PN-ACS-474

RDI REPORTS

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Ministry of Agriculture & Land Reclamation
US Agency For Intl. Development
Agriculture Policy Reform Program
Reform Design and Implementation

وزارة الزراعة واستصلاح الأراضي
الوكالة الأمريكية للتنمية الدولية
مشروع إصلاح السياسات الزراعية
وحدة تصميم وتنفيذ السياسات

Ministry of Agriculture and Land Reclamation

AGRICULTURE POLICY REFORM PROGRAM

Reform Design and Implementation Unit (RDI)

USAID CONTRACT NO. 263-C-00-97-00005-00

RDI

APRP

Reform Design and Implementation Unit

Development Alternatives Inc. Group: Office for Studies & Finance, National Consulting Firm Development Associates, Cargill Technical Services, The Services Group, Training Resources Group, Purdue Universities, University of Maryland

PN-ACS-474

WHEAT Sub-Sector Maps for Egypt

Report No. 47

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October 1998

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ACRONYMS LIST

ACRONYM	*DESCRIPTION*
AC	Agricultural Census
AERI	Agriculture Engineering Research Institute
AHD	Aswan High Dam
AIC	Agricultural and Irrigation Committee of the People's Assembly
ALCOTEXA	Alexandria Cotton Exporters Association
APRP	Agricultural Policy Reform Program
ARC	Agriculture Research Center
ATUT	Agricultural Technology Utilization and Transfer Project
AY	Agricultural Year Locator (October 1st to September 30th of the following year)
BOD	Board of Directors
CAGA	Central Administration for Governorates Affairs
CAPMAS	Central Agency for Public Mobilization and Statistics
CAPQ	Central Administration for Plant Quarantine, MALR
CAWD	Central Administration for Water Distribution
CBE	Central Bank of Egypt
CIDA	Canadian International Development Agency
CIF	Cost, Freight and Insurance
CMA	Capital Market Authority
Co.	Company
COP	Chief of Party
CSPP	Egyptian-German Cotton Sector Promotion Program
CTS	Cargill Technical Services
DA	Development Associates, Inc.
DAI/B	Development Alternatives, Inc./Bethesda
ELS	Extra Long Staple Cotton
EMEPAC	Egyptian Company for Production Marketing and Exporting Ag. crops
ERSAP	Economic Reform and Structural Adjustment Program
ESAs	Employee Shareholder's Association
ESOPs	Employees Stock Ownership Program
EU	European Union
FAO	Food and Agricultural Organization of the United Nations

ACRONYM	*DESCRIPTION*
FDIs	Foreign Direct Investments
Fed.	Feddan = 4200 square meter
FIHC	Food Industries Holding company
FOB	Free on Board
FSR	Food Security Research Unit
GA	General Assembly
GASC	General Administration for Supply Commodities
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GOE	Government of Egypt
HC	Holding Company
IBTCI	International Business and Technical Consultants, Inc.
IDA	International Development Association
IFC	International Financial Cooperation
IFPRI	International Food Policy Research Institute
IPPC	International Plant Protection Convention
IPO	Initial Public Offering
IIMI	International Irrigation Management Institute
IR	Intermediate Results
Kg.	Kilogram
Kt.	Kentar
Libra	Pound of 0.45359 kilogram, also abbreviated as lb.
LE	Egyptian Pound
LK	Lint Kentar of cotton, 50 kgs.
LS	Long Staple cotton
MALR	Ministry of Agriculture & Land Reclamation
MENA	Middle East North Africa
MEIC	Ministry of Economy & International Cooperation
MIMW	Ministry of Industry & Mineral Wealth
MMT	Million Metric Ton
MoTS	Ministry of Trade & Supply
MPE	Ministry of Public Enterprises
MPWWR	Ministry of Public Works & Water Resources

ACRONYM	*DESCRIPTION*
MLS	Medium-Long Staple cotton
MVE	Monitoring, Verification & Evaluation Unit
NARP	National Agricultural Research Project (a former USAID Project)
NBE	National Bank of Egypt
NCF	National Consulting Firm
NGO	Non-Governmental Organization
O & M	Operation & Maintenance
OSAF	Office for Studies And Finance
PA	People's Assembly
PBDAC	Principal Bank for Development and Agricultural Credit
PEO	Public Enterprise Office
P&L	Privatization & Liberalization
PIDP	Partnership In Development Project
PMU	Project Management Unit
PPC	Program Planning Committee
PRA	Participatory Rapid Appraisal
PU	Purdue University
RDI	Reform, Design & Implementation Unit
ROW	Rest of the World
SCC	Sugar Crops Council
SCRI	Sugar Crops Research Institute
SIIC	Sugar and Integrated Industries Company
SK	Seed Kentar of cotton (157.5 kgs.)
SS	Short Staple cotton
STTA	Short Term Technical Assistance
SWG	Sugarcane Working Group
TA	Technical Assistance
TAMIS	Technical & Administrative Management Information System
TAT	Technical Assistance Team
TF	Task Forces
TO	Training Officer
TOR	Terms of Reference
TNA	Training Needs Assessment

ACRONYM	*DESCRIPTION*
TRG	Training Resources Group
TSG	The Services Group
UMD	University of Maryland
USAID	United States Agency for International Development
US$	United States Dollar
WB	World Bank
WTO	World Trade Organization
WUA	Water User Association

Acknowledgements

This study would not have been possible without the contributions of the IFPRI Food Security Research Unit of the APRP project. In 1997 the Food Security Research Unit initiated a study of wheat policies, production and marketing in Egypt. A major contributor to this effort has been Abla M. Abdel-Latif who has recently made several contributions to this project through her writings on wheat policy and the activities of millers. The Food Security Research Unit also conducted a survey of millers during late 1997, the results of which were made available for this report.

I am also indebted to other members of this Food Security Research Unit including Dr. Akhter Ahmed, Chief of Party, Mylene Kherallah, Research Fellow, IFPRI, Dr. Rashad Moh'd El Saddany, who supervised the miller survey work and provided insights on the rural wheat scene, and Amina Hegazy, data analyst.

Special thanks is extended to Abdel Razzig, Director of Sampling in the Economic Affairs Sector of MALR for the conduct of the village survey in five governorates. The assistance of Hussein Hamed Ebrahim, member of the Economic Affairs Sector of the MALR and of Samah Sweidan, and Dr. Mohamed Heikal of the AERI, with interviews of flour mills and the analysis of the village survey data is also appreciated.

Other key officials from the government and private sector who freely and willingly provided information are listed below.

Abdel Ganhi, Dir. Gen. of GASC, MOTS
Ali Abdel Rahman Ali, Advisor to the Minister of Trade and Supply
Al-Gabalawy flour mill (82%) in Giza
Al-Zomar flour mill (82%) in Imbaba
Dick Prior, U.S. Wheat Associates
Egyptian Millers, flour mill (72%)
El-Shamashergy flour mill (82%) in Shoubra
Hassan Abdel Ghaffar, U.S. Wheat Associates
Mohamed El Gamal, owner of Flour Land, (72% flour mill)
Mammohd Ibrahim, General Society for Agrarian Reform Co-operatives
Mohamed Kamal Ghonaim, Chairman of the Holding Company for Rice and Wheat Mills
Nick Gomersall, Cargill
Samira Khalil, General Society for Agrarian Reform Co-operatives
Samir Shehata, Under Secretary for Agricultural Co-operatives, MALR
Shoman & Ghanem flour mill (82%)

Executive Summary

This study examines the structure of the Egyptian wheat sub-sector from producer to consumer. This sub-sector consists of three components that operate somewhat independently: the 72% flour component, the 82% flour component, and the rural component. The sub-sector maps developed illustrate the impact of the GOE wheat and bread subsidy program on the market structure of this sub-sector.

The 72% flour (fino) component utilizes almost exclusively imported hard wheats. Ten modern private mills and 17 of the most modern public mills mill this flour. Rapid and extensive private investments in this area are depressing gross margins. Private investors in this sector have heavy debt loads and are competing with public mills with no debt servicing costs. In other respects, the private and public firms are competing on equal footing. The GOE regulation prohibiting these mills from using local wheat penalizes the Egyptian wheat producer, especially in times of high world wheat prices. Currently, however, the GOE has set its procurement price of local wheat above world prices, giving these mills no incentive to buy local wheat.

Individual public mills should be offered for sale to private investors. The public mills used to mill 72% flour are as modern as the private mills being built, but excess capacity is currently being created in this component. Privatization of these best public mills would alleviate this excess capacity problem. Policies to promote privatization of public wheat mills should be examined carefully to head-off excess private investments in new plants and eventual over-capacity, such as exists in other sub-sectors.

The 82% flour component is closely regulated by the GOE through the General Administration for Supply Commodities (GASC). Only 20 percent of the wheat used in this component is produced in Egypt, with the balance being imported. The wheat which GASC procures is sold to millers at subsidized prices. Public mills mill 84 percent of this type of flour. A few private mills receive wheat for milling 82% flour from GASC on a quota basis, the establishment of which is non-transparent. The flour is sold below cost to bakers of baladi bread and to retail flour stores. Allocations of flour to bakeries and stores are done by GASC on the basis of population but in a manner which favors the urban sector. Bakers must produce a specified amount and weight of baladi bread.

Private investment exists in milling, baking and retail stores in the 82% flour component; however, rates of return on investment are very low, precluding new private investments in this component and leaving the technology of the sector outdated and probably declining. Low returns can tempt firms to violate regulations. For example, these bakeries and flour stores can purchase subsidized flour, refine it and sell it illegally at huge profits. This study makes no estimate of the amount of this activity.

The 82% component is encumbered with regulations and opportunities for fraud, illegal operations and illegal profits. It needs drastic overhaul to regain efficiency of operation. Transfer of the bread or flour subsidy to the final consumer with a food stamp or coupon system should be considered as a way to eliminate the temptations for illegal operations and reestablish competition within the system.

Millers of all types of flour are supposedly required to sell bran at GOE specified prices. Such a price setting procedure serves no purpose. The bran is useful primarily as a feed ingredient and would be priced on its feed value. This rule is not rigidly enforced but is an irritant to the market and serves no useful purpose.

Egyptian wheat that is not sold to GASC remains in the rural areas to be milled by village mills or farmer-owned mills and consumed by the rural population. This wheat is probably retained in the rural sector to offset the urban bias of the GOE wheat and flour subsidy programs. Most of this wheat is used as raw (un-sifted) flour. The typical village mill is a stone mill with no sifting equipment. Village mills mill wheat for a fee which, because of competition, gives low rates of return to the mill operators. This component is relatively free of regulation and can be considered a free market system. It has a relatively simple marketing structure, with wheat going from the producer to the miller and then to consumer, who is often also the producer.

Abandonment of the current GOE wheat and flour subsidy programs would likely result in a rapid expansion in demand and milling capacity of the rural component, either through privatization of public mills or through importation by private firms of new small mills.

Introduction

This report maps the Egyptian wheat sub-sector. An agricultural sub-sector is defined as the private firms and public agencies that are engaged in the processing and handling of a specific agricultural commodity from the producer to the consumer. Since a large portion of the wheat consumed in Egypt is imported, the Egyptian wheat sub-sector also includes the firms and operations involved with the processing and movement of imported wheat and wheat flour.

