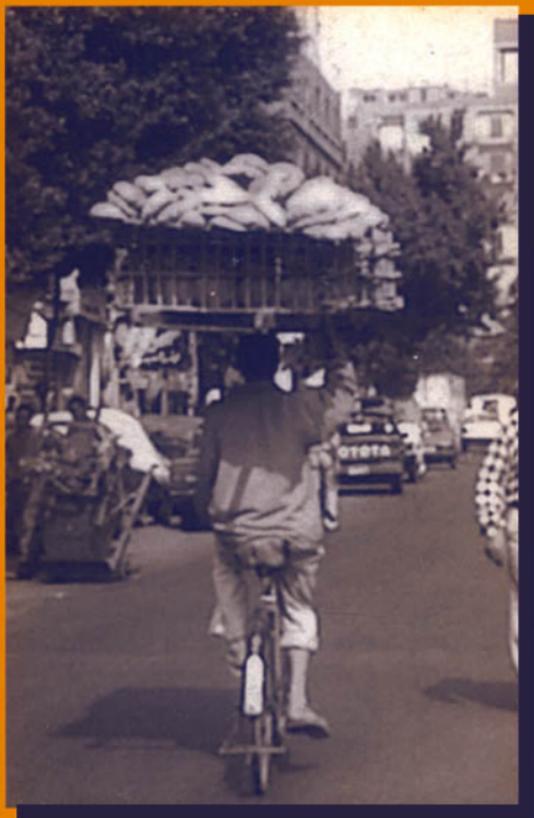


# Fiscal Policy Measures in Egypt

Public Debt and Food Subsidy



Couda Abdel-Khalek

Karima Korayem

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**FISCAL POLICY MEASURES IN  
EGYPT:**

**PUBLIC DEBT AND FOOD SUBSIDY**

**Gouda Abdel-Khalek  
Karima Korayem**

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## INTRODUCTION

This monograph includes two studies; the first is on domestic public debt and the second is on food subsidy. While both studies are written independently by different authors, both discuss issues related to fiscal policy measures applied in Egypt. Policy measures in those two spheres affect the standard of living of the Egyptian population through their impacts on growth, income distribution, and cost of living. The first study argues that in terms of equity and social expenditure implications, domestic debt has redistributed income in the wrong direction: from the poor to the rich (and from Egyptians to foreigners). On the other hand, the second study argues that food subsidy 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 through its positive impact on the cost of living for the low income strata and the poor in Egypt. The two studies, therefore, are sufficiently related to comprise two chapters in one monograph.

Part one presents the study on Domestic Public Debt in Egypt; Magnitude, Structure and Consequences, by Gouda Abdel-Khalek. It analyzes the growth and equity effects of domestic public debt. In order to assess the re-distributive effect, the study documents the change in the magnitude and structure of domestic public debt. It hypothesizes that the development of such debt since the beginning of the Economic Reform and Structural Adjustment Program (ERSAP) is the logical conclusion of the nominal exchange-rate anchor and a strong monetary stance in the context of capital mobility. In effect, the government incurs domestic debt much beyond its fiscal needs.

The study draws attention to the fact that between 1991-1997, the short-term part of domestic public debt (treasury bills) rose extremely rapidly—being by far the fastest growing component. During the period, the stock of treasury bills outstanding rose eightfold. The driving force behind such increase was not the need to cover the fiscal deficit, but the requirement to maintain the level of monetary aggregates within the limits set under ERSAP. It is significant to note that this component of domestic public debt was contracted at market competitive interest rates.

On the other hand, interest paid by the national Investment Bank (NIB) for social insurance and pension funds accruing to the National Organization for Insurance and Pensions (NOIP) and the General Authority for Social Insurance (GASI), were non-competitive throughout. The difference between the non-competitive interest rate on social insurance funds and the (higher) competitive rate (for example, on investment certificates) amounts to an implicit tax imposed on the return on these funds. According to the study, the implicit tax on social insurance funds averaged about LE 1.5 billion annually during 1987–1997.

One interesting finding of the first chapter is that interest payments on domestic debt have claimed almost one quarter of total current expenditure in the government budget during 1993-95. From being just about one half of subsidy expenditure on the average prior to 1989, it has become 2-3 times total subsidy expenditure during the 1990s.

The second part introduces the study by Karima Korayem on the Impact of the food Subsidy Policy on Low income People and the Poor in Egypt. It investigates the impact of the food subsidy policy and its efficiency in reaching the target group. The chapter starts by gauging the magnitude of food subsidy in absolute and relative terms. Despite some strong fluctuations in the value of total food subsidy, its share in government expenditure has steadily declined since the mid-eighties. In the 1990s, it accounts for 5-6%, and it is currently limited to 4 commodities: *baladi* bread, wheat flour (82% extraction), sugar and edible oil.

The study assesses the efficiency of the “subsidy umbrella” in covering the lower income people and the poor in Egypt. The assessment is made on three levels: The governorate level, the rural/urban level, and the household expenditure level. At the governorate level, the study shows that subsidies on *baladi* bread and wheat flour (82% extraction) are more efficiently distributed than those on edible oil and sugar. With regard to the rural/urban allocation of food subsidies, it is hard to tell whether the *baladi* bread and flour subsidy is efficiently distributed because of contradictory effects. The subsidy of edible oil and sugar, on the other hand, favors the rural households and hence is more efficient. Finally on the household level, it has been found that the edible oil and sugar subsidy is more efficiently distributed among urban households. The subsidy on *baladi* bread and wheat flour (82% extraction) should be expected to benefit the poor and lower

income households more, since higher income households prefer buying a better quality of non-subsidized bread and wheat flour.

The study concludes that food subsidy in Egypt benefits the lower-income strata and the poor more than the high income groups.

The question now is how to put these two studies in a common, broader, perspective? The basic conclusions of the two studies appear to push in opposite directions regarding the impact of fiscal policy measures on the lower-income strata and the poor in Egypt. However, at least two observations are pertinent to answering the question.

First, the study on domestic public debt concludes that domestic debt policy takes from the poor to give the rich, while the study on food subsidy concludes that the poor and low income people benefit more than the rich. The extent to which the latter policy redistributes income between the two groups depends on the nature of the tax system. Only the assumption of a progressive tax system would enable us to speak of redistribution from the rich to the poor on food subsidy. The evaluation of the nature of the tax system in Egypt is beyond the scope of this volume. So, one may say that food subsidy benefits everybody, but the poor benefit more. On the other hand, domestic public debt favors the rich at the expense of the poor.

Second, in money terms, there is a transfer from the poor to the rich because of the implicit tax on NOIP and GASI funds totaling LE 16.8 billion over the period 1987–1997. Total food subsidy over the same period amounted to LE 22.2 billion, which benefits everybody. Thus, the implicit tax transferred from the poor to the rich amounts to 75% of the food subsidy which benefits both groups. Therefore, even if we make the strong assumption that the rich exclusively foot the food subsidy bill one way or another, one may say that the rich will benefit (or the poor will suffer) in net terms if the share of the poor in food policy is less than 75%. There remains the thorny issue of identifying the relevant groups: the poor who benefit from food subsidy, the rich who benefit from food subsidy, the tax payers, the poor who own pension funds, and the rich who hold treasury bills. That goes beyond the present exercise.

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**DOMESTIC PUBLIC DEBT IN EGYPT:  
MAGNITUDE, STRUCTURE AND  
CONSEQUENCES**

**GOUDA ABDEL-KHALEK**

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## **Introduction\***

During 1996/97 domestic public debt rose by 13.6%, and its service rose proportionately. The stock of treasury bills, the short-term component of domestic public debt, rose by 21.4% during the same year. It even rose by almost 29% in the third quarter of 1997. This indicates a worsening of the structure of domestic debt. In the 1990s, domestic public debt surpassed foreign public debt both in terms of stock ratios to GDP and flows of debt-service expenditure.

The development of domestic public debt, especially under ERSAP, raises a number of questions. Why did such debt accumulate despite a strong fiscal stance? How is it related to macroeconomic policy under ERSAP? What is the impact of the accumulation of domestic debt on investment expenditure and social expenditure? How sustainable is this level of domestic debt?

In the present paper, we analyze available data related to domestic debt in an effort to shed some light on the questions raised above. First, we will examine the magnitude and structure of domestic debt, discussing whether the rate of borrowing represents an over-borrowing syndrome. Then we shall deal with the underlying causes of debt accumulation followed by the various consequences of domestic debt. Finally, we will address debt management and policy options.

We hypothesize that the increase in domestic debt under ERSAP is the logical consequence of the nominal exchange rate anchor and a strong monetary stance in the context of capital mobility. It is a familiar story that, with liberalization of capital transactions in many countries, the policy response to massive capital inflows, predominantly driven by changes in international interest rates, was sterilization (Dooley et al. 1996). In Egypt's case under ERSAP, this led to large accumulation of foreign reserves. Rising domestic debt was the other side of the coin.

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\* This is a revised version of a paper for *the Human Development Report-Egypt 1997*.

## **Magnitude and Structure of Domestic Debt**

**Issues of Definition.** We start the discussion by dealing with the definitional problem.

Public debt is simply the debt of the public sector. But the delimitation and coverage of the public sector relevant for measuring debt may be different in different countries. For example, in most OECD countries, the public sector is the general government, which is defined as follows (Stourmaras 1983:406):

$$\begin{aligned} & \text{The general government} \\ & = \text{The central government + local authorities} \\ (1) \quad & + \text{non-private social security and other organizations} \\ & + \text{non-financial public corporations} \end{aligned}$$

On the other hand, in a recent World Bank report on Egypt (World Bank 1992, III:174), the public sector is defined as the consolidated government, which includes state budget, National Investment Bank (NIB), and the Central Bank of Egypt (CBE). According to this definition, debt includes both monetary debt (debt of CBE), and non-monetary debt (debt of the government and NIB).

Distinction is often made between gross debt and net debt. Net debt is equal to gross debt net of public sector deposits with banks and net of treasury bills owned by non-private social security and other organizations as well as by public corporations. In short,

$$(2) \text{ Net debt} = \text{gross debt} - \text{public sector liquid assets}$$

For our purposes, we are only concerned with debt which carries service obligations, at least in principle. Thus, we leave out monetary debt. According to Egyptian official sources, domestic public debt consists of government debt, NIB debt, and debt of public economic authorities. It should be noted that government debt comprises debt of central and local

administrative units and state service authorities, but does not include debt of public economic authorities since the latter are not part of the state budget.<sup>1</sup>

Official statistics on public debt often leave out potential government obligations that may not strictly qualify as government debt. In the Egyptian context, such obligations include several important items--public enterprise debt to foreigners, loans of cotton trading companies, claims of infrastructure companies on public-sector enterprises, and non-performing loans in the banking system.

Domestic public debt is public debt placed or generated inside the country (at home), while foreign public debt is public debt placed or generated outside the country (abroad). Domestic debt is mostly held by residents in domestic currency, and foreign debt is mostly held by non-residents in foreign currency. We may illustrate the distinction in matrix form as shown in Figure 1.

**Figure 1**  
**Classification of Public Debt**

	Domestic Currency		Foreign Currency	
	Residents	Non-Residents	Residents	Non-Residents
Domestic Debt	Mostly	Occasionally	Occasionally	Never
Foreign Debt	Never	Rarely	Never	Mostly

In the context of this paper, domestic public debt is composed of two main components: government debt and National Investment Bank (NIB) debt. Government is roughly general government in the sense of equation 1 above: it consists of the central government, local government, and non-financial public corporations. As such, it is different from the consolidated government, whose accounts cover the government budget, the NIB, and the Central Bank of Egypt (World Bank 1992, vol. III:173). The narrower definition suits our purpose better, since we are only interested in debt that

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<sup>1</sup> The only exception is the item called net balances with the banking system, which includes net balances of public economic authorities. See Central Bank of Egypt, *Report on Monetary and Credit Conditions 1993/94*, p.106.

carries service obligations. Moreover, debt figures discussed here are net of deposits with banks.

**Magnitude.** Domestic public debt has been rising consistently since the beginning of the 1980s. Table 1 shows that it has increased more than 15-fold over the period 1981-1997. GDP increased less than 13-fold over the same period. In per capita terms, this implies a rising level of domestic debt per individual Egyptian from LE 254 in 1981 to LE 2,823 in 1997. As a proportion of GDP, domestic public debt has risen over the period from 63.6% to 78.2%, notwithstanding strong fluctuations. The behavior of this ratio over the period exhibits some interesting features (Figure 2).<sup>2</sup> First, the ratio rose sharply in the first half of the 1980s; this was the height of the monetization of the budget deficit (El-Edel & Abdel-Hamid 1992). It jumped from 64% in 1981 to 99% in 1985. Second, there was some decline in the ratio in the second half of the 1980s followed by a significant jump in the early 1990s to a new height of 99% in 1991. Third, there is a significant decline in the ratio between 1992 and 1996. Fourth, it appears that the ratio of domestic debt to GDP has increased, though slightly, in 1997. Whether the increase in the debt/GDP ratio for the last year is the beginning of a new trend (i.e., 1996 is a turning point) remains to be seen. This point will be examined later. Finally, over the 17-year period (1981-1997), the domestic debt/GDP ratio witnessed two peaks of equal height: in 1985 and in 1991. The saddle-like shape of the debt/GDP ratio is rather interesting and calls for explanation.

Consider the off-peak values of the debt/GDP ratio of 70 - 80%.<sup>3</sup> Is this ratio too high or too low?

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<sup>2</sup> Note that Figures 2-5 are double-scaled graphs, where the left-hand scale refers to the first variable in the legend. The other variables are all measured along the right-hand scale.

<sup>3</sup> The World Bank (1995, vol I: p.6) estimates the ratio of overall domestic debt in June 1994 at 78.9 percent of GDP. According to this source, domestic debt was LE 115.6 billion, which implies a GDP figure of LE 149.5 billion. These compare to our own estimates of LE 123.7 billion and LE 149.1 billion, respectively.

We address this question both in terms of Egypt's own past experience, and in comparison with other developing countries. Regarding Egypt's experience this compares with public domestic debt of LE 175 million in June 1951, equivalent to about 20% of national income, and LE 579.3 million in November 1961, equivalent to about 40% of national income (see Issawi 1963: 284-85). Of course, these two points may not adequately represent the situation prior to the 1980s and 1990s, and thus may not provide a solid basis for comparison. We may surmise that there has been a significant increase in the ratio of domestic public debt in the latter decades.

On the basis of Egypt's own postwar historical record, the level of debt shown in Table 1 may be a bit too large. The high ratio of domestic public debt in the 1980s and 1990s reflects a shift in deficit financing from foreign borrowing and inflationary financing to domestic debt. This, and the use of treasury bills to sterilize capital inflows, has led to a significant change in the composition of total public debt. Domestic debt has been increasingly replacing foreign debt during the 1990s (World Bank 1995, vol. I:6). If we compare it with the ratios for other developing countries, it appears to be too high. Thus, compare this ratio with ratios of public debt (domestic and foreign) ranging between 25% and 68.5% for Latin American countries-- Argentina, Brazil, Mexico and Venezuela (Dooley et al. 1996: 36).<sup>4</sup> It is clear that by the standards of developing countries, the observed ratio of domestic public debt is rather high. It is also high, judged against the convergence criteria of the Maastricht Agreement (Dec. 1991) of 60% for public debt/GDP ratio. Egypt's ratio of domestic public debt is much higher than the above-mentioned ratios of total public debt taken as reference. This raises questions of sustainability of such levels of indebtedness.

Another indicator of domestic public debt is debt service, particularly interest payments. Annex II shows interest payments on domestic public debt over the 1981-97 period. It should be noted that interest payments grew significantly faster than domestic debt, reflecting a significant increase of *ex post* interest rate. This is illustrated in Figure 3. The average *ex post* interest rate fluctuated around 3-4% per annum during 1981-1991 but rose

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<sup>4</sup>Public debt ratios for these countries cover both domestic and foreign debt of the public sector minus official reserves. It is not clear whether the domestic debt component is recorded on net or gross basis. The foreign debt component, however, is recorded on a net basis.

significantly after that (the ERSAP period) to around 6-8% per annum. Both as a result of higher interest rates and as a result of rising level of debt, interest payments on domestic debt as a proportion of government current expenditure rose dramatically from 10-15% until 1991 to more than 20% after 1992. Interest payments on domestic debt exceeded 25% of government current expenditure in 1994. Accordingly, “it seems that *Egypt’s previous foreign debt service problem has been converted into a domestic-debt service problem*” (World Bank 1995, vol. 1:6, emphasis added). The increase of the burden of interest payments on domestic public debt raises some thorny questions.

1. To what extent have interest payments crowded out expenditure on such priority areas as social services and labor compensation (wages and subsidies) and hence, what is the likely effect on equity?
2. What is the likely effect of rising interest rates on savings and investment and hence, on growth performance?

We shall discuss these questions later in the section on consequences of domestic public debt.

**Structure of Domestic Public Debt.** No less important than the overall magnitude of public debt is the structure of that debt. By the structure we mean the anatomy of debt: how much of it is short-term and how much long-term (term structure); how much of it consists of securities and how much in the form of direct loans (extent of securitization); how much of it represents government debt, and how much is NIB debt. Analysis of such dimensions of the structure of domestic public debt is essential for working out a policy for managing domestic public debt.

Based on the conceptual framework represented by the debt identities c.1 to c.11 in Appendix C, we proceed to analyze the structure of domestic public debt. For reasons related to data availability, the analysis will essentially cover the period 1985 - 1997.

*Government Debt vs. NIB Debt.* As mentioned before, government debt in the context of this paper consists of debt of the central and local

government as well as non-financial public entities known as service corporations. Government borrows directly from the public (including the financial sector) and indirectly through the NIB.

