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Introduction and Approach

This paper discusses the distribution of consumption of important agricultural commodities in rural and urban areas in Egypt. It attempts to shed light on three questions: (1) Does per capita consumption of a given commodity vary among income classes and between urban and rural areas? (2) What is the direction of per capita consumption of various commodities over the decade 1964-65 to 1974-75? (3) Is the distribution of consumption related to the subsidy and rationing policies of the government?

It is expected that per capita consumption of various agricultural commodities would be significantly affected by the government's agricultural and trade policies. Consumer subsidies exist for staple commodities such as bread, other wheat products, rice, beans, vegetable oil, and sugar. Policy makers need to know how changes in subsidies and other price policies might affect consumption.

In recent years the subsidy policy particularly has become highly controversial. Defenders see it as contributing to the national welfare because: (1) The subsidy policy provides basic food requirements at low and affordable prices and thus contributes importantly to the standard of living of Egyptian consumers. (2) It keeps food prices low which some believe is anti-inflationary. (3) The subsidy policy insulates the Egyptian consumer from highly volatile prices that would ensue if domestic prices were allowed

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to follow world price movements. (4) Since food is so important in the total consumption bundle, food subsidies help to stabilize real income levels through time. (5) Given that low income consumers spend a greater percentage of their incomes for food than do high income consumers, the food subsidy policy redistributes real income from high to low income consumers. (6) It is alleged that the subsidy policy helps to protect consumers from inefficient and economically powerful middlemen in the marketing and distribution sector of agriculture.

Opponents of the subsidy policy argue that: (1) Interference in the market distorts relative prices and prevents the efficient resource allocation that would result if Egypt produced crops in which she had comparative advantage. Inefficient production choices ultimately reduce the average consumption level. (2) Food subsidies are an increasing segment of government expenditures, leading to budget deficits which some hold are inflationary. (3) It is believed that increased expenditures by government for subsidies crowd out private and public investment that would induce growth in the economy. (4) Much of the subsidy goes to high income middlemen and food processors and thus contributes to inequality in the distribution of income. (5) Since the subsidy goes to both rich and poor consumers alike, its alleged importance as an income redistribution vehicle is exaggerated. This is expecially so in Egypt because most subsidized food items are superior goods and high income families buy more of these commodities than low income families do. (6) Since the subsidy program is much more developed in urban than in rural areas where families depend on consumption from their own production, it increases the income disparity between the relatively well-off urban population and the poorer rural population. The opponents generally favor getting rid of the subsidy policy completely.

A third group would modify the subsidy policy, although much disagreement exists about exactly what needs to be done. Some modifications suggested are: (1) Determine income levels which most need the food subsidy and make it available only to them; (2) Identify those commodities and services which "need" governmental aid and confine the subsidy to them; (3) Offset the burden of subsidies in the government budget by levying a consumption tax with the proceeds used to defray subsidy costs; (4) Combine subsidies with a rationing policy in order to limit the subsidy going to individuals and families; (5) Tax some commodities at the production and processing level, but subsidize them for consumers. In this latter case it is not clear that the subsidized price would be lower than the price that would have existed in a free market in the absence of the production tax.[1]

It is commonly recognized that subsidies exist when prices are fixed by government edict at a level below supply costs. But why does this happen? What broad social purposes do subsidies serve? What problems do they create? To answer these questions subsidies should be considered as a part of a broader domain known as price policy. In a market enterprise economy prices are the terms of trade between buyers and sellers of market goods. As such, they influence the allocation of resources and the distribution of income and wealth. Economists refer to the former as the efficiency issue and the latter as the equity issue.

Under certain assumptions resources will be said to be efficiently allocated when the price of a commodity is equal to the marginal valuation of consumers of that commodity and to the marginal costs of producing it.

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[1]Mostafa Abdel Azem Mohamed, "Egyptian Agricultural Economic Policy During the 1952-1972 Period: An Analytical Study," Ph.D. dissertation, Department of Agricultural Economics, Cairo University, 1978, pp. 241-253.

Subsidies are likely to cause a disparity between price and marginal valuation and/or between price and marginal cost.

