	19.52	24.89
4. Sugar.	33.50	36.19	29.77	25.77	22.29	20.33	20.52	19.64	19.27	20.42	20.65	21.18	24.20	26.45
5. Food & Beverages Expenditures.	515.42	680.07	722.87	713.25	604.3	599.83	600.96	635.04	692.26	736.61	814.58	962.20	1060.01	1423.75
6. Total Consumption Expenditure (Food & Non- Food).	717.92	1051.56	1140.00	1171.86	1051.11	1072.49	1107.24	1187.34	1317.72	1466.54	1683.16	2109.11	2387.25	3932.78

Source : Calculated From : Central Agency for Public Mobilization and Statistics (CAPMAS), *Households Expenditure Sample Survey, 1995/96*, Cairo, VOL.2. (Part 1), Tables (2-1) & (18-1)

Table C.2

Average Expenditure on the Food Items with Subsidized Components Per Rural Household Member in 1995 / 96 (L E)

Annual Household Expenditure Intervals	Less than 1000	1000-	1200-	1600-	2400-	3200-	4000-	4800-	5600-	6800-	8000-	10000-	12000-	14000-
Relative Share of Individuals in the Population Sample (%)	0.178	0.120	0.515	2.330	5.792	9.603	13.070	14.116	18.737	12.987	11.486	4.932	2.410	3.724
1. Bread (All Types Baladi, Fino & Shami).	27.31	43.48	36.51	25.38	20.41	20.02	18.20	20.16	18.97	21.02	23.29	21.71	16.70	20.58
2. Wheat Flour (Regular & Super).	42.94	37.54	32.39	33.87	32.83	27.98	27.25	27.20	26.85	26.08	26.60	29.97	30.58	33.74
3. Edible Oil (Cotton Seeds Oil).	10.20	12.39	17.52	13.39	11.62	11.11	10.38	10.55	11.07	11.15	12.22	13.22	13.72	14.47
4. Sugar.	22.75	27.24	33.29	24.81	22.55	20.36	18.81	18.96	19.07	18.85	19.50	21.53	22.10	26.55
5. Food & Beverages Expenditures.	509.73	605.43	658.8	534.58	483.49	486.02	495.52	530.98	556.85	587.23	644.27	710.85	780.75	873.45
6. Total Consumption Expenditure (Food & Non-Food).	725.95	891.06	1004.28	849.38	794.82	816.09	832.64	907.85	961.38	1036.41	1188.16	1360.19	1473.54	1981.78

Source: Calculated From Central Agency for Public Mobilization and Statistics (CAPMAS), Households Expenditure Sample Survey, 1995/96, Cairo, VOL.3, (Part 1), Tables (2-1) & (18-1).

Table C.3
Average and Total Household Expenditure in Urban and Rural Sectors, 1995/96

(LE)

Annual Household Expenditure Intervals (LE)	Urban Sector			Rural Sector		
	No. of Households	Total Households Expenditure	Average Households Expenditure (=2/1)	No. of Households	Total Households Expenditure	Average Household Expenditure (=5/4)
	(1)	(2)	(3)	(4)	(5)	(6)
Less than 1000	11	8631	784.6	77	58217	756.1
1000-	26	28545	1097.9	44	48318	1098.1
1200-	48	68608	1429.3	166	233851	1408.7
1600-	267	544970	2041.1	445	899188	2020.6
2400-	394	1115002	2830.0	738	2093731	2837.0
3200-	516	1857681	3600.2	987	3564249	3611.2
4000-	662	2922652	4414.9	1123	4957307	4414.3
4800-	678	3528933	5204.9	1123	5833178	5194.3
5600-	968	5985619	6183.5	1333	8220353	6166.8
6800-	755	3363364	7368.7	838	6157649	7348.0
8000-	889	7909311	8896.9	710	6278293	8842.7
10000-	498	5453714	10951.2	288	3110488	10800.3
12000-	280	3599982	12857.0	129	1653384	12816.9
14000-	630	13253534	21037.4	182	3631888	19955.4
Total	6622	51840546	7828.5	8183	46740094	5711.9

Source: Central Agency for Public Mobilization & Statistics (CAPMAS), Households Expenditure Sample Survey, 1995/96, Cairo; vol. 2(Part 1), Table (2-1) and vol. 3 (Part 1) , Table (2-1) .

Table C. 4
Allocation of Subsidized Wheat Flour (82% extraction)
to Baladi Bread and Warehouses, by Governorate (1996)

(LE million)