The NIB, established in 1980,<sup>5</sup> is really an intermediary fund for investment: it collects resources from the Social Insurance Fund for Government Employees, the Social Insurance Fund for Business Sector Employees, proceeds of Investment Certificates and deposits of the Postal Saving Fund and then allocates it to finance public investment, mostly on a loan basis.

How is domestic public debt divided between government debt, in the sense defined above, and NIB debt according to identity c.1 in Appendix C?

According to available data for 1985-1997, domestic public debt is predominantly government debt. For the entire period, the average government debt was 85-90% of total domestic public debt. NIB debt accounted for the balance, or some 10-15%. Perusal of data does not reveal any significant changes in the division of domestic public debt between these two types over the period 1985-1997.

*Securities vs. Indirect Borrowing.* One interesting aspect of the structure of public domestic debt is the rising importance of total NIB resources.<sup>6</sup> Their contribution to total domestic public debt increased significantly under ERSAP: it rose from 40% during 1985-90 to 52% during 1992-97 (see Table 2). Government securities as defined in identities c.5, c.6 and c.9, initially gained in importance during the early years of ERSAP, but tended to revert back to their pre-ERSAP share in 1996-97. It is clear from Table 2 that although under ERSAP the contribution of indirect borrowing (NIB resources) has been rising and the contribution of government securities has been falling, their combined contribution to domestic public debt has been

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<sup>5</sup> According to Law 119/1980 it replaces the Deposit and Insurance Investment Fund (DIIF). DIIF had the mandate of investing the accumulated resources of Social Insurance Funds and Postal Saving Fund. Law 119/1980 instituting NIB granted it a monopsony power over the technical surpluses of Social Insurance Funds and the Postal Saving Fund.

<sup>6</sup> Total NIB resources are defined by identity c.4 in Appendix C. When government borrowing from NIB is subtracted from total NIB resources, we obtain NIB debt (see identity c.3 in Appendix C).

rising, exceeding 100% over the ERSAP period. According to identity c.8 in Appendix C, government net balances with the banking system have been negative during this period. Data in Annex I confirm this. Such balance averaged about LE 20 billion a year during 1992-97 which means that the government is a net creditor, not debtor, to the banking system.

Figure 4 illustrates this development vividly. According to the data, 1991, the first year of ERSAP, represents a turning point. Until 1991, government securities' share in domestic public debt was more or less stable at about 55%; NIB resources share was about 40%; the remainder was covered by net debit balances of the government and public service corporations hovering around 5%. The beginning of ERSAP in 1991 was a watershed. The government placed proportionately more securities and borrowed more NIB funds only to deposit a significant proportion thereof in the banking system. This may be an indication that on a purely fiscal criterion the government has been over borrowing during the ERSAP years. Hence, one of the hypotheses to be verified in this paper is that the confluence of a strong monetary stance and liberalized capital transactions in the balance of payments, coupled with a nominal exchange-rate anchor, has caused unwarranted accumulation of domestic public debt. There are important fiscal (macro and micro) and equity implications to this, which will be examined in detail in a later section of this study.

*Marketable vs. Non-Marketable Debt.* Another aspect of the structure of domestic public debt, which is very relevant for the conduct of monetary policy in particular, is the distinction between domestic public debt listed on the stock market, and those not listed. Identities c.5 and c.6 in Appendix C present the details. Listed instruments include dollar denominated development bonds,<sup>7</sup> housing bonds, and treasury bonds 2000 & 2003. Non-listed instruments are treasury debentures and bonds, development bonds

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<sup>7</sup> Dollar denominated bonds are of two types: development bonds issued by the government according to Law 13/1977, carrying fixed interest, and national development bonds issued by NIB according to Law 6/1986, carrying variable interest. Housing bonds were issued by the treasury according to Decree of Finance Minister 199/1977, to be used for financing low cost housing. Treasury bonds 2000 were issued in April 1995 in an amount of LE 3 billion with 5 year maturity. Treasury bonds 2003 were issued in March 1997 in an amount equal to LE 4 billion with 7 year maturity.

with variable return, alternative-energy bonds, banks' recapitalization bonds, actuarial-deficit bonds, housing bonds, government bonds financed by 5% of public sector companies' profits, investment certificates, and treasury bills.

The development of the relative shares of listed securities, non-listed securities, debt of deposit and insurance institutions (as defined in identity c.7 in Appendix C) and net balances of government and public service corporations with banks, is rather interesting. Figure 5 offers a succinct illustration of the data. Perusal of this figure indicates that listed securities represented a rather trivial proportion of the overall domestic public debt. Its share appears to be higher in the 1990s, but unstable. In 1997, it climaxed to 4% of total debt, mainly due to the placing of treasury bonds 2000 and 2003.

It is interesting to observe that the share of non-listed securities has taken a significant upward turn since 1991; it continued to rise steeply through 1993, but started to decline thereafter. The share of non-listed securities appears to be far more unstable when compared to that of listed securities. The sample mean of the share of listed securities is 1.5% and its standard deviation is 0.01, while that of non-listed securities has a mean value of 66%, with standard deviation of 0.09.

The behavior of the share of listed securities in the 1990s may be explained by the jump in the value of the dollar denominated debt in 1991, the monetization of that debt in September 1993, and the placing of treasury bonds 2000 and 2003 starting in 1995. The fluctuation in the share of non-listed securities in the 1990s may be explained by the issuing of treasury bills in 1991, and the fluctuations in the value of treasury debentures and bonds.

We conclude this part by noting a number of characteristics of the structure of domestic public debt in the 1990s (under ERSAP). First, domestic public debt has grown less securitized, especially in light of the significant increase in the share of debt owed to deposit and social insurance institutions (through the medium of the NIB). According to Annex I, it rose steadily from 30% in 1991 to almost 47% in 1997. This has obvious implications for financial deepening, for debt management, and for the likely effects of domestic public debt.

Second, it appears that during the early phases of ERSAP, domestic public debt has become less marketable. See the bulge in the curve

representing non-listed securities between 1991 and 1996 (Figure 5). This may run counter to the essence of ERSAP: transforming the Egyptian economy from a centrally-planned, public-enterprise economy to one based on private enterprise and the market mechanism. (Abdel-Khalek 1995). It can only be understood in the light of the macroeconomic policies adopted under ERSAP, a point that we shall discuss later in more detail.

Third, government debt to the NIB (debt by the government and public corporations) has quadrupled during the 1990s. As a result, the share of such debt in total government debt doubled between 1991 and 1997 (rising from 29% to 58.6%). Note that this is part of the financial resources of the NIB, which it collects from deposit and social insurance funds--the Postal Savings Fund, the Social Insurance Fund for State Employees, and the Social Insurance Fund for Public and Private Sector Employees. It should be mentioned that according to its by-laws, the NIB has a monopoly power over surpluses of these institutions.<sup>8</sup> Interest paid by NIB historically fluctuated around 6%. They were raised to 8%, then 13%, and currently 11%. Until 1991, these social insurance reserves used to earn large negative returns which became positive in 1992 (World Bank 1992, vol. II:87).

This type of change in the structure of domestic public debt has clear equity implications which will be considered in another section.

*The Government as Financial Intermediary.* We have already made the distinction between public debt and government debt. Now we focus on the latter, noting again that government is interpreted here in the broad sense to include public service corporations. Total government domestic debt may be split into three components: securities, debt to the NIB and net balances with the banking system. Table 3 shows the development of the structure of government debt over the period 1985-1997 by applying identity c.2 in Appendix C. The contribution of government securities peaked in the early phase of ERSAP but then plummeted back to its initial level by 1996-97.

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<sup>8</sup> The social insurance system in Egypt is run by two separate administrative bodies: The National Organization for Insurance and Pensions (NOIP) and the General Authority for Social Insurance (GASI). NOIP runs the pension fund for state employees under Law 79/1975, amended by Law 47/1984. GASI operates several funds; the most important is the pension fund for employees of public and private enterprises, under the same laws. (World Bank 1992, III:88).

The most important factor behind this behavior is the change in the stock of treasury bills outstanding. This will be examined separately. It is also interesting to note that the share of government debt to the NIB has been steadily and significantly rising since 1991. Commensurate with this development is the change in the nature of government balances with the banking system, which turned negative since 1992. This represents a creditor position of the government towards the banking system.

Actually, the situation as illustrated in Table 3 reflects the government acting very much like a financial intermediary: borrowing funds and lending at the same time. The magnitude of funds deposited in the banking system since 1992, both in absolute and relative terms, leads one straight to this conclusion. There is one anomaly; the government borrows long and lends short.<sup>9</sup> This raises the question of costs and benefits of government policy.

*Term Structure of Domestic Public Debt: A Bubble in the Making?*  
According to the data analyzed above, most of Egypt's domestic public debt is involuntary, and hence *de facto* it is not short-term. As such, it may not raise serious management problems. This may be so only on the surface of things. We have already noted the relatively high debt/GDP ratio. Also, the mounting service of domestic debt, both amortization and interest payments, should be a cause for concern lest such service should crowd out essential public expenditure on both social services and investment projects. It must be added that the short-term voluntarily held part of that debt, treasury bills, has been rising faster than overall domestic public debt. In 1992 the World Bank observed that the outstanding stock of treasury bills (about 9 percent of GDP at the time) was "not high enough to provoke unsustainable debt accumulation." The problem lies, however, in its short-term maturity (World Bank 1992, vol. II:81). Now that the stock of treasury bills' debt has reached some 15% of GDP at the end of June 1997 (TBs = LE 33.1 billion and GDP about LE 220 billion), the problem is indeed compounded.<sup>10</sup>

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<sup>9</sup> To use the jargon of the stock exchange in the United States, borrowing long and lending short means incurring a loss or cost because the borrowing interest rate is higher than the lending rate.

<sup>10</sup> Policy makers should be even more concerned because of the quantum jump in the stock of voluntary short-term debt (treasury bills) in the third quarter of 1997, from LE 33.1 million to LE 42.6 million.

Examination of the development of the stock of each category of TB maturity (3-month, 6-month, and 12-month) based on quarterly data from the Central Bank of Egypt for the period 1991.1-1997.4 shows some interesting features. Average maturity for treasury bills has improved between 1993 and the third quarter of 1995. But it has worsened thereafter.

It appears that there is lack of clear policy direction in the vital area of treasury-bills debt. In an attempt to restructure domestic debt towards longer maturities, 12-month treasury-bill issues were discontinued by the first quarter of 1995. Treasury bonds 2000 and 2003 were issued to replace treasury bills. But the attempt was only short-lived; issues of 12-month treasury bills were resumed in the second quarter of 1997.<sup>11</sup> This was apparently under the pressure of increased portfolio capital inflows. Coupled with increased issues of 6-month treasury bills, this raised the total outstanding stock of treasury bills by LE 9.5 billion in the third quarter of 1997. It amounts to almost 30% jump in the stock of TBs during that quarter.

Does this point in the direction of a Ponzi-type domestic debt situation or is it a bubble in the making?

## **Underlying Causes of Domestic Debt Accumulation**

**The Dynamics of Public Debt Accumulation.** In a strictly accounting sense, a change in the stock of public debt is the result of the overall government deficit. Such deficit may be the result of one or both of two factors: primary deficit and interest payments on public debt.

(3) Overall deficit = Primary deficit + interest payments

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<sup>11</sup> The sale of 12-month bills was suspended in March 1995, and the government placed LE 3 billion worth of 5-year bonds bearing 12% interest (T Bonds 2000) in April 1995. In September 1996, LE 4 billion worth of 7-year bonds, carrying fixed interest of 11% (T Bonds 2003) were issued in an effort to restructure domestic debt. But placements of 12-month bills were resumed in June 1997.

Such overall deficit determines the public sector (government) borrowing requirements (PSBR). Given the government budget constraint, PSBR may be expressed as:<sup>12</sup>

- (4) Primary deficit + interest payments = Change in domestic debt + change in foreign debt + foreign official unrequited transfers

In plain words, (3) and (4) together state the simple fact that the overall deficit may be financed by various means: change in public debt (domestic and foreign), foreign official transfers and net revenue from issuing money base. We ignore foreign transfers and seignorage,<sup>13</sup> but allow for revaluation effect on existing debt to reflect changes in effective exchange rate and in the market value of public debt. Rearranging, and using symbols to denote discontinuous variables, we obtain from (3) and (4):

$$(5) \quad B_t - B_{t-1} = D_t + r_t B_{t-1} + a_1 B_{t-1}$$

where B = public debt (both domestic and foreign)

D = primary deficit,

r = nominal interest rate on public debt, and

a = revaluation effect on existing debt.

Since we are interested in relative not absolute magnitudes, we divide both sides of (5) through by nominal GDP,  $Y_t$ , expressing ratios of variables to nominal GDP in lower-case form, and after some manipulation we obtain our basic equation of debt dynamics. It identifies the determinants of the change in the ratio of debt to GDP. The interested reader may refer to

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<sup>12</sup> Seignorage is the net revenue derived by the monetary authority (the Central Bank) out of issuing money base. The PSBR identity for the consolidated government is different, since the government there includes central and local government, NIB, and CBE. Such identity includes six sources of financing the overall deficit: implicit tax from financial repression, implicit subsidy on foreign debt, foreign official unrequited transfers, seignorage revenue (issuing money base), foreign-debt financing and domestic-debt financing (World Bank 1992, III, Annex III.2).

<sup>13</sup> Alternatively, one may think of the primary deficit in excess of seignorage revenue. The reason for ignoring foreign transfers is that, in long-run equilibrium, they are not a sustainable means for financing the fiscal deficit.

Appendix B for the details of the derivation. Our fundamental relation of the dynamics of public debt is thus:

$$(6) \quad \Delta b_t = d_t + (r_t^* - g_t^*) b_{t-1} / (1 + g_t)$$

where:

$d_t$  is the ratio of the primary deficit to GDP,

$g_t$  is the nominal GDP growth rate between  $t$  and  $t-1$ ,

$g_t - P_t = g_t^*$  and  $r_t - P_t = r_t^*$ , where  $P_t$  is the rate of inflation.

According to (6), two factors contribute to the change in the public debt/GDP ratio  $\Delta b_t$ : the primary deficit and a real interest rate different from real GDP growth rate. Specifically, even if the primary deficit is zero, public debt may continue to rise as a proportion of nominal GDP if the real interest rate exceeds the real GDP growth rate. This is the well-known Domar Proposition (Domar 1944). Therefore, whenever  $r^* > g^*$ , the economy gets caught in an interest-debt spiral: the government borrows just to refinance interest expenditure. Of course, this process carries its own limits.

To apply this analytical tool (the equation of debt dynamics) to the Egyptian case, we refer to Figure 2. Focussing on the ERSAP period, we note that the ratio of domestic public debt to nominal GDP rose sharply in 1990-91. After declining in 1992-96, it rose again in 1997. We also note that during the entire period 1990-1997, foreign debt was falling as a ratio to GDP. The primary deficit in the government budget was also falling steadily in relation to GDP over the same period. From equation 6 it should follow that  $(r^* - g^*) > 0$  for the years 1990-91 and 1997.<sup>14</sup> The government must have been incurring new domestic debt to refinance interest payments accruing to existing debt in those years.

**Why Did Domestic Public Debt Accumulate.** How do we explain the accumulation of domestic public debt observed in the previous section? Before we proceed to answer this question, distinction must be made between new debt instruments and old ones. New debt instruments were essentially two: treasury bills and treasury bonds. These were by far the fastest growing, and they are both related to increased private capital inflows

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<sup>14</sup> Actually, the real interest rate exceeded the real growth rate during 1990/91-1993/94. See Subramanian, 1997: Table 1.

to Egypt since 1991. It should be observed that Egypt shared the experience of many developing countries which witnessed net private capital inflows and net official capital outflows simultaneously (Dooley et al., 1996).

Against this background, we may suggest two main factors to explain the accumulation of public domestic debt: the new fiscal stance under ERSAP, characterized by the desire to avoid recourse to monetary financing of domestic debt; and the sterilization of large capital inflows to maintain monetary targets under ERSAP. This implies that a comprehensive external/internal perspective must be followed in order to provide a good understanding of the factors causing domestic-debt accumulation in Egypt.

*The Internal Factors.* The new fiscal stance under ERSAP rested on curtailing fiscal deficit, and using real resources to finance the deficit. As a result, government borrowing from the NIB more than tripled between 1991 and 1997 (rising from LE 27.3 billion to LE 87.8 billion). On the other hand, the outstanding stock of treasury bills and bonds rose more than tenfold during the same period.<sup>15</sup> This led to a sharp jump in interest rates,<sup>16</sup> which in turn fueled more debt, according to the debt-dynamics equation discussed above.

In addition, the tighter monetary policy adopted under ERSAP generated additional pressures on the domestic interest rate, and thus augmented the impact of the tough fiscal stance on that score.

*The External Factors.* The main factor here is the easier monetary policy of the industrial countries. Such policy resulted in sharp decline in the interest rates (Kuczynski, 1992). For example, US dollar 3-month LIBOR rate fell from 8.3% in 1990 to 6.0% in 1991 and further to 3.5% in October 1992. A surge in capital inflows to developing countries also took place in the early 1990s (Fernandez-Arias and Montiel 1996; Kuczynski 1992; Corbo and Hernandez 1996; Dooley et al. 1996). Thus, the average annual net

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<sup>15</sup> Increased government borrowing at such rates may be reminiscent of Egypt's fiscal experience with the debt debacle of the late nineteenth century.

