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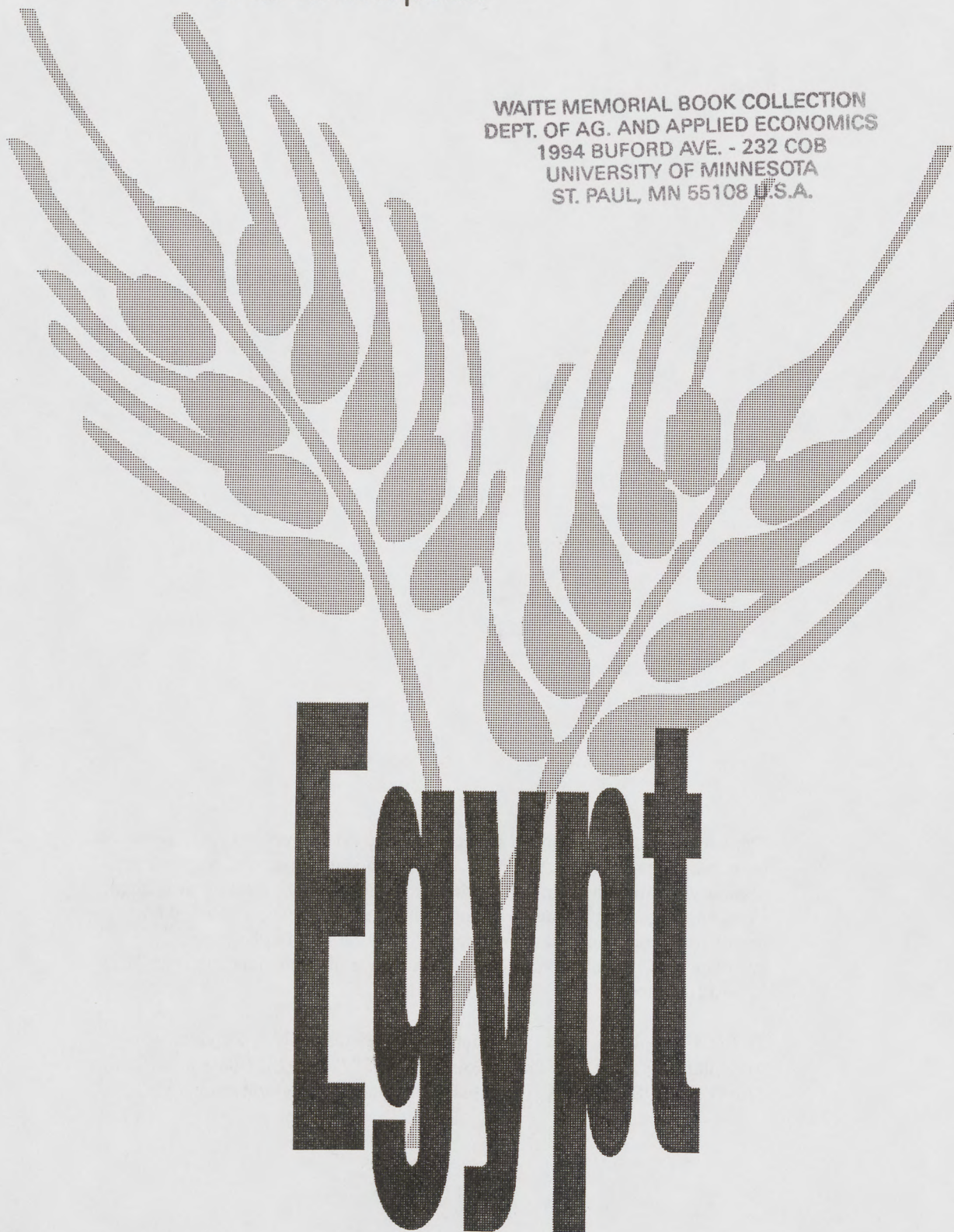
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Determinants of Wheat Import Demand

John Parker
Shahla Shapouri

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Abstract

Egypt relies on wheat imports for more than half of its consumption. Future imports are likely to rise because of the limited arable land and already very high yields. The three largest suppliers of wheat in the Egypt market are the United States, Australia, and the European Community. The wheat import market in Egypt is highly competitive. The types of export promotion programs, in particular the prices offered, will determine the market shares. Providing cleaner wheat will not change the shares. However, providing consistent quality could expand the U.S. share. U.S. white wheat has the best potential to capture a larger share of the market.

Keywords: Wheat imports, flour imports, production incentives, bread subsidies, quality, prices, supplier export subsidies, consumer preference.

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Preface

This report is 1 of 17 reports covering 18 wheat-importing countries prepared by the Economic Research Service (ERS) in support of a comprehensive study of cleaning U.S. wheat destined for export. Similar reports are forthcoming for corn and soybeans:

The Food, Agriculture, Conservation, and Trade Act of 1990 (FACTA) required the Federal Grain Inspection Service (FGIS) to establish or amend grain grades and standards to include, "...economically and commercially practical levels of cleanliness." The legislation required FGIS to determine if the benefits of cleaning exceeded the costs. FGIS subsequently asked ERS to conduct the study. The comprehensive study on wheat included two major components: 1) economic-engineering studies of the cost of wheat cleaning in the United States and estimates of domestic benefits from cleaning and 2) a series of in-country interviews of buyers in major wheat-importing countries to determine the effects of cleaner U.S. wheat on sales in these markets.

The results of this work have been prepared in a three-volume set:

"Economic Implications of Cleaning Wheat in the United States" (AER-669), by B.T. Hyberg, M. Ash, W. Lin, C. Lin, L. Aldrich, and D. Pace;

"The Role of Quality in Wheat Import Decisionmaking" (AER-670), by Stephanie Mercier; and

"The Costs and Benefits of Cleaning U.S. Wheat: Overview and Implications" (AER-675), by William Lin and Mack Leath.

The 18-country case studies form the foundation for the results of the international component of the wheat-cleaning study. The 18 countries studied accounted for 58 percent of world wheat imports and 63 percent of U.S. wheat sales in 1991. Each report has two components: background on the wheat-marketing policies, institutions, and distribution system in the wheat-importing country and results of interviews of wheat traders, processors, and government officials. All the interviews were completed during April-September 1992, and all followed a similar format. Each interview team consisted of both a commodity specialist and a country specialist. They attended a series of seminars on grain quality issues, data collection, and interview procedures before doing their interviews.

All the interviews followed a specific set of guidelines. An advisory panel of government officials, private traders and trade association members helped develop the questions, which consisted of five topic areas:

- The most important factors in the choice of a supplier country;
- Quality factors most important to the importer's purchase decisions and the importer's perception of wheat purchased from their suppliers;
- Contract specifications the importer uses to communicate preferences;

The background information on the wheat-importing country and the responses from the interviews provide a unique insight into the role of quality factors in the wheat purchase decisions of the major importers of U.S. wheat.

Alan J. Webb
Coordinator, Country Case Studies

Reports in the Series, "Determinants of Wheat Import Demand"

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Summary

Egypt relies on wheat imports for more than half of its consumption. Future imports are likely to rise because of the limited arable land and already very high yields. The three largest suppliers of wheat in the Egyptian market are the United States, Australia, and the European Community. There have been wide annual variations in the U.S. and EC market shares, while Australia's share has been steadier. The United States has been the leading source of Egypt's wheat imports in 8 of the last 10 years. Australia, the preferred supplier, has been providing 25 to 30 percent of total Egyptian imports. This means that about two-thirds of Egypt's import needs come from other sources.