As indicated above, in addition to these efficiency aspects, prices also affect the distribution of output among factor-of-production and income classes. Accordingly, a price system may be used to direct consumption toward various "target" groups: labor vs. capital, urban vs. rural, low income vs. high income.

In Egypt, food subsidies appear to play a dominant role in effectuating a redistribution of income and wealth to meet "distribution" or "equity" goals.

The problem with this policy objective is that efficiency and distribution goals of a price system are generally in conflict. Policies that promote redistribution, such as subsidies do, often violate pricing rules that lead to economic efficiency. Sometimes policy makers do not realize that this is so and fix prices at levels that seriously misallocate resources and diminish the real national output. Economists are trained to analyze these efficiency-distribution tradeoffs so that policy makers can have more complete information and hopefully can make better decisions.

Prior to using subsidies to redistribute real income, the decision maker needs to know how disparate the distribution of the subsidized commodities is. Providing some of this information is the principal motivation for this study. In countries with relatively low per capita incomes, a relatively large fraction of income is used for food consumption. Thus, the distribution of categories of food among relevant economic and social classes is of critical concern.

Many consumption and demand studies have been made in Egypt, covering several agricultural commodities. These studies can be classified into two

broad categories: (1) cross-section studies of consumption using data from the Family Budget Surveys, sponsored and published by the Central Agency of General Mobilization and Statistics; and (2) time series studies showing consumption trends in diet. These latter studies have generally utilized data collected and tabulated by the Ministry of Agriculture.

Much of this work was done by students and was reported in Master's theses and Ph.D. dissertations. The primary focus has been to analyze changes in the standards of living in Egypt through time, in both urban and rural areas as reflected in food consumption trends. A popular approach is to monitor the time trends in per capita consumption of the major dietary classes: energy (carbohydrates), protein, and fats.[2] Other studies have estimated consumption expenditure elasticities for various food commodities.[3] Still others studied changes in levels of food consumption through time as balanced against human nutritional needs.[4]

One of these studies showed that calories consumed covered the minimum level needed for adequate nutrition in urban areas, with 1 percent to spare in 1964-65 and 4 percent in 1974-75. In the rural areas the situation was not quite so favorable: caloric intake was sufficient in 1964-65, but declined to

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[2]As an example see El Monoufi, A. M., "Statistical Analysis of Consumption Trends on the Main Food Commodities in A.R.E. in the Period 1971-78," Proceeding of the Fifth International Congress for Statistics, Computer Sciences, Social and Demographic Research, March 29-April 3, 1980, Vol. 5, pp. 95-116.

[3]See Korayem, Karima, "The Impact of the Elimination of Food Sbusidies on the Cost of Living of Egypt's Urban Population," Working Paper, World Employment Programme Research, International Labour Office, Geneva, August 1980.

[4]Abdou, A. I. et al., "A Study of the Pattern and Level of Food Consumption in Urban and Rural Areas in Egypt," Proceeding of the Fifth International Congress for Statistics, Computer Sciences, Social and Demographic Research, March 29-April 3, 1980, Vol. 5, pp. 145-152.

a barely adequate level in 1974-75 because of a per capita decrease in grains, carbohydrates, and protein consumption between the two periods.

Another study[5] analyzed family consumption expenditures, which were broken down into broad commodity and service groups. Differences in urban and rural expenditure levels among total expenditure classes were noted, using Lorenz curves and Gini coefficients. Still another study[6] looked at the effect of income distribution on consumption patterns in rural and urban areas for the period 1977-79. The population was divided into four income classes and the analysis attempted to show the impacts of direct and indirect taxes and subsidies on expenditures in the various income classes. The findings were that recent taxation and subsidy policy has redistributed real income from the high income classes to the low ones. Also, incomes were far higher in urban than in rural areas. The study utilized the Family Budget Survey of 1974-75 to analyze the impact of income level on consumption expenditures for broad classes of commodities and services. Consumption of a commodity, however, was described in terms of how much was spent for it rather than the physical units actually consumed.

In fact, none of the studies reviewed analyzed the concentration of consumption of individual agricultural commodities in physical units among total expenditure classes in urban and rural areas. This study does precisely this and, therefore, the results are unique and significant. Changes in expenditures on a given commodity may or may not reflect changes in consumption in physical quantities since expenditures consist of the product

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[5]National Bank of Egypt, Economic Memorandum No. 4-31, 1978, pp. 348-375.