Governorate	Urban Sector			Rural Sector			Other Uses	Value of Total Subsidized Wheat Flour
	Baladi bread	Ware - houses	Total	Baladi Bread	Ware - houses	Total		
Urban Governorates	349.7	21.2	370.9	-	-	-	19.9	390.8
Cairo	241.5	-	241.5	-	-	-	14.6	256.1
Alexandria	86.8	19.7	106.5	-	-	-	4.0	110.5
Port Said	11.5	0.5	12.0	-	-	-	0.8	12.8
Suez	9.9	1.0	10.9	-	-	-	0.5	11.4
Lower Egypt	247.7	49.2	296.9	72.8	95.3	168.1	22.3	487.4
Damietta	11.9	3.5	15.4	4.6	7.8	12.4	0.2	28.0
Dakahlia	36.4	3.2	39.6	6.7	5.3	12.0	0.2	51.8
Sharkia	43.3	0.1	43.4	9.6	0.2	9.8	14.6	67.8
Kalyubia	42.0	2.2	44.2	24.5	5.2	29.7	1.6	75.5
Kafr El-Sheikh	16.5	6.9	23.4	1.5	18.2	19.7	-	43.2
Gharbia	34.7	10.2	44.9	6.4	15.0	21.4	1.6	67.9
Menoufia	21.2	9.2	30.4	10.6	13.0	23.6	1.0	55.0
Beheira	27.8	12.6	40.4	7.2	25.5	32.7	2.1	75.2
Ismailia	13.9	1.3	15.2	1.7	5.1	6.8	1.0	23.0
Upper Egypt	209.8	123.7	333.5	98.4	328.5	426.9	14.5	774.9
Giza	65.9	1.8	67.7	38.0	43.6	81.6	3.7	153.0
Beni Suef	20.8	2.6	23.4	6.1	4.7	10.8	1.1	35.3
Fayoum	16.5	9.8	26.3	6.6	35.7	42.3	0.6	70.2
Menia	33.6	0.2	33.8	24.4	0.3	24.7	0.6	59.1
Assyout	25.7	21.0	46.7	9.2	36.8	46.0	1.8	94.5
Sohag	20.2	28.2	48.4	7.2	82.9	90.1	4.3	142.8
Quena	12.7	30.2	42.9	4.9	83.7	88.6	1.4	132.7
Luxor	3.3	9.3	12.6	0.3	8.9	9.2	0.1	21.9
Aswan	11.1	20.6	31.7	1.7	31.9	33.6	0.9	66.2
Border Governorates (1)	15.8	14.3	30.1	0.8	9.4	10.2	7.4	47.6
Total	823.5	208.6	1032.1	172.3	434.4	606.7	64.21	1703.0

(1) It includes the governorates of Red Sea, al-Wady al-Gadid, North Sinai and South Sinai

Source: Ministry of Trade and Supply, unpublished data.

Table C.5
Number of Fully and Partially Subsidized Ration Card Holders in
Egypt, by Governorate (at June, 1996)

(in thousands)

Governorate	Fully subsidized (1)	Partially subsidized (2)	Total	Population ⁽¹⁾	Ration Card Holders as Percent. of Population (%)
Urban Governorates:	8879.1	364.8	9243.7	11004.8	84.0
Cairo	5602.9	239.8	5842.7	6789.5	86.1
Alexandria	2654.6	73.5	2728.1	3328.2	82.0
Port Said	321.5	41.1	362.5	469.5	77.2
Suez	300.1	10.4	310.4	417.6	74.3
Lower Egypt:	19133.7	669.5	19803.3	25811.4	76.7
Damietta	704.6	67.1	771.7	914.6	84.4
Dakahlia	3213.1	181.7	3394.8	4223.7	80.4
Sharkia	3049.7	108.2	3158.0	4287.8	73.7
Kalyubia	2097.9	43.6	2141.4	3302.9	64.8
Kafr El-Sheikh	1740.9	49.7	1790.6	2222.9	80.6
Gharbia	2725.0	88.6	2813.7	3404.8	82.6
Menoufia	2082.6	60.0	2142.6	2758.5	77.7
Beheira	2988.2	59.2	3047.4	3981.2	76.5
Ismailia	531.7	11.4	543.1	715.0	76.0
Upper Egypt:	15094.4	832.3	15926.9	21639.6	73.6
Giza	3073.2	99.2	3172.5	4779.9	66.4
Beni Suef	1340.1	41.6	1381.7	1860.2	74.3
Fayoum	1460.2	49.3	1509.5	1989.9	75.9
Menia	2343.4	177.6	2521.0	3308.9	76.2
Assyout	1978.7	115.4	2094.1	2802.2	74.7
Sohag	2088.3	206.7	2295.1	3123.0	71.2
Quena	1767.5	108.8	1876.3	2441.4	76.9
Luxor	280.3	8.9	289.2	360.5	80.2
Aswan	762.7	24.8	787.5	973.7	80.9
Border Governorates ⁽²⁾	536.7	20.6	557.3	816.5	68.3
Total	43643.9	1887.4	45531.3	59272.4	76.8

(1) End of 1996.

(2) It includes the governorates of Red Sea, al-Wady al-Gadid, North Sinai, and South Sinai

Source: Ministry, of Trade and Supply, unpublished data.

Table C.6

Exchange Rate of US\$/LE
(1985/86-1995/96)

Year (End of)	1985/ 86	1986/ 87	1987/ 88	1988/ 89	1989/ 90	1990/ 91
LE	1.33	1.47 ⁽¹⁾	2.30	2.59	2.71	3.34
Year (End of)	1991/ 92	1992/ 93	1993/ 94	1994/ 95	1995/ 96	
LE	3.32	3.35	3.39	3.39	3.39	

General Note: Starting February 1991, the exchange rate of the Egyptian Pound was unified; Hence, from 1990/91, the exchange rate refers to the free-market rate. While before that date, it refers to the exchange rate in the commercial banks pool, which was the highest official rate at that time, since the Egyptian pound was subject to multiple exchange rates system.

(1) The monthly average of the exchange rate in July 1987 was LE 2.20

Source: Central Bank of Egypt, *Annual Report*; several issues.