The Government is the dominant importer of wheat but no longer has an absolute monopoly. The ban on private wheat imports was lifted in 1991. However, only 1 percent of wheat is imported by the private sector because of cumbersome regulations and price restrictions. The Government decides on quantity and quality of wheat imports. Currently, it places priority on importing white wheat. Suppliers are selected based on cost criteria, although efforts are being made to incorporate consumers' preferences and to diversify sources.

Providing credit to attract the Egyptian market is not an effective policy for exporters because of the improvement in Egypt's foreign exchange availability and the International Monetary Fund's requirement that Egypt limit its borrowing. Shipping costs are important in cost calculations and in the choice of supplier.

Egyptians do not include cleanliness in their quality list. Therefore, dockage is not a problem. In ranking, the main concern is live insects and insect damage, followed by moisture level, weed seed, shrunken and broken kernels, and falling number.

Australia's white wheat gets top marks because of its high quality. Egyptians are willing to pay a premium of \$18 to \$20 per ton for top quality Australian white wheat. Similarly, Egyptians are willing to pay a premium of \$8 to \$10 per ton for U.S. wheat compared with EC wheat. One reason is the difference in moisture content, lower in Australia's wheat, followed by U.S. and EC wheat. Egyptians report high variability in the quality of U.S. wheat within marketing years and shiploads, while Australian wheats are less variable.

The United States is a preferred low-cost supplier, assuming the Export Enhancement Program remains intact. However, reducing the quality variability of shipments and improving the system for dealing with quality complaints could expand the U.S. market share.

Egypt

Determinants of Wheat Import Demand

John Parker
Shahla Shapouri

Overview of the Economy and Recent Performance

The performance of Egypt's economy during the last decade was uneven. Per capita gross domestic product (GDP) declined from \$625 in 1980 to \$565 in 1989. In 1990, the Iraqi invasion of Kuwait forced a large number of expatriate workers to return to Egypt, which added to unemployment problems. Egypt's foreign exchange situation, however, improved because of debt forgiveness and increases in foreign assistance from Gulf and Western countries. In 1991, the economy improved and per capita GDP grew by 3 percent, higher than the 2.5 percent annual population growth.

The debt rescheduling under the International Monetary Fund's (IMF) standby agreement and the World Bank's structural adjustment program reduced financial pressures and forced the Government to undertake major policy reforms. In 1991, the total outstanding debt was 40 percent lower than at its peak in 1988, leading to the lowest debt service payment since 1984 (table 1).

The main goal of policy reform is to reduce the Government's role in the economy and move toward a market-oriented economic system. To improve Egypt's trade performance, the foreign exchange system and trade regulations were modified. The new system is based on a two-tiered market. The primary market is administered and includes all public imports and private exports of goods and all payments currently handled by the Central Bank of Egypt. Wheat and wheat flour, which are imported by the Government, fall into this category. The secondary market involves all other transactions, including tourism. Tariff rates were lowered and the list of products that require prior import authorization was reduced from 55 to 13.

Review of the Agricultural Sector

The role of agriculture in the Egyptian economy has declined through time. Still, agriculture employs about 35 to 40 percent of the total labor force. Its share of GDP was 17 percent in 1990, compared with 25 percent in 1970. During the 1980's, agricultural growth failed to keep pace with growth in the rest of the economy, and its share of total exports declined from 65 percent in 1970 to 20 percent in 1990. During the same period, the food share of total imports rose from 26 percent to 31 percent.

The availability of arable land is a major constraint to increasing agricultural production in Egypt. About half of the population lives in the rural areas. The cropping intensity is high, almost 200 percent, accompanied by a complicated system of crop rotations. Egypt's major crops are cotton, rice, and corn in the summer and wheat, berseem clover, and beans in the winter.

Over the years, the main Government policy goals have remained unchanged. They are: to provide basic food to all and to increase agricultural productivity in order to reduce imports. To achieve these

Table 1—Egypt: Financial and macroeconomic indicators, 1980-91

Year	GDP current (local)	CPI 1985=100	Exchange		Merch. exports	Total imports	Balance of trade	Net transfers	Current account	Total debt	Debt service	Population
			Official	Unofficial								
	<i>Billion Pounds</i>	<i>Index</i>	<i>Local</i>	<i>Per U.S. dollar</i>	<i>Million U.S. dollars</i>							<i>Million</i>
1980	15.5	58.6	0.70	0.76	3,854	6,814	-2,960	2,522	-438	12,786	1,411	42.1
1981	17.1	63.3	0.70	0.88	3,999	7,918	-3,919	1,783	-2,136	14,271	1,911	43.2
1982	20.9	69.2	0.70	1.04	4,018	7,733	-3,715	1,863	-1,852	15,468	1,905	44.5
1983	24.8	80.3	0.70	1.11	3,693	8,251	-4,558	4,228	-330	15,531	1,999	45.7
1984	27.9	88.3	0.70	1.20	4,033	10,766	-6,733	4,745	-1,988	21,400	2,352	47.0
1985	32.5	100.0	0.70	1.40	4,059	9,961	-5,902	3,736	-2,166	23,900	2,555	48.3
1986	36.0	117.3	0.70	1.79	2,632	7,170	-4,538	-2,727	-1,811	28,900	2,250	49.9
1987	45.3	133.3	0.70	2.20	3,115	8,095	-4,980	4,731	-249	37,400	2,400	51.3
1988	54.6	168.3	0.70	2.31	2,770	9,378	-6,608	5,560	-1,048	44,500	2,165	52.8
1989	65.6	214.2	1.10	2.59	2,907	8,841	-5,934	4,625	-1,309	36,400	2,360	54.2
1990	78.9	250.2	2.00	2.67	3,604	10,303	-6,699	6,847	148	32,400	2,500	55.6
1991	98.7	295.9	2.99	2.99	3,856	9,831	-5,975	7,878	1,903	28,000	2,100	56.9

Sources: International Monetary Fund.

goals, the Government increasingly intervened in the agricultural sector. Intervention policies included producer pricing for major crops, area allotment, procurement and processing, direct management of trade, input pricing and allotment, and direct consumer price controls.

In the late 1980's, economic pressures finally forced the Egyptian Government to introduce a more forward-looking set of economic policies. In the agricultural sector, except for cotton and sugar, extensive Government involvement in production and marketing was reduced. In the next few years, the Government plans to liberalize the entire agricultural market including both inputs and outputs.

Wheat Market

Wheat is Egypt's leading food staple. Bread and wheat products account for about half of the 3,400 calories in the daily diet. In recent years, imported wheat and flour accounted for about a third of the total caloric intake. Egypt's wheat import dependency declined during the 1980's, as domestic output increased. In the past 6 years, Egypt has reduced its dependence on wheat imports from a peak of 82 percent of total supply of 8.6 million tons in 1986 to 54 percent of 10.1 million tons in 1991.

The Government has a monopoly in wheat imports. It is also responsible for distribution of both domestically procured and imported wheat. However, almost all domestic production is consumed where it is produced, and, through 1990, only about 5 to 10 percent was sold to Government agents. The officially distributed wheat is processed by Government-owned mills and is sold at highly subsidized prices. Consumer prices are set for different types of wheat and wheat flour.

Production Performance and Policies

Most of Egypt's wheat is produced on farms averaging about 1 acre in the traditional irrigated areas, with less than 10 percent on marginal rainfed areas and newly reclaimed lands.

From 1970 to 1985, annual production was in the range of 2 million tons. Since 1986, wheat production more than doubled to a record 4.6 million tons in 1992 (table 2). During the same period, wheat yield increased by 63 percent and area by 47 percent. The increase in area planted was due to wheat substituting for other winter crops such as cotton, berseem clover, and beans. The increase was a response to higher prices and profits. Until 1987, Egypt had a mandatory acreage and procurement program. It was eliminated that year and producer prices increased.