A sub-sector map provides an overall view of a sub-sector. It is the first step in the traditional analysis of the structure, conduct, and performance of a marketing system. A sub-sector map identifies the marketing channels through which the commodity moves from the sources of supply to the final consumer. There are a number of alternative channels through which most commodities move, each of which is composed of a number of successive steps. In a mixed economy, such as that of Egypt, some of these firms are publicly owned and some are privately owned.

Wheat and wheat flour are major food items in Egypt. In 1996, per capita consumption was 197 kg of wheat/year, which is one of the highest consumption rates in the world. Total wheat consumption in Egypt was approximately 12 MMT in 1996 of which slightly less than half (47%) was produced domestically and slightly over half (53%) was imported.

This report contains several diagrams. The first diagram identifies the main elements in the wheat market and the market channels. Subsequent diagrams identify the shares of wheat passing through each stage, the number of firms in each stage, the prices at each stage, the total product value flowing through each stage, the number of employees in each stage and the wage rate or total wage cost for each stage.

This report also discusses the major policy issues involved in the marketing of wheat, the current situation in regard to privatization of public firms, and the GOE policies which impact on this privatization process. Recommendations are made for policy changes that would improve the functioning and efficiency of the sector.

Domestic Wheat Production

Wheat is produced throughout the traditional Nile valley. It is perhaps *the* major winter field crop in Egypt. Other winter field crops grown on a large percent of the farms are berseem and fava beans. Most farmers who plant wheat will plant rice or maize on that land the following summer season. In any given year approximately 1.5 million farmers will grow wheat, and during any 3-year period most Egyptian farmers will plant wheat.

Most Egyptian farmers follow a crop rotation designed in cooperation with other farmers in their village. These rotations are of two or three years duration, varying by area of the country. The result is that most farmers in the Nile Valley produce wheat, but only 1/3 to 1/2 of these farmers grow wheat in any one year. The data in Table 1 show that the area planted to wheat ranges from 20 to 50 percent of the cropland in each rural governorate, and that wheat is an important crop throughout the Nile Valley. The percent of the land planted to wheat is highest in Upper Egypt and lowest in Lower Egypt. Livestock production, and thus berseem production, is relatively more important in Lower Egypt.

Cotton cannot generally be grown after wheat because the harvest time for wheat is too late (April or May) to permit the planting of cotton (March). Although some farmers in Upper Egypt are able to grow cotton after wheat because they can harvest the wheat earlier, most farmers who grow cotton must grow berseem or fava beans the previous winter season. Thus, cotton production interferes with wheat production, and vice versa. Except for cotton and year-long crops such as sugarcane and orchard crops, almost all other crops can be easily grown in rotation with wheat.

In 1996-97 the total wheat area was 2,486,131 feddans and total production was 38,994,227 ardeb or 5.85 MMT (one ardeb = 150 kgs) for an average yield of 15.68 ardeb/FD or 2.35 tons/FD. Almost all of the wheat produced in Egypt is a soft winter wheat. About three percent of the wheat area is planted to durum varieties. Durum, used to produce semolina for pasta production, is produced in the governorates of Assuit, Minya, and Sohag.

Table 1. Area of wheat and percent of land in wheat, 1997.

Governorate	Area of wheat (Feddans)	Percent of Cropland in wheat:
Alexandria	2,635	4.5
Behira	227,374	30.1
Gharbia	131,604	34.9
Kafr El Sheik	183,478	32.1
Daqahliya	218,800	34.8
Damietta	22,793	21.4
Sharkia	264,753	36.5
Ismailia	27,484	19.7
Port Said	30	0.5
Suez	2,205	17.3
Menofiya	92,134	30.4
Qalubiya	46,951	24.8
Cairo	250	3.2
Lower Egypt	1,220,491	31.5
Giza	29,250	15.7
Beni Suef	114,350	43.4
Fayoum	142,359	36.5
Minya	172,688	38.6
Middle Egypt	458,647	35.6
Assuit	130,999	39.8
Sohag	155,737	52.9
Qena	78,597	28.1
Aswan	27,278	21.3
Luxor	13,222	47.9
Upper Egypt	405,833	38.3
Total Nile Valley	**2,084,971**	**32.7**
North Sinai	24,152	20.5
South Sinai	243	5.0
Matrouh	24,761	13.1
Wadi El Gidid	30,314	47.5
Other desert lands	79,470	21.2
Total New land	321,690	33.5
Total Egypt	**2,486,131**	**32.9**

Source: MALR

GOE Wheat Policies

Prior to 1987 the wheat sub-sector in Egypt was highly regulated. Farmers were required to plant a specified area of wheat and deliver it to the Government. In 1987 the GOE began to relax the mandatory area and procurement quotas. Farmers now have complete freedom to determine the area of wheat that they plant, and mandatory delivery quotas have been eliminated. Farmers may now retain as little or as much of their wheat crop as they like and can sell to either public or private merchants (although they are still prohibited from selling to mills producing 72% flour). Domestic production is essentially free of controls.

In 1992 the private sector was permitted to engage in the importation of 72% extraction rate wheat flour (fino), and the GOE subsidy on this fine grade of flour was removed. In 1993 the private sector was also permitted to import wheat to be milled into 72% flour. In 1996 the subsidy was also removed on 76% extraction rate flour. Currently only two grades of all-wheat flour are produced in Egypt, 72% extraction rate, which is not subsidized, and 82% extraction rate flour, which is subsidized.

Milling, processing and distribution of 82% flour is controlled by the GOE. While private mills mill about 16% of this flour, they receive wheat from the GASC on a quota system which is devised in a non-transparent fashion. The 82% rate flour is used to produce baladi bread, which is currently sold at 5 piasters per piece. The cost to the government per piece of baladi bread was reported at 11-12 piasters in 1997. The bread and wheat flour subsidy programs resulted in a cost to the GOE in fiscal 1996/97 of LE 2.9 billion or 4.3 percent of the national budget (Ahmed, p.24). <u>The wheat subsidy program is thus a major GOE expenditure and a major policy issue.</u>

To reduce the National Budget cost of the wheat subsidy the Ministry of Trade and Supply (MOTS) has recently begun producing a mixture of 80% wheat flour and 20% maize flour to be used for baladi (subsidized) bread. This practice has not yet made a significant impact on subsidy costs or volumes. Currently only about two percent of baladi type flour contains maize flour. Furthermore, when world wheat prices are low, as is now the case, substitution of maize for imported wheat does not

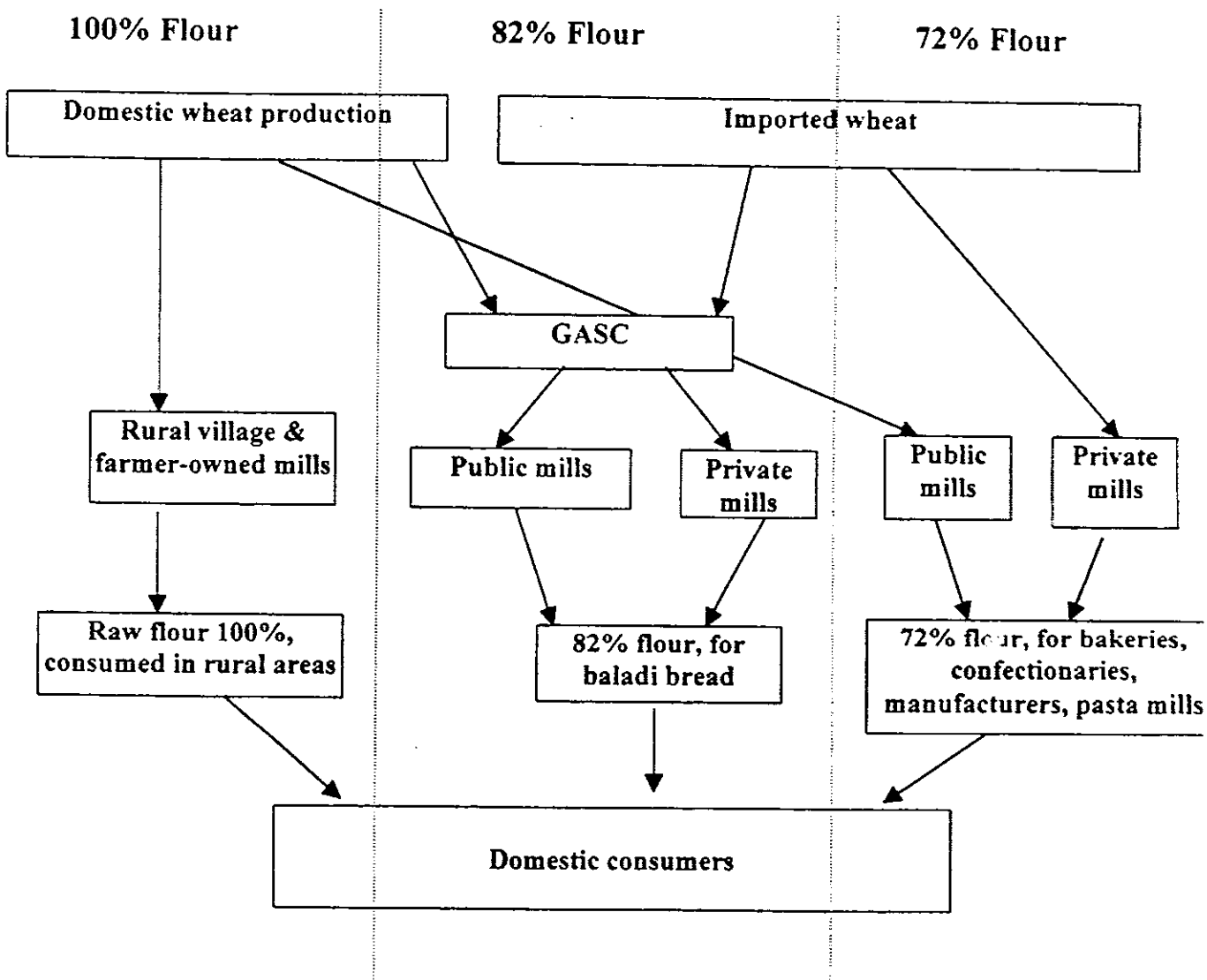
produce large savings.[1] A significant expansion of production of this type of flour would not likely change the market structure but would only produce slight changes in the rates of flow in the system. Hence this type of flour is not identified in the sub-sector maps.

[1] Currently the maize price is LE 80/ ardeb (140 kg) or LE 570/ ton. This is below the domestic price of wheat of LE 666/ ton. The current cost of imported soft wheat from Argentina is $146/ton. After adding customs and port charges, the net cost to GASC is about LE 620/ ton. Thus, the potential savings from substituting maize for wheat is not large.

Wheat sub-sector map

Figure 1 depicts the entire wheat sub-sector. Quantity estimates are based on 1997 production data and current import estimates. There are two major sources of wheat: domestic production and imports. Domestic production meets 47% of the demand and imports meets 53%. As shown in this figure, there are three main categories of flour reaching the consumer. Detailed market channel maps will be developed for each of these components.

Figure 1 - Wheat Sub-sector



Three major Market Components

GOE wheat policies have resulted in a wheat market composed of three major components which, to a large degree, operate separately.

The 72% flour component

The 72% wheat flour is a fine grade flour used in baking finer quality breads, pastries, confectionery items, and manufactured foods including pasta products. This component is produced mainly via domestic milling, by both public and privately owned mills, of mostly imported hard wheats. It includes a very small amount of direct imports of 72% flour.