<sup>16</sup> As domestic interest rates started rising, foreign interest (90-day CD in the US) happened to be falling. The domestic-foreign interest differential peaked at 14 percentage points in the fourth quarter of 1991 and the first quarter of 1992. See World Bank 1995, Table 1.5.

inflow of private capital to all developing countries rose from US \$40 billion for 1982-89 to US \$90.0 billion for 1990-93 and to US \$163.0 billion for 1994-95 (Fernandez-Arias and Montiel 1996; World Bank 1996, vol.1). There are many reasons for the surge in private capital inflows to developing countries. Basically, analysts tend to favor one of two views: the push view and the pull view. The push view stresses the impact of lower rates of return in industrial countries, while the pull view emphasizes the improved domestic policy environment in developing countries.

Applying this framework to the Egyptian case, we find that both the push factors and the pull factors are at work. They produced net capital inflows to Egypt at unprecedented rates, mainly in the form of foreign portfolio investment (FPI) (Abdel-Khalek 1998). The recent reappraisal of Egypt's risk-return outlook<sup>17</sup> provoked significantly larger inflows of portfolio investment. With liberalization of capital transactions in the balance of payments and maintaining a nominal anchor, uncovered interest arbitrage proceeded in full swing. We have already discussed this issue in detail in 1995, and anticipated the more recent surge in portfolio capital inflows to Egypt (Abdel-Khalek 1995).

We would like to re-iterate here that the policy response to large portfolio capital inflows has been to sterilize such inflows in order to avoid unwarranted increase in the monetary base. The end result was accumulation of international reserves parallel with the accumulation of domestic public debt. But this process essentially involves a strange asset swap: exchanging high-yielding domestic assets for low-yielding foreign assets. As already mentioned, it looks like the government is borrowing long and lending short. There is necessarily a fiscal cost involved, which tends to redistribute income from the poor to the rich. We shall deal with this issue later, but it is perhaps telling to refer to the World Bank's designation of recent large capital inflows to Egypt as an "embarrassment of riches" (World Bank 1997). As we shall demonstrate later, it amounts to taking from the have-nots to give the haves.

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<sup>17</sup> Standard and Poor's gave Egypt BBB- long-term debt rating in January 1997. Moody's gave Egypt a sovereign-debt rating of Ba2. Moreover, the IFC decided to add Egypt to its global composite index of emerging stock markets, starting January 1, 1997. In addition, the crisis in the financial markets of South East Asia may have pushed some capital to take refuge in Egypt.

## Consequences of Domestic Public Debt Accumulation

**Theoretical Framework.** The domestic public debt has many consequences. There are economic effects: on the level and growth of GDP, on the relation of investment to saving, on the interest rate, the exchange rate and relative prices, particularly tradables vs. non-tradables. The list of economic effects may actually be longer. There are also social consequences of domestic public debt. Of these consequences, we may distinguish in particular income distribution between relevant social groups (classes) and between generations. Interaction of various aspects complicates the analysis and ideally calls for some type of general-equilibrium approach. This is particularly so, since debt is only one alternative means of financing public expenditure, other alternatives are money creation (seignorage) and taxation.

Our analysis in this part of the study will focus on the relation of domestic public debt to social expenditure. Before we discuss this, it is necessary to clear up some confusion in the current debate on domestic public debt in Egypt, especially with respect to the old issue of the burden of debt. It is often maintained that unlike public external debt, domestic public debt does not represent a burden on the national economy. Such confusion is reflected in official statements and even some technical reports dealing with the issue of domestic public debt. Thus, one reads in the Fiscal Statement by the Minister of Finance regarding the budget proposal for 1997/98 that:

*Internal public debt--in contrast with external public debt--is not a burden on the national economy; its role is confined to transferring part of the national income from the hands of lenders to the government. It therefore does not increase the burden on national net worth. In addition, it involves using real savings with no inflationary effects. (Ministry of Finance 1997:27) (emphasis added)*

This same statement was repeated, almost *verbatim*, in a recent technical report (The National Council for Production and Economic Affairs 1997:22).

Such statements echo what Buchanan, forty years ago, called the new orthodoxy of public debt. At that time, he strongly attacked its intellectual and scientific foundations. Such orthodoxy was based on three basic propositions: (a) the creation of public debt does not entail any transfer of

primary burden to future generations; (b) in all essential aspects, the analogy between public debt and private or individual debt is fallacious; and (c) a sharp distinction exists between internal and external public debt (Buchanan 1958:4). Buchanan showed, quite convincingly, that:

- a. The primary real burden of a public debt is shifted to future generations.
- b. The analogy between public debt and private debt is fundamentally correct.
- c. The external debt and the internal debt are fundamentally equivalent.

These three propositions constitute the crux of the general (pure) theory of public debt. Proposition (c) implies that internal public debt, just as external debt, imposes a burden on the national economy. If proper accounting is made of the combined public debt/public spending operation, internal and external debts are equivalent in terms of the real burden on the national economy. The real burden of debt is the opportunity cost of public goods financed by such debt, whether the latter is internal or external.

It is the arbitrary treatment of interest payments according to the post-Keynesian convention of national economic accounting that leads to the false proposition that only external debt imposes a burden on the economy while internal debt does not. According to this convention, interest payments are part of national income only if paid to non-residents (foreign holders of debt); they are transfer payments if paid to residents (national holders of debt). On the other hand, interest payments on internal private debt are included in national income although they are very much like interest payments on internal public debt. In both cases, such payments involve transferring income from individuals in their capacities as debtors to individuals in their capacities as creditors. This reveals the arbitrariness of national accounting treatment, which should not camouflage the burden of internal public debt. Posner calls this view (that domestically-held debt imposes no burden on future generations) the *naive* view (Posner 1987).

Distinction is made between two types of burden of public debt, the primary and the secondary burden. The primary burden represents the opportunity cost of the goods financed by the debt. Debt creates an institutional means of moving that opportunity cost forward in time. The

primary burden of debt is thus located in periods subsequent to that of debt issue (Buchanan and Wagner 1967:28-9).

It should be noted however, that if we focus on analyzing the burden of public debt outstanding, then internal debt may be less burdensome than external debt of equal size, other things being equal. This is because in the case of external debt, terms of trade of the country may deteriorate as a result of repayment. This is the familiar transfer problem, which does not arise in the case of internal debt. This is not to say that internal public debt, unlike external debt, does not impose any burden. In fact, the transfer problem distinguishes internal debt, both private and public, from external debt.

Having shown the fallacy in the official position with regard to the burden of domestic public debt, we now turn to analyze its effects. We start by examining the requisite conceptual framework. The discussion here is in the context of the Egyptian case. Given the level of external debt, the accumulation of domestic public debt is the result both of budget deficit (which consists of both the primary deficit and interest payments) and sterilization. This latter source of debt accumulation assumed particular importance during episodes of large capital inflows, such as 1992-94 and 1996-97.

We limit our discussion of the consequences of domestic public debt to the effect on the main variables. In particular, we focus on the following: interest rate; investment, consumption and growth; and the re-distributive effects. According to our aforementioned analysis, domestic debt accumulation affects *growth* and *equity* through a chain of direct and indirect effects. Thus, debt accumulation affects growth directly through its effect on investment or indirectly *via* the interest rate. The ultimate effect of debt accumulation on growth is uncertain *a priori*.

Debt accumulation affects equity (income distribution) indirectly through its effect on consumption and the interest rate. The effect on consumption may be either positive (when debt is used to finance the production of public goods) or negative (if debt results in higher savings). The effect of consumption on equity may go either way, depending on whether public goods financed by debt provide for the needs of the poor or cater to the wants of the rich.

In addition to the above, there is also the effect of debt accumulation on money supply, and the relation of both the nominal anchor and the inflation

target (the two are important aspects of ERSAP) to real appreciation (non-tradables/tradables terms of trade). The resultant impact of the various variables on the trade deficit is also important, but not discussed below.

**(a) Effect on Interest Rate.** In theory, fast accumulation of domestic public debt may drive down the price of securities, and hence raise interest rates--other things being equal. If, however, the supply of loanable funds increases, then domestic interest rates may even fall. This could happen under capital mobility with an initially significant domestic-foreign interest rate differential. Compared with tax financing of public expenditure of comparable size, internal public debt financing implies higher interest rates. Depending on the rate of growth, this may produce Domar type instability--given the rate of inflation. Higher interest rates in turn, and in a second round, may discourage private investment. Hence, debt finance may result in a lower level of the capital stock compared to tax finance. Moreover, it may trigger large capital inflows, further constraining the conduct of fiscal policy and/or exchange rate and monetary policy.

**(b) Effect on Investment and Capital Stock.** Classical economists were in general opposed to deficits and a large public debt (Mundell 1993:34). They expressed deep concern about the effect of domestic public debt on investment and the capital stock. For Adam Smith, David Ricardo, and John Stuart Mill, debt finance would be paid out of investment. Public debt, therefore, involves a reduction in investment and leaves society with a lower capital stock compared to tax finance. In fact, classical economists, particularly Pigou, emphasized the injurious effect of a large public debt on what they called the national dividend (GDP in today's jargon). According to their view, such large debt generates expectations of higher taxes necessary for its service thereby reducing the individual incentive to work and leading to a lower level of GDP. This is a supply side argument against excessive levels of public debt.

Fast accumulation of domestic public debt (either to finance the budget deficit or to sterilize the liquidity expansion of capital inflows) pushes up real interest rates if they are not controlled. This raises the user cost of

capital<sup>18</sup> and reduces the profitability of investment (Easterly and Schmidt-Hebbel 1993).

There is also likely to be a negative impact of domestic public debt on investment and the rate of capital accumulation, based on the crowding out thesis. According to this argument, funds for the purchase of public-debt instruments (government securities) are more likely to involve diversion from financing investment in the private sector than are equivalent funds collected through taxes. In other words, compared to tax financing, debt financing entails a relatively larger cut in private investment expenditure (and hence a relatively smaller cut in private consumption expenditure). *Ceteris paribus*, under debt finance, the rate of economic growth is therefore likely to be slower than under tax finance.

**(c) Public Debt and Distribution.** The relationship between public debt and distribution has always been at the center of both academic and public debates. The classical economists paid a great deal of attention to this relationship.<sup>19</sup> According to Pigou, three dimensions of distribution may be distinguished: distribution between present and future generations; distribution between people with equal wealth but different liquidity; and distribution between people who are wealthy and those who are not. Ignoring the second dimension, the other two are known in contemporary language as inter-temporal and inter-personal distribution.

With regard to inter-temporal distribution, the classical economists were of the view that public debt to finance a given expenditure does not involve any more burden on the future generation than a tax financed expenditure of equivalent amount. Under the debt alternative, people will adjust by reducing their consumption to foot the future tax bill necessary to pay the debt. This is the familiar Ricardian equivalence.<sup>20</sup>

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<sup>18</sup> The user cost of capital is determined by the real interest rate and the price of investment goods-given investment incentives.

<sup>19</sup> More broadly, they argued that tax finance comes out of consumption while debt finance comes out of investment. Pigou took issue with this proposition, however, arguing that it is valid only under the possibility of foreign borrowing (Mundell 1993:45).

<sup>20</sup> As is well-known, Ricardian equivalence rests on a number of strong assumptions; in particular, perfect foresight and perfect capital markets.

As to the inter-personal distribution, the alternative of financing public expenditure through debt (as compared to taxes) has clear consequences. We have to admit, however, that this issue is very complicated, and may best be approached by making some distinctions and assumptions. Distinction must be clearly made between the pure *fiscal aspects* and the *economic aspects*. Distinction should also be made between *voluntary* and *involuntary* public debt. We also assume that the government will not default on debt, and will always honor its obligations.

Let us deal with the fiscal end of the issue of the effect of public domestic debt on income distribution between classes or groups of the population. At the fiscal level, and regardless of the purpose for which public debt is being contracted, the government collects debt proceeds from lenders in return for a promise to pay the principal plus interest. We assume that repayment of principal (installments) is exactly equal in value (equivalent) to the loan,<sup>21</sup> so that interest payments represent net gain to the borrower.

Under these assumptions, issuing domestic public debt today means imposing taxes tomorrow to finance interest payments. In the case of voluntary debt, we should expect buyers of government securities to be the rich individuals, who have a surplus on hand. The interpersonal distributive effect of debt will depend on the nature of the tax system. If the tax system is progressive, the tax burden will fall largely on the rich. In this case, the re-distributive effect of domestic public debt will be minimal. If, on the other hand, the tax system is regressive, then the issuing of domestic public debt will entail a redistribution of income from the poor to the rich.

Take the case where debt is involuntary. The fact that it is involuntary may actually imply that debt terms may be less competitive, meaning that the government may pay below market interest rates.<sup>22</sup> If the proceeds of debt collected in this fashion are used to finance public investment projects, then there may be interpersonal redistribution, depending on the most likely beneficiaries of such projects. This will be so regardless of the nature of the tax system.

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<sup>21</sup> Say, through indexation.

<sup>22</sup> It may also imply that the government may unilaterally decide to roll the debt over indefinitely, never paying it. But we assume away that possibility.

**Application to the Egyptian Case.** The assessment of the various consequences of the accumulation of domestic public debt in Egypt's case ideally calls for both identification of such consequences and measurement of their respective magnitudes. Naturally, the consequences will depend, among other things, on the level and structure of debt. We recall from a previous section that in terms of structure, Egypt's domestic public debt has the following characteristics:

- It is predominantly government debt, with clear evidence of over-borrowing since the start of ERSAP.
- The share of marketable debt (listed securities) is rather trivial. Despite some increase in the second half of the 1990s because of the introduction of treasury bonds 2000 and 2003, domestic public debt remains overwhelmingly non-marketable.
- In the 1990s, domestic public debt has become less securitized and less marketable.
- Government debt to the NIB has quadrupled during the 1990s, with its share in total government debt doubling between 1991 and 1997.
- During the 1990s, the government has accumulated a significant creditor position *vis-a-vis* the banking system. Borrowing long and lending short clearly involves a fiscal cost.
- It is largely involuntary, and hence not short term, but the voluntary short-term component (treasury bills) has been steadily rising.

Applying the theoretical analysis to the Egyptian case must also account for such factors as capital mobility, nominal anchor, and sterilization. Our previous analysis has underscored the importance of capital inflows and ensuing sterilization as a new and, in a sense, unique cause of domestic public debt accumulation. In this context, there is a danger of a domestic debt-capital inflow spiral, with all the attendant consequences.

In view of the purpose of the present study, we shall deal with the consequences of the accumulation of domestic public debt in Egypt under two headings: growth and equity.

**(a) Effect on Growth.** The relation between growth and domestic debt accumulation, as we have seen, is very complex and roundabout. Domestic public debt impacts on growth *via* its effect on the rate of capital accumulation (investment). Investment is affected by domestic debt accumulation both directly and indirectly. Directly, debt accumulation generates two opposing forces on investment. One is positive by financing of public projects either in direct production or in infrastructure. The other is negative by crowding out private investment in the market for credit. The nature of the resultant direct effect of domestic public debt on investment may be hard to ascertain on *a priori* grounds. Indirectly, domestic debt accumulation raises interest rates, *ceteris paribus*, and results in slower growth.

It is more likely, therefore, that the accumulation of domestic public debt in Egypt has been inimical to growth. Nevertheless, we have to look at the evidence to examine this hypothesis.

From an institutional point of view, domestic public debt is made up of two parts: government debt and National Investment Bank (NIB) debt (see identity c.1 in Appendix C).<sup>23</sup> During the 1990s, the ratio of the first to the second averaged 9:1.

Table 3 provides data on the breakdown of domestic government debt into its two main components: government securities and government debt to the NIB, and the residual component, government balances with the banking system. The latter has been negative since 1992, signaling a creditor position for the government. This is a derivative of stabilization cum-sterilization under ERSAP, which is closely related to treasury bills placement. It may have a negative direct effect on investment and growth to the extent that it crowds out private investment and also *via* its upward pressure on the interest rate.

For the purpose of analyzing the two main components of domestic public debt, *viz.* government securities and government debt to the NIB, we exclude government balances with banks. Accordingly, we find that as an average for the entire period 1985-1997, government securities (including

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<sup>23</sup>Some sources often forget this important aspect and identify domestic public debt with government domestic debt. Such treatment excludes NIB debt, which, *stricto sensu*, is public debt. See People's Assembly, 1998, p.43.

treasury bills) represent 63% of domestic public debt.<sup>24</sup> The share of government debt to NIB is only 37%. It is clear that the larger part of domestic public debt was not used for investment purposes.<sup>25</sup>

It should be noted that NIB debt is only a minor part (about 20%) of its total resources; the bulk is relented to the government to finance investment projects. NIB is just an investment fund.<sup>26</sup> It largely finances investment projects (about 74% of its resources on the average for the 1990s) but also allocates capital transfers to public enterprises and authorities (26%) (see Table 4).

Regarding investment finance, there was a clear shift during the 1990s away from projects of economic agencies and units to investments in public administration (central and local) and services. In the early 1990s, more than 50% of investment finance was for economic projects. This was reduced to only one third by 1997. Less emphasis in the NIB finance of investment was placed on economic sectors, and correspondingly more emphasis was placed on service and administration projects. Thus, although domestic debt funneled through the NIB must have contributed to GDP growth, such contribution was in fact declining during the 1990s. The other part of NIB financing, i.e., capital transfers, is far less related to investment than the financing of projects.

We may conclude, therefore, that there is certainly *some contribution* of part of domestic public debt to investment. In view of the shift of focus from economic projects to administration and service projects, the contribution of domestic debt to growth on that score is waning. In justification of the magnitude of domestic public debt, the argument is often made that it was largely used to build infrastructure and other vital projects for the economy (Ministry of Finance 1997:27). Hence, domestic public debt, so the argument goes, has counterpart assets of national wealth, which

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<sup>24</sup> This certainly has equity implications, as we shall demonstrate shortly.