From 1986 to 1991, wheat yields rose by 63 percent. According to Government reports, new seed varieties were used in all wheat production in 1990, an increase of 14 percent from 1989. Improved farming practices have also contributed to higher yields. For example, traditional hand seeding left uneven and often weak stands, crippling yields. Since the mid-1980's, the Government has been providing mechanical drill planting at a modest fee for all farmers.

Major policy changes improved producers' incentives. Producer prices that were less than 50 percent of the world prices (based on market exchange rates) in 1982-84 increased close to wheat border prices in the early 1990's (table 3). The producer price in 1990 was about \$201 a ton (at market exchange rates), compared with \$160 a ton at the international level. The equivalent incentive price was higher because of input subsidies, for pesticides and water, in particular, and benefited from the high price for wheat straw, which is used as feed.

Water is free and there is no limit on its use. Property taxes are low and few farmers pay income taxes. The new landlord-tenant law is expected to result in an increase in the cost of land leasing and the cost of production. The privatization of the input distribution system in the late 1980's increased

Table 2—Egypt: Wheat production

Year	Area	Production	Yield	Growth		
				Area	Production	Yield
	<i>1,000 ha</i>	<i>1,000 MT</i>	<i>Tons/ha</i>	-----Percent-----		
1980	557	1,796	3.22	NC	NC	NC
1981	588	1,938	3.30	5.57	7.91	2.22
1982	556	2,017	3.63	-5.44	4.08	10.07
1983	570	1,996	3.50	2.52	-1.04	-3.47
1984	491	1,815	3.70	-13.86	-9.07	5.56
1985	498	1,874	3.76	1.43	3.25	1.80
1986	532	1,929	3.63	6.83	2.93	-3.64
1987	579	2,722	4.70	8.83	41.11	29.65
1988	597	2,839	4.76	3.11	4.30	1.15
1989	630	3,183	5.05	5.53	12.12	6.24
1990	740	4,268	5.77	17.46	34.09	14.16
1991	760	4,482	5.90	2.70	5.01	2.25
1992	780	4,600	5.90	2.63	2.63	0.00

NC = Not calculated.

Sources: Egyptian Ministry of Agriculture and USDA data base.

supplies of fertilizer. Prices paid by farmers for fertilizers increased in the past 2 years (1990-91) by about 30 percent.

Quality Characteristics of Domestic Wheat

Soft white wheat accounts for over 95 percent of total output. Farmers are being encouraged to grow more durum and hard red winter wheat. The domestic wheat produced is considered of good quality by world standards, comparable to grades 2 and 3 of the U.S. standards. The quality is, however, hampered by the method of harvesting. The use of small, old, threshing machines reduces the quality by increasing breakage. The threshers vary in efficiency, which means that the amount of foreign matter and sand varies considerably from one farm to another. Poor storage also reduces the quality.

Table 3—Egypt: Wheat producer price relative to international price, 1982-91

Supplier	Unit	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Producer price	LE/\$	95	102	120	172	174	233	467	533	537	550
World price	\$/MT	186	190	187	174	145	139	198	200	160	152
Transportation costs	\$/MT	40	26	18.4	21.4	23.3	21.3	21.2	20.7	26.6	30.2
Exchange rate:											
Official rate	LE/\$	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.1	2	3.33
Market rate	LE/\$	1.04	1.11	1.2	1.4	1.79	2.2	2.31	2.59	2.67	3.33
Domestic price to world price:											
Official rate	Ratio	0.60	0.67	0.83	1.26	1.48	2.08	3.04	2.20	1.44	0.91
Market rate	Ratio	0.40	0.43	0.49	0.63	0.58	0.66	0.92	0.93	1.08	0.91

Sources: USDA, Egyptian Ministry of Agriculture, and World Bank.

Wheat is stored in the open for a considerable time, allowing for sand and insect infestation. There is no grading system to evaluate the quality of domestic wheat because most of the output is consumed on farms. However, with increased domestic production and increased wheat purchases by the Government, a grading system similar to that for imports will be used in future domestic wheat procurement (no timetable is set). The grading system will be implemented by the Ministry of Agriculture and Land Reclamation, which is currently responsible for testing imported wheat quality.

Consumption Preference and Policies

Wheat consumption increased sharply over the past two decades because of consumer subsidies. The lowest wheat consumption level occurred following the 1967 war (1969-70), when the Government plan was to restructure the economy and reduce consumption of imported commodities. Consumption rose from 7.8 million tons in 1981 to about 11 million tons a decade later. Likewise, per capita consumption rose from 143 kilograms in 1980 to a peak of about 157 kilograms in 1990. Since then, consumption gains have slowed because of higher prices for wheat products.¹ Per capita use in 1991 remained flat.

Food security is a major goal of the Egyptian Government. The large size of the consumer subsidy of wheat indicates the Government's commitment to protecting consumers from high and unexpected external food price shocks. Consumer policies for wheat include a large array of intervention measures, such as: direct control of imports, price subsidies between import and retail prices, transportation subsidies, and marketing subsidies.

Subsidized bread and flour are available to all consumers without restrictions. Bread prices are fixed at the retail level. Nominal bread prices are often held constant over a few years and then increased in a given year. Consumer price for bread (the widely consumed balady bread) ranged from 20 percent in 1988 to 61 percent in 1990 of the border prices from 1980 to 1990 (table 4). In real terms, prices paid by consumers for bread declined during 1965-87, causing the bread subsidy costs to approach \$1 billion, more than half the total food subsidies in some years.

During the second half of the 1980's, subsidies on all food declined sharply as the Government tried to reduce budget exposure. However, the decline in the wheat subsidy lagged. In 1988, under pressure from the rising cost of subsidies, the government more than doubled bread prices, which led to a major reduction in subsidy costs. The Government per ton losses from bread subsidies, before marketing costs, were reduced by 41 percent from 1988 to 1990 (table 4).

In the budget account, wheat subsidy costs were less than is shown in table 4 because of the lower import prices paid, more a result of varying exporter subsidy policies than the international price for wheat and flour indicate. The amount of the subsidy on imported wheat was still large, about \$45 per ton in 1991. Efforts to improve efficiency in wheat imports, flour milling, baking, and distribution permitted the Government to reduce its losses from handling wheat to about \$300 million annually in the past 3 years, from an estimated \$850 million during 1980-82, and \$520 million during 1984-86.

Primary Uses of Wheat

Almost all the wheat, except the bran from flour mills, is used for human consumption. Even the small amount of bread used for feed has declined as retail prices have risen. The Government has

¹Consumption of wheat probably would have declined if higher prices of other food items, such as meats, had not also increased, causing many low-income consumers to increase the share of their budget expenditures on lower priced wheat products.

Table 4—Egypt: Bread price, annual 1980-90

Year	Price per loaf	Loaf size	Loaves per kg	Price per kg	Wheat price ¹	Border price	Loss before marketing
	<i>Piasters</i>	<i>Grams</i>	<i>Number</i>	<i>Piasters</i>	<i>\$/ton</i>	<i>\$/ton</i>	<i>\$/ton</i>
1980	1	182	5.5	5.5	59.3	191	132
1981	1	182	5.5	5.5	51.3	238	187
1982	2	169	5.9	11.8	93.0	226	133
1983	2	169	5.9	11.8	87.2	216	129
1984	2	169	5.9	11.8	80.6	202	122
1985	2	169	5.9	11.8	69.1	195	126
1986	2	165	6.1	12.1	55.4	168	113
1987	2	165	6.1	12.1	45.1	160	115
1988	2	165	6.1	12.1	43.0	219	176
1989	5	135	7.4	37.0	117.1	221	104
1990	5	135	7.4	37.0	113.6	187	73

¹Wheat extraction is 0.82 percent.