The 82% flour component

About 20-25 percent of domestic wheat goes into production of the 82% subsidized flour component. In addition, about 4.8 MMT of wheat is imported annually for the production of this grade of flour. The operations of this component are managed by GASC in the MOTS. GASC imports wheat and purchases wheat from domestic producers, sells the wheat to millers at a subsidized price, and supervises the distribution of the flour and baking of the baladi bread. The wheat is milled in both public and private mills and is then distributed to public and private bakers and to retail flour stores. The GOE had a purchase target of 1.5 MT of domestic wheat in 1997 but actually purchased only 1.2 MMT. The GOE procurement price for wheat in 1997 was LE 95/ardeb (150 kg).

The rural component

Wheat that is produced in Egypt but not purchased by the public sector for the production of 82% flour remains in the rural component. In 1997 this component received about 80 percent of domestic production (4.6 MMT out of 5.8 MMT).

Estimates on the use of wheat in this component are weak. The annual seed requirement is estimated at approximately 75 kg/FD for a total of about 200,000 MT (3.4% of production). From a survey of village wheat millers and wheat traders in 21 villages in March 1998[2], we estimate that

[2] Survey conducted for this study by the Economic Affairs Sector of the MALR

290,000 tons of wheat produced in Egypt was fed to livestock and poultry. (None in the Delta and 12.7% in Middle and Upper Egypt.)

The Ministry of Agriculture and Land Reclamation (MALR) also reports that 162,000 tons of durum wheat, which was used for semolina production in the 72% component, was produced in 1997. Subtracting these quantities leaves 3.95 MMT for human consumption. In the rural component, the small village mills and farmer-owned mills mill all wheat used for human consumption. Most of the village mills grind wheat for a fee and generally produce only "raw flour" which is 100% extraction, meaning that the flour is not sifted after milling.

Durum wheat

Durum wheat represents only three percent of total domestic wheat production. In 1997 a total of 162,000 tons of durum wheat were produced in three governorates of Egypt: Minya, Assuit and Sohag. There is one public semolina mill in Egypt, located in Sohag, with a capacity of 300 MT/day. No durum wheat is imported. Some semolina is imported and used by local private companies for pasta production. The major domestic source of flour used for pasta making is the 72% flour mills.

Agencies and firms

General Administration for Supply Commodities (GASC)

Located within the MOTS, GASC is the agency designated to carry out the food subsidy programs of the GOE. The major commodities of concern to this agency are wheat, sugar and edible oils. This agency has about 250 employees. It finances the purchase of domestic wheat used for 82% flour and imports and finances all wheat to be used for producing 82% flour, except the wheat provided by donors. GASC provides wheat to the public and private sector mills which mill 82% flour. It distributes the 82% flour to designated public and private baladi bread bakeries and warehouses (flour sales outlets) and regulates the baking of the baladi bread.

Principal Bank for Development and Agricultural Credit (PBDAC)

While financing agricultural investments is PBDAC's main activity, the agency has had a long history in procurement of agricultural commodities. In the past, these commodities were procured in lieu of payment on farmer loans, i.e., amounts due on loans were subtracted from the payment for the commodity. Today, PBDAC has retained a role

in procurement mainly because it has offices throughout most of rural Egypt and because it maintains a large share of the agricultural commodity storage space available in the country.

Thus, PBDAC functions as a wheat procurement agent for GASC. Wheat delivered to PBDAC is paid for out of a GASC account at the bank and becomes the property of GASC. Farmers, rural wheat traders, and co-operatives deliver wheat to PBDAC. The agency receives LE 3/ardeb for the costs of receiving, weighing, appraising, storing and maintaining the wheat until it is moved, at the expense of GASC, to the flour mills. In 1997 PBDAC procured 2,576,979 ardeb of wheat (387,000 tons) for GASC.

Village co-operatives

Village co-operatives also act as procurement agents for GASC and for the public sector flour mills. The Agrarian Reform Society of Co-operatives reported purchasing 252,225 ardeb (37,834 tons) of wheat from their farmers members and through their village co-ops during the 1996-97 cropping year (1997 wheat harvest).

Also in 1997 the General Purpose or Credit Co-op Society purchased a total of 1,515, 310 ardeb (227,000 MT) and the General Co-op Society for New Lands purchased 140,000 ardeb (21,000 MT) of wheat from their farmers. In total, the co-operatives purchased 286,130 tons of wheat from farmers in 1997 to deliver either to PBDAC or direct to the public mills. (Data on the share going to either outlet was not provided.) The co-ops receive sales commissions of 1-3 % on these transactions.

Private wheat traders

A 1996 survey[3] indicates that a large number of individuals are engaged in the trade of wheat and wheat flour at the village level. These private traders are not exclusively wheat traders but deal in many farm commodities, with wheat representing only about 20 percent of their trading activity. The traders purchase wheat mainly from farmers, less so from other traders, and sell mainly to public mills and PBDAC. The average private wheat trader in the 1996 survey reported that he traded 1,175 ardeb (182 tons) of wheat.

[3] Survey conducted by the Food Security Unit, IFPRI/APRP

Average operating costs reported by these traders were as follows:

	LE/ardeb	Percent
Transport	1.29	25
Storage	.34	7
Labor	3.12	64
Other (taxes, bags, electricity)	.19	4
Total	**4.84**	**100**

In the 1998 village survey, 20 wheat traders were interviewed. These traders reported that they bought 84 percent of their wheat from farmers and 16 percent from other traders. They reported average annual purchases of only 37.5 tons of wheat each. They sold 26 percent to other wheat buyers, including traders, 52 percent to public flour mills, and 22 percent to PBDAC.

These wheat traders reported that wheat represented 31 percent of their business, while 45 percent of them dealt in seeds, 70 percent traded maize, 60 percent traded rice, 40 percent traded fava beans, 35 percent traded fertilizer and 20 percent traded other commodities. Forty-five percent said they trade in other villages in addition to the village in which they live.

The traders reported an average of 7.6 wheat traders per village. The villages surveyed had an average of 1,845 feddans, which implies that there is one wheat trader for every 242 feddans of land. On this basis there are about 30,000 wheat traders in Egypt.

As reported above, there are several market channels for farmers to sell their wheat. The 1998 village survey reported that the co-ops in Middle Egypt buy wheat, but those in the Delta do not. PBDAC acts as a purchasing agent for GASC. Also, a farmer may choose to sell to a private trader, an attractive option as traders pay cash immediately or furnish transport for the wheat -- few farmers have the means to transport their products. On the other hand, the co-op and the village branch bank of PBDAC will pay on the basis of weight thus paying the full price/ardeb for each 150 kg. Many private buyers measure grain in their own containers instead of weighing it, potentially shorting the farmer. Most farmers are well aware of such trader practices but accept them in exchange for the services they provide.

Flour Mills

There are four categories of wheat flour mills in Egypt: public mills, private mills, village mills and farmer-owned mills.

Public Sector Mills

The public milling sector consists of 126 mills with a total capacity of 21,131 tons per day or 6 MMT per year. The seven public sector companies that operate these mills are affiliated with two holding companies: North Cairo and Mid-Egypt milling companies are affiliated with the Holding Company for Food Industries, and the remaining five companies are affiliated with the Holding Company for Rice and Wheat Milling.

The GOE has not attempted to sell individual flour mills. Shares of stock in all seven milling companies have been sold by the holding companies during the past two years according to the following tabulation, as reported in the IBTCI Quarterly reports.[4]

	Percent of total shares sold as of:	
	30 Sept. 1996	31Dec. 1997
Food Industries Holding Co.		
North Cairo Flour Mills	20	40
Middle Egypt Flour Mills	20	40.07
Rice and Wheat Mills Holding Co.		
South Cairo Flour Mills	39.4	39.4
Middle and West Flour Mills	54.9	61.01
Upper Egypt Flour Mills	60.92	60.92
East Delta Flour Mills	60.69	60.7
Alexandria Mills	---	39.0

The Chairman of the Rice and Wheat Mills Holding Company indicated that the GOE will offer for sale an additional nine percent of the shares in the three companies of which 60 percent of the shares have already been sold. Although the majority of shares in three of the milling companies are held by the private sector, the holding company maintains complete management control, as no individual private investor has gained

[4] "Quarterly Review" International Business & Technical Consultants, Inc., USAID Privatization Project.

majority control. The GOE will retain control of the remaining companies for the present time since wheat is a strategic food (See Ref. 3, page 11).

Of the 126 public mills, 109 are currently used for milling 82% flour with a total daily capacity of 15,531 tons, and 17 mills are used to produce 72% flour with a daily capacity of 5,600 tons (Table 2). Stone mills can produce only 82% flour, but roller, or cylinder, mills can produce either type. A separate tabulation of MOTS data indicates that about half of the public sector mills are roller mills with an average capacity of 185 tons/day and half are stone mills with an average capacity of 126 tons/day. Abdel-Latif reports that all domestically produced wheat that is used for 82% flour in the public sector is milled in public sector stone mills because of its high dust content (Abdel-Latif #3, page 5).

Table 2. Public sector milling companies, mills, and milling capacities

Name of	72% flour		82% flour		Total	
Company	No. Mills	Tons/day	No. Mills	Tons/day	No. Mills	Tons/day
North Cairo	2	1,200	11	2,250	13	3,450
South Cairo	2	750	17	1,517	19	2,267
Alexandria	2	750	12	1,383	14	2,133
East Delta	1	500	16	2,325	17	2,825
Mid & West Delta	4	1,200	14	2,520	18	3,720
Mid Egypt	3	600	18	2,470	21	3,070
Upper Egypt	3	600	21	3,066	24	3,666
Total	**17**	**5,600**	**109**	**15,531**	**126**	**21,131**

Source: Data collected by Abla M. Abdel-Latif, 1998. Data on recent changes From U.S. Wheat Associates.

The mills that are currently producing 72% flour have an average capacity of 329 tons/day while the average capacity of the mills producing 82% flour is only 142 tons. This reflects the fact that the roller mills generally have a larger capacity. The capacity of the stone mill plants varies in accordance with the number of individual stone mills they have. Data from the IFPRI survey of millers produce an estimate of 200 tons/mill/day for the stone mills.

The IFPRI survey indicated an average of 118 permanent workers per public mill with average monthly salaries of LE 327. This implies total

employment of 14,868, a total annual wage cost of LE 58.3 million for all publicly owned mills, and a labor cost of LE 9.71/ton of wheat milled.

Private Mills

72% flour

GASC permits private mills to mill only one type of flour in order to prevent any diversion of subsidized wheat provided by GASC into 72% flour. However, practically all 72% flour is made from hard wheats whereas Egyptian-grown wheat is soft winter wheat.

Private sector capacity for the production of 72% flour is expanding rapidly. Private firms began milling 72% flour in January 1996. At the end of 1997 there were 8 private mills operating with a total capacity of 2,460 tons/day. Currently 10 private firms operate with total daily milling capacity of 2,910 tons. It is estimated that by mid-1998 there will be 18 firms with a total capacity of 6,150 tons/day.

The private mills, with the most modern rotary equipment available in the world, are very competitive internationally. Average milling costs of these mills are estimated at US $20-22/ ton (LE 68-75/ ton) compared with average milling costs in the USA of US $25/ ton.[5] Almost all of the new private mills are located in the new desert industrial cities -- 6th of October, 10th of Ramadan or Borg Al Arab -- and enjoy the tax holiday granted to firms in these locations. The average investment in these mills is US $40,000 per ton of daily capacity. Thus, a 500-ton/day mill has an investment cost of US $20 million or LE 68 million. At the current level of 2,910 tons of operating capacity, the estimated investment in the sector is US $116 million or LE 395 million. By mid-1998 the total investment by the private sector is projected to be US $245 million or LE 835 million.