<sup>25</sup> The shares may be closer to 60-40, since government securities include national development bonds and housing bonds, whose proceeds are earmarked for investment.

<sup>26</sup> It is the finance arm of the Ministry of Planning. According to Law 119/1980, its purpose is to finance all projects included in the plan for economic and social development. Although NIB has its own legal entity, it operates directly under the Planning Minister.

such debt was in most part devoted to financing. As we have shown, available evidence hardly corroborates such a claim.

**(b) Effect on Equity.** We argue in this part of the study that the accumulation of domestic public debt, particularly during the period of ERSAP, involves a two-way redistribution. At one level, it involves redistribution from Egyptians to foreigners. At another level, it involves redistribution from poor Egyptians to rich Egyptians. In support of this thesis, we present the following:

(i) The short-term part of domestic debt (treasury bills) grew extremely rapidly between 1991 and 1998. In fact, it was by far the fastest growing component of domestic public debt. It rose eightfold between 1991 and 1997. The driving force of such increase was not the need to cover the fiscal deficit, but the requirement to maintain monetary aggregates under ERSAP.<sup>27</sup> The mechanics of this process was discussed above and elsewhere (see Abdel-Khalek 1997; Schadler 1994; and World Bank 1997). In this section, we focus on its distributional/equity implications.

Since the beginning of ERSAP, Egypt experienced two strong waves of large capital inflows (Subramanian 1997). The first wave spanned the years 1991/92-1993/94, and the second wave started in 1996/97 and appeared to continue through early 1998. The magnitude of the inflows, according to some estimates, averaged 4.5% of GDP per year during the first wave (Subramanian 1997). According to preliminary data for the balance of payments for 1996/97, capital inflows may top \$2 billion (CBE 1997a:112-13). This is mostly portfolio capital from institutional investors (IMF 1997:26). As shown in Annex I, the outstanding stock of treasury bills rose from LE 4.0 billion in 1990/91 to LE 35.2 billion in 1993/94, mainly because of sterilization. Based on the interest differential between TB rates and equivalent US short-term rates for the period, the direct fiscal cost comes close to 4% of GDP. For 1996/97, the interest differential is about 5 percentage points. This produces a direct fiscal cost of sterilization of LE 0.1

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<sup>27</sup> Subramanian (1997) argues that the issuance of t-bills at such a rate may also be partly explained by the desire of the government to shore up the banking system.

billion, or 1.4% of GDP.<sup>28</sup> To the extent that these capital inflows belong to non-residents, a proportionate part of such direct fiscal cost of sterilization gives an indication of the order of magnitude of redistribution from Egyptians to foreigners through the accumulation of short-term domestic public debt (treasury bills).<sup>29</sup>

The surge in capital inflows beyond 1996/97 fueled a substantial increase in the stock of treasury bills outstanding-rising by LE 9.5 billion during July-September 1997. This represents a 28.7% increase in the stock of TBs in just one quarter. Net issues of treasury bills in 1996/97 totaled LE 5.849 billion and government net deposits with banks rose by almost the same amount (CBE 1997a:19).

(ii) The most important component of long-term domestic public debt in Egypt in recent years has been debt to NOIP and GASI. It has been steadily rising both in absolute and relative terms, accounting for 46.5% of the total domestic public debt in 1997 (see Annex I). During the 1990s, it accounted for 58% of NIB resources<sup>30</sup> and was used for financing long-term investment projects. To examine the equity implications of this part of Egypt's domestic public debt, two aspects are particularly relevant. One is the identity of the social groups/classes that benefit most from the investments financed by these funds. The other is the terms according to which such funds were mobilized.

Regarding the first aspect, the identity of the beneficiaries of the investment projects depends on the nature of such projects. If the projects address the needs of the particular social group more than others, then it can be said, admittedly vaguely, that the project concerned will have equity implications. Obviously, much will depend on the definition of the project and the identification of the social group. Although NOIP and GASI surplus funds are largely used in financing, through the medium of NIB, investment projects as we discussed above, there are no data available at the project

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<sup>28</sup> This estimate of the fiscal cost of sterilization neglects the increase in the cost of other domestic debt components as a result of sterilization.

<sup>29</sup> It is widely believed that the first wave of inflows represents both capital repatriation by residents and funds of non-residents while inflows of the second wave belong largely to non-residents (data are extremely scanty).

<sup>30</sup> Based on information in the *Annual Follow-up Report* of the NIB for the years 1990/91-1996/97.

level. Rather, we can only observe data on the investment program of the government according to the plan for economic and social development and the contribution of NIB to this program. Such contribution, as shown in Table 4, has fluctuated widely during the 1990s (ranging from 38.8% to 61.2%). While non-availability of data on the specific projects financed through NIB makes it difficult to assess the equity implications of this component of domestic public debt, it can be indirectly inferred from examining the government overall investment program.

Table 5 gives some data bearing on the issue of gauging the equity implications of that component of domestic debt which belongs to NOIP and GASI. We have recorded in that table the pattern of allocation of available finance for investment projects in the plan during the 1990s.<sup>31</sup> The five most important sectors were identified each year. Four areas seem to dominate consistently during the entire period: housing and new urban communities, transport and communication, electricity and energy, and education. The leading sectors in terms of finance allocations out of domestic public debt are infrastructure and education.

Barring any evidence to the contrary, it may be construed that the benefits of education projects accrue to all various social groups. After all, education is a public good to a large extent. With regard to infrastructure projects, although in principle they benefit the population at large, we may safely assume that the rich stand to benefit more than the poor. By their very nature, public investment allocations for transport and communication, electricity and energy, and housing and urban development cater to the demand of the rich more than the needs of the poor.

It is remarkable that education has consistently claimed second position in terms of available finance for investment; available finance for this sector has doubled in relative terms over the five years 1993-1997 (rising from 7.5% to 15.2%).<sup>32</sup> From a human development perspective, this is a significant achievement.

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<sup>31</sup> Note that the data in Table (5) are for *available* finance, *not planned* finance, of investment. But as shown in the very last row of the table, available finance averages about 96.1% of planned finance. So planned finance is almost fully available.

<sup>32</sup> If investment finance allocations for higher education were included, the share of education would be higher--perhaps much higher.

On the other hand, more directly relevant for considering the equity implications of this component of domestic public debt is the soft financing provided through NIB. This covers such areas as low-cost housing in the individual governorates, new urban communities, cattle feeding, export projects, emergency housing in various governorates, housing companies, and industrial parks in governorates. Allocations for these purposes averaged LE 350 million annually during the 1990s--their share in total NIB investment finance amounted only to 4.4% on the average for the period 1991-1997. This share has been steadily declining over the period (see memo item in Table 5). The most important item in this list is low-cost housing projects at the level of the governorates, where subsidized loans are given to help governorates build housing units for their population. It may be said that, by and large, this part of domestic public debt, although rather proportionately small, addresses the needs of the poor or low income groups of the population.

It should be mentioned that until 1992, NIB also financed public-sector enterprises (PEs). With the promulgation of Law 203, NIB gradually dropped lending to PEs, but still has a significant exposure to them. According to Law 119/1980 (the legislation instituting NIB), NIB provides long-term financing to public investment projects listed in the Plan for Economic and Social Development. Until very recently, because of low cost funds from NOIP and GASI, interest rates charged to government and public authorities' projects and PEs were negative in real terms.<sup>33</sup>

(iii) For a long time, interest paid to both NOIP and GASI were non-competitive. According to NIB sources, until 1980 the fund for Investing Deposits and Social Insurance (the precursor to NIB) used to pay 4% per annum. Table 6 shows that NIB was paying 6% per annum over the period 1980-87. The rate was then raised during the 1990s, peaking at 12% per annum over the period 1992-97. It was then rolled back to 11% in July 1997. We have estimated the implicit tax to which social insurance funds were subjected under these arrangements. It should be noted that such tax was not only due to financial repression, which was a common practice right

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<sup>33</sup> NIB has increased its lending rates commensurately with the rise in interest rates on social insurance funds.

through the beginning of the 1990s. It was also the result of monopsonistic power vested in NIB by Law 119/1980.<sup>34</sup>

Table 6 compares interest rates paid to NOIP and GASI to the interest rate on investment certificates. We assume that the latter represents the opportunity cost of investing NOIP and GASI funds. It is interesting, though not necessarily surprising, that the implicit tax rate imposed on pensioners' funds exceeded 100% of their interest income over the decade 1980-1990. This greatly undermines the capacity of NOIP and GASI to provide for their contributors in old age.<sup>35</sup> The implicit tax rate on interest income of social insurance funds has declined since 1991 *pari passu* with the increase of interest rate paid by NIB on such funds. However, corresponding tax revenue for that period did not fall proportionately due to the continuous rise of NIB debt to NOIP and GASI.

For the entire period 1987-1997, the total amount siphoned from pensioners' money through implicit taxation totaled LE 16.778 billion.<sup>36</sup> In a sense, this part of domestic public debt involves a mechanism very much like a huge pump, taking financial resources from the poor, only to give the rich. This may serve as a close approximation of the order of magnitude of redistribution from owners of social insurance funds to the government. The latter is just an intermediary, which uses those funds to finance investment projects according to the development plan. We have already seen that at best, such projects broadly benefit the entire population. Perhaps there is redistribution in favor of the rich, who stand to benefit more from expenditure on infrastructure. The only exception might be expenditure on education, where the poor *may* benefit more from public investment.

Owners of social insurance funds are low income people, being workers and employees. In fact, they are identified as poor (Korayem 1991:32). TB holders, on the other hand, are mainly rich (see Table 7). We then conclude

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<sup>34</sup> According to the World Bank, financial-repression tax revenue averaged 5.7 percent of GDP in Egypt during 1988/89-1991/92. This is much higher than the equivalent for other developing countries in the early eighties, with the exception of Mexico. See World Bank, 1992, Vol. III, p.178.

<sup>35</sup> The Ministry of Insurance and Social Affairs claims that it covers the actuarial deficit of NOIP and GASI.

<sup>36</sup> The amount is definitely more than that, if account is taken of the period before 1987.

that the accumulation of domestic public debt financed by the surpluses of NOIP and GASI largely entails redistribution from the poor to the rich. One may venture to compare the lot of TB holders (the rich) and social-insurance funds owners (the poor) in the context of the specific characteristics of the Egyptian domestic public debt. The return on TBs is market-determined and tax free,<sup>37</sup> while the return on social-insurance funds (as we have already shown) is set by fiat.<sup>38</sup> The latter is a carry-over from the *statist* policy environment, and a truly curious remnant of the now extinct compulsory delivery system in Egyptian agriculture.

To conclude this part on the equity implications of Egypt's domestic public debt, we find it fitting to say that the accumulation of such debt has involved redistribution from the working class to the *clipping* class--to use a term coined by Keynes. Furthermore, to the extent that TBs are held by non-residents,<sup>39</sup> it may be said that there is also redistribution from the Egyptians to foreigners.

The relevance of this conclusion to social expenditure and human development cannot be escaped. Given the level of total budget expenditure, prospects of social expenditure depend, *inter alia*, on the prospects of domestic-debt interest payments (Zaytoun n.d.:63). To underline that aspect, we compare the evolution of interest payments on domestic debt with such socially significant items in the government budget as total current expenditure, wage payments, subsidies, and expenditure on education and health (see Annex II). Interest payments on domestic debt have claimed almost one-quarter of the total current expenditure in the government budget over the period 1993-95. From being about one half of the average subsidy expenditure prior to 1989, it has become 2-3 times the subsidy expenditure during the 1990s. In 1995, interest payments on domestic debt reached four

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<sup>37</sup> Until very recently, Law 5/1998 rescinded tax exemptions for income from TBs and bonds. Now income from these sources is subject to tax.

<sup>38</sup> This raises the thorny question of efficiency: how do the cost/benefit ratios compare? Does the large cost of borrowing *via* TBs (compared to social-insurance funds) have a commensurate larger benefit? These are interesting questions with clear bearing on debt management.

<sup>39</sup> This blurs the distinction between domestic debt and foreign debt, as we discussed above. It is more likely that holders' category V in Table 7 (other) includes non-residents: it is not banks or insurance companies or business sector or households. What else could it be? Institutional investors?

times current non-wage expenditure on education and health combined. In proportion to total wage payments, interest payments on domestic debt were equivalent to 42.5% during 1985-89, jumping to 85.1% during 1993-97. Put in a more telling way, for every pound paid to compensation of labor as wages through the budget, *twice* as much was paid as interest to domestic debt holders during 1993-97 compared to 1985-89.

### **Debt Management and Policy Options**

In general terms, debt management may have several objectives, such as minimizing the borrowing costs, achieving a balanced maturity structure, creating a secondary market for government securities, developing long-term instruments for private savings and improving the distribution of income (OECD 1982). Achieving these (or any other objective) calls for some course of action by the debt-issuing authority, which, in the case of public debt is the government or the Central Bank acting for it.

With regard to the Egyptian case, and on the basis of the foregoing analysis in this study, several of the above mentioned objectives may be relevant, and some of them have indeed been identified elsewhere (National Council for Production and Economic Affairs 1997; Ministry of Finance 1997; CBE 1997). We shall focus here on three objectives: reducing the size of domestic public debt to a reasonable level; restructuring the debt towards longer maturity marketable instruments; and redressing inequalities resulting from the extant methods of borrowing. We deal with each succinctly in the following way.

**Reducing the Size of Domestic Public Debt.** The main issue here is not the absolute size of domestic public debt, but the relative size—usually relative to GDP.<sup>40</sup> We have already shown that the ratio of domestic public debt to GDP has been rather high over the past decade, despite some fluctuations. We have also argued that the current ratio of domestic public

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<sup>40</sup> Some may object to this procedure, arguing that debt is a stock while GDP is a flow. But the objection may be easily answered by reference to the standard measure of GDP per capita as the ratio of flow to a stock. Further, debt as a stock generates an important flow: debt service.

debt to GDP is too high compared to the experience of other countries and to Egypt's own experience in this century. It resulted from the policy of monetizing the fiscal deficit in the second half of the 1980s, followed by the policy of sterilizing capital inflows during the 1990s.

In terms of the fiscal equation, such a high level of domestic public debt produces correspondingly large budget allocations for debt service. Such allocations, as we have already shown, compete with social expenditure in areas such as education and health. Reducing the level of domestic public debt helps release more resources for social spending *ceteris paribus*. However, that would require using policies other than sterilization to maintain monetary aggregates on target in the face of capital inflows.

There is only one way to reduce the absolute level of debt *viz.*, repayment. In terms of equation (3), this requires running a primary surplus larger than interest payments if monetary stability is to be safeguarded. Debt monetization has to be avoided, therefore, because of its inflationary potential.<sup>41</sup> Nevertheless, there are two ways to reduce the relative level of debt (the debt/GDP ratio). Consider the equation of debt dynamics (equation 6 above). According to this equation, the ratio of debt to GDP may be reduced either by raising the real growth rate of GDP or by lowering the real interest rate.

There is evidence that the Egyptian government recognizes the need to relieve the burden of debt service (see Ministry of Finance 1997; CBE 1997; National Council for Production and Economic Affairs 1997). However, the Government is yet to formulate a coherent debt-management policy with clear, specific, and monitorable objectives. One of the central questions here is related to the red line or the ceiling for the debt/GDP ratio. There is nothing definitive regarding this parameter in available policy documents.<sup>42</sup>

Furthermore, one of the means elected to reduce the absolute level of domestic debt is the use of net privatization proceeds to amortize part of

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<sup>41</sup> Debt monetization is the process whereby public debt is repaid on maturity or bought in before maturity (as a matter of policy) without a counterbalancing issue of new non-monetary debt. As a result, the money supply increases in the process.

<sup>42</sup> In fact, there are two factors that may render targeting a level of domestic debt in Egypt rather difficult. The first is the macroeconomic setting. The second is the automatic access of NIB to social insurance funds.

such debt (Ministry of Finance 1997). In this context, the productive assets of the public sector are being looked at as a sinking fund, to be liquidated for repayment of debt. There are problems with this solution, however. On efficiency grounds, it amounts to diverting resources from investment to consumption as far as it obviates the need for reducing unnecessary government consumption. There is no mechanism to ensure that domestic debt will not accumulate again to dangerous levels in the future. In addition, such solution may be detrimental to equity. This would apply particularly if privatization proceeds were used to repay debt in the form of treasury bills.

**Debt Restructuring.** Restructuring of domestic public debt is essential for at least three reasons. First, it is necessary in order to minimize the problem of debt management. To this end, restructuring would entail replacing short-term debt instruments with long-term ones. One cannot overestimate this point since the analysis in the previous sections of this study has indicated that the share of the short-term component of domestic debt (TBs) has been steadily rising. Although some steps have been taken by the government to replace TBs by longer-term securities, the move proved short-lived. Thus, 5-year and 7-year treasury bonds (TB bonds 2000 and 2003) were issued in April 1995 and September 1996, respectively, to replace one year TBs. Issuing the latter soon resumed, and the total stock of TBs actually rose at the end of September 1997 instead of falling.<sup>43</sup> A sensible debt-management policy would require discontinuing one-year TBs and reducing reliance on 3-month and 6-month TBs.

Second, restructuring of domestic debt is also essential to reduce the burden of debt service. There is a potential saving of interest payment if securities carrying high interest rates were replaced by new securities at the now lower interest rates. Third, restructuring domestic public debt by amortizing a part of TBs and replacing it with long-term securities is necessary for boosting financial intermediation. The step taken by issuing T-Bonds 2000 and 2003, both being marketable, is a welcome move towards better management of domestic debt. This process could and should be carried further by transforming existing non-marketable securities, which

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<sup>43</sup>One-year TB issuance totaling LE 2.4 billion was placed to amortize part of government securities covering the General Authority for Supply Commodities debt to public-sector banks (CBE 1997a, p. 20).

represent the overwhelming proportion of government securities, into marketable securities. At some stage, turning TBs into marketable paper should be entertained. That should help broaden the scope of open-market operations and facilitate the conduct of monetary policy.