Sources: Egyptian Ministry of Supply and Home Trade, and ERS estimates.
Not official USDA data.

banned feeding bread, but the practice has not completely stopped because of the low prices of bread relative to other feed products and the fact that bread has a short shelf life. Therefore, scraps are fed to animals. Most of the bran from flour milling is also used for feed.

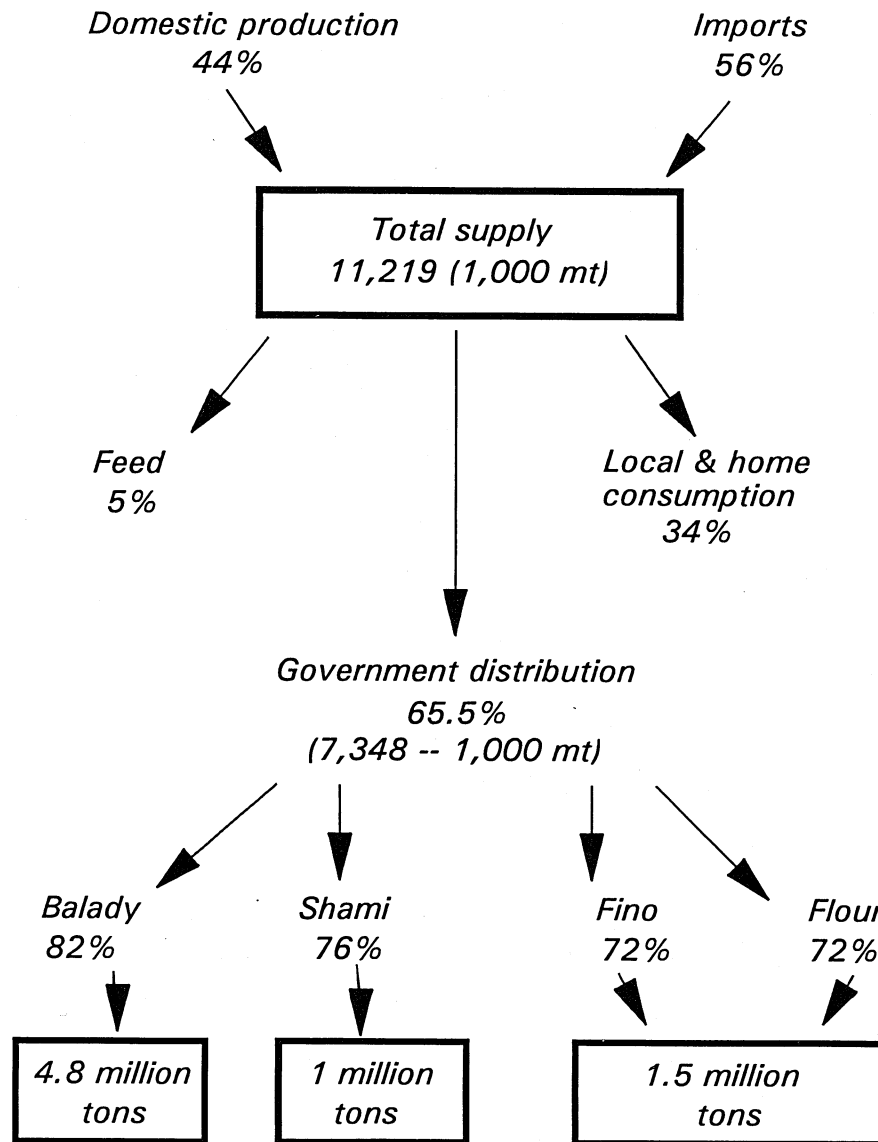
The structure of the wheat market has changed through time, depending on Government policies and domestic output. The structure of the wheat market in 1991 is shown in figure 1. Most of the wheat is used to make bread, and nonbread use of wheat is only about 5 percent of the total commercial wheat available. About 65 percent of the wheat distributed by the Government is used to make balady bread. The extraction rate for balady bread is 82 percent. In recent years, balady bread has changed from a mostly dark coarse bread, using red wheat, to a lighter color, using mainly white wheat. Lighter bread is preferred by consumers. The switch to "higher quality" light bread allowed the Government to increase prices and reduce the size of the loaf (from 169 grams to 135 grams). The Government plans to reduce the size another 15 grams in 1993.

Shami bread is made from flour produced at a lower extraction rate and is more expensive. Recently, the Government reduced the extraction for Shami bread from 72 percent to 76 percent and reduced the size of the loaf from 145 grams to 120 grams, without changing the retail price. Shami bread accounts for about 15 percent of the subsidized wheat distributed by the Government. Fino, a name for newer types of non-Arabic bread, is the name given to French and various other European types of bread and American loaf bread. Fino is made of flour with a 72-percent extraction rate. The Government also increased the price of fino bread from 5 piasters to 7.5 piasters per loaf and reduced the size from 145 grams to 100 grams.

Import Trends and Policies

Egypt usually ranks behind the former Soviet Union and China as the third largest importer of wheat and wheat flour combined. Imports (in wheat equivalent) increased during the 1980's, peaked at over 7.6 million tons in 1987, and declined to 5.5 million tons in 1991 (table 5). The low point for imports was during 1967-72, after the 1967 war, when the Government was faced with severe budget problems and food aid was not available for political reasons. After food aid shipments resumed in 1974, both imports and per capita use of wheat increased markedly. Imports still account for 56-60 percent of the

Figure 1--Egyptian wheat supply and distribution 1991



Note: Percent refers to extraction rate of flour from wheat.

wheat supply. Imports of wheat flour are declining as Egypt's milling capacity expands with the addition of new facilities.

The share of food aid in total wheat imports has declined through time. In the early 1980's, the food aid share of total wheat and flour imports was about 35 percent. It declined from 32 percent of total wheat imports in 1980 to 20 percent in 1989-90. In 1991 and 1992, the food aid share of total wheat imports increased to 25 percent. This was an increase in foreign aid, rewarding Egypt for its role in the Gulf War.

Table 5—Egypt: Wheat availability and imports, 1980-92

Year	Imports		Total wheat available	Import share of supply	
	Aid	Total		Aid	Total
	-----1,000 metric tons-----			----Percent----	
1980	1,740	5,423	7,469	23	73
1981	1,727	5,878	7,670	23	77
1982	1,940	5,503	7,576	26	73
1983	1,809	5,857	7,950	23	74
1984	1,772	6,302	8,150	22	77
1985	1,942	6,236	8,169	24	76
1986	1,781	7,022	8,601	21	82
1987	1,962	7,573	9,616	20	79
1988	1,630	7,408	10,247	16	72
1989	1,417	7,258	10,441	14	70
1990	1,206	5,668	10,254	12	55
1991	1,525	5,781	9,933	15	58
1992	1,385	5,500	10,100	14	54

The Government is the dominant importer of wheat, but no longer has an absolute monopoly. The ban on private wheat imports was lifted in 1991. The announced privatization of wheat and flour imports, however, is expected to have a limited effect on the market because of slim profit margins and cumbersome regulations and price levels. For example, wheat flour sold in retail stores must not exceed specified price ceilings, meaning that private imports for distribution to stores are not likely to be profitable. Therefore, in 1991, only about 1 percent of wheat was imported privately. The private imports fall into two categories. One, they consist of a special type of flour like durum or cake mix, mostly for distribution to catering firms or major hotels. Two, the imports are made with the intention of delivery to the Government distribution system, with a plan to receive a specified commission (usually 4 percent of the delivered cost). Private importers must also pay a 1 percent port handling tax and a 1 percent statistical tax to customs.