Labor costs of these mills, based on milling capacity, is estimated at LE 10/ton. This can be compared with the estimate of LE 9.71 for public mills, which was based on tons actually milled. The private mills operate with much fewer staff but pay much higher wage rates, particularly for the highly skilled workers such as the millers, the mechanical and electrical engineers, the technicians and the business managers. Hence much of the labor cost in a private mill is relatively fixed and cannot be reduced if the mill runs at less than full capacity. It is estimated that

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[5] Source: Private communication with U.S. Wheat Associates.

when the private mill is operating at 80% capacity, the labor cost is about LE 12/ton.

All private millers of 72% flour are also wheat importers. They import mostly hard red winter or spring wheat. Frequently two or three millers purchase jointly since each shipment is approximately 50,000 tons. All private millers transport the wheat in bulk from the port to the mills.

A small quantity of wheat flour is imported but only for specialty purposes. The high-value of the wheat bran in Egypt combined with the low milling costs have practically eliminated flour imports. No wheat flour imports will be shown in the sub-sector maps.

Public sector pasta mills have a capacity of 122,000 MT/ year. Five new private sector pasta plants have a capacity of about 135,000 MT/year, and several old private pasta plants have a capacity of 300,000 MT/year. The total pasta milling capacity is about 557,000 MT/ year.

82 % flour

Thirty-three private mills currently produce 82% flour under contract for the MOTS. The total production of these 33 mills, which are all stone mills, is currently 2,834 ton/day (Avg. = 86 tons/mill/day). The output per mill ranges from 12 to 225 tons/day, reflecting the variation in the number of individual stone mills within each mill and in the number of shifts that they operate. Many of these private sector mills are located in the Cairo area.

The IFPRI survey of millers included 24 mills in this category. That survey indicated that these are old mills with an average age of 47 years. The average quantity of wheat milled per year is 13,560 tons or about 47 tons/mill/day. About half of these mills reported operating 24 hours a day and half reported operating 12 hrs/day. The range in daily output reported by the mills surveyed was from 13 to 231 tons.

The IFPRI survey of 1996 reported average wage rates for workers in these mills of LE 220/month or LE 2,640/year. The average number of workers was 15.6, so average annual labor costs per mill were LE 41,820 or LE 3.08/ ton of wheat milled.

Four additional mills in the Cairo area were surveyed in 1998 to obtain first hand information on operating practices and financial data. The average milling capacity reported by these four mills was 146 tons/day or 47,100 tons/year. Two of these mills operated three shifts per day and two operated only one shift. The mills had from 10 to 23 stone mills. The average output was 0.6 tons/stone mill/hr.

Actually, GASC determines daily quotas of wheat for each mill. The method of determining these quotas is unknown. The survey of four mills indicated that their capacities exceeded the delivered quantities by 2 to 22 percent.

In these four mills the average annual wage cost was LE 4,370 per worker. Labor cost per ton of wheat milled ranged from LE 4.67 to LE 10.76 for the four mills with an average of LE 7.59/ton. Average reported investment was LE 4.5 million per mill or about LE 188 per ton of annual output. Total milling costs, including labor but no return on investment, averaged LE 30.31/ton milled.

To prevent leakage of the subsidized wheat into non-subsidized products, these mills are only permitted to mill 82% flour. GASC sells and delivers wheat to them at a price of LE 445.80/ton. This is below the price paid by GASC for either imported or domestic wheat. Domestic wheat was purchased in 1997 by GASC at a price of about LE 666/ton. These mills must deliver the 82% flour to bakers of baladi bread or to retail flour stores as specified by GASC.

Flour stores pay LE 500/ton for 82% flour, but bakers of baladi bread pay only about LE 300/ton. The difference is reimbursed to the mills by GASC. The private mills are supposed to sell the bran at LE 400/ton. Based on these prices, the gross revenue from one ton of wheat when the flour is sold to a retail store is LE 482 (LE 500 x .82 = LE 410 plus LE 400 x .18 = LE 72). The gross margin is only LE 36/ton. This margin does not appear to be sufficient to pay operating costs and provide a competitive return on investment.

This margin does not take into account any change in weight due to moisture or foreign matter. It is reported that GASC delivers 152 kg per ardeb of wheat to allow for foreign matter, an allowance of only 1.3%, which is probably insufficient. The four mills reported average foreign matter content of three to four percent.

The wheat is normally washed and dried before milling, but the final moisture content could easily be increased, depending upon the initial moisture content. Thus, there is also a possibility for the miller to increase weight, and thus increase revenue, through increasing the moisture content. The 4 mills reported a gain in weight by adding moisture of 1-2 percent.

The miller can increase revenues by selling bran above the GOE set price of LE 400/ton. Free market prices of bran vary and have been as high as LE 600/ton in recent years. While millers are expected to sell the bran at

LE 400/ton, they often do not, and the GOE apparently does not enforce this regulation.

It appears that these private mills have little bargaining power. They do not have the technology needed to make 72% flour, and the milling of 82% flour is regulated by the government. The mills are not permitted to mill other types of grain. Their opportunities are very limited and no doubt they have limited sale value.

Village Mills

Table 3 contains a list of the 5,259 licensed village mills in Egypt, by governorate. These mills do not mill flour for GASC; rather, they mill domestically produced wheat that is not purchased by GASC -- wheat retained by domestic producers and wheat that is traded between farmers at the village level. Most of these mills grind other grains also. They are small private enterprises generally consisting of only one or two operating stone mills. Few mills sift the ground flour, producing only 100% extract or "raw" flour.

Few of these mills buy grain. They mill grain on a fee basis and ownership of the grain remains with the party that brought the grain to the mill.

Table 3. Number of licensed village wheat flour mills, bakeries, and stores selling 82% flour.

Governorate	Village Mills	Bakeries Urban	Bakeries Rural	Stores Urban	Stores Rural
Cairo	0	1,480	0	0	0
Giza	126	496	258	0	1,842
Qalubiya	150	417	299	230	500
Alexandria	8	800	0	245	0
Port Said	0	130	0	10	0
Suez	3	97	0	41	0
Ismailia	34	159	40	50	180
Behira	330	281	320	500	1,100
Daqahliya	575	457	183	200	440
Gharbiya	352	380	111	294	736
Skarkia	664	395	258	0	80
Kafr El Sheik	353	202	77	125	623
Damietta	56	138	72	80	220
Menofiya	314	245	184	175	400
Fayoum	135	190	86	709	354
Beni Suef	405	140	113	17	153
Minya	421	420	420	10	50
Assuit	198	230	210	475	1,202
Sohag	337	242	162	1032	3,235
Qena	670	171	119	804	3,111
Luxor	0	25	0	146	0
Aswan	86	85	63	540	660
Red Sea	0	50	22	40	10
Matrouh	4	55	28	92	68
New Valley	38	21	11	30	30
North Sinai	0	130	55	60	114
South Sinai	0	20	6	33	10
Total	**5,259**	**7,456**	**3,097**	**5,938**	**15,118**

Source: MOTS, 1995/96

IFPRI survey

In 1997, IFPRI conducted a survey of 406 village mills sampled from the 5,259 licensed mills mentioned above. The size categories shown in Table 4 represent quantities of wheat milled in the past year. These mills also mill maize, but data on the quantity of maize milled were not obtained in this survey.

Table 4. Output of village wheat flour mills

Size Categories (Tons/year)	No. of Mills	Wheat milled/mill	Types of flour produced: 82%	76%	72%	Raw	Bran
		(Tons/year)	(Percent of output)				
Village mills							
< 100	70	68.7	3.5	1.2	1.4	92.3	1.7
100-200	106	143.4	0.6	0.7	2.2	94.5	2.1
200-300	74	238.2	10.4	1.2	6.4	76.8	5.3
300-400	45	341.8	6.0	0	2.7	89.0	2.3
400-500	27	429.5	18.2	1.7	13.4	57.8	8.9
500-1,000	39	654.3	21.5	0.8	8.2	61.6	8.0
1,000-3,000	45	1,543.3	61.0	0.3	11.9	8.7	18.0
Total or Avg.	406	393.1	33.3	0.6	8.7	46.6	10.8
Private mills milling 82 % flour for GASC							
3-6000	3	3,534.3	82.0	0	0	0	18.0
6-20000	17	12,105.8	82.0	0	0	0	18.0
20-35000	4	25,177.7	82.0	0	0	0	18.0
Total or Avg.	24	13,213.0	82.0	0	0	0	18.0
Public mills							
20-35,000	29	27,716.0	82.0	0	0	0	18.0
35-50,000	19	42,953.9	81.2	0	0	0	18.8
50-70,000	28	57,564.6	63.3	3.4	12.4	0	21.0
70-100,000	13	83,585.2	53.7	0	25.6	0	20.7
> 100,000	7	154,066.1	16.6	6.2	51.2	0	26.0
Total or Avg.	**96**	**56,216.3**	**57.6**	**2.3**	**19.0**	**0**	**21.2**

Source: Wheat millers survey, Food Security Unit, IFPRI/APRP, 1997-98.

Village mills reported milling an average of 393 tons of wheat per year or about 1.25 tons per day (Table 4). However, 89 percent of the mills

averaged only 0.83 tons/day while the largest 11 percent averaged about 5 tons/day. Only one of the 406 village mills reported working less than 12 months a year. The larger mills are found in small regional cities. They are still in the rural component and are stone mills. Many have sifting equipment and are able to produce higher quality flour than raw 100% extraction flour. No data were obtained on who owns the wheat that is processed into the finer types of flour or how this flour is marketed.

Based on the milling estimates from the IFPRI survey, the 5,259 village mills mill 2.2 million tons of wheat per year. Previously it was estimated that about 4 MMT of wheat was available to be milled in this component. This gap between capacity and milling requirements will be discussed again below.

The 1997 IFPRI milling survey also reported data on wages. Among the 406 village mills, 71 percent reported permanent hired workers receiving an average wage rate of LE 142/month. With 11.4 months of permanent labor, average annual cost per mill was LE 1,620. Only 10 percent of the mills reported temporary workers for an average annual cost per mill of LE 204. Paid family labor was reported by 69 percent of the mills. These mills reported LE 893 average annual wage cost/mill. The overall total wage cost/mill was LE 2,717 per year. The reader should note that these costs are for hired workers but that these are all small enterprises where the operator is also employed full time.

1998 Village survey[6]

In the 1998 village survey the operators of 19 village mills were interviewed. The average mill milled 53 percent wheat and 47 percent maize. All of these mills milled wheat on a fee basis with charges ranging from LE 2.25 to LE 8/ardeb. These charges averaged LE 3.74 in the Delta and LE 6.46 in Middle Egypt.

Of the 19 mills, 17 reported milling raw flour, 3 reported milling 82% flour, one milled 76% flour and two reported 72% flour. Overall, 83 percent of the output was raw flour, 13 percent was 82% flour, 3 percent was 76% flour and one percent was 72% flour. These mills produced an average of 960 kg of flour/ton of wheat.