**Redressing Inequalities Associated with Extant Methods of Borrowing.** Our analysis has shown that the larger part of Egypt's domestic public debt is involuntary. The discussion in the previous section has demonstrated that social insurance funds in particular have been forcibly, though legally, added to domestic public debt. As we have already shown, such method of borrowing by fiat has inflicted great losses on NOIP and GASI, and through these two institutions, on working people. In terms of implicit tax rate reflecting non-competitive, below-market interest rates on such funds, there is a slashing of interest payments of almost 100% for nearly a decade (Table 6). Such easy money may have encouraged over-borrowing by NIB--witness net deposits by the latter in the banking system.<sup>44</sup>

Restructuring of this component of domestic debt is long overdue indeed. It should entail breaking the monopoly power enjoyed by NIB in this regard. Naturally, a prerequisite for that is to change Law 119/1980 accordingly. In addition, restructuring has to involve securitization of the existing domestic debt owed to NOIP and GASI, a measure that has been recommended by the National Council for Production and Economic Affairs (The Council, 1997).

### **Concluding Remarks**

We have taken pains in this paper to verify the data regarding the total size and composition of Egypt's domestic public debt. Looking at the few tables, which are included here, may give the impression that the task was easy. It was not. The data originally obtained were invariably subjected to a great deal of scrutiny to insure that they represent the facts as accurately as possible. The main conclusions to be drawn from the foregoing analysis are the following:

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<sup>44</sup> Such net deposits averaged LE 4.54 billion a year over the period 1992/93-1996/97.

*First*, The stock of total domestic public debt has been rising consistently over the period 1981-97. The growth rate was not uniform, however. There was a distinct phase of acceleration in the late 1980s and early 1990s. The debt/GDP ratio peaked during this phase with two clear spikes. Curiously enough, the debt/GDP ratio viewed in Figure 2 over the entire period 1981-1997 gives the imagery of the back of Bactrian camel! Does 1996 represent a turning point? It is not unlikely since the Egyptian economy has just embarked on a new wave of capital inflows.

*Second*, Two different processes were behind the acceleration of debt accumulation: in the eighties it was the monetization of the fiscal deficit; in the nineties it was the sterilization of capital inflows. Throughout the period, the easy money of social insurance and pension funds also contributed to debt accumulation. The large net creditor position of the government vis-a-vis the banking system during the 1990s may be evidence of an over-borrowing syndrome.

*Third*, in terms of the Domar proposition, we presented evidence that the real interest rate exceeded the real growth rate in the early nineties which may explain the rise in the ratio of domestic debt to GDP during that period. During the earlier period of debt acceleration (the late eighties) the primary deficit may have been the driving force.

*Fourth*, we took issue with the official position that the domestic debt is not a burden on the national economy, showing that it echoed what Buchanan called the “new orthodoxy”, and noting that domestic debt has a burden which is located in the future.

*Fifth*, in terms of structure, domestic debt has become of shorter maturity, less securitized and less marketable. Treasury bills in particular have assumed an alarming proportion, engendering a Ponzi-type situation.

*Sixth*, domestic debt, particularly through the NIB, appears to have contributed to investment and growth. But that contribution is too modest to

justify the argument often made that debt was largely used to build infrastructure and other projects vital for the economy.

*Seventh*, in terms of its equity and social expenditure implications, domestic debt has definitely redistributed income in the wrong direction: from the poor to the rich, and from Egyptians to foreigners. NIB borrowing from social insurance and pension funds has involved siphoning off close to LE 17 billion of these funds since 1987. The amounts may be higher still if we consider the preceding period back to 1980 (when NIB was established). This, in effect, is taxation without legislation. As we have demonstrated in this paper, the projects financed through NIB do not exclusively benefit the owners of insurance and pension funds, who are actually made to foot most of the bill for such projects. This amounts to the pauperization of working people in old age.

*Eighth*, Government sales of TBs to mop up liquidity resulting from capital inflows involved a high fiscal cost. That fiscal cost was borne by the tax-paying Egyptians to the benefit of rich Egyptians and foreigners.

*Ninth*, domestic-debt interest payments are crowding out budget allocations for investment and social expenditure. Interest payments on domestic debt have been rising faster than either wages or current expenditure. Since the former are legal obligations while the latter are more of political obligations, the government may opt to sacrifice the latter under pressure of a fiscal crunch.

*Tenth*, domestic debt management has to target a reduction in the size of debt, restructuring it towards longer-maturity, securitized, marketable instruments and redressing the inequalities associated with the extant methods of borrowing. Foremost is the need to break the monopoly power bestowed upon the NIB by Law 119/1980. That law has to change.

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## APPENDIX A

### A NOTE ON GDP DATA

GDP figures are highly important in themselves. They acquire special importance in the context of public-debt analysis. The debt/GDP ratio is the most widely used indicator of the incidence of debt. By construction, such ratio is critically sensitive to the value of the denominator- GDP. The value of GDP becomes even more crucial for making inter-country comparisons of debt/GDP ratios as we do in an earlier section.

In light of the above, the GDP figures in Annex II deserve some explanation. The GDP figures for 1981-1993 are from the World Bank, *World Tables 1995*. For the remaining years, 1994-97 we only have Ministry of Planning (MOP) figures since the *World Tables* were discontinued. Upon examination, GDP figures for 1994-97 appeared significantly out of line with figures for the previous years. If we compare MOP data on GDP at current prices for 1988-93 with those of *World Tables 1995*, we find them consistently higher by some 17.5% on the average. For 1995, they would produce a per capita GDP figure of LE 3511 or US\$ 1039. This is much higher than the figure of US\$ 790 for the same year as reported in the World Bank *World Development Report 1997*.

We therefore assume that the same trend holds for 1994-97, and hence adjust MOP figures for these years down proportionately to bring them in line with GDP figures for the earlier years. We used a factor of adjustment of 0.852 for this purpose. The result was the GDP series in column (2) of the table Annex II.

It should be noted that the unadjusted MOP figures for GDP would produce a domestic debt/GDP ratio of 66.6% for 1997 compared to 78.2%, which is the value reported in the text (see Table 1).

## APPENDIX B

### Mathematical Derivation of Debt Dynamics

#### 1. Discontinuous Case:

The change in the public sector debt B ( both external and domestic) between two time periods (years) t and t-1 is given by the government budget constraint:

$$B_t - B_{t-1} = r_t B_{t-1} + D_t + a_t B_{t-1} \dots\dots\dots (B.1)$$

Where:

$r_t$  = average nominal interest rate on public-sector debt.

$D_t$  = Primary deficit (Public Sector Borrowing Requirement-PSBR, net of interest payments)

$a_t$  = revaluation effect on existing debt ( due to changes in the effective exchange rate and in the market value of public debt).

Dividing eq. (1) through by GDP,  $Y_t$ , we get

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_t} = r_t \frac{B_{t-1}}{Y_t} + \frac{D_t}{Y_t} + a_t \frac{B_{t-1}}{Y_t}$$

$$\frac{B_t}{Y_t} = (1 + r_t + a_t) \frac{B_{t-1}}{Y_t} + \frac{D_t}{Y_t}$$

Multiplying the first term on the right -hand side by  $\frac{Y_{t-1}}{Y_{t-1}}$  and re-arranging, we get:

$$b_t = (1 + r_t + a_t) b_{t-1} / (1 + g_t) + d_t$$

where  $g_t$  is the nominal GDP growth between t & t-1. Subtracting  $b_{t-1}$  from both sides.

$$b_t - b_{t-1} = (1 + r_t + a_t) b_{t-1} / (1+g_t) - b_{t-1} + d_t$$

$$b_t - b_{t-1} = (r_t + a_t - g_t) b_{t-1} / (1+g_t) + d_t$$

$$\Delta b_t = (r_t + a_t - g_t) b_{t-1} / (1+g_t) + d_t \dots \dots \dots (B.2)$$

Assuming that there is no revaluation effect on existing debt ( $a_t=0$ ),  
and

putting  $g_t = p_t + \dot{g}_t$  and  $r_t = p_t + \dot{r}_t$

where  $\dot{g}_t$  = real GDP growth rate

$p_t$  = change in GDP deflator,

$\dot{r}_t$  = real interest rate,

we obtain

$$\Delta b_t = d_t + (\dot{r}_t - \dot{g}_t) [ b_{t-1} / (1+g_t) ] \dots \dots \dots (B.3)$$

Our basic equation will thus be:

$\Delta b_t = d_t + (\dot{r}_t - \dot{g}_t) b_{t-1} / (1+g_t)$
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It follows that, given the primary deficit,  $d_t$

$$\Delta b_t \left. \begin{array}{l} > \\ \cong \\ < \end{array} \right\} 0 \text{ as } (\dot{r}_t - \dot{g}_t) \left. \begin{array}{l} > \\ \cong \\ < \end{array} \right\} 0 \quad (B.4)$$

Equation (4) indicates that , in this case, there are two causes for the increase in the ratio of public-sector debt to GDP ( $\Delta b_t$ ): the primary

deficit ( $d_t$ ) and the high real interest rate ( $r_t$ ) in excess of real GDP growth ( $g_t$ ).<sup>1</sup>

## 2- Continuous Case:

We can approach this problem alternatively as follows, using continuous rather than discontinuous change:

Define the following:

$B$  = Public debt ( both external and domestic )

$G$  = Government expenditure (excluding interest payments)

$T$  = Government revenue

$(G-T)$  = Primary deficit ( $D$ )

$r$  = nominal interest rate on public debt.

Neglecting money financing (seignorage), the change in public debt may be defined as equal to the overall budgetary deficit. The latter is composed of the primary deficit and nominal interest payments.

$$\frac{dB}{dt} = (G - T) + rB \quad (B.5)$$

Measuring debt as a ratio to nominal GDP,  $Y$ , we derive the formula for the change in the ratio of debt to GDP ( $B/Y$ ):

---

<sup>1</sup> If revaluation effects were present, then  $r$  would be interpreted as the real effective interest rate.

$$\begin{aligned} \frac{d(B/Y)}{dt} &= \frac{Y(dB/dt) - B(dY/dt)}{Y^2} \\ &= \frac{Y[(G-T) + rB] - B(dY/dt)}{Y^2} \\ &= \frac{(G-T) + rB}{Y} - \frac{B(dY/dt)}{Y^2} \end{aligned}$$

Put  $B/Y = b$  and  $\frac{(dY/dt)}{Y} = g = p + \dot{g}$

$$\frac{db}{dt} = \frac{G-T}{Y} + rb - b(p + \dot{g})$$

Put  $d = \frac{G-T}{Y}$  and  $r = p + \dot{r}$

$$\frac{db}{dt} = d + b(p + \dot{r}) - b(p + \dot{g})$$

$$\boxed{\frac{db}{dt} = d + b(\dot{r} - \dot{g})}$$

(B.6)

Note that  $\dot{r} > \dot{g}$  leads to interest-debt spiral.

## APPENDIX C

### THE ANATOMY OF DOMESTIC DEBT

It is necessary for the analysis in the body of the study to lay down some basic relations among the various components of Egypt's domestic public debt. We use the following identities:

- (c.1)  $DMDBT = TGDBT + IBDBT$
- (c.2)  $TGDBT = TGS + GBLN + GIBD$
- (c.3)  $IBDBT = TIBR - GIBD$
- (c.4)  $TIBR = ICRTF + SIFG + SIFB + PSTS + IBLN$
- (c.5)  $LSEC = DVB1 + HSB1 + TRB2$
- (c.6)  $NLSEC = TRB1 + DVB2 + ENB + CBB + ACT + HSB2$   
 $+ GVB + ICRTF + TBS$
- (c.7)  $DEP = SIFG + SIFB + PSTS$

Where :

$DMDBT$	= domestic public debt
$TGDBT$	= total government debt
$IBDBT$	= National Investment Bank debt
$TGS$	= Government securities (including treasury bills)
$GBLN$	= Government balances with banking system
$GIBD$	= Government borrowing from NIB
$TIBR$	= Total NIB resources
$ICRTF$	= Sales proceeds of investment certificates
$SIFG$	= Social Insurance Fund for Government Employees
$SIFB$	= Social Insurance Fund for Business Sector Employees
$PSTS$	= Post Office Fund savings
$IBLN$	= NIB balances with banking system
$LSEC$	= Securities listed on the stock exchange
$DVB1$	= Dollar development bonds, listed
$HSB1$	= LE housing bonds, listed
$TRB2$	= LE treasury bonds (2000 & 2003), listed
$NLSEC$	= Securities not listed on the stock exchange

TRB1	= treasury bonds , not listed
DVB2	= dollar development bonds, not listed
ENB	= alternative-energy bonds, not listed
CBB	= bonds for recapitalization of public-sector banks, not listed.
ACT	= bonds to cover actuarial deficit of Insurance Funds, not listed.
HSB2	= housing bonds, not listed.
GVB	= government bonds equivalent to 5% reserve, not listed
ICRTF	= Proceeds of investment certificates (including interest on Group A certificates).
TBS	= Treasury bills, not listed.
DEP	= Deposits of insurance/saving institutions

From identities (c.1), (c.2) and (c.3) we have

$$(c.8) \quad \text{DMDBT} = \text{TGS} + \text{GBLN} + \text{TIBR},$$

Where TIBR is defined by identity (c.4), and

$$(c.9) \quad \text{TGS} = \text{LSEC} + \text{NLSEC} - \text{ICRTF} - \text{TBS}$$

Finally, net public domestic debt may be alternatively defined as:

$$(c.10) \quad \text{DMDBT} = \text{LSEC} + \text{NLSEC} + \text{DEP} + \text{GBLN}$$

To obtain gross public domestic debt, we leave out of DMDBT net government balances with the banking system, GBLN,

$$(c.11) \quad \text{GDMDBT} = \text{DMDBT} - \text{GBLN}$$

**Table 1****Domestic Public Debt, GDP, and Population, 1981-97**

Year	Debt (billion)	GDP (billion)	Population (million)	Debt/GDP	Debt per Capita (LE 1000)
1981	11.000	17.300	43.322	0.635	0.253
1982	15.300	20.800	44.506	0.735	0.343
1983	18.100	24.200	45.721	0.747	0.395
1984	22.400	28.500	46.990	0.785	0.476
1985	32.698	33.100	47.308	0.987	0.691
1986	37.108	38.40	48.254	0.966	0.768
1987	42.797	45.300	49.257	0.944	0.868
1988	49.780	54.600	50.280	0.901	0.978
1989	58.780	65.800	51.345	0.893	1.145
1990	77.215	78.900	52.391	0.978	1.471
1991	97.416	98.700	53.480	0.986	1.798
1992	106.115	118.200	54.591	0.897	1.941
1993	113.667	131.100	55.726	0.866	2.040
1994	123.667	149.100	56.884	0.829	2.179
1995	134.969	173.808	58.065	0.776	2.323
1996	149.898	195.448	59.272	0.766	2.537
1997	170.800	218.367	60.504	0.782	2.822

Source: Based on data in Annex II.

**Table 2****Structure of Domestic Public Debt 1985-1997 (%)**

Year	Gov't Securities	NIB Resources	Gov't Balances	Total
1985	51.6	36.7	11.7	100.0
1986	54.1	39.5	6.5	100.0
1987	53.3	41.1	5.5	100.0
1988	55.7	42.1	2.2	100.0
1989	56.2	42.3	1.6	100.0
1990	51.3	39.9	8.8	100.0
1991	56.4	36.7	6.9	100.0
1992	72.2	39.6	-11.8	100.0
1993	78.3	43.4	-21.7	100.0
1994	71.9	48.7	-20.6	100.0
1995	62.3	54.0	-16.3	100.0
1996	55.5	59.5	-15.1	100.0
1997	52.7	63.6	-16.3	100.0

Source: Calculated from data in Annex I using the relevant identities in Appendix C.

**Table 3****Structure of Domestic Government Debt, 1985- 1997****(%)**

Year	Debt to NIB	Bank Balances	Securities	Total
1985	28.6	13.2	58.2	100.0
1986	30.8	7.4	61.8	100.0
1987	32.4	6.3	61.2	100.0
1988	34.2	2.5	63.3	100.0
1989	34.4	1.8	63.8	100.0
1990	32.3	10.2	59.5	100.0
1991	29.1	7.8	63.5	100.0
1992	29.9	-13.7	83.9	100.0
1993	35.7	-24.6	88.9	100.0
1994	42.8	-22.9	80.0	100.0
1995	48.7	-18.2	69.4	100.0
1996	53.8	-17.1	63.0	100.0
1997	58.6	-18.6	60.0	100.0

*Source:* Calculated from data in Annex I, using relevant identities in Appendix C.