The decisions on the quantity and quality of wheat imports are made by the Government. The Government imports directly and negotiates import prices. The Ministry of Supply selects the quantity of imports based on an assessment of demand and domestic output. The level of subsidies must be approved by the cabinet, then by the Ministry of the Treasury, who must approve the allocation of foreign exchange. The Ministry of Supply can make adjustments to the annual budget because of changes in world prices and/or demand. The Under Secretary of the Ministry of Economy is the Chairman of the General Authority for Supply of Commodities (GASC). The chairman coordinates the planning and purchases of imported wheat and flour. The amount of wheat needed by specific flour mills throughout the country is estimated in order to assure a steady supply. GASC receives information and advice from overseas Egyptian buying missions. Millers and bakers are not involved in decisions related to types and grades of imports.

The standard for Egyptian wheat imports is set by law and is U.S. grade 2 or better. U.S. standards are also followed at the port inspection centers. The Quarantine Department of the Ministry of Agriculture and Land Reclamation is responsible for inspecting for diseases, dockage, spoilage, and other quality-related problems.

U.S. and Competitor Programs

Egypt is an important market for U.S. agricultural exports, which were valued at \$700 million in 1990. Egypt is also a major recipient of U.S. export assistance under programs such as P.L. 480, Export Credit Guarantee Program (GSM-102), the Export Enhancement Program (EEP), and the Sunflowerseed Oil and Cottonseed Oil Assistance Program.

The total quantity of wheat assistance under the P.L. 480 program increased from 1974 to its peak in 1982 (1.2 million tons) and since then has declined (table 6). The value of wheat assistance declined from about \$300 million annually in the early 1980's to only \$150 million in fiscal year 1992. Only \$43 million of the \$150 million available in fiscal 1992 was used. During the 1980's, wheat usually accounted for two-thirds of the value and wheat flour a third. In FY 1992, the share was 75 percent and 25 percent, respectively, responding to the increased milling capacity in the country. A combination of a recent increase in foreign exchange availability, a Government cash purchase policy, and a change in the repayment for P.L. 480—from an option of local currency payment to only U.S. dollars—may reduce use of P.L. 480. Food aid received from other donors will not be affected because it is provided on a grant basis.

Wheat and flour accounted for all the \$350 million in Export Credit Guarantee Program (GSM-102) provided in FY 1989 and \$200 million in FY 1990. The quantities imported under this program reached almost 1.9 million tons in 1989 (table 7). GSM-102 credit was not used in 1991. A private GSM-102 credit for \$40 million was provided for wheat flour in FY 1992, and \$30 million was used.

Since 1986, most of the wheat and flour exported to Egypt outside P.L. 480 has received EEP bonus awards, which varied widely, depending primarily on world prices and competitor prices. In general, EEP means that the price paid by Egypt is a fourth to a third less than would otherwise be the case.

Table 6—Volume of U.S. concessional shipments of wheat and flour (in grain equivalent) to Egypt, fiscal years 1974-90

Year	Title I	Title 2	Total P.L. 480	Aid	Total
<i>Metric tons</i>					
1974	0	5,088	5,088	0	5,088
1975	436,370	5,007	441,377	0	441,377
1976	690,490	0	690,490	0	690,490
1977	1,193,610	0	1,193,610	0	1,193,610
1978	968,170	0	968,170	15,281	983,451
1979	1,081,650	0	1,081,650	0	1,081,650
1980	1,035,325	0	1,035,325	0	1,035,325
1981	1,060,840	0	1,060,840	0	1,060,840
1982	1,160,423	8,544	1,168,967	0	1,168,967
1983	973,559	11,497	985,056	0	985,056
1984	968,635	6,312	974,947	0	974,947
1985	971,615	6,292	977,907	0	977,907
1986	984,940	0	984,940	0	984,940
1987	1,024,226	0	1,024,226	0	1,024,226
1988	793,038	0	793,038	0	793,038
1989	602,829	0	602,829	0	602,829
1990	755,537	0	755,537	0	755,537

Table 7—Volume of credit program exports of wheat and wheat flour to Egypt, 1981-91

Fiscal year	GSM-102	Blended credit	Total
<i>1,000 metric tons</i>			
1981	0	0	0
1982	0	0	0
1983	0	390	390
1984	0	397	397
1985	98	148	246
1986	1,541	0	1,541
1987	1,015	0	1,015
1988	1,974	0	1,974
1989	1,903	0	1,903
1990	1,022	0	1,022
1991	0	0	0

Australia and the European Community (EC) are the largest U.S. competitors in the Egyptian market. During 1980-90, the Australian Wheat Board provided credit for Egypt to purchase wheat, but since 1991, all purchases have been made in cash.

Australia has a long-term trade agreement with Egypt, calling for 10 million tons of wheat over a 5-year period. The Australians have not subsidized their sales, with one exception in 1987. In that year, U.S. white wheat was sold to Egypt at \$73 per ton, compared with a world price of \$120 per ton, and an Australian Standard White (ASW) price of \$107 per ton. Following negotiations between Australia and Egypt, the actual price paid by Egypt was \$89, a subsidy of \$18 per ton (\$107-\$89). The difference between the U.S. and Australian prices was \$16 per ton, which Egyptians believe is a reasonable premium for the higher quality Australian wheat.

The EC also has a large credit subsidy program for its wheat exports. EC restitution payments for wheat and flour were pivotal in 1989 and 1990. EC exports of wheat flour to Egypt were about 1 million tons annually in the late 1980's, more than 10 times the 1992 level. The EC also provides food aid to Egypt, which in 1991 included 150,000 tons of wheat and 67,000 tons of wheat flour.

Canada, a major wheat exporter, had little wheat trade with Egypt in the last few years in part because its wheat varieties are not preferred and partly because of Egypt's earlier payment difficulties. Canada resumed its exports through a food aid program with 32,000 tons of wheat in 1991 and 36,000 tons in 1992. Saudi Arabia granted Egypt 200,000 tons of wheat in 1991 but only 154,000 tons were shipped.

Trends and Factors in Market Shares

Both the Egyptian Government's procurement policies and the suppliers' export policies result in changes in market shares. For example, the Government's current priority is to import white wheat and protein content is not important. This means a shift away from more expensive U.S. and Canadian hard red winter wheat, imported in the mid-1980's. In 1991, Egypt purchased large volumes of U.S. white wheat and reduced imports of soft red winter wheat. Imports of soft red winter wheat, mostly from the United States and the EC, which rose from 1 million tons in 1979 to 3.8 million tons in 1989/90, were at token levels in 1991.

The three largest wheat suppliers in the Egyptian market are the United States, the EC, and Australia. Currently, the United States has the largest market share. However, wide annual variations have occurred in the U.S. and EC market shares, while Australia's share has been steadier. The U.S. market share, for example, increased from 35 percent in 1990 to 56 percent in 1991 as the EC share fell from 35 percent to 7 percent (table 8). In 1990, large wheat flour exports allowed the EC share to rise to 35 percent, from 14 percent in 1989. The Australian share has been in the range of 25 to 34 percent since 1984. The U.S. Government and the EC have extensive wheat export promotion programs and are highly competitive. Australia does not provide any direct price or credit subsidies, but, according to Egyptians, their prices are competitive and their wheat quality is clearly preferred.