Eighteen of the mills hired workers with an average of 1.26/mill. The average wage rate was LE 6 per day for average costs per mill of LE

[6] A survey of 21 villages in the governorates of Behira, Beni Suef, Daqahliya, Minya, and Sharquia was conducted by the Economic Affairs Sector of the MALR for the purposes of this study.

7.55/day. Mills worked an average of 6 days a week. They reported working an average of 10.7 months per year, giving an average annual wage cost of LE 2,100 per mill.

The milling capacity of these mills ranged from 2 to 16 ardeb per day with an average of 6.7 ardeb. If they operate an average of 10.7 months, total annual output would be 1,870 ardeb or 280.5 tons per mill. The mills reported milling 53 percent wheat, for a total quantity of grain milled per mill per year of 150 tons.

Each village had an average of 3.5 mills, or one mill for every 538 feddans of cropland. Based on this ratio, the total number of mills in the country is about 14,000, which suggests that the number of unlicensed mills is about 8,700. These 8,700 unlicensed mills are estimated to have an annual capacity/mill of 150 tons and a total annual milling capacity of 1.3 MMT. As these mills likely mill wheat about 53 percent of the time, it is estimated that they mill about 0.7 MMT of wheat/year. Thus, the annual capacity for wheat milling of these two groups of village mills is estimated at 2.9 MMT.

Farmer-owned mills

While very little is known about the farmer-owned mills, it is assumed that many of these mills must exist. The total wheat milling capacity of these mills is estimated at 1.1 MMT/year, as this is the quantity of wheat remaining in the rural component that exceeds the estimated capacity of the village mills.

Table 5. Summary of data on flour mills *

Item	Village mills Licensed	Village mills Unlic.	Category of mill: Milling 82 % flour Public	Milling 82 % flour Private	Milling 72 % flour Public	Milling 72 % flour Private
No. of mills	5,259	8,700	109	33	17	10
Milling capacity:						
Wheat						
Tons/mill/day	1.25	0.27	142.5	86	329	291
Total tons/day	6,574	2,333	15,531	2,834	5,600	2,910
Total/yr. (MMT)	2.2	0.7	4.35	0.88	1.68	0.873
All grains						
Total/yr. (MMT)	3.3	1.3	4.35	0.88	1.68	0.873
Labor use:						
No. workers/mill	2.59	2.26	118	15.6	118	100
Total workers	13,621	19,662	12,862	515	2,006	1,000
Labor cost:						
Annual wage rate	1,704	2,100	3,924	4,370	3,924	8,730
LE/mill/year	4,413.4	4,746	463,032	68,172	463,032	873,000
Annual Total (M LE)	23.21	41.29	50.47	2.25	7.87	8.73
Labor cost (LE/ton)	10.54	14.05	9.71	7.59	9.71	10.00
Investments:						
Ave./mill (LE)	62,500	50,000	N.A.	4.5 M.	N.A.	39.5 M
Total (M. LE)	328.7	435	N.A.	148.5	N.A.	395

* No data available on farmer-owned mills. Annual capacity estimated at 1.1. MMT
N.A.- Data not available

Wheat and Flour Storage

Public sector silos at the importation docks can store one month of wheat requirements for the public mills. Individual public mills and milling companies can store an additional 2-months supply of wheat (see Table 6). PBDAC has vast quantities of storage space for domestic wheat purchases. Private millers of 72% flour have sufficient storage capacity for 2-3 months of operation. Purchases of wheat are made frequently enough to coincide with milling and storage capacities.

GASC delivers wheat and picks up flour from private millers of 82% flour on a regular basis. At mills visited in 1998, flour was piled throughout the mill indicating a storage constraint.

The purchasers of 72% flour pick up flour on a daily basis, so that no storage constraint exists in the 72% flour component.

Table 6. Storage capacity for wheat and wheat flour held by public sector companies in Egypt, 1996.

	For wheat:		For flour:		Total
Company	Silos	Sheds	Sheds	Warehouses	
		(000 Metric tons)			
General Co. for Silos and Stores	510	0	170.5	0	680.5
Flour Milling Companies					
North Cairo	19.1	18	6	0	43.1
South Cairo	25.5	39.3	12	0.9	77.7
North Alexandria	17.9	3.7	0	0	21.6
East Delta	30	161.5	57.5	28.4	277.4
Middle & West Delta	80.2	102.5	112	13.1	307.8
Middle Egypt	81.6	216.7	8	4.2	310.5
Upper Egypt	206.3	100	22.2	14	342.5
Total	**970.6**	**641.7**	**388.2**	**60.6**	**2,061.1**

Source: MOTS

Urban bias of Wheat Subsidy Program

The rural population receives relatively more 82% flour than the urban population, because most of the 82% flour in urban areas is used by bakers to produce bread. In per capita terms, however, during the year 1995/96, urban residents received LE 38.40 worth of flour and bread compared with LE 18.70 received by village residents (Ref. 4, page 1.33). This bias in distribution may be one of the reasons for the high retention of wheat by farmers. If the GOE does not provide adequate flour for the rural populace, the rural populace simply retains more wheat to feed themselves.

72% Component Sub-sector Maps

Currently, 17 public mills and 10 private mills are operating in this component, although not at full capacity (Fig. 2.1). The public sector has recently shifted one mill from milling 72% flour to producing 82% flour in response to the excess capacity in the 72% component and the needs of the 82% component.

The current milling capacity of this sector is about 9,500 MT/day or about 2.85 MMT/year (Fig. 2.2). However, this capacity is not being fully utilized at present. A rapid rate of investment by the private sector, and a desire by the public sector to reap some profits from producing a high value product, has resulted in excess capacity in this component. Current demand is absorbing about 5,700 MT/day or 1.7 MMT/year of imported wheat. The current excess capacity is about 3,800 tons per day or about 40 percent.

One private mill markets some of the flour it produces in retail size packages (1, 2 and 5 kg) directly to supermarkets, but the bulk of the 72% flour goes to flour traders or wholesalers and manufacturers. Data were not collected on the distribution channels for 72% flour.

Currently, wheat can be purchased at the US Gulf for about $138/ton. Ocean freight is $20/ton. Costs of customs, discharge, fumigation, and taxes at the port add about LE 40/ton and costs of local transport from port to mill are about LE 35/ton. This gives a total cost of wheat at the mill of about LE 615/ton. Total milling costs are estimated at $20-22/ton if operating at full capacity.[7] Thus at full capacity the total cost of a ton of ground wheat would be LE 690/ton.

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[7] Source: Private communication with U.S. Wheat Associates.

Current prices of 72% flour are LE 900-930/ton and bran is LE 400/ton. One ton of wheat produces 720 kg of flour worth LE 662 and 280 kg of bran worth LE 112 for a total value per ton of wheat of LE 774. This gives a current gross margin of about LE 84/ton of wheat milled when at full capacity. As the shape of the cost curve is unknown, there are no accurate estimates of milling costs at 60 percent of capacity, but the milling costs would not be doubled. If the milling cost at 60 percent capacity is $35/ton (LE 119) then at current wheat prices the total costs, including milling, are LE 734 and total receipts are LE 774 for a net return of LE 40/ton.

Thus it appears that currently the private mills are making a small positive return. This profitable situation is highly dependent upon the world wheat price. An increase in wheat price by $12/ton is not improbable and would put these millers in a break-even situation.

Current world wheat prices are below Egyptian prices. Thus there is no reason for millers in this component to purchase local wheat, even if it were legal for them to do so (Ref. No. 5, page 1.29). Allowing these mills to purchase local wheat would have no effect at present but would give Egyptian farmers an edge in times when world wheat prices are high.

The modern private and public mills now existing in this component are capable of competing very effectively in world markets. With the proper investment and policies Egypt has the potential to become a flour-milling center for the Middle East.

Fig. 2.1 - Sub-sector map of 72% flour component
(Number of Firms)