[6]El Tayieb, M., "The Relationship Between the Trend of Final Consumption and the Trend in Subsidies," Committee of Subsidy Study, December 1979.

of prices and quantities. If prices rise, expenditures could rise even if quantity remained the same or even declined.

To summarize, as stated at the outset, this study focuses on three issues: (1) a comparison of per capita total expenditures and per capita food expenditures in urban and rural areas in Egypt, (2) the relationship of per capita consumption of individual commodities (measured in physical units) and total expenditure class, and (3) a comparison of the distribution of the per capita consumption of subsidized and nonsubsidized commodities among expenditure classes.

The data base of the study is two Family Budget Surveys, conducted in Egypt in 1964-65 and 1974-75. The sampling unit for these surveys was the individual household, which, in Egypt, generally represents one complete family unit.

In 1964-65, 13,818 families were surveyed, while in 1974-75 the number was 11,995. The total samples were divided into four groups with each group containing one-fourth of the families. The number of urban families was roughly twice the number of rural families in the samples.

Rural and urban families were sampled in each governorate in each season so that seasonal variation in consumption could be studied. Data were collected at the end of every three-month period, representing the four seasons, and total consumption for the entire period was reported. Annual consumption was estimated from these monthly totals. Consumption of the various individual commodities was measured in physical units (kilos, number, etc.) as well as in value terms. In each governorate, urban families were sampled in both the capital city and in other cities in rough proportion to the distribution of population. In rural areas, 2 percent of the villages was

selected at random in every governorate, with the sample size in each village proportionate to its population size.

The Lorenz curve is a useful device for showing graphically the degree of variability or inequality in the distribution of income, consumption, or any other variable. The Gini coefficient is a convenient vehicle for describing the degree of inequality. It measures the area between the Lorenz curve and the diagonal as a proportion of the total area between the diagonal and the axis, with the limits of the coefficient being zero and one. Thus, a Gini coefficient of zero would imply complete equality; whereas a value of one would mean perfect inequality. Gini coefficients will be extensively utilized later in the paper.

Study Findings

Average Consumption Expenditures in Urban and Rural Areas

Before proceeding to the analysis of the distribution of consumption of individual commodities, some general comparisons between urban and rural areas will be presented (see Table 1). Nominal values in Egyptian pounds (L.E.) were deflated by a Cost of Living Index (1959-1960 = 100) to correct for the effects of inflation on the purchasing power of money between the two time periods.

In real terms, the per capita total expenditures in 1964-65 were L.E. 42.54 in urban areas and L.E. 25.38 in rural areas. By 1974-75, these expenditures had increased to L.E. 55.91 and L.E. 34.39, respectively; a 31.4 percent increase for urban areas and 35.5 percent for rural areas. In 1964-65, rural per capita total expenditures were about 60 percent of those in urban areas, whereas in 1974-75, they were nearly 62 percent.

Table 1. Per Capita Total Expenditure and Food Expenditure in Actual and Real Terms in Urban and Rural Areas of Egypt in 1964-1965 and 1974-1975

Item	1964-65				1974-75				1974-75 as a Percent of 1964-65			
	Urban Areas		Rural Areas		Urban Areas		Rural Areas		Urban Areas		Rural Areas	
	Actual L.E.	Real* L.E.	Actual L.E.	Real* L.E.	Actual L.E.	Real* L.E.	Actual L.E.	Real* L.E.	Actual (percent)	Real* (percent)	Actual (percent)	Real* (percent)
Total Expenditures	67.77	42.54	40.43	25.38	102.38	55.91	62.97	34.39	151.07	131.43	155.75	135.50
Food Expenditures	33.64	21.12	25.08	15.74	51.23	27.98	38.74	21.16	152.29	132.48	154.47	134.43
Food Expenditures as a Percent of Total Expenditures	49.64	49.64	62.03	62.03	50.04	50.04	61.52	61.52	--	--	--	--

*Deflated by Cost of Living Index (1959-60 = 100).

Source: Family Budget Surveys in Egypt, 1964-65 and 1974-75, Central Agency for General Mobilization and Statistics.