The unit import values for wheat and wheat flour by major suppliers did not have a stable pattern. The reasons are differences in quality and types of imports. During 1983-93, however, the import value of Australian wheat was higher in 5 of the 8 years (table 9). In the wheat flour market, the main competitors were the EC and the United States. During 1982-90, the unit import value for EC flour was higher in 7 of the 9 years (table 10). The EC was usually the leading supplier of imported wheat flour. Wheat flour imports declined because of the construction of modern flour mills in Egypt, which has caused a sharp decline in EC sales to Egypt.

The share for suppliers other than the big three declined from 25 percent in 1978 and 11.5 percent in 1985 to only 3.8 percent in 1990, but rose to 8.2 percent in 1991 because of an increase in Saudi

Table 8—Egypt: Wheat and wheat flour market share, 1966-91

Year	States United	EC	Australia	Other
<i>Percent</i>				
1966	0.7	14.2	0.2	84.9
1967	4.2	23.6	1.9	70.3
1968	0.0	42.0	0.0	58.0
1969	0.0	91.4	0.0	8.6
1970	0.0	32.4	27.2	38.8
1971	0.0	28.2	68.5	3.3
1972	0.0	39.4	53.4	7.2
1973	19.9	54.2	23.2	2.7
1974	22.9	25.9	29.5	21.7
1975	28.2	41.8	25.7	0.3
1976	49.4	23.2	23.4	4.0
1977	43.7	16.4	29.3	17.1
1978	35.8	20.1	19.1	25.1
1979	25.1	29.1	32.8	12.2
1980	32.0	37.3	30.1	0.7
1981	43.8	25.3	28.1	3.3
1982	42.0	19.9	35.3	3.0
1983	57.2	20.7	16.1	3.6
1984	33.0	27.9	29.3	9.7
1985	35.7	23.1	31.8	11.1
1986	44.2	15.5	30.9	8.0
1987	45.2	18.2	29.8	3.0
1988	53.5	20.5	24.9	1.2
1989	58.4	14.0	26.6	1.2
1990	35.1	34.7	27.4	3.8
1991	55.9	6.9	33.7	3.4

Table 9—Egypt: Wheat imports from selected suppliers, 1983-90

Supplier	1983	1984	1985	1986	1987	1988	1989	1990
<i>Metric tons</i>								
Quantity:								
United States	1,954,324	1,542,748	1,645,829	2,071,359	2,458,132	2,814,293	3,390,968	1,663,703
Australia	1,093,308	2,190,638	2,357,761	2,116,879	2,104,000	1,738,120	1,875,984	1,779,286
EC	1,021,286	291,494	2,000	50,817	394,070	784,904	420,053	1,640,000
Canada	56,670	642,545	654,948	348,351	126,261	24,538	0	0
<i>US \$1,000</i>								
Value:								
United States	298,065	212,296	207,060	215,783	234,531	372,144	529,574	213,390
Australia	179,355	335,193	324,717	242,558	187,896	209,292	304,696	286,365
EC	158,781	42,414	353 5,499	29,205	96,678	62,280	204,913	
Canada	6,928	97,699	90,342	39,420	14,027	NA	0	0
<i>US dollars per metric ton</i>								
Import unit value:								
United States	152.52	137.61	125.81	104.17	95.41	132.23	156.17	128.26
Australia	164.05	153.01	137.72	114.58	89.30	120.41	162.42	160.94
EC	155.47	145.51	176.50	108.21	74.11	123.17	148.27	124.95
Canada	122.25	152.05	137.94	113.16	111.10	NA	0	0

NA= Not available.

Sources: USDA and United Nations data.

Table 10—Egypt: Wheat flour imports from selected suppliers, 1982-90

Supplier	1982	1983	1984	1985	1986	1987	1988	1989	1990
<i>Metric tons</i>									
Quantity:									
United States	450,823	1,385,358	662,459	721,742	860,398	528,378	662,398	528,378	334,638
EC	726,000	348,620	1,324,044	1,240,835	726,327	659,601	606,491	390,682	402,978
<i>US \$1,000</i>									
Value:									
United States	113,139	190,952	116,516	110,693	119,647	113,053	114,373	121,075	79,149
EC	193,000	66,017	249,599	241,228	118,279	115,178	99,851	92,538	97,612
<i>Dollars per metric ton</i>									
Import unit value:									
United States	250.96	137.84	175.88	153.37	139.06	213.96	172.67	229.14	236.52
EC	265.84	189.37	188.51	194.41	162.85	174.62	164.64	236.86	242.23

Arabia's exports. All Saudi wheat is donated and exports in 1991 were 156,000 tons. Small suppliers have generally been crowded out of the Egyptian market by the one quality premium supplier, Australia, and the two export subsidy suppliers, the United States and EC. Canada's share of Egypt's wheat imports during 1984-87 was 6.4 percent, but declined sharply in 1988-91, to less than 1 percent. Argentina, Bulgaria, and Turkey have also had a decline in their shares.

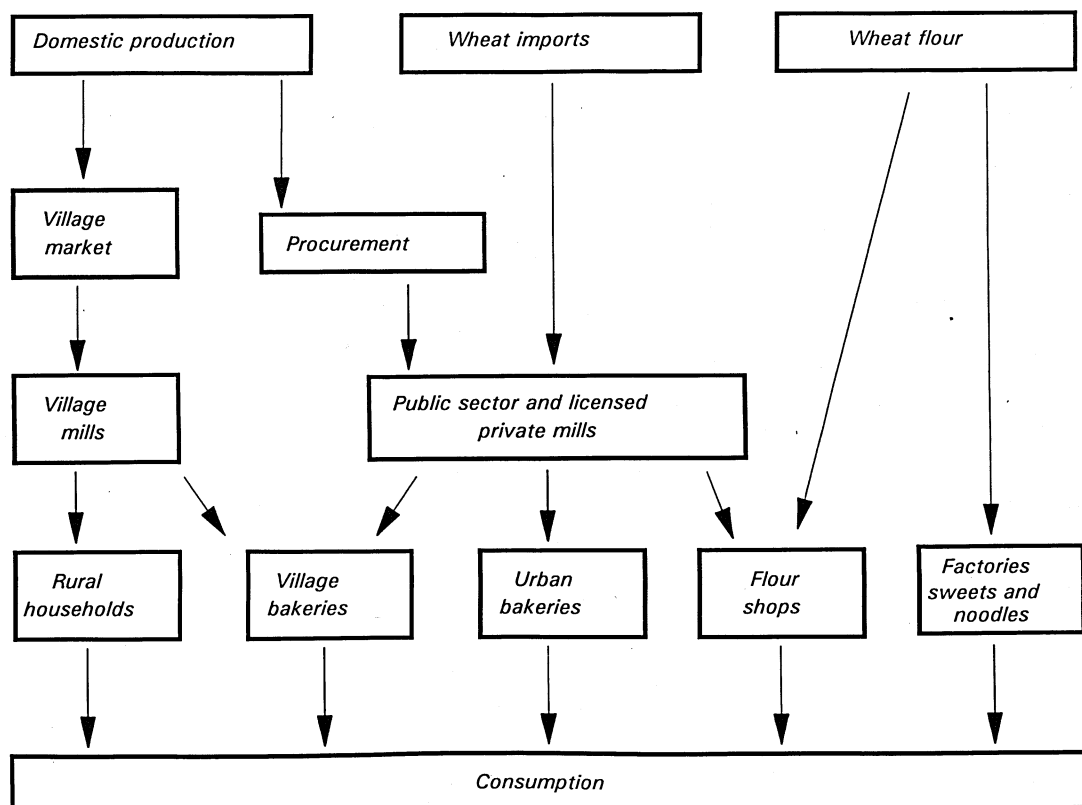
Marketing and Distribution

The distribution of wheat and wheat flour is shown in figure 2. The Government has the responsibility of the marketing of all imports and domestically produced wheat. In the Ministry of Supply, GASC is responsible for direct imports, including import tenders and all import operations. It also oversees stocks (General Silo Company). The Principal Bank for Development and Agricultural Credit (PBDAC) is in charge of domestic procurement. The Government procurement of domestic wheat was small until 1991, when it rose to 14.7 percent of the crop.