Table 4

**NIB Financing of Investment Expenditure  
and Capital Transfers ( Adjusted)**

(LE million)

<b>Fiscal year</b>	1991	1992	1993	1994	1995	1996	1997
<b>Investment Expenditure</b>							
Admin. & Local Gov.	1607.2	2012.9	3120.1	3879.5	4533.0	5199.4	6094.7
%	23.5	24.7	33.8	27.7	30.7	29.2	30.4
Service Authorities	1164.1	1468.2	1890.4	3408.0	4057.0	5071.5	5353.1
%	17.0	18.0	20.5	24.4	27.4	28.5	26.7
Econ. Authorities	1766.7	2067.3	2632.6	3809.1	3765.4	3914.4	4389.0
%	25.8	25.3	28.5	27.2	25.4	22.0	21.9
Econ. Units	1421.8	1419.9	700.0	658.0	651.8	759.4	1175.5
%	20.8	17.4	7.6	4.7	4.4	4.3	5.9
Surplus Inv. Funds	(781.9)	(1487.3)	(1602.3)	(1365.5)	(1796.4)	(1678.7)	(1984.8)
%	(11.4)	(18.2)	(17.4)	(9.8)	(12.2)	(9.4)	(9.9)
<b>Total</b>	<b>5177.9</b>	<b>5481.1</b>	<b>6740.8</b>	<b>10389.1</b>	<b>11210.3</b>	<b>13266.0</b>	<b>15027.5</b>
%	<b>75.6</b>	<b>67.2</b>	<b>73.0</b>	<b>74.3</b>	<b>75.8</b>	<b>74.6</b>	<b>75.6</b>
<b>Capital Transfers*</b>							
<b>Total</b>	<b>1674.0</b>	<b>2679.1</b>	<b>2490.4</b>	<b>3597.8</b>	<b>3577.9</b>	<b>4525.1</b>	<b>5016.9</b>
%	<b>24.4</b>	<b>32.8</b>	<b>27.0</b>	<b>22.7</b>	<b>24.2</b>	<b>25.4</b>	<b>25.0</b>
<b>GRAND TOTAL</b>	<b>6851.9</b>	<b>8160.2</b>	<b>9231.2</b>	<b>13986.9</b>	<b>14788.2</b>	<b>17791.1</b>	<b>20044.4</b>

\* Includes financing liquidity shortages (gaps), payments of obligations for previous years, equity financing and loans to joint ventures, repayment of loans, installments to the treasury, and soft loans.

Source: National Investment Bank, *Follow-up Report of Implementation of the Plan Investments and Financing Activity of the Bank*, Various volumes.

**Table 5**

**Allocation of Available NIB Finance for Investment  
Projects in the Plan**

(%)

<b>Fiscal Year</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
<b>Sector/Activity</b>							
Housing & Urban Communities	11.7	17.9	16.4	5.6	14.5	14.0	18.8
Education			7.5	9.9	10.6	11.6	15.2
transport & Communication	9.0	9.5	6.8	11.0	9.3	9.2	11.0
Electricity & Energy	9.1	8.1	10.5		7.5	8.1	8.4
Public Works & Water Resources		5.9	6.1				6.3
Min. of Interior				7.3		6.3	
Min. of Local Administration				8.1	8.5		
Higher Education		6.1					
Industry	6.8						
Land Reclamation	6.5						
<b>Total</b>	<b>43.1</b>	<b>47.5</b>	<b>46.3</b>	<b>41.9</b>	<b>51.3</b>	<b>49.2</b>	<b>59.7</b>
<b>Total Financing (LE Billion)</b>	<b>4.7</b>	<b>5.3</b>	<b>6.7</b>	<b>10.0</b>	<b>11.0</b>	<b>12.7</b>	<b>14.2</b>
<b>% of Planned Financing</b>	<b>91.2</b>	<b>96.6</b>	<b>100.0</b>	<b>95.9</b>	<b>98.5</b>	<b>96.1</b>	<b>94.4</b>
<b>Memo Item:</b>							
NIB soft loans for housing, land reclamation, etc (LE Billion)	0.415	0.363	0.385	0.327	0.291	0.314	0.389
<b>% of NIB Financing</b>	<b>8.0</b>	<b>6.6</b>	<b>5.7</b>	<b>3.1</b>	<b>2.6</b>	<b>2.4</b>	<b>2.6</b>

*Source: National Investment Bank, Follow-up Report for Implementation of Plan Investments and Finance Activity of the Bank, various years.*

**Table 6**

**Implicit Tax Imposed on NOIP and GASI Funds  
1985-1997**

Period	(r <sub>1</sub> ) Rate on NOIP & GASI funds	(r <sub>2</sub> ) Rate on Investment Certificates*	Implicit Tax	
	%	%	Rate (timp) %	Revenue (LE million)
	(1)	(2)	(3)	(4)
1/7/1985 - 30/6/1987	6 <sup>x</sup>	12	100	710 <sup>+</sup>
1/7/1987 - 30/6/1989	7	13.25	89	1159 <sup>+</sup>
1/7/1989 - 14/9/1990	8	17	112	2152
15/9/1990 - 30/6/1991	9	17.5	94	2396
1/7/1991 - 30/6/1992	11	17.5	59	2182
1/7/1992 - 30/6/1997	12	13.9	16	1120 <sup>+</sup>
1/7/1997 - present	11	12.5	14	
Total, 1987 - 1997				16778

Notes:

x Effective beginning 1/7/1980

\* Average for the corresponding period of interest rates on current income certificates, which account for more than 75% of gross sales of investment certificates.

+ Annual average for corresponding period.

Sources: Column (1), unpublished data obtained from the National Investment Bank.

Column (2), CBE, *Annual Report*, various volumes.

Column (3), Calculated from columns (1) & (2) using the formula:

$$timp = \frac{r_2 - r_1}{r_1} \times 100$$

Column (4) calculated by applying the implicit tax rate from column (3) to interest income on SIFG and SIFB debt.

**Table 7**

**Holders of Outstanding Stock  
 of Treasury Bills**

(L.E.)

End of June Holders	1996		1997	
	Billion	%	Billion	%
<b>Banks</b>	21.948	80.1	26.294	79.4
Commercial Public Sector	12.648	46.4	16.042 <sup>x</sup>	48.4
Joint Venture & Private	9.200	33.7	10.252	31.0
<b>Insurance Companies</b>	2.181	8.0	1.213	3.6
Public Sector	1.115	4.1	0.570	1.7
Private Sector	1.066	3.9	0.643	1.9
<b>Business Sector</b>	1.887	6.9	1.357	4.1
Public	0.108	0.4	0.016	*
Private	1.779	6.5	1.341	4.1
<b>Households</b>	1.366	5.0	1.522	4.6
<b>Other</b>	-	-	2.745	8.3
<b>Total</b>	27.282	100.0	33.131	100.0
<b>Memo item</b>				
Total Public	13.871	50.8	16.628	50.2
Total Private	13.411	49.2	16.503	49.8

*Notes:*

x Includes its subscription in the full amount (LE 2.4 Billion) of one-year TBs, whose placement resumed at the end of June 1997, after interruption of more than two years.

\* Less than 0.1 of one percent.

*Source:* CBE, Report Submitted to the People's Assembly on Monetary and Credit Conditions During 1996/97 (Cairo: CBE, Sept. 1997), Table (39).

## ANNEX I

### Main Components of Domestic Public Debt, 1985-1997 (LE Billion)

Fiscal Year Debt Item	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>Listed Securities</b>													
National Development bonds (DVBI)	0.424	0.421	0.421	0.449	0.449	0.704	2.191	2.244	2.292	0.286	0.258	0.387	0.523
Housing Bonds (HSB1)	0.016	0.022	0.028	0.028	0.039	0.039	0.055	0.055	0.062	0.070	0.077	0.090	0.126
Treasury Bonds (2000,2003) (TRB2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.000	7.000
<b>Non-Listed Securities</b>													
Treasury Debentures (TRB1)	12.604	15.729	19.436	22.874	28.154	34.154	34.108	42.604	41.079	38.007	40.959	36.848	36.846
Development Bonds (DVB2)	0.0	0.0	0.0	0.0	0.075	0.034	0.285	0.059	0.012	0.052	0.177	0.262	0.322
Alternative Energy Bonds (ENB)	0.563	0.597	0.634	0.672	0.713	1.189	3.762	4.040	4.326	4.640	4.881	5.118	5.382
Bank Recapitalization Bonds (CBB)	0.0	0.0	0.0	0.0	0.0	0.0	6.859	6.942	7.007	7.085	7.096	7.092	7.083
Actuarial Deficit Bonds* (ACT)	3.071	3.063	3.029	3.029	3.029	3.029	3.029	3.0290	3.029	3.029	3.029	3.029	3.029
Housing Bonds (HSB2)	0.013	0.011	0.010	0.014	0.011	0.013	0.015	0.012	0.011	0.007	0.027	0.063	0.029
Government Bonds (5% Reserve)* (GVB)	0.182	0.221	0.274	0.330	0.390	0.462	0.539	0.645	0.712	0.734	0.739	0.664	0.831
Investment Certificates (ICRTF)	2.202	2.567	3.084	3.499	4.169	5.488	6.188	7.100	9.648	14.393	20.285	24.297	28.758
Treasury Bills (TBS)	0.0	0.0	0.0	0.0	0.0	0.0	4.007	17.053	30.536	35.171	26.882	27.282	33.131
State-Employees Pension Fund (SIFG)	4.106	5.019	6.013	7.205	8.926	10.671	12.734	15.284	18.330	21.842	26.351	31.939	38.450
Business-Sector Employee's Pension Fund (SIFB)	5.444	6.762	8.178	9.676	11.393	13.349	15.593	18.331	21.672	25.832	30.600	35.745	40.950
Postal Savings Fund (PSTS)	0.440	0.518	0.598	0.669	0.744	0.835	0.945	1.107	1.281	1.720	2.378	3.208	4.387
Net Gov't Balances with Banks (GBLN)	3.821	2.396	2.366	1.084	0.917	6.815	6.716	-12.485	-24.667	-25.434	-22.031	-2.602	-27.800
<b>TOTAL (DMDBT)</b>	<b>32.898</b>	<b>37.108</b>	<b>42.797</b>	<b>49.204</b>	<b>58.780</b>	<b>77.215</b>	<b>97.416</b>	<b>106.115</b>	<b>113.633</b>	<b>123.667</b>	<b>134.969</b>	<b>150.400</b>	<b>170.800</b>
Government Debt to NIB (GIBD)						21.5	25.2	27.3	35.7	47.5	59.1	71.2	87.8
Total Government Debt (TGDBT)						66.6	86.5	91.3	100.1	111.2	121.2	132.3	149.9
Investment Bank Debt (IBDBT)						9.3	10.6	14.7	13.6	12.7	13.8	18.1	20.9
Memo Item: Implicit Tax on SIFG & SIFB	0.573	0.707	0.851	1.052	1.266	2.152	2.396	2.182	0.768	0.915	1.093	1.300	1.524

**Notes and Sources:**

\* Figures for the period 1985-1989 were estimated by subtracting from the 1990 value of additions for individual preceding years, according to NIB follow-up reports of the Plan for Economic and Social Development. These were LE million 71.9, 59.7, 56.4, 53.2 and 39.3 respectively.

All data from CBE, *Annual Report*, various years. *Report on Monetary and Credit Conditions*, various years; Ministry of Finance, unpublished data; Specialized National Councils, "Egyptian Public Debt- Domestic and External under Program of Economic Reform and Financial Liberalization, in Arabic (July, 1997) Unpublished.

Amount of actuarial deficit of pension Funds, plus accumulated interest, through 31/12/1983. Sec People's Assembly, Plan and Budget Committee, *Report on Final Accounts 1995/96*, p. 43.

## ANNEX II

### Total Domestic Debt and Some Related Variables 1981-1997

(LE billion, except population)

Fiscal Year	Domestic Public debt	GDP	Population (Million)	Current Expenditure			Wages	Subsidies	Domestic Debt Service	
				Total	Education	Health			Interest	Installments
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1981	11.0	17.3	43.3	5.7	na	na	1.5	1.6	0.5	n.a
1982	15.3	20.8	44.5	7.1	na	na	2.1	2.0	0.4	n.a
1983	18.1	24.2	45.7	8.8	.119	.094	2.4	2.0	0.8	0.4
1984	22.4	28.5	46.8	9.9	.155	.106	2.9	1.7	1.0	0.4
1985	32.9	33.1	47.6	11.3	.172	.144	3.2	2.3	1.2	0.5
1986	37.1	38.4	48.3	13.3	.204	.171	3.4	2.9	1.3	0.5
1987	42.8	45.3	49.3	13.1	.198	.172	3.7	1.7	1.6	0.6
1988	49.2	54.6	50.6	16.2	.320	.212	4.6	3.9	1.9	0.7
1989	58.8	65.8	51.3	17.4	.398	.227	5.2	2.6	2.5	0.8
1990	77.1	78.9	52.4	18.9	.459	.291	6.1	1.9	3.0	0.9
1991	96.2	98.7	53.5	25.4	.513	.330	7.1	3.3	4.2	1.1
1992	106.0	118.2	54.6	37.7	.796	.487	8.4	4.5	6.4	1.3
1993	113.7	131.1	55.7	41.3	1.336	.752	10.0	4.1	9.3	3.2
1994	123.7	149.1	56.9	46.1	1.609	.806	11.7	3.4	12.2	6.7
1995	140.0	173.8	58.1	47.6	1.800	1.000	13.6	3.9	11.2	1.9
1996	150.4	195.4	59.3	51.7	2.000	1.200	15.7	4.7	11.6	3.2
1997	170.8	218.4	60.5	54.7	2.400	1.500	18.3	4.5	13.0	3.9

*Memo Item:* Domestic public debt in 1951 was LE. 175 million, and in 1961 LE 579 million.

*Sources and Notes:*

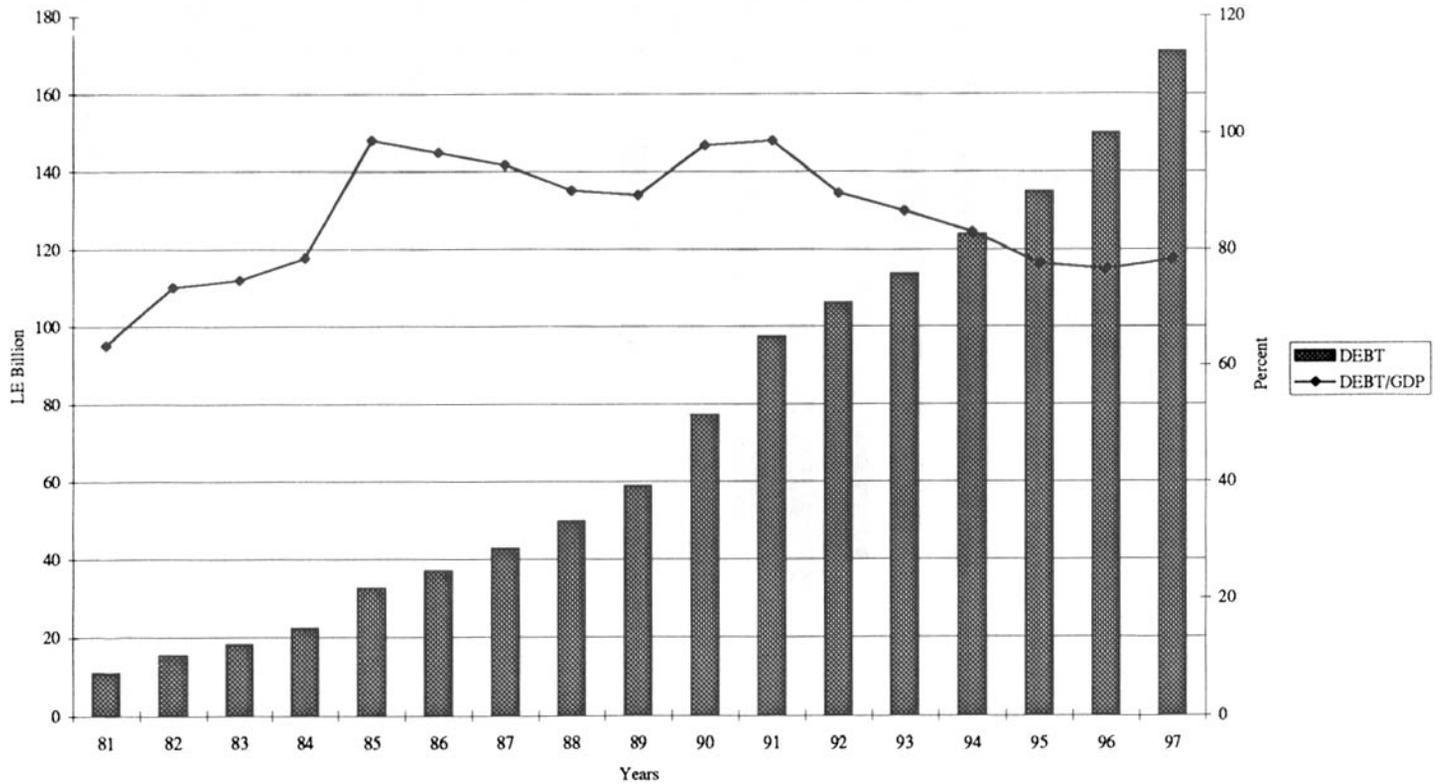
Column (1) : for 1981-84, M. El-Banna (1985); for 1985-97, ANNEX I.