As a proportion of per capita total expenditures, per capita food expenditures were relatively larger for rural than for urban areas. In 1964-65, rural per capita expenditures for food were about 62 percent of total expenditures; in urban areas, about 50 percent. In 1974-75, the corresponding figures were almost identical. In 1964-65, per capita food expenditures in rural areas were nearly 75 percent of those in urban areas; in 1974-75, just over 75 percent.

Real per capita food expenditures increased 32.5 percent in urban areas and 34.4 percent in rural areas between 1964-65 and 1974-75. Thus, expenditures for food increased at almost the same rate as the increase in total expenditures (31.4 percent in urban areas and 35.5 percent in rural).

Since expenditures are derived from both prices and quantities purchased, it is impossible to determine whether the higher expenditures in 1974-75 than in 1964-65 were attributable to greater quantities of food purchased, from higher quality food commanding higher prices, or simply from increases in the relative prices of food. More data are needed to discover the true explanation.[7] It is quite possible that higher expenditures in urban areas were attributable to higher food prices and to the availability of higher quality foods and/or more highly processed foods.

The Relationship Between Per Capita Consumption and Expenditure Class

From the Family Budget Survey of 1974-75, per capita annual consumption in physical terms was calculated for various commodities in both urban and rural areas (see Table 2). The Survey reported detailed consumption data for

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[7]A Master's thesis at Zagazig University found that quality effects were not significant in the area studied. See Moselhy, Mohamed A., "Demand Analysis for Food in Egypt," M.S. Thesis, Zagazig University, 1980.

Table 2. Per Capita Consumption of Basic Food Commodities in Urban and Rural Areas of Egypt in 1974-75[a]

Food Item	Urban Areas L.E. of Annual Expenditures 0 < 200	200 < 800	Over 800	Total	Rural Areas L.E. of Annual Expenditures 0 < 200	200 < 800	Over 800	Total
Wheat	7.11	7.47	8.66	7.69	33.50	58.81	101.14	59.05
Wheat Flour	24.72	27.17	19.01	25.30	42.00	40.40	41.58	40.74
Bread	122.88	136.62	146.49	137.86	31.61	16.04	21.34	18.77
Macaroni	1.46	1.40	1.42	1.41	2.52	11.47	39.94	12.79
Corn	5.01	5.72	6.07	5.75	35.14	46.34	51.11	45.17
Sorghum	5.50	1.61	1.35	1.78	18.26	10.70	6.46	11.40
Rice	20.22	24.05	29.63	24.90	20.27	26.81	39.93	27.07
Beans - nongranulated	1.79	2.06	3.01	2.23	2.07	2.69	5.57	2.86
granulated	2.46	2.08	1.96	2.08	1.40	1.51	2.38	1.56
Lentils-nongranulated	1.51	1.46	1.52	1.47	0.83	0.75	1.18	0.80
granulated	2.85	2.64	2.54	2.63	2.21	2.26	2.86	2.31
Beef - fresh	4.08	7.02	18.28	9.15	5.61	5.80	11.62	6.31
frozen	0.68	0.76	0.68	0.74	0.04	0.03	0.03	0.03
Poultry	0.85	2.31	7.27	3.24	1.44	2.64	6.28	2.80
Fish	3.88	5.37	8.92	6.01	3.13	4.46	7.28	4.53
Eggs (number)	15.03	28.99	87.98	40.22	23.48	33.99	70.55	35.83
Milk	6.00	15.61	33.27	18.67	2.78	8.42	21.71	8.83
White Cheese	0.59	1.52	4.22	2.02	0.25	1.03	3.31	1.13
Local Cheese	4.16	3.00	2.28	2.92	6.16	6.23	7.89	6.37
Vegetable Oils	4.20	3.76	4.58	3.95	4.56	5.06	8.57	5.30
Margarine	3.96	4.03	4.30	4.08	2.78	2.38	2.69	2.47
Butter	0.25	0.64	1.66	0.83	0.75	1.45	2.14	1.42
Butter Oil	0.34	0.95	3.04	1.34	0.87	1.74	3.17	1.75
Sugar	9.46	11.70	18.63	12.98	12.31	13.26	15.73	13.35
Tea	0.66	0.74	0.83	0.75	0.55	0.68	0.85	0.67
Coffee--unmilled	0.01	0.34	0.14	0.05	0.01	0.02	0.04	0.02
milled	0.07	0.94	0.35	0.15	0.02	0.05	0.13	0.05

[a]In kg. except eggs, which are given in number of eggs.