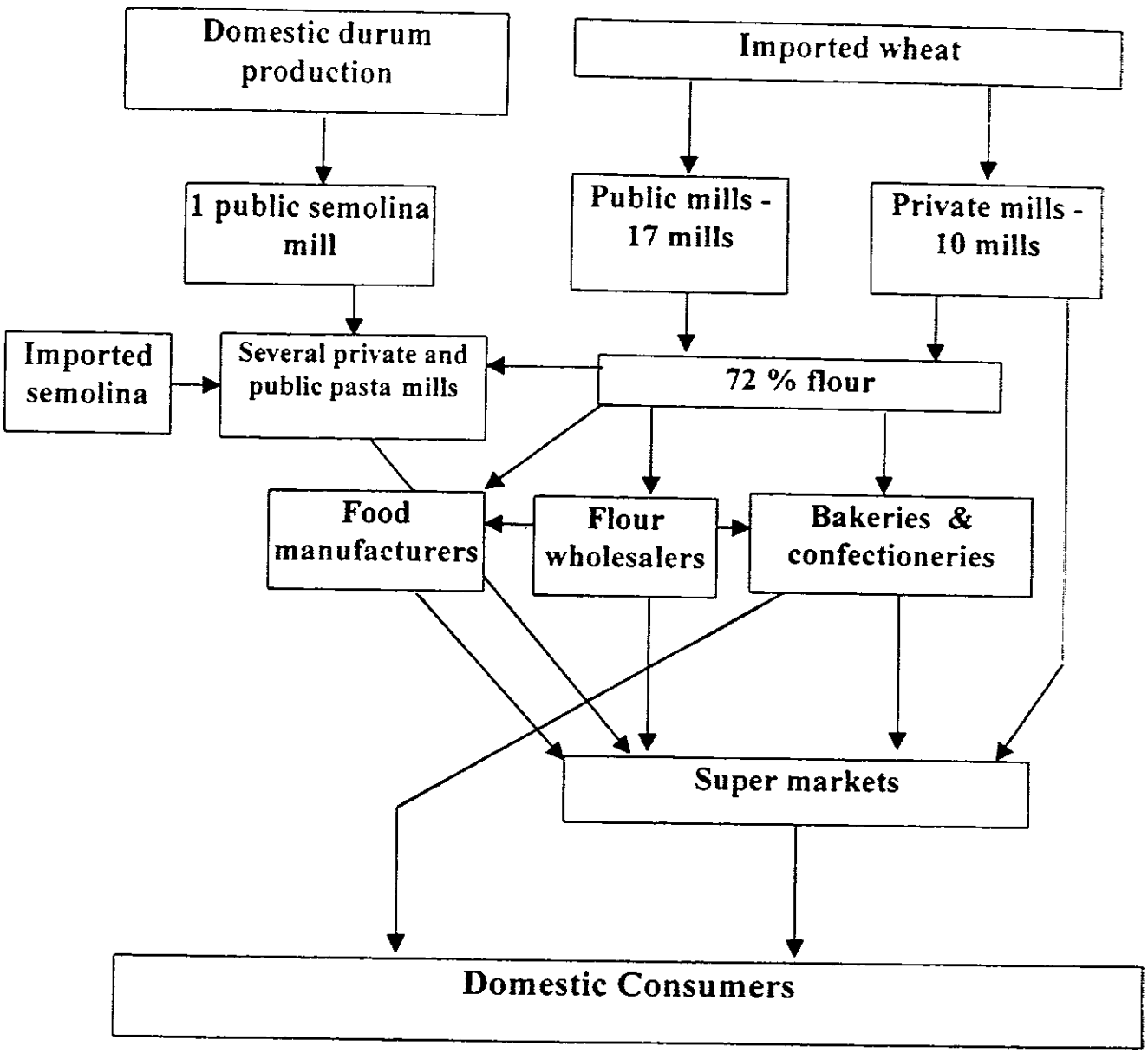
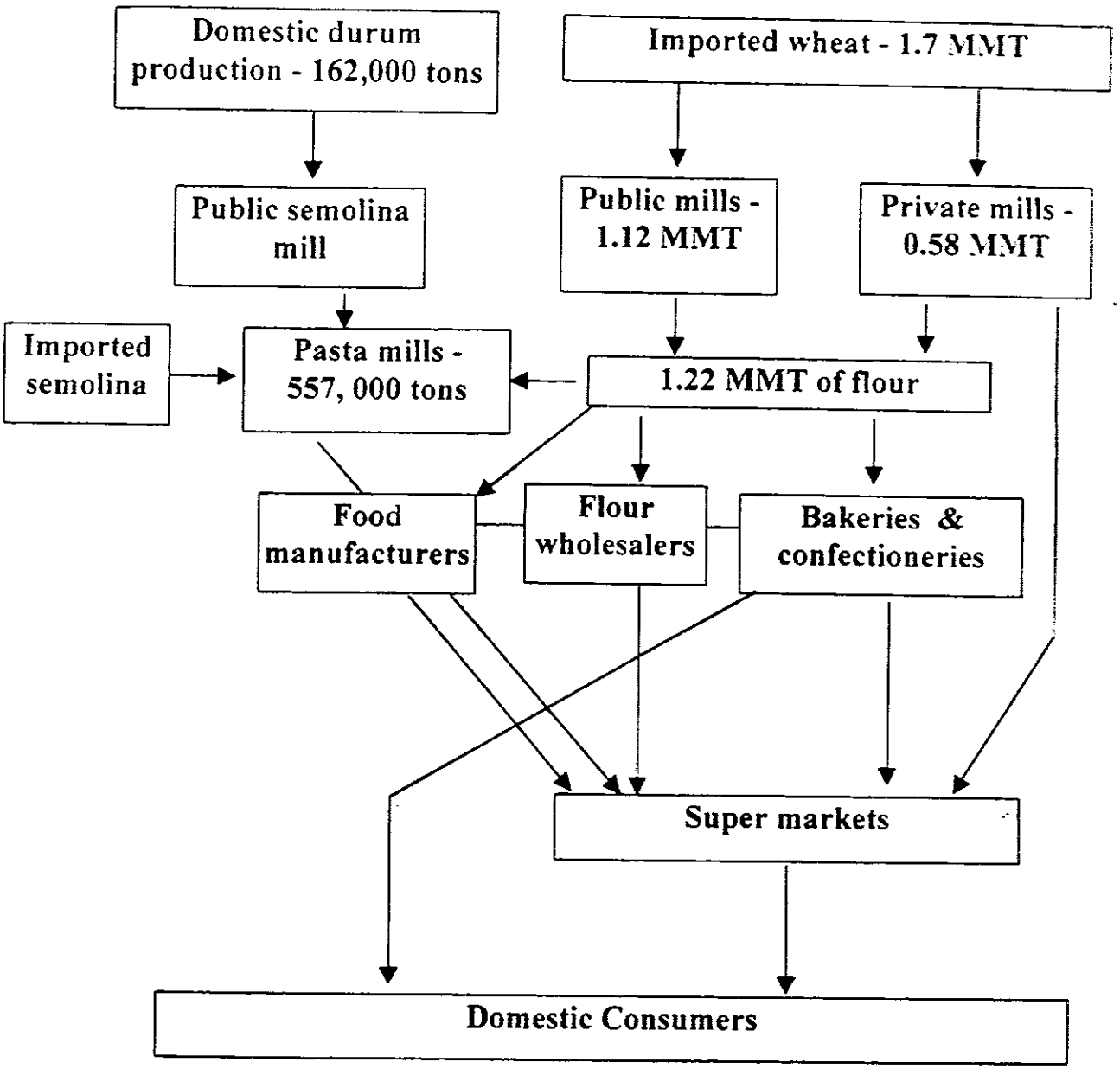


Fig. 2.2 - Sub-sector map of 72% flour component

(Quantity of product flow)



82% Component Sub-sector Maps

Figure 3.1 presents data on the number and type of firms operating in the 82% flour component. Data presented in Figure 3.2 represent 82% flour quantity estimates for 1997-98, based mainly on percentages obtained from 1996-97. As shown in Figure 3.2, the channels of movement of wheat from the Egyptian farmer to the public mills are known, but the quantities moving by each channel are not known.

Distribution of 82 % flour

The 82 % extraction rate subsidized flour moves from the public and private mills to either flour stores (warehouses) or bakeries of baladi bread in each governorate and village according to quotas determined by a committee in GASC (See flow chart 1.3, page 1.32, Ref. No.4). In 1996/97, 73.2 percent of the 82% flour went to bakeries and 26.8 percent went to stores (See Table 7). The private-owned mills which mill flour under contract for the GOE are all located in urban areas and deliver all of their product to flour stores and bakeries in urban areas, as designated by GASC.

Flour Stores

Of the 82% flour going to stores (warehouses) in 1997, 73 percent was delivered to rural areas and 27 percent to urban areas. These flour stores paid LE .56/ kg for the 82% flour and were required to sell it to customers for LE .60/ kg (See Tables 3 & 7). Based on these data the average volume of flour handled by flour stores was about 60 tons/year and about 200 kg/store/day (Table 8). With an average volume of 60 ton/year and a margin of 4 piasters, the average store had a gross margin of LE 2,400/year. The average inventory value of the flour per store is LE 16,800 (30 tons @ LE 560). The 1998 village survey indicated that the average rural store has no hired labor, only an owner-operator. These stores also sell other GOE subsidized commodities such as sugar and edible oils.

Table 7. Deliveries of 82% wheat flour to bakeries and stores, 1997

Governorate	Bakeries Urban	Bakeries Rural	Stores Urban	Stores Rural	Total Urban	Total Rural	Grand Total
			(000) Tons				
Cairo	819.4	0	0	0	819.4	0	819.4
Giza	226.1	129.5	0	85	226.1	214.5	440.6
Qalubiya	142.9	83.7	0.6	9.3	143.5	93	236.5
Alexandria	298.2	0	12.9	0	311.1	0	311.1
Port Said	39	0	0.9	0	39.9	0	39.9
Suez	33.7	0	2	0	35.7	0	35.7
Ismailia	48.3	5.9	0	12.7	48.3	18.6	66.9
Behira	92.6	31.8	20.5	50.2	113.1	82	195.1
Daqahliya	115.5	30.9	2	6.8	117.5	37.7	155.2
Gharbiya	122.5	20.3	18.2	28	140.7	48.3	189
Skarkia	149.2	32.6	0	0.224	149.2	32.82	182.02
Kafr El Sheik	34.22	5.76	3.84	39.13	38.06	44.89	82.95
Damietta	44.5	17.3	3.8	40.2	48.3	57.5	105.8
Menofiya	88.6	36	20.9	69.2	109.5	105.2	214.7
Fayoum	52.8	26.5	27.8	63.9	80.6	90.4	171
Beni Suef	70.8	22.5	5	9.5	75.8	32	107.8
Minya	118.5	83	1	0.1	119.5	83.1	202.6
Assuit	88.2	32.2	45.9	68	134.1	100.2	234.3
Sohag	68.8	25.3	53	169	121.8	194.3	316.1
Qena	52.6	16.9	58.3	168.5	110.9	185.4	296.3
Luxor	12.5	2.4	18.9	15.2	31.4	17.6	49
Aswan	40	7.5	28.6	64.5	68.6	72	140.6
Red Sea	15.2	0.5	4.5	1.5	19.7	2	21.7
Matrouh	14.6	1.9	4	0.35	18.6	2.25	20.85
New Valley	2.9	2.3	0.85	2.36	3.75	4.66	8.41
North Sinai	10.4	1.2	7.18	7.86	17.58	9.06	26.64
South Sinai	6.4	0.1	2.1	0.9	8.5	1	9.5
Total	**2,808.4**	**616.1**	**342.8**	**912.4**	**3,151.2**	**1,528.5**	**4,679.7**

Source: MOTS

Bakers of Baladi Bread

Baladi bread is made in both GOE-owned bakeries and in private bakeries. Most bakeries (96%) are privately owned and operate under contract with GASC, much as the private mills milling 82% flour. The data in Table 3 indicate that there were 7,456 bakeries in urban areas and 3,097 bakeries in rural areas in 1995/96.[8] Of the flour sent to bakeries, 82 percent went to urban bakeries and only 18 percent to village bakeries. Flour is delivered to the baladi bakers according to a quota system based on population. GASC reports an average selling price to these bakers of LE 290/ton, but in the village survey the bakers reported paying an average price of LE 310/ton.

The bakers of baladi bread are closely regulated. They are required to produce 10 pieces of bread per kg of flour (One village baker reported that he was required to produce 1050 pieces/100 kg of flour). The selling price of baladi bread is set at LE 0.05/ piece. Inspectors from GASC monitor the weight and number of the pieces of bread produced.

The 1998 village survey provided data for 17 village bakeries. These village bakeries had an average of 6.06 employees with an average daily wage cost of LE 7.23 per employee and LE 44 per bakery per day or LE 16,000 per bakery per year. The bakeries surveyed reported that they were supplied with an average of 547 kg of flour per day. Table 3 reports 3,097 rural bakeries, and Table 7 reports 616,060 tons distributed to rural bakeries. Based on these data the average quantity of flour delivered per bakery per day is 545 kg for rural bakers and 1,084 kg for urban bakeries.

These bakeries were required to bake bread every day of the year. In the 1998 survey the village bakers reported an average sale value of LE 56,700. No survey data were available describing the operations of the 7,456 urban bakeries. GASC delivers an average of 1,031 kg of flour per bakery for every day of the year.

[8] Ahmed and Bouis, page 27, report that there were 10,693 bakeries in 1996/97 with about 7600 in urban areas and 3100 in rural areas and that 96 percent are private owned.

Table 8. Summary of data on baladi bread bakeries and flour stores.