The Government holds most stocks. The modern covered storage facilities have an estimated capacity of 1 million tons. Open storage areas have a capacity of more than 1 million tons, but losses are high because of birds, pests, and rain.

Domestic use requirements for wheat flour involve tests to ensure that the quality sold by the flour mills to the bakers is acceptable. Balady bread, distributed by contracted bakers, must be freshly baked and clean and safe for human consumption. Quality flaws result in the revocation of baker contracts.

Figure 2--Distribution of wheat and flour



The imported and procured wheat are milled by Government milling companies. About 90 percent of the flour mills are Government owned and operated. The other 10 percent are privately owned but are under Government supervision and must comply with fixed price guidelines. These are older mills in smaller cities and towns.

The Government operates 26 large modern flour mills and 39 smaller and older mills. The level of technology is very high for the larger mills built in the last decade. The new flour mills have increased Egypt's annual milling capacity to 6 million tons, which is sufficient to supply current needs. This has led to a decrease in flour imports, as mentioned earlier. Transportation of bread from bakeries to vendors was previously dominated by the Government, but more private firms are being given contracts.

The baking industry is a mixture of Government and private enterprise. Government bakeries receive flour from Government milling companies. In recent years, rising shares of wheat products have been prepared by the private sector. However, most of them operate under strict price and quality guidelines from the Ministry of the Economy.

The Government cooperative stores account for over 60 percent of the wheat flour sold at the retail level in the urban areas. Government stores account for less than 10 percent of the sales of bread and bakery products.

In rural areas, an open marketing system handles domestic wheat and locally produced flour. About 34 percent of the total wheat availability, about 3.9 million tons in 1991, was marketed in the rural marketing system (fig. 2). Many rural consumers prefer homemade breads, although it is cheaper to buy subsidized bread provided through the Government distribution system.

Transportation of wheat and wheat flour from ports to urban centers has mostly been handled by the Government. Wheat is transported from the ports to flour mills or storage centers by trucks and trains. Trucks have become a leading transportation mode in recent years, because many new mills were built where they could serve a larger number of customers than they could on rail lines.

Egypt has good port facilities for unloading wheat and flour. The Government owns and operates five modern berths in the port areas of Alexandria. Alexandria and the new Westport account for over 60 percent of the wheat imports, with Red Sea port facilities accounting for over 30 percent, and the remaining 10 percent imported at other smaller ports. To promote privatization, in 1990, the Government announced that it would provide port facilities, trucks, and rail services for private wheat importers. Government ownership of the vast network of facilities for wheat and flour distribution has been enhanced by decades of foreign economic aid, grants, and technical assistance projects.

In rural areas, domestic wheat moves from farms to nearby villages and towns. The wheat is transported by trucks or trailers to local markets and small private flour mills that mill wheat for a fixed fee. Customers in villages have several options. They can buy local wheat, which can be milled into flour at the small local mill, subsidized balady bread, or subsidized wheat flour from the Government supply.

Projection of Wheat Supply, Use, and Trade to 1996

For wheat producers, little change is expected in the high procurement prices and the mix of subsidies to maintain profitability. Consumer prices are expected to rise, particularly for the higher valued wheat products. The Government is expected to maintain its role in wheat imports, despite the removal of the ban on private wheat imports. Private firms can import durum or special types of

wheat, but it will be difficult for them to import most types of wheat because Government subsidies and retail fixed price policies have almost eliminated the margin for profit.

The strong upward trend in production is expected to slow over the next 5 years, primarily because of the limited land area. Yields are already among the highest in the world. A shift from the current concentration of production in the fertile soils of the Nile Valley to newly developed desert soils will also tend to moderate yield gains. Egypt has about 2.6 million acres of cropland and, during the winter, about 40 percent of it is planted with wheat. The increases in wheat area have crowded out berseem clover, cotton, beans, and vegetables.

Improvement in prices for other crops, particularly for cotton, could cause the cotton area to expand at the expense of wheat. During the 1970's and early 1980's, farm prices in Egypt were low because of Government rotation regulations and efforts to maintain low food prices for consumers. The setting changed radically in the late 1980's, when grain prices increased sharply. In addition to policy changes that allowed farmers more freedom in deciding which crops to plant, a dramatic policy change triggered sharp price hikes.

The size of future wheat production depends on its profitability relative to other crops. For example, if the Government monopoly for cotton marketing is eliminated and cotton becomes more lucrative than wheat, wheat area will decline. Such a decline could be offset if new areas are reclaimed. However, with the Government plan to reduce the budget deficits, increased investment in land development projects will not be a high priority. Because yields are already high, this means that total wheat production will plateau at 4.5 to 5 million tons during the mid-1990's.

Per capita use of wheat products is expected to remain below the peaks of the 1980's because of higher prices leading to slow growth in consumption. In this study, total consumption is projected by growth in demand for bread, which accounts for 90 percent of total consumption. Income elasticity of demand for bread is positive but low (0.27) and the price elasticity of demand is negative (-0.29). Egypt's current policy is to increase the pace of price increases for bread, which means that price increases could erode the impact of income growth (assuming 1 percent annual per capita real income growth). Per capita consumption is projected to decline from 174 kg in 1992 to 170 kg in 1996. Therefore, almost all of the increase in demand from 1993 to 1996 is likely to come from population growth (2.5 percent per year).

Given a slight decline in per capita consumption, total demand is expected to grow by 2.4 percent per year. This means that total wheat demand is expected to reach 11.1 million tons by 1996. Imports will likely remain in a range of 6.1 to 6.6 million tons annually by the mid-1990's, with not much increase in production, which will average 4.5 to 5 million tons.

Availability of food is an intrinsic part of political stability in Egypt. Concern with political stability is a major factor in setting bread prices and planning imports. The current low per capita income, averaging about \$700 annually, means that a sharp cut in imports of wheat is unlikely in the future.

Review of Survey Results

The survey regarding the factors affecting wheat import decisions was conducted in May 1992. The survey results are based on discussions with Egyptian Government officials. The Government decides on quality and quantities of wheat imports. Import decisions are based on the estimates of domestic production and demand levels, and import costs. The current policy is to reduce import costs by selecting low-price suppliers. Consideration of consumers' preferences has become more important in

recent years as retail prices are increased and subsidies are reduced. The quantity of imports is spread out during a year based on the amount of wheat that can be utilized by the flour milling companies.

Import Cost

According to our survey, different export programs such as EEP and the EC export restitution payments are closely monitored as a vital component of wheat import decisions. In 1992, credit was not an important factor because of the improvement in Egypt's foreign exchange position and the limitation on Egypt's borrowing required by the IMF. Shipping costs were mentioned repeatedly as an important factor in the cost calculation and choice of suppliers. Shipping costs for ships with a capacity of 30,000 tons or more from the U.S. Gulf to Alexandria range from \$23 to \$30 a ton. Ship capacity is important because larger ships have a lower per unit cost. For any given ship, transportation of wheat from the United States costs about \$5 per ton more than transportation from the EC. The cost of Australian wheat unloaded at Safaga on the Red Sea, is about the same as for American wheat landed at Mediterranean ports. The in-land transportation costs from different ports to milling companies are similar.