Source: Family Budget Survey in Egypt, 1974-1975.

16 total expenditure classes. Because of sampling problems, however, resulting in inconsistencies and anomalies in the data, total expenditure classes were grouped into three broad classes: families spending from 0 to less than 200 L.E. (low income class); those spending from 200 to 800 L.E. (middle income class); and those spending over 800 L.E. (high income class).

Commodities are called superior if increased per capita consumption occurs as income increases. Using total expenditure as a proxy for income, the following commodities are superior goods in both urban and rural areas: wheat, corn, rice, nongranulated beans, fresh beef, poultry, fish, milk, white cheese (contains butterfat and is processed), butter, butter oil (liquid butter), sugar, and tea. Of these the animal products (fresh beef, poultry, fish, milk, white cheese, butter, and butter oil) are strongly superior, i.e., as total expenditures rise, per capita consumption rises sharply. The plant foods (wheat, corn, rice, nongranulated beans, sugar, and tea) are weakly superior.[8]

Some food commodities are inferior goods: i.e., their per capita consumption declines as income rises. Sorghum, granulated beans, granulated lentils, and local cheese (cottage cheese) are inferior in urban areas, while only sorghum is inferior in rural areas.

Macaroni, vegetable oils, and coffee are superior goods in rural areas but are neither clearly inferior or superior in urban areas. Bread and margarine are superior in urban areas but are not in rural areas. Wheat

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[8]Many other studies show similar results. For example, see Korayem cited in footnote 3, Goueli, A. A. and D. K. Abdou, "Factors Affecting Imports of Major Food Commodities in Egypt," USDA-Zagazig University, 1981 (forthcoming), and Mostafa, Rasmia, Richard Green, and LeRoy Blakesly, "Estimating Engel Curves for Agricultural Staples," ADS Working Paper, Egypt-California Project, 1982 (forthcoming).

flour, nongranulated lentils, and frozen beef cannot be unambiguously classified in either area since the middle income families consumed more or less than high and low income families.

Table 2 also shows that urban people consumed much more ready-made purchased bread than did rural people, who substituted wheat, wheat flour, corn, and sorghum. Rice was an important food in both areas. In the two upper expenditure classes, macaroni was consumed in large quantities in rural areas. Beef, milk, poultry, fish, eggs, white cheese, and margarine were relatively more important in urban than in rural areas, whereas local cheese, vegetable oils, butter, and butter oil were relatively more important in rural areas. Beans, lentils, sugar, tea, and coffee appeared to be approximately equally important in urban and rural areas, although compared to tea, coffee was not consumed in large quantities in either place.

Distribution of Consumption of Food Commodities Among Expenditure Classes

The distribution of consumption of the various food commodities among the expenditure classes will be analyzed next. Total consumption expenditures were estimated for each family, families were classified according to the magnitude of their per capita consumption expenditure, and the classes were arrayed from lowest to highest. Gini coefficients were calculated for total expenditures, food expenditures, and for the physical units of various food commodities consumed (see Table 3).

From the 1964-65 Survey, Gini coefficients for per capita total expenditures were .23 for urban and .18 for rural areas, respectively, suggesting a more unequal distribution in urban areas. By 1974-75 the coefficient for urban areas rose to .28 while for rural areas it rose only

Table 3. Gini Coefficients for Total Expenditure, Food Expenditure and Food Commodities in Urban and Rural Areas, Egypt, 1964-65 and 1974-75