Item	Bakeries		Flour stores	
	Urban	Rural	Urban	Rural
Number	7,456	3,097	5,938	15,118
Flour delivered by GASC:				
Total Tons	2,950,000	650,000	360,000	960,000
Tons/firm/year	395.7	209.9	60.6	63.5
kg/firm/day	1,084.0	575.0	195.6	204.8
Employment				
Hired workers/firm	10	6.06	0	0
Total workers/firm	11	7.06	1	1
Total workers	82,016	21,865	5,938	15,118
Labor costs				
Daily wage rate (LE)	10	7.2	10	7.2
Labor value/day/firm (LE)	110.0	51.0	10.0	7.2
Labor value/year/firm(LE)	40,150	18,631	3,100	2,241
Total for group (M. LE)	299.4	57.7	18.4	33.9

Fig. 3.1- Sub-sector map of 82% flour component
(Number of firms)

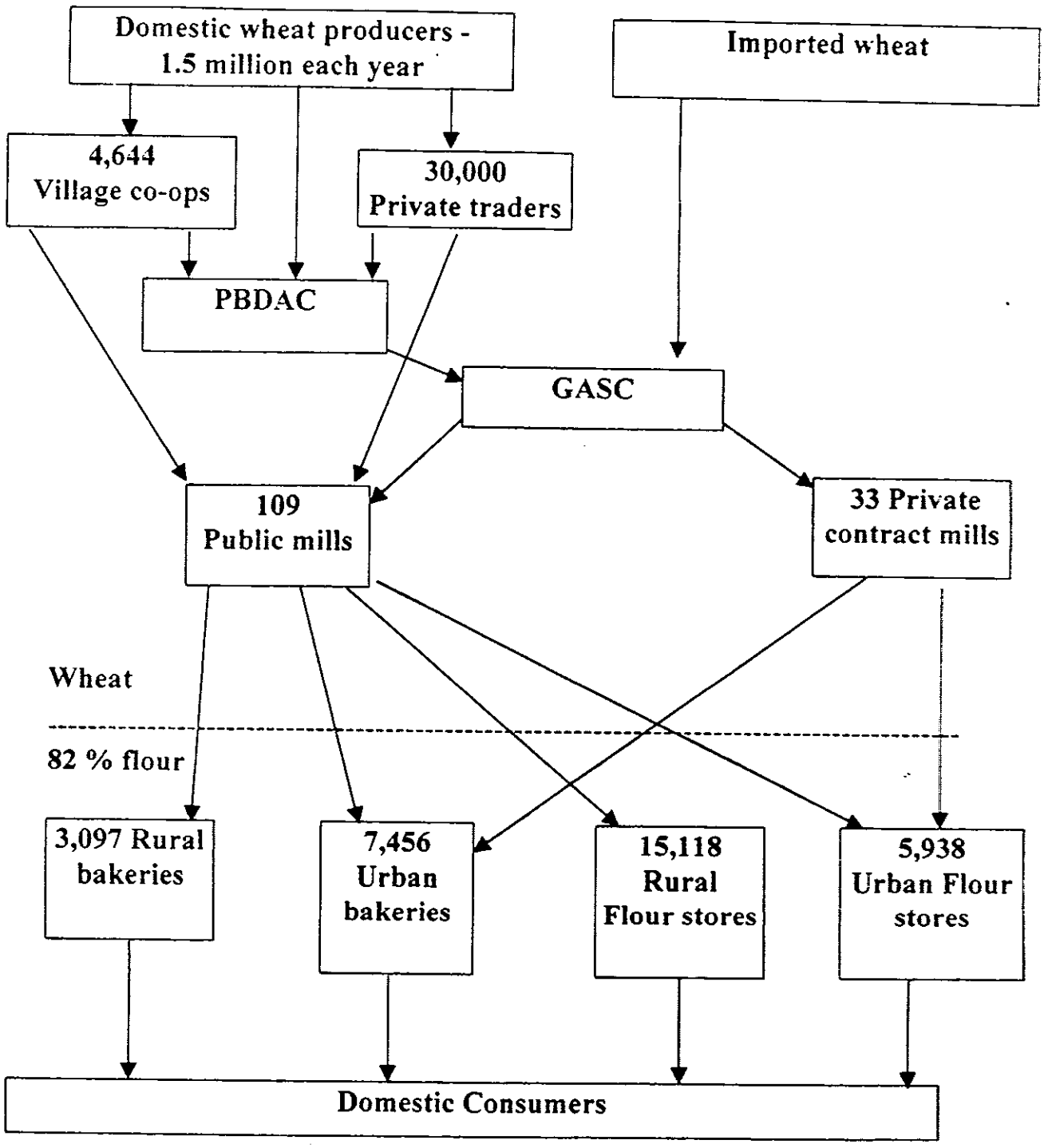
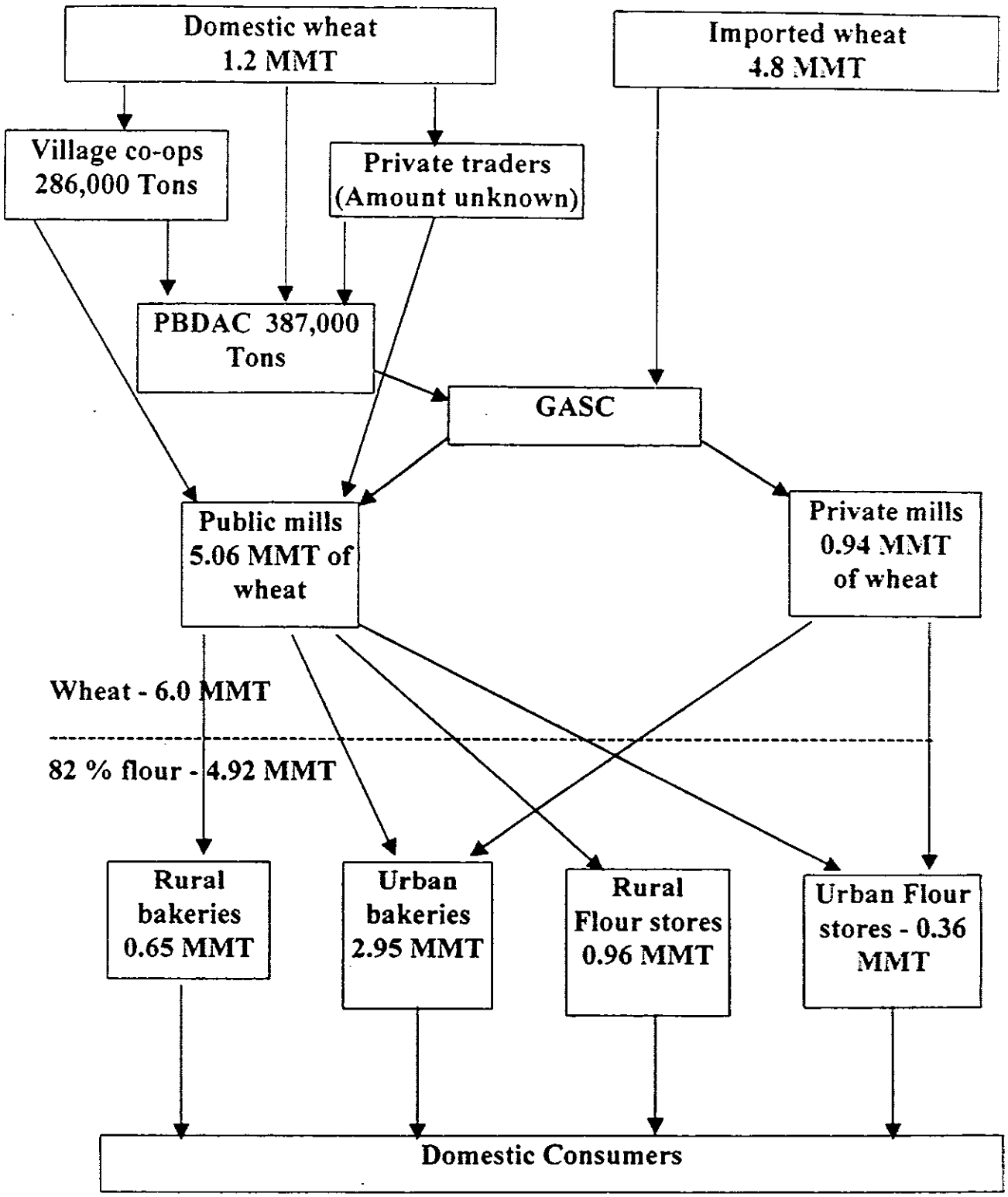


Fig. 3.2 - Sub-sector map of 82% flour component
(Quantity of product flow)



Rural Component Sub-sector Maps

The rural component retains approximately 4.5 MMT of domestically produced wheat annually.[9] We estimate that 4.0 MMT of this wheat is used for human consumption. No data were found regarding the quantity of wheat sold or traded to other farmers, but this trade is likely to be substantial since less than half of the farmers in any locality grow wheat in any given year. It is also known that farmers use grains as payment for hired labor and as payment for other grains, such as maize or rice. Previously it was estimated that there are 30,000 private wheat traders that buy wheat from farmers and sell it to PBDAC or to the public mills, but the quantity moving through this channel is unknown. We can be quite certain that these traders are also active in the trade between farmers and other village residents, but we have no price or quantity data on these markets.

Traders report that they pay farmers about LE 5/ardeb more than the GOE procurement price, which was LE 95/ardeb in 1997. It is likely that traders say this to make it appear as if they have very low incomes and thus should not pay any taxes. However, the price of wheat in the rural component is really unknown. Raw flour in the rural areas must be worth the price of wheat (LE 635/ton) plus the cost of milling (LE 30-35/ton) or about LE 665-670/ton. Farmers refuse to sell a very large share of their wheat production to the GOE, hence they must value it higher than the GOE procurement price.

This wheat is milled in village or farmer-owned mills. Farmers may also mill wheat for their neighbors. Village mills generally do not purchase this wheat but mill grain for others for a fee. Most small mills have no sifting equipment, but larger mills in rural cities do have sifting equipment. These mills can produce a variety of types of flour. The bulk of these mills produce raw flour but the larger mills in this component (Table 4) produce mostly 82% flour and some even produce 72 % flour.

Mills in this component are not using subsidized wheat, and thus these mills can sell any type of flour that they can mill. In some rural areas the people prefer to mix wheat flour with maize flour for bread making. The output of the licensed village mills is assumed to be 89% flour and the output of the unlicensed and farmer owned mills is assumed to be 100%

[9] 4.65 MMT minus 162,000 tons of durum wheat which is used for semolina production, leaving 4.488 MMT for the rural component.

raw flour. An estimated 3.75 MMT of flour is produced annually in this component.

Currently, prices of domestic soft wheat are higher than imported hard wheat. As a result, it is not profitable for mills in this component to compete with the 72% component except for transportation costs. Returns on investment in this sector are low because of the depressing effects of the subsidized baladi bread and flour programs. If the GOE wheat subsidy program were discontinued, this component would be faced with a huge increase in demand. Because of the low average rural incomes, the bulk of the population would continue to consume high extraction rate flour. A rapid expansion in milling capacity would be needed in this component. If public mills were offered for privatization at reasonable prices, they would rapidly be put to use in this component. If public mills were to be priced at unattractive levels, the private sector would add new small mills, as has been done in the rice sub-sector.