Column (2) : for 1981-93, World Bank, World Tables 1995, for 1994-97 Ministry of Planning after adjusting them to be in line with WB figures. (see Note on GDP data in Appendix A)

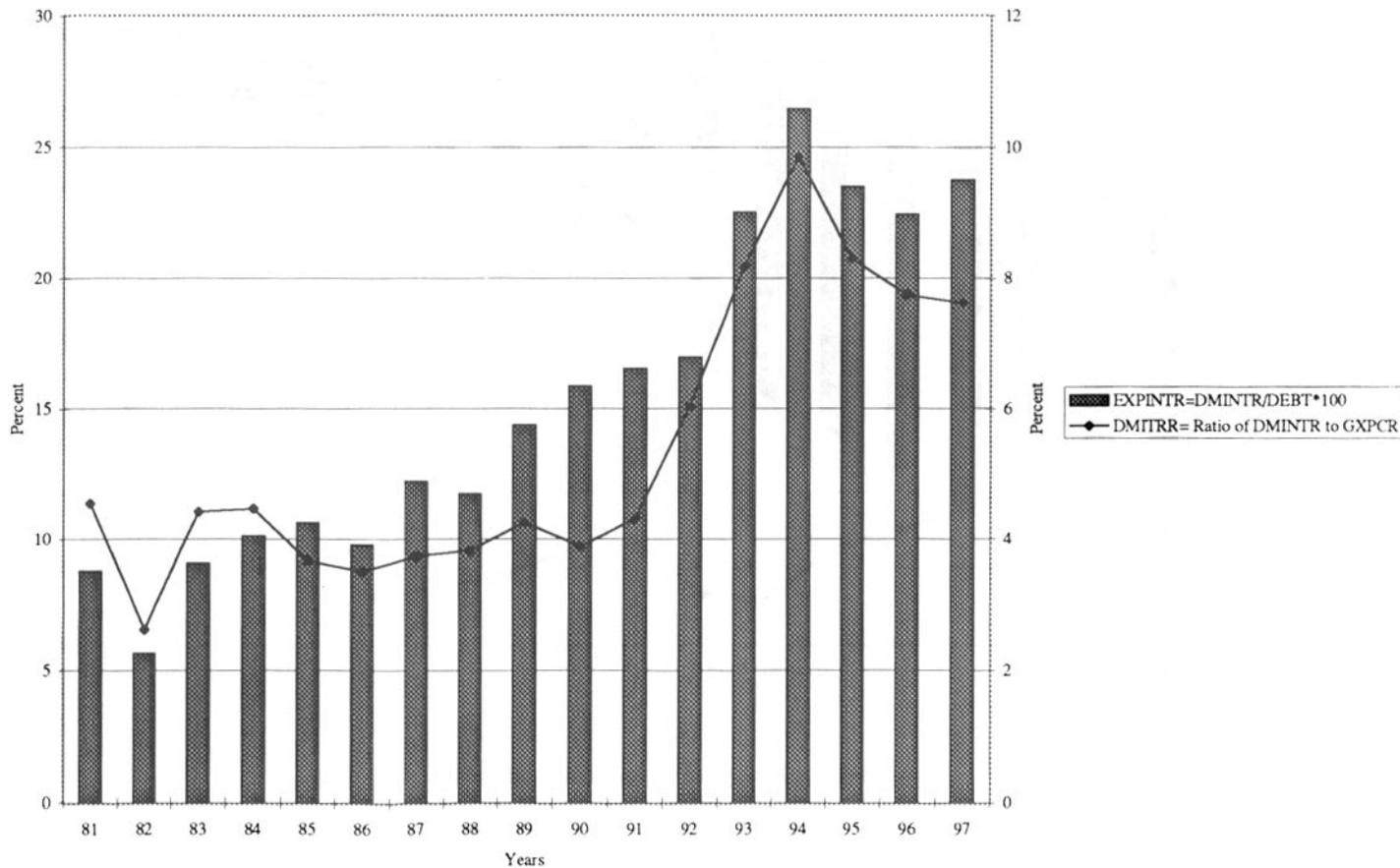
Column (3) : 1981-85, CAPMAS estimates; 1986 and 1996, census figures; remaining figures based on inter-census population growth rates.

Columns (4)-(10) : Central Bank of Egypt and Ministry of Finance, unpublished figures of actuals, except 1996/97 revised estimates.

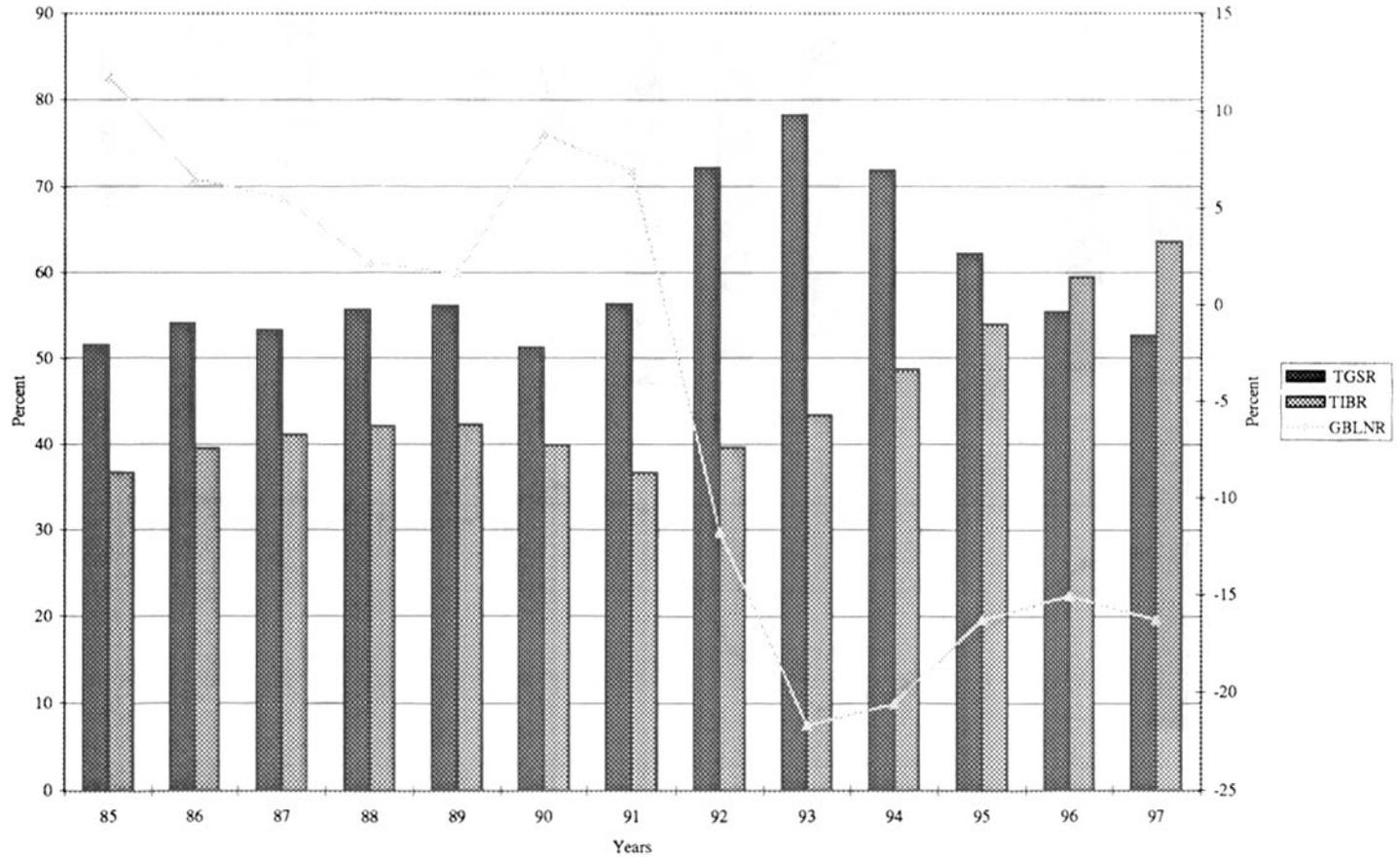
**Figure (2)**  
**Stock of Domestic Debt and Debt/GDP Ratio, 1981-97**



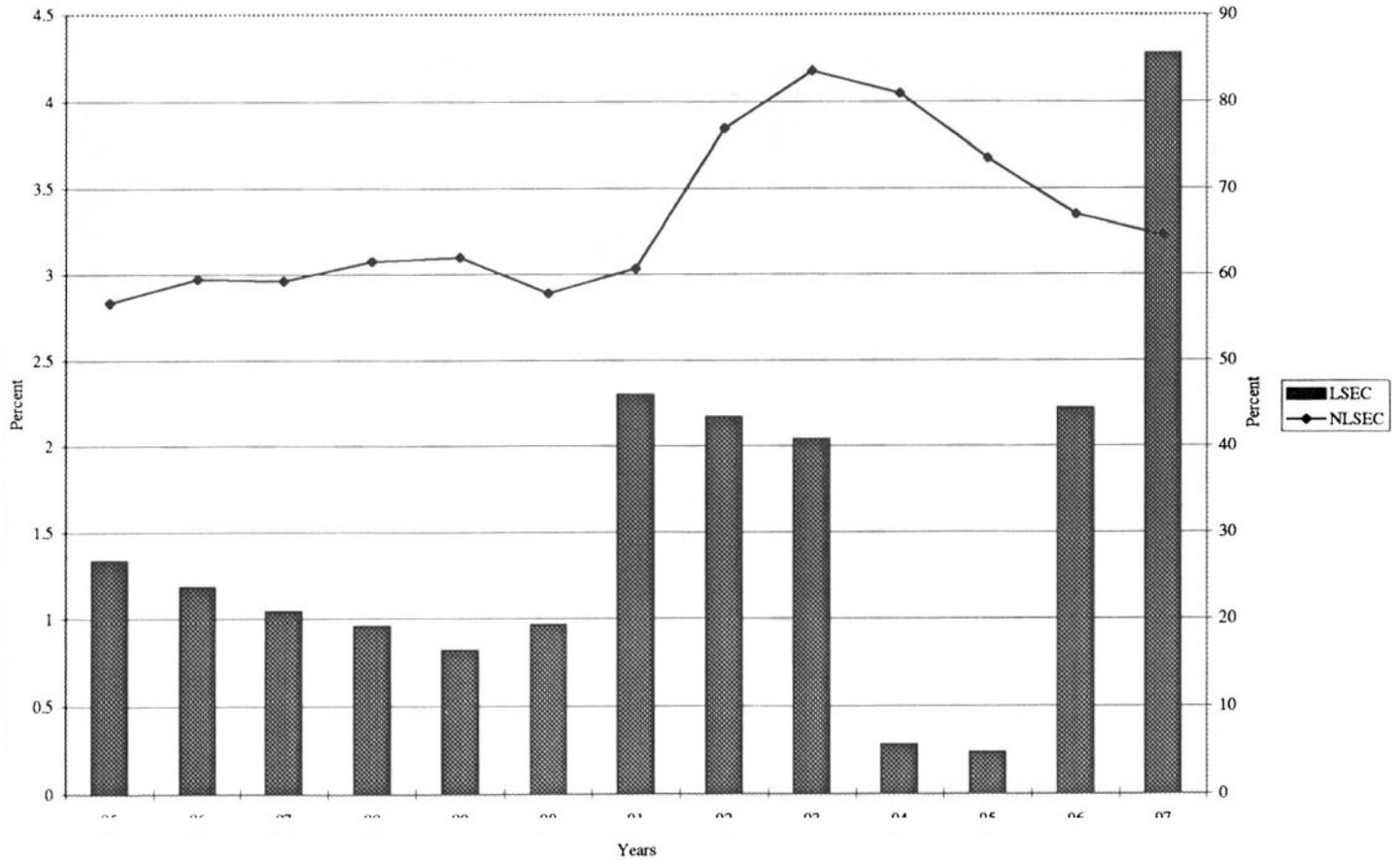
**Figure (3)**  
**Ex Post Interest Rate and Interest Payments as % of Current Expenditure**



**Figure (4)**  
**Structure of Domestic Public Debt, 1985-97**



**Figure (5)**  
**Share of Listed and Non-Listed Securities in Government Debt**



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

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## Introduction<sup>1</sup>

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

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<sup>1</sup>This 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.<sup>2</sup> In 1985/86, it started a declining trend, falling to LE 1,341 million in 1987/88, representing only 6.8% of

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<sup>2</sup>The 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.	-	596.8	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 1987<sup>3</sup> 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*).<sup>4</sup>

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.

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

<sup>4</sup> 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

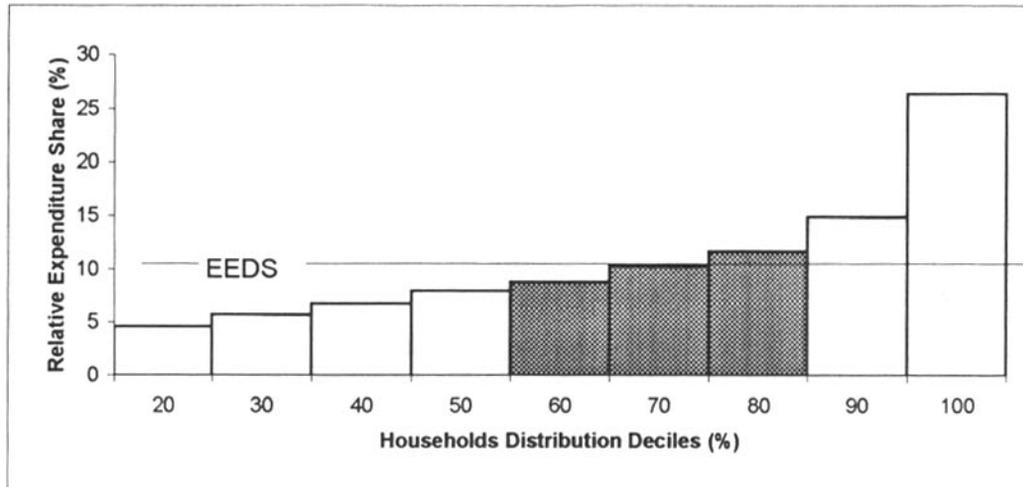
expenditure intervals LE 6800 and LE 8000 in the urban sector and LE 5600 and LE 6800 in the rural sector. Those figures represent 29% and 32% of households in the two sectors respectively. Those are the closest figures to the estimated size of the middle income households group in both sectors; the 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

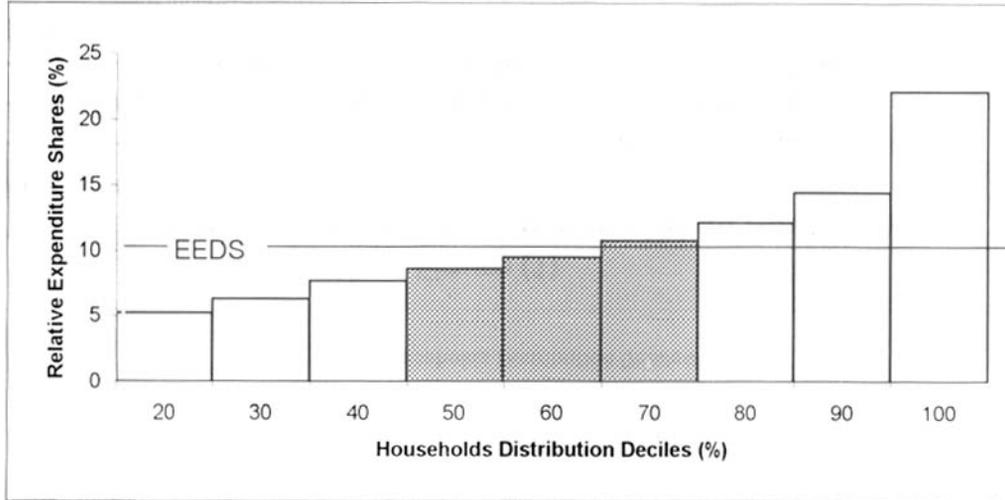


**Figure (1)**

**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)



**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,<sup>5</sup> 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

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<sup>5</sup> 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).<sup>6</sup>

**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.

<sup>6</sup> 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.<sup>7</sup> 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.<sup>8</sup>

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.<sup>9</sup> 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.<sup>10</sup> 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

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<sup>7</sup> 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.

<sup>8</sup> 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.

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

<sup>10</sup> 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,<sup>11</sup> 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.<sup>12</sup>

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<sup>11</sup>The 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.

<sup>12</sup> 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**

<b>Expenditure Intervals (LE)</b>	<b>Bread</b>	<b>Wheat Flour</b>	<b>Edible Oil</b>	<b>Sugar</b>
<b>Group 1; lower expenditure households</b>				
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
<b>Average of Group 1</b>	<b>-0.071</b>	<b>-0.019</b>	<b>-0.026</b>	<b>-0.032</b>
<b>Group 2; middle expenditure households</b>				
6800-	-0.068	-0.014	-0.019	-0.023
8000-	-0.065	-0.012	-0.019	-0.020
<b>Average of Group 2</b>	<b>-0.067</b>	<b>-0.013</b>	<b>-0.019</b>	<b>-0.022</b>
<b>Group 3; upper expenditure households</b>				
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
<b>Average of Group 3</b>	<b>-0.056</b>	<b>-0.008</b>	<b>-0.015</b>	<b>-0.017</b>

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**

<b>Expenditure Intervals (LE)</b>	<b>Bread</b>	<b>Wheat flour</b>	<b>Edible Oil</b>	<b>Sugar</b>
<b>Group 1; lower expenditure households:</b>				
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
<b>Group 2, middle expenditure households:</b>				
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
<b>Group 3, upper expenditure households:</b>				
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.<sup>13</sup> 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.

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<sup>13</sup> 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-	400-	600-	800-	1000-	200-
<b>Bread*</b>								
Urban	10.4	28.2	34.2	39.3	42.6	47.1	47.9	49.0
Rural	5.2	7.8	10.5	11.4	14.5	16.6	21.3	19.2
<b>Sugar</b>								
Urban	5.7	9.8	10.1	11.9	13.2	14.9	15.8	17.6
Rural	3.9	6.6	7.2	10.6	13.7	15.5	17.3	19.9

\* 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)
<b>Group 1; lower expenditure households:</b>							
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
<b>Group 2; middle expenditure households:</b>							
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
<b>Group 3; upper expenditure households:</b>							
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 (%) (1)	Bread (2)	Flour (3)	Oil (4)	Sugar (5)	Total (=2+3+4+5) (6)	Food Expend/ Total Consump. Expend. (7)
<b>Group 1; lower expenditure households</b>							
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
<b>Group 2; middle expenditure households</b>							
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
<b>Group 3; upper expenditure households</b>							
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.<sup>14</sup> 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

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<sup>14</sup>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.<sup>15</sup> 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.<sup>16</sup> 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.<sup>17</sup> 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 expenditure<sup>18</sup> 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

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

<sup>16</sup> Calculated from Table C.4 in Appendix C.