Item	1964-65		1974-75	
	Urban Areas	Rural Areas	Urban Areas	Rural Areas
Total Expenditure	0.23	0.18	0.28	0.19
Food Expenditure	0.20	0.12	0.20	0.14
Subsidized and rationed				
Sugar	0.06	0.04	0.11	0.04
Tea	0.06	0.05	0.03	0.06
Vegetable Oils	0.04	0.05	0.05	0.10
Rice[a]	0.08	0.13	0.07	0.11
Subsidized but not rationed				
Wheat Flour	0.11	0.06	0.06	0.06
Bread	0.07	0.20	0.02	0.21
Subsidized and sometimes rationed				
Beans - nongranulated	0.07	0.12	0.09	0.17
granulated	0.05	0.12	0.06	0.09
Lentils-nongranulated	0.04	0.11	0.04	0.08
granulated	0.04	0.04	0.04	0.06
Imported frozen beef	0.07	0.30	0.08	0.29
Neither subsidized, nor rationed				
Wheat	0.04	0.11	0.11	0.17
Macaroni	0.19	0.27	0.05	0.43
Corn	0.08	0.10	0.07	0.26
Sorghum	0.24	0.12	0.27	0.17
Beef, fresh	0.22	0.11	0.25	0.13
Poultry	0.35	0.20	0.44	0.24
Fish	0.10	0.11	0.15	0.14
Eggs	0.30	0.13	0.30	0.18
Milk	0.24	0.29	0.23	0.31
White Cheese	0.27	0.24	0.30	0.42
Local Cheese	0.14	0.07	0.10	0.04
Margarine	0.06	0.13	0.02	0.16
Butter	0.27	0.15	0.30	0.16
Butter Oil	0.25	0.14	0.35	0.25
Coffee--nonmilled	0.41	0.26	0.36	0.32
milled	0.36	0.36	0.36	0.31

[a]Rice was subsidized in both periods but rationed only in the second.

Source: Family Budget Surveys in Egypt, 1964-65 and 1974-75, Central Agency for General Mobilization and Statistics.

slightly to .19. It would be interesting to know precisely the reasons for the greater inequality of distribution in urban areas and why the urban inequality increased relative to rural from 1964-65 to 1974-75. These questions merit further research.

There were also significant differences between urban and rural areas in the distribution of per capita food expenditures with the greater concentration (more unequal distribution) in urban areas. The Gini coefficients were lower for food expenditures than for total expenditures, confirming the view that food is more income inelastic than nonfood commodities and services are. It is also noteworthy that the concentration of per capita food expenditures did not change at all for urban families from 1964-65 to 1974-75 and only slightly (from .12 to .14) for rural families. This result is interesting because it shows that the increasing concentration of total expenditures in urban areas was attributable to a less equal distribution of nonfood expenditures through time.

Consumption concentration of individual commodities might be expected to vary as between urban and rural areas and through time. Tastes and preferences vary as do prices, incomes, supplies available, etc. However, the primary focus of this paper is the distributive impacts of rationing and subsidy policies. It is hypothesized that rationing would produce a more equal distribution, providing the rationing entitlement through the ration card gives the same amount of the commodity to every individual in the family. The expected effects of a subsidy policy are less clear, although there are at least two reasons for believing a subsidy might also reduce inequality of consumption. The first is that the relative price decline of a subsidized good compared to one with no subsidy will usually result in the substitution

of the former for the latter. For low income families this substitution response is likely to be stronger than for high income families,[9] reducing the inequality of consumption. Secondly, a heavy subsidy would effectively mean that income would be reduced as a barrier to consumption of that good; and, of course, the income constraint is more binding on low income than high income families.

For purposes of comparing Gini coefficients for Egyptian food items, commodities will be classified into four groups:

1. Those subsidized and rationed (sugar, tea, and vegetable oil rationed in both periods; and rice, rationed only in urban areas in 1974-75).

2. Those subsidized but not rationed (wheat flour and bread).

3. Those subsidized and sometimes rationed depending on availability of supply (beans, lentils, and imported frozen beef).

4. Those neither subsidized nor rationed.

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[9]Economic theory is useful in explaining why the price response may well be stronger for low than for high income families. An individual consumer's response to a price decrease (because of a subsidy or for any other reason) can be decomposed into two parts: the substitution effect and the income effect. The first is always negative--that is, the quantity purchased will increase as price decreases (holding all else constant). As price decreases, however, the person finds himself better off. He has more income to spend either on that good or some other. If from this "better-off" position he chooses to purchase more of the good in question, that good is called a superior good. If not--if he uses his extra income on other things, actually buying less of the good in question--the good is called "inferior." In the case of an inferior good the income effect of a price change is positive. As the price falls and real income rises, less is purchased. Occasionally, this positive income effect is large enough to more than affect the negative substitution effect. Thus, if the price of a commodity decreases, less of it may actually be purchased. This phenomenon, relatively common in developing countries, is called the Giffen paradox. It is likely that the poor who are more tightly constrained by their budgets will have stronger substitution and income effects associated with a price change of any good that is important in their consumption bundle.