Fig. 4.1 - Sub-sector map of rural component
(Number of firms)

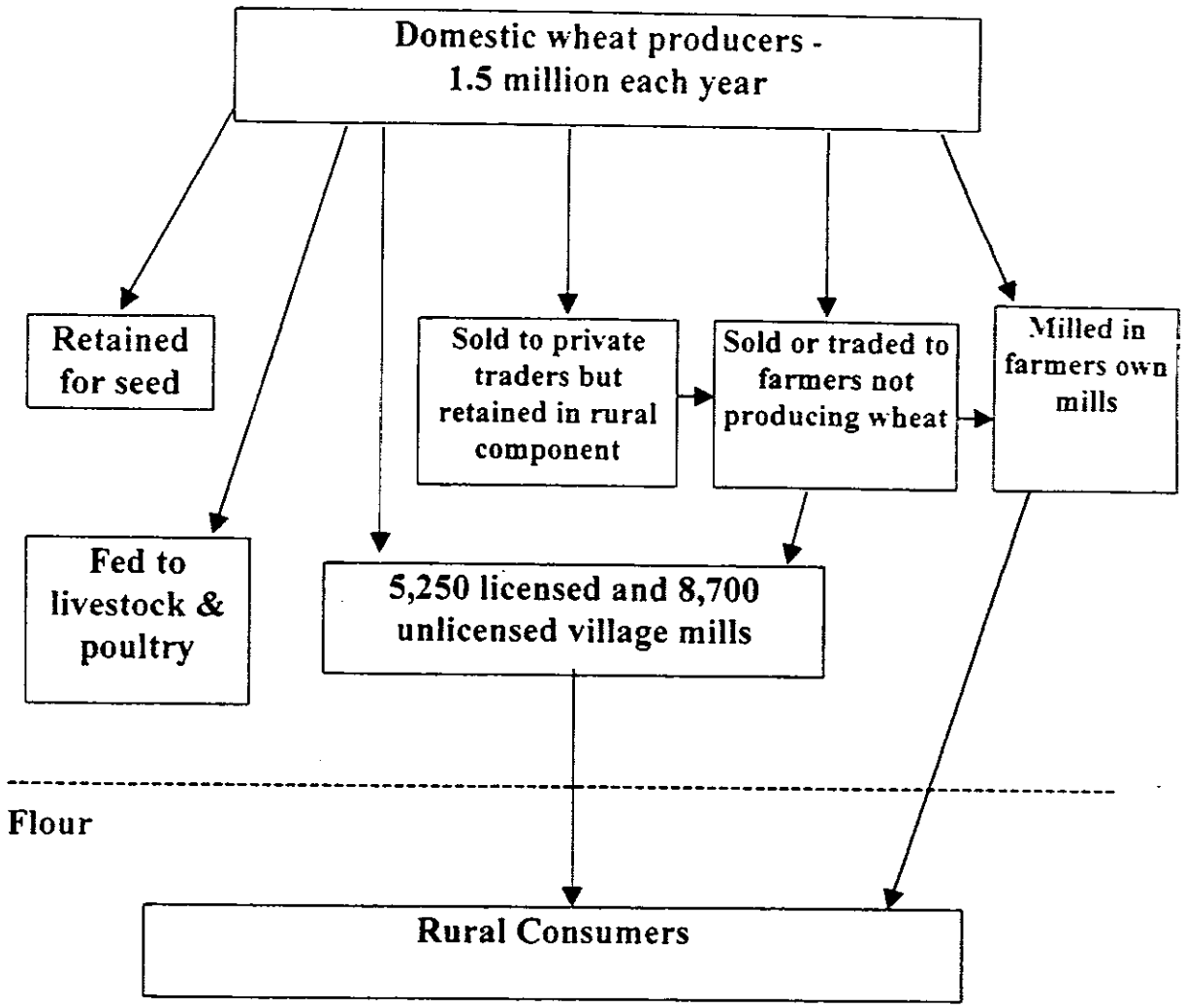
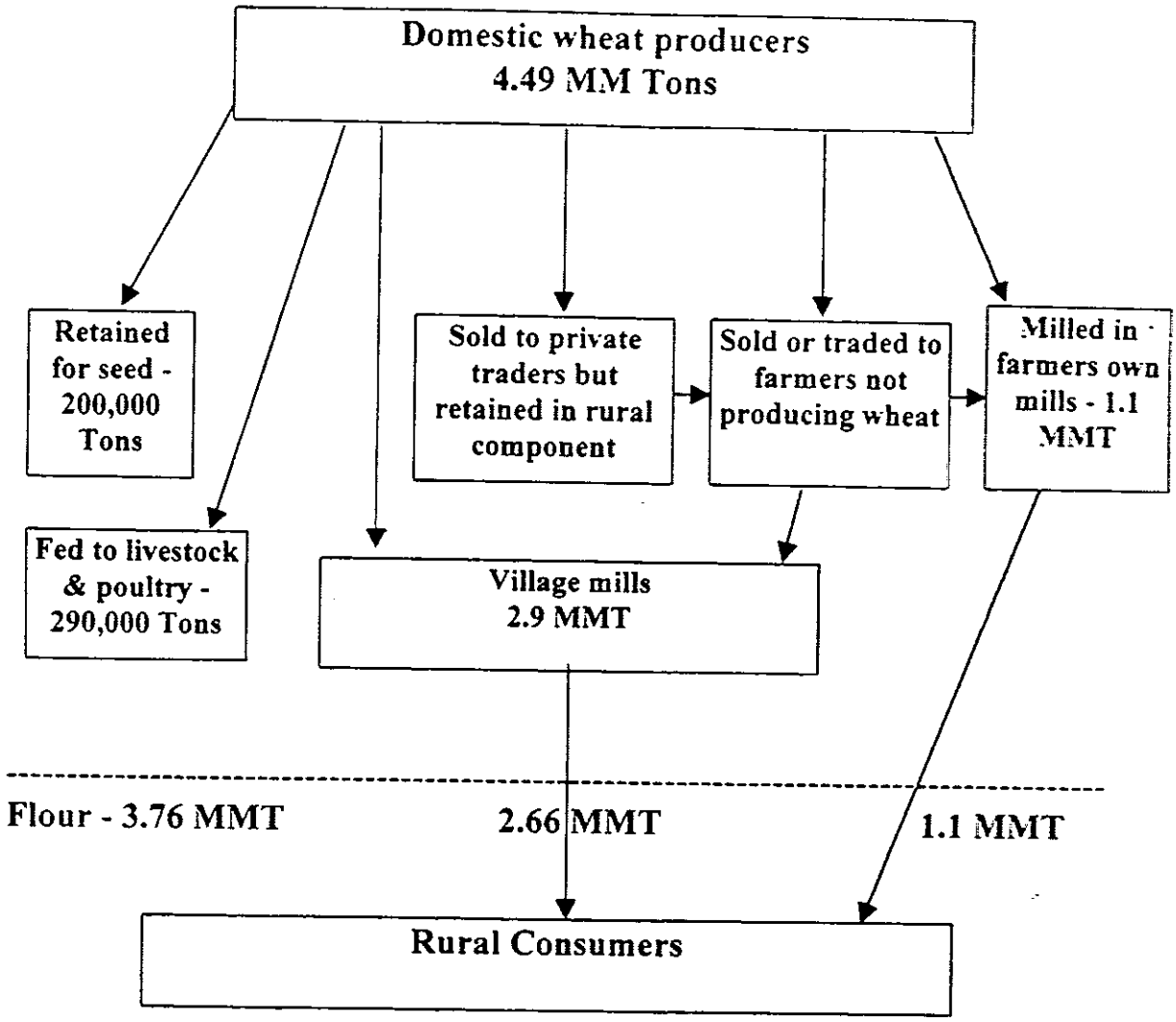


Fig. 4.2 - Sub-sector map of rural component
(Quantity of product flow)



Findings and Recommendations

The sub-sector mapping exercise has revealed several undesirable results of the current GOE wheat and bread subsidization program.

- Baladi bakery shops, 82% flour millers, and private flour stores are operating under contract with GASC at extremely unfavorable price terms. These firms cannot modernize, or even properly maintain their equipment, and they cannot pay decent living wages to their employees. It is difficult for them to follow the GASC rules and remain solvent.
- Private 82% mills have little bargaining power. They do not have the technology needed to make 72% flour, and the milling of 82% flour is regulated by the government. The mills are not permitted to mill other types of grain. Their opportunities are very limited and no doubt they have limited sale value.
- Under the current wheat subsidy program, investments by the private sector in new milling technology for milling of 82% flour are highly unlikely. Private firms now milling 82% flour are antiques, and modernization by these firms cannot be expected. *Changes in the bread subsidy program are needed before the private sector will bring new technology or investment to the 82% or rural components of the wheat sub-sector.*
- While GASC attempts to closely regulate use of 82% flour, there likely are substantial leakages (illegal movements) of flour from the 82% flour component to the other two components. 82% flour can easily be sifted to remove some bran and then resold at a much higher price, or even sold as is for a much higher price. Oversight of the use of 82% flour is costly, and elimination of illegal sales is nearly impossible.
- The system used to determine wheat quotas for the private millers in this component is not transparent and therefore also ripe for fraud. In addition, a recent survey indicated that the capacities of the plants exceeds the delivered quantities by 2 to 22 percent. *These quotas should be transformed into a system of open tenders so that mills can bid on the basis of their individual efficiency.*
- In general, the 82% component is encumbered with regulations and opportunities for fraud, illegal operations and illegal profits. Firms

are likely to be approached by GASC inspectors for underhanded payments. This is an unhealthy situation.

- Millers of 72% flour are prohibited from buying and milling wheat from domestic sources. The GOE fears that such sales would decrease supplies for 82% and require the GOE to import more wheat. This can hardly be true since only about 20 percent of the local wheat is purchased by GASC. This regulation diminishes the demand for Egyptian wheat and penalizes the Egyptian farmer. Most of the wheat needed for 72% flour is hard wheat, but some blending with local soft wheats is always possible. This regulation is also likely to be violated under conditions of high world prices for wheat.

- Not only does the wheat and bread subsidy program create inefficiencies and opportunities for fraud, but it cost the GOE LE 2.9 billion – 4.3 percent of the national budget – in fiscal year 1996/97. *Transfer of the bread or flour subsidy to the final consumer with a food stamp or coupon system should be considered as a way to cut costs to the government, eliminate the temptations for illegal operations, and reestablish competition within the system, thereby attracting more investment in the sector.*

- The eagerness of the private sector to invest in the 72% component is leading to excess milling capacity. Rising incomes and rising population should gradually increase the demand for 72% flour and reduce the excess capacity problem, if the private sector is prudent regarding future investments. However, there are eight or nine additional private mills now under construction. Meanwhile, there is undercapacity in the 82% component. *More public mills could be shifted from the 72% component to the 82% component to alleviate both problems.*

- *If not shifted to the 82% component, public mills in the 72% component should at least be offered for sale to private investors.* Until now, privatization of the public sector flour milling companies has been performed in name only. The majority shares of three of the seven companies and roughly 40 percent of the other four companies have been sold to private investors, but management control remains in the hands of the public sector with no changes in management. No individual public sector mills have been sold to private investors. Pricing has been problematic due to the high value of the land upon which many mills are operating. Policies to promote privatization of public wheat mills should be examined carefully to head-off excess

private investments in new plants and eventual over-capacity, such as exists in other sub-sectors.

- All of the 72 % flour millers are located in the Cairo area or in the Delta. No doubt this is why some flour milled in the rural component is sifted and sold as 72% flour. Consumers in Upper Egypt also have a demand for higher quality flour, however, they are likely deprived of the flour milled by the 72% millers due to high transportation costs.
- All wheat millers are forced to sell bran at a fixed price. *This regulation is both useless and an irritant to the market and should be eliminated.*
- Returns on investment in wheat milling in the rural component are low because of the depressing effects of the subsidized baladi bread and flour programs. *If the GOE wheat subsidy program were discontinued, this component would experience a huge increase in demand and a corresponding increase in investment and milling capacity.*

Data are severely lacking regarding wheat use, milling, marketing, pricing, and distribution in the rural component. The farmer survey planned by the Food Security Unit of APRP for 1998 should attempt to obtain more data on farmers' disposition of wheat. Data are needed on sales or trades of wheat or flour with neighbors, sales to traders, prices of such sales, reasons for choice of outlets, and the use of wheat for livestock and poultry feed.

There are many unlicensed flour mills in the villages throughout Egypt. These unlicensed mills grind both wheat and maize and generally mill for a fee rather than buying the grain. The estimates of numbers and capacities made for these sub-sector maps were based on a very small sample. More accurate data on these firms and their operations would require an additional survey.

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