<sup>17</sup> Calculated from Tables C.4 and C.5 in Appendix C.

<sup>18</sup> 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.<sup>19</sup> 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.<sup>20</sup> 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.<sup>21</sup> 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).<sup>22</sup>

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

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<sup>19</sup> Calculated from Table 3.

<sup>20</sup> 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.

<sup>21</sup> 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)).

<sup>22</sup> 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.<sup>23</sup> 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

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<sup>23</sup> 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.<sup>24</sup> 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.

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<sup>24</sup> 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 (L.E)	Relative Share of Individuals in the Population Sample (%)	Edible Oil		Sugar	
		Total Quantity (kg) <sup>(1)</sup>	Subsidized quantity as a percentage of the total (%)	Total Quantity (kg) <sup>(2)</sup>	Subsidized quantity as a percentage of the total (%)
<b>Group 1; lower expenditure households:</b>					
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
<b>Group 2; middle expenditure households:</b>					
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
<b>Group 3; upper expenditure households:</b>					
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) <sup>(1)</sup>	Subsidized quantity as a percentage of the total (%)	Total Quantity (kg) <sup>(2)</sup>	Subsidized quantity as a percentage of the total (%)
<b>Group 1; lower expenditure households:</b>					
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
<b>Group 2; middle expenditure households:</b>					
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
<b>Group 3; upper expenditure households:</b>					
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.<sup>25</sup>

(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;<sup>26</sup> 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

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<sup>25</sup> 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).

<sup>26</sup> 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%.<sup>27</sup> In 1996, and still in 1998, the selling price of a kilo of subsidized wheat flour (82% extraction) is LE 0.55.<sup>28</sup> The average cost of one kilo of wheat flour (82% extraction) is about LE 1.5.<sup>29</sup> Therefore, the subsidy/price ratio of the regular type of flour will be about 173%.<sup>30</sup>

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

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

<sup>28</sup> Ministry of Supply and Trade, unpublished data.

<sup>29</sup> 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.

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

close.<sup>31</sup> 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;<sup>32</sup> this relative share of local wheat has increased from 1.4% in 1985/86 to 22.4% in 1995/96.<sup>33</sup>

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<sup>31</sup> 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 \* 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).

<sup>32</sup>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.

<sup>33</sup> 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.<sup>34</sup> 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.<sup>35</sup> 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

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<sup>34</sup> 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 =  $((2.75/1.50) - 1) 100 = 83.3\%$ .

<sup>35</sup> 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,<sup>36</sup> 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).<sup>37</sup> 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).

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

<sup>37</sup> 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.<sup>38</sup> 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

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<sup>38</sup> 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:

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

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.<sup>1</sup>

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).

---

<sup>1</sup> 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:  $X = 10$ ,  $N = 10$

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

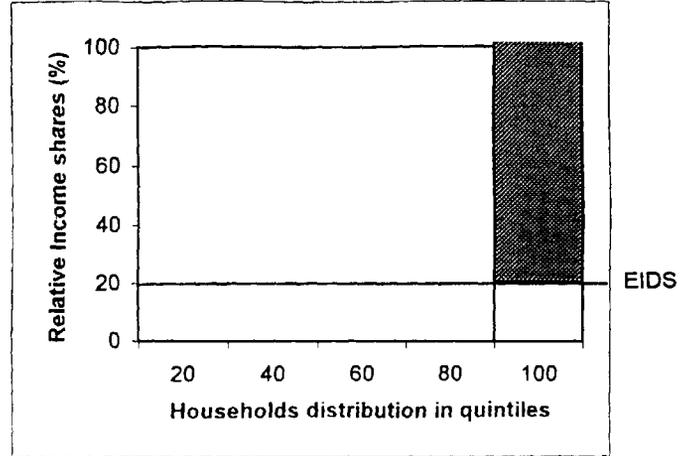
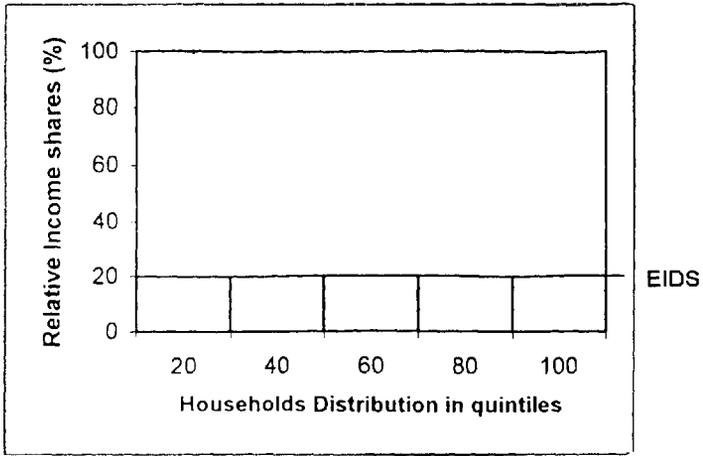


Figure (A.1)

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 intervals<sup>1</sup>. 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 form<sup>2</sup>. The five forms are:

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

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

---

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

<sup>2</sup>Two 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.

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

$$ij \quad j$$

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

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

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  $j$ th expenditure interval; and  $y_j$  refers to total expenditure per household member in the  $j$ th expenditure interval.

$j$

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:

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

$$(0.214) (0.025)$$

$$\begin{aligned} &-- 2 \\ &R = 0.990 \end{aligned}$$

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

$$(0.420) (0.049)$$

$$\begin{aligned} &--2 \\ &R = 0.954 \end{aligned}$$

(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 parantheses 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.TotalConsumption 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
	<i>Baladi</i> bread	Ware - houses	Total	<i>Baladi</i> Bread	Ware - houses	Total		
<b>Urban Governorates</b>	<b>349.7</b>	<b>21.2</b>	<b>370.9</b>	-	-	-	<b>19.9</b>	<b>390.8</b>
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
<b>Lower Egypt</b>	<b>247.7</b>	<b>49.2</b>	<b>296.9</b>	<b>72.8</b>	<b>95.3</b>	<b>168.1</b>	<b>22.3</b>	<b>487.4</b>
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
<b>Upper Egypt</b>	<b>209.8</b>	<b>123.7</b>	<b>333.5</b>	<b>98.4</b>	<b>328.5</b>	<b>426.9</b>	<b>14.5</b>	<b>774.9</b>
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
<b>Border Governorates (1)</b>	<b>15.8</b>	<b>14.3</b>	<b>30.1</b>	<b>0.8</b>	<b>9.4</b>	<b>10.2</b>	<b>7.4</b>	<b>47.6</b>
<b>Total</b>	<b>823.5</b>	<b>208.6</b>	<b>1032.1</b>	<b>172.3</b>	<b>434.4</b>	<b>606.7</b>	<b>64.21</b>	<b>1703.0</b>

(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)**

<b>Governorate</b>	<b>Fully subsidized (1)</b>	<b>Partially subsidized (2)</b>	<b>Total</b>	<b>Population <sup>(1)</sup></b>	<b>Ration Card Holders as Percent. of Population (%)</b>
<b>Urban Governorates:</b>	<b>8879.1</b>	<b>364.8</b>	<b>9243.7</b>	<b>11004.8</b>	<b>84.0</b>
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
<b>Lower Egypt:</b>	<b>19133.7</b>	<b>669.5</b>	<b>19803.3</b>	<b>25811.4</b>	<b>76.7</b>
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
<b>Upper Egypt:</b>	<b>15094.4</b>	<b>832.3</b>	<b>15926.9</b>	<b>21639.6</b>	<b>73.6</b>
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
<b>Border Governorates <sup>(2)</sup></b>	<b>536.7</b>	<b>20.6</b>	<b>557.3</b>	<b>816.5</b>	<b>68.3</b>
<b>Total</b>	<b>43643.9</b>	<b>1887.4</b>	<b>45531.3</b>	<b>59272.4</b>	<b>76.8</b>

(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)**

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

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# People and Pollution

Cultural Constructions and Social Action in Egypt

*Nicholas S. Hopkins, Sohair R. Mehanna, and Salah el-Haggar*

**E**nvironmental pollution is a concern of many people in Egypt and the world in general. *People and Pollution* is a study of how Egyptians in particular understand environmental problems and what their roles are in the solutions. This original study is based on extensive field research with both academic and policy relevance. The uniqueness of the book comes from its focus: instead of the usual approach of analyzing policy and measurements, this text seeks to understand how the people themselves, often the objects of policy, understand their environment and their own actions.

An interesting finding from the research lies in the focus of Egyptian concerns. Rather than the global perspective (the depletion of the ozone layer, protection of coral reefs and rainforests, and so on) that is common in the West, Egyptians are mainly concerned with matters of immediate environmental degradation, such as garbage, sewage, dirty streets, and noise pollution. In addition, the researchers have found that people are often able to effect changes themselves through cooperation with neighbors, thus bypassing the 'official' channels of redress such as NGOs and local government officials. The difference in focus of concern and courses of action may be extrapolated to many Third World or developing nations, and leads to provocative questions regarding policymaking for public participation in future environmental campaigns.

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# State-Owned Enterprises in the Middle East and North Africa

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*Edited by Merih Celasun*

**W**orldwide privatization has expanded rapidly but in the Middle East and North Africa (MENA) region progress has been markedly slow. The two main obstacles to privatization in the MENA region are seen to be the high level of overstaffing in public enterprises and the inability of economies to create jobs fast enough.

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بنتيجته نظراً لتعارض آثار نظام الدعم. وتخلص الباحثة الى أن الدعم الغذائي في مصر يستفيد منه الفقراء ومنخفضى الدخل بدرجة أكبر من ذوى الدخل المرتفع. ومن ثم فهو وسيلة لإعادة توزيع الدخل أو القوة الشرائية بصورة مستترة يعتبر اسهل سياسياً من فرض ضرائب على الاغنياء لتمويل تحويلات دخلية للفقراء.

المكونات الاختيارية للدين الداخلى. وتقدر الدراسة أن ما تم تحويله من اصحاب أموال التأمينات فى ضوء فروق اسعار الفائدة بلغ حوالى ١٧ مليار جنيه خلال الفترة ١٩٧٨-١٩٩٧.

ويتضمن الجزء الثانى الدراسة التى اعدتها الدكتورة كريمة كريم عن أثر سياسة الدعم الغذائى على اصحاب الدخل المنخفضة والفقراء فى مصر. وتركز المؤلفة فى دراستها على محورين: أثر الدعم على نفقة المعيشة لهذه الفئات وقدرة هذا النظام على الوصول بالدعم الى مستحقيه--أى كفاءة الاستهداف. ويبدأ هذا الجزء بتحديد حجم الدعم الغذائى فى حجمه المطلق وبصورة نسبية ويخلص الى أنه--رغم تقلب قيمة هذا الدعم--الا أن نسبته الى الانفاق الحكومى قد اتجهت الى الانخفاض بصورة مطردة منذ منتصف الثمانينات، فلم يتجاوز ٥-٦٪ فى التسعينات وانحصر فى اربع سلع فقط هى الخبز البلدى ودقيق القمح (نسبة استخراج ٨٢٪) والسكر وزيت الطعام.

وفى سبيل تقييم أثر سياسة الدعم الغذائى على منخفضى الدخل، قامت الباحثة بتطوير مقياس مبتكر (هو دليل اللامساواة الدخلية Income Inequality Index-III) يتضمن تمييز الفئات منخفضة ومتوسطة ومرتفعة الدخل، مما ساعد على مقارنة نسبة المنفق على السلع المدعمة وأهمية هذه السلع فى ميزانية الفئات منخفضة الدخل بالمقارنة الى الفئات متوسطة ومرتفعة الدخل.

وبالنسبة لمدى كفاءة توزيع الدعم من حيث وصوله الى مستحقيه من منخفضى الدخل، قامت الباحثة ببحث هذا الموضوع على مستويات ثلاثة: مستوى المحافظة والمستوى الاقليمى (ريف/حضر) ومستوى الاسرة. وقد اتضح من الدراسة أن دعم الخبز والدقيق اكثر كفاءة فى الوصول الى مستحقيه من دعم السكر والزيت على مستوى المحافظة. وعلى مستوى الاسرة؛ فإن دعم السكر والزيت يعد اكثر كفاءة من دعم الخبز والدقيق بالنسبة للأسر الحضرية بالمقارنة بالأسر الريفية. اما على المستوى الاقليمى؛ فيصعب القطع

## ملخص

يضم هذا العدد دراستين: الأولى كتبها الدكتور جودة عبد الخالق عن الدين العام الداخلى ، والثانية كتبتها الدكتورة كريمة كريم عن الدعم الغذائى. والدراستان تتكاملان من حيث أن احدهما تتصل بجانب الإيرادات العامة والثانية تتصل بجانب النفقات العامة ؛ كما انهما تشتركان معاً فى تناول اجراءات للسياسة المالية تؤثر فى مستوى معيشة المواطنين من خلال تأثيرها على النمو وتوزيع الدخل ونفقة المعيشة.

يحتوى الجزء الاول على جوانب مختلفة من الدين العام المحلى فى مصر : حجمه وهيكله والنتائج المترتبة عليه، مع تركيز خاص على التطورات فى ظل برنامج الاصلاح الاقتصادى خلال التسعينات من القرن العشرين. وتعرض الدراسة لتقديرات موثقة لحجم الدين المحلى مع التمييز بين الدين الحكومى والدين العام. كما ترصد التطور فى حجم الدين والتطورات فى هيكله مع تحليل اسباب تراكم الدين العام المحلى و أثر ذلك على كل من النمو والعدالة الاجتماعية. والأطروحة الاساسية لهذه الدراسة هى ان تراكم الدين العام المحلى منذ بداية برنامج الاصلاح الاقتصادى والتكيف الهيكلى (ERSAP) هو النتيجة المنطقية لإتباع سياسة نقدية متشددة فى ظل تحرير المعاملات الرأسمالية فى ميزان المدفوعات وربط الجنية المصرى بالدولار الأمريكى.

وتوضح الدراسة أنه نتيجة للتصاعد فى حجم الدين المحلى مع ارتفاع اسعار الفائدة عليه، بلغت مدفوعات فوائده حوالى ربع الانفاق فى الموازنة العامة للدولة خلال ١٩٩٢-١٩٩٥. كما سلطت الدراسة الضوء على ما ينطوى عليه الدين العام المحلى من إعادة توزيع واضحة للدخل حيث ان ما يدفع من عائد على أموال التأمينات (وهى جزء اجبارى من الدين الداخلى) يقل كثيراً عن ما يدفع لحملة شهادات استثمار البنك الأهلى وأذون الخزانة باعتبارها من

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جميع الحقوق محفوظة. ممنوع إعادة طبع أى جزء من الكتاب أو حفظه بعد تصحيحه أو نقله فى أى صورة و باى واسطة الكترونية أو ميكانيكية أو تصويرية أو تسجيلية أو غير ذلك بدون التصريح المسبق من صاحب حق النشر.

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بحوث القاهرة  
في العلوم الاجتماعية

مجلد ٢٣ عدد ١ ربيع ٢٠٠٠

## اجراءات السياسة المالية

في مصر:

الدين الداخلى والدعم الغذائى

جودة عبد الخالق

كريمة كُرَّيم

لقد اثبتت بحوث القاهرة في العلوم الاجتماعية أنها منهل لا غنى عنه لكل من القارئ العادي والمتخصص في شئون الشرق الأوسط. وتعرض هذه الكتيبات الربع سنوية - التي تصدر منذ عام ١٩٧٧ - نتائج البحوث التي قام بها علماء محليون وزائرون في مجالات متنوعة من الموضوعات السياسية والاقتصادية والاجتماعية المتصلة بالشرق الأوسط والتي قد يكون لبعضها بعد تاريخي.

وترحب هيئة تحرير بحوث القاهرة بالمقالات المتعلقة بهذه المجالات للنظر في مدى صلاحيتها للنشر. ويراعى أن يكون البحث في حدود ١٥٠ صفحة مع ترك مسافتين بين السطور، وتسلم منه نسخة مطبوعة وأخرى على اسطوانة كمبيوتر (ماكنتوش، أو ميكروسوفت وورد، أو وورد برفكت). أما بخصوص كتابة المراجع، فيجب أن تتوافق مع الشكل المتفق عليه في «كتاب الأسلوب لجامعة شيكاغو» (The Chicago Manual of Style) حيث تكون الهوامش في نهاية كل صفحة، أو الشكل المتفق عليه في «الجمعية الانثروبولوجية الأمريكية» وفي هذه الحال يذكر اسم المؤلف وتاريخ النشر ورقم الصفحة بين قوسين داخل النص.

ويتوقف قبول هذه البحوث أو رفضها على رأي الحكام وأعضاء هيئة تحرير بحوث القاهرة. ويبلغ المؤلفون بقرار هيئة التحرير في خلال ثلاثة أشهر من تاريخ استلام البحث. وترحب هيئة التحرير بتنوع الموضوعات ووجهات النظر. وبالتالي، فإن الآراء المعروضة في بحوث القاهرة لا تعكس بالضرورة وجهة نظر أو آراء هيئة التحرير أو الجامعة الأمريكية بالقاهرة.

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