All food commodities in the first category of subsidized and rationed have low Gini coefficients as hypothesized, in both rural and urban areas. Most Gini coefficients are below .10 showing very low concentration of consumption. Rice had a slightly lower coefficient in urban areas in 1974-75 when it was rationed than in 1964-65 when it was not.

The Gini coefficients are also low for those in the second category of subsidized but not rationed commodities (wheat flour and bread) with the important exception of bread in rural areas. There is a very good reason for the exception. Ready-made bread was not generally available in rural Egypt in 1974-75 for three reasons: (1) Most of the commercial bakeries were in urban areas. (2) Bread was not made available in rural areas because its price was so low that it might have been used as a livestock feed were it obtainable. (3) Rural residents tended to make their own bread. It should be pointed out that ready-made bread is more available in rural areas now than it was during the period of the last survey. It is also true that rumors abound that bread is used as a livestock feed.

It is revealing that in urban areas for 1974-75, the Gini coefficient for bread was only .02. Because the price of bread has been fixed for many years, its relative price declined substantially between 1964-65 and 1974-75 and by the latter period was at a very low level. Bread is the most subsidized of all commodities and thus it is not surprising that the Gini coefficient for bread was lower than for all other commodities in urban areas. Even middle and upper income consumers took full advantage of the bread subsidy.

Those commodities in the third category of subsidized and sometimes rationed (beans, lentils, and frozen beef) had Gini coefficients that tended to be low in urban areas, but higher in rural areas. This may mean that the

subsidy and rationing policies were not very effective in the rural areas for these commodities.

The major nonsubsidized, nonrationed food items in category four generally had relatively high Gini coefficients in both urban and rural areas. This was especially true for animal products (fresh beef, poultry, eggs, milk, and white cheese). Coffee also had high coefficients in both urban and rural areas. Two factors are probably responsible. The price of coffee was very high relative to tea and lower income classes have traditionally been heavy tea drinkers.

A most interesting comparison can be made between subsidized imported frozen beef and higher quality and unsubsidized local fresh beef. The subsidization policy seems to have had a strong effect at equalizing urban imported beef consumption. Very little frozen beef is consumed in rural areas (Table 2). Unsubsidized fresh beef was more equally distributed in the country than in the city, according to its respective Gini coefficients for both time periods. In the urban areas, fresh beef was of higher quality than subsidized imported beef and sold at much higher prices. It was generally bought only by middle and high income households.

Although not related to the government subsidy program, an interesting comparison can be made between butter and margarine, both unsubsidized at the time. Butter, a luxury item, had high coefficients in urban areas; they were lower in rural areas where butter was produced. The low coefficients on margarine in the cities capture the fact that it was an inexpensive butter substitute. The effect of government subsidies can be clearly seen by comparing the high coefficients for unsubsidized butter oil with the low ones for subsidized vegetable oils. It may be of interest to know that at present

(1982) both butter and margarine are subsidized, although subsidized butter is not always available. Although both were nonrationed and nonsubsidized, the consumption of white cheese (much of it imported) was much less equally distributed than the consumption of local cheese in both urban and rural areas. However, local cheese, eggs, poultry, and sorghum were more equally distributed in rural areas where they were produced than in urban areas.

Evidence in support of the hypothesis that subsidies have served to equalize the distribution of consumption can also be found in comparison of Gini coefficients among various staple commodities. Per capita consumption of wheat flour, wheat, corn, and sorghum was much higher in the country than in the cities where bread was available (Table 2). Only the subsidized commodity, however, wheat flour--exhibited a low Gini coefficient in rural areas. Sorghum coefficients were higher in urban than rural areas, but not much sorghum was consumed in the cities, and the coefficient in rural areas (0.17 in 1974-75) indicates some inequality there. Wheat and corn also had relatively high coefficients in rural areas (0.17 and 0.26 in 1974-75, respectively). In sharp contrast, the Gini coefficient for subsidized wheat flour in rural areas was only 0.06 in both time periods.

Another pattern of some consequence is that most of the nonrationed, nonsubsidized commodities had higher Gini coefficients in 1974-75 than in 1964-65 in both rural and urban areas. These commodities include wheat, sorghum, fresh beef, fish, poultry, white cheese, butter, and butter oils. The explanation probably lies in substitution through time of cheaper subsidized commodities in consumption patterns of low income households, whereas in high income households the substitution would not be so extensive.

This conclusion is corroborated by the sharp fall in the Gini coefficient for bread in the urban areas between 1964-65 and 1974-75.

Macaroni is an especially interesting case since the Gini coefficients changed markedly from 1964-65 to 1974-75. In the urban areas the coefficient fell from .19 to .05 whereas in rural areas it increased from .27 to .43. Since macaroni is a manufactured product that is produced in urban areas, the explanation for these trends is probably that macaroni consumption had become very widespread in cities; whereas, in rural areas it was simply not available except to higher income people who may have done some of their shopping in the cities.

Summary and Conclusion

Per capita expenditures by households, as revealed by Family Budget Surveys, were substantially higher for urban areas than for rural areas in both periods surveyed, 1964-65 and 1974-75. Per capita food expenditures were also higher for urban than for rural areas in absolute terms, but as a percent of total expenditures they were higher for rural areas than for urban areas. In both areas, real per capita total expenditures and real per capita food expenditures increased from 1964-65 to 1974-75.[10]

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[10]Many important causal variables affecting consumption have not been considered in this analysis simply because data were not available. Increases in real income are one important source of increasing consumption levels. For two classic studies of the relationship between consumption behavior and income, the reader might refer to Modigliani, F. C. and R. E. Brumberg, "Utility Analysis and the Consumption Function" in K. K. Kurihara (editor) Post Keynesian Economics, (New Brunswick, N.J. Rutgers University Press, 1954) and Friedman, M. M. A Theory of the Consumption Function (Princeton: Princeton University Press, 1957).

Given the increase in real per capita total expenditures (a proxy for real income) between 1964-65 and 1974-75, it was possible to infer whether individual commodities were superior or inferior. Wheat, corn, rice, nongranulated beans, fresh beef, poultry, fish, milk, white cheese, butter, butter oil, sugar, coffee, and tea were superior in both areas. Sorghum, granulated beans, granulated lentils, and local cheese were inferior in urban areas, whereas, only sorghum was inferior in rural areas.

The distributions of per capita total expenditures and per capita food expenditures were measured and expressed as Gini coefficients: both distributions were more unequal in urban than in rural areas. Gini coefficients were also utilized to reveal the concentration of consumption of individual commodities, measured in physical rather than in value units.

Special cognizance was given to the distribution of consumption of those commodities which were subsidized and rationed as contrasted with those which were not. The results were quite apparent: those commodities which were subsidized and rationed (sugar, tea, vegetable oil, and rice) had low Gini coefficients, meaning distributions of consumption that tended toward equality. So did those commodities that were subsidized but not rationed (wheat flour and bread). Those commodities that were subsidized and sometimes rationed (beans, lentils, and frozen beef) had Gini coefficients that tended to be low in urban areas, but much higher in rural areas. This could indicate that the rationing policy for these commodities was more effective in urban areas. The major nonsubsidized and nonrationed food items surveyed tended to have "high" Gini coefficients in both urban and rural areas (fresh beef, poultry, eggs, milk, coffee, and white cheese, especially).

The conclusion seems inescapable: the subsidy and rationing policies were clearly associated with commodities that were more equally distributed in consumption than those commodities that were not rationed and not subsidized. Caution must be exercised, however, in inferring that the rationing and subsidy policy caused the greater equality of consumption. Those commodities that had widespread use among the entire population were probably the ones the government chose to subsidize (bread, rice, beans, sugar, etc.). It is not too surprising, therefore, that they had low Gini coefficients. What would have been the size of the coefficients had the subsidies not been given, and had rationing not occurred, however, is conjecture, but we believe the evidence suggests that they would probably have been higher.