Quality Criteria

Quality along with price has an important impact on Egypt's choice of suppliers. Egyptians do not include cleanliness in their quality list. The main concern is live insects and insect damage. This is followed by moisture levels, weed seed, shrunken and broken kernels, and falling number. Dockage is not a problem. In terms of color, white wheat is preferred.

Supplier Performance

According to our survey, the most preferred supplier is Australia for their white wheat. U.S. wheat ranks next. Because the United States can supply a wide assortment of wheat, Egypt can shift from a type with quality flaws, real or perceived (like soft red winter to white), to satisfy its consumers. Since the United States has large supplies of most major types of wheat, GASC decisions to stop importing a particular type of wheat may not cause total purchases from the United States to decline.

Hard red spring wheat from Saudi Arabia received a high rating, about the same as for U.S. white wheat. The U.S. hard red winter wheat was ranked lower. Canadian wheat has a good rating for quality, but prices are higher because of a high-protein content, which is not a quality concern in Egypt. Consumers are more interested in the color and taste than in the protein content. EC soft red winter wheat, similar to U.S. soft red, received a passing grade. Wheats from East European countries and Asia were perceived to have the poorest quality.

Egypt is willing to pay a higher net price for white wheat with very high quality. A premium of \$18 to \$20 per ton for top quality Australian white wheat was indicated. This is the amount over the average price quoted for c.i.f delivery of U.S. wheat at Alexandria. Similarly, Egyptians are willing to pay a premium of \$8 to \$10 for the U.S. wheat, compared with EC wheat. One reason is the difference in wheat moisture content. According to Egyptian officials, wheat imported from the EC has the highest moisture content, 14 percent (U.S. No. 2--all contracts are based on U.S. standards), U.S. wheat has 13- to 13.5-percent moisture, while Australian wheat has 11-percent moisture specified. For actual delivery, Australian wheat had only about 8.5- to 9-percent moisture.

Quality Problems

Egyptians noted that the quality of Australian wheat is often better than what is specified in the contracts and has had no quality problems in the past 20 years. Australian shipments are also uniform,

which reduces the variability in bread quality. In contrast, they stated that U.S. wheat quality varies greatly within marketing years and shiploads, while Australian wheats are less variable. U.S. shipments, although not uniform, meet the minimum level of standards.

Government officials complained that the U.S. system for dealing with quality complaints is inadequate. Egyptians said that complaints about U.S. quality are viewed by Americans as differences in the method of testing in the two countries. For example, a trace of cottonseed was found in seven vessels of wheat imported from the United States in 1988. The cargo was rejected in Egypt and, after protracted negotiations with the American supplier, was sold at less than 25 percent of the original cost, a loss of \$4 million to the Egyptian Government with no compensation by U.S. companies. The most recent problem for U.S. wheat shipments was the presence of foreign material, especially weed seed and hempseed, again no compensation was made by the U.S. companies. Egyptians have been complaining about insects for years. The issue was finally settled recently following negotiations between Egyptian and U.S. representatives.

Quality Preference and Trade Impacts

According to the Egyptians, the U.S. standards and prices are used as benchmarks, and quality differences are factored into the negotiations with other suppliers. This means that very clean Australian wheat is worth a higher price. The specification closely follows the U.S. standards (the dockage specifications range from 0.4 to 0.8 percent). Moisture and protein content are also specified. Egyptians usually do not add any extra quality specification to their contracts.

The dockage level, within the standard limit 0.7 to 0.8 percent, is acceptable. However, Australian wheat dockage level, often less than 0.4 percent, was mentioned as a positive feature. This means that, although Egypt may not be willing to pay higher prices for lower dockage, a cleaner product improves the image of the supplier.

The cost of cleaning is not known precisely in Egypt because of the nature of the Government operation (costs are not itemized), but estimates are within the range of \$1 to \$1.50 per ton at the flour mill. Egyptian procurement officials indicated that price is more important than cleaner wheat in selecting suppliers because Egypt has facilities and plenty of labor near the main flour milling companies for cleaning wheat. Cleaning costs are expected to be less than in the United States because of cheaper labor.

Conclusions

Egypt usually ranks behind the former Soviet Union and China as the world's third largest importer of wheat and flour combined. Egypt was a leading world importer of wheat flour in the past, up to 2 million tons in some years. Wheat flour imports declined to only a fifth of those in 1992, because of the construction of modern flour mills.

Government control of wheat imports has been legally relinquished, but the administration of subsidies makes it unlikely that many private wheat importers can make a profit. The bread subsidy has been reduced, but it still allows consumers to buy the most basic variety, at about a third less than the cost of production. The decisions on quantity and quality of wheat imports are made by the Government. The standard for Egyptian wheat imports is set by law and is U.S. grade 2 or better. Currently the Government places priority on importing white wheat.

Australia and the EC are the largest competitors of the United States in the Egyptian market. Australia has a unique position in the Egyptian market for imported wheat, which places a premium on

high-quality white wheat. Australia's share of Egypt's imports was about a fourth of the total in the past 3 years. The market for other suppliers, particularly the United States and the EC, are highly competitive. The types of programs, in particular the prices offered, will determine the market shares. Currently credit is not an important factor in import decisions because of limitations on Egypt's borrowing required by the IMF. Shipping costs are an important factor in the cost calculation and choice of suppliers. Providing cleaner wheat will not change the shares. However, improving U.S. wheat quality is likely to expand the U.S. export market. The United States provides over half of Egypt's wheat imports and its share is enhanced by the wide variety of types available and by export programs. U.S. white wheat has the best potential to capture a larger share of the market, if EEP remains intact.

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Glossary

Blending: The systematic combining of two or more lots or kinds of grains to obtain a uniform mixture to meet a desired specification.

C & f: Cost and freight to the designated delivery point, paid by the seller.

C.i.f.: Cost, insurance, and freight to the designated delivery point, paid by the seller.

Commodity Credit Corporation (CCC): An agency of the U.S. Department of Agriculture created in 1933 to carry out loan and storage operations as a means of supporting prices above the level that would have prevailed in a free market.

Cu-Sum: A set of rules established by FGIS, that exporters must follow when loading grain on ocean vessels. The rules control variability among sublots blended to meet contract grade limits.

Damaged grain: In U.S. grading standards, the term damage refers primarily to biological deterioration associated with discoloration. Physical damage (such as cut or broken kernels) is not included in U.S. grades but is included in the standards of some other countries.

Defects: Computed total amount of damaged kernels, foreign material, and shrunken and broken kernels.

Dockage: Nongrain material that can be readily removed by accepted screening devices.

Durum wheat: Very hard, high-protein wheat used in the production of semolina flour for pasta products.

Export Credit Guarantee Program (GSM-102): U.S. agricultural export promotion program that guarantees repayment of private, short-term credit for up to 3 years.

Export Enhancement Program (EEP): Program to help U.S. exporters meet competitors' prices in subsidized markets: Exporters are awarded generic certificates that are redeemable for CCC-owned commodities, enabling them to sell certain commodities to specified countries at prices below the U.S. market price.

Extraction rate: The fraction of the wheat kernel that is converted into flour during the milling process.

Falling number test: A test used to measure sprout damage in wheat.

F.a.s.: Free alongside ship specifies that the seller delivers goods to the port elevator or dock at a specified location and the buyer pays for loading the ship and ocean freight.

Federal Grain Inspection Service (FGIS): An agency of the U.S. Department of Agriculture that establishes grain standards and develops the technology to measure the factors contained in such standards. This agency also develops and publishes sampling and inspection procedures, evaluates and approves equipment, monitors inspection accuracy, and oversees mandatory export inspection of grain by agency or FGIS-licensed inspectors.

F.o.b.: Free on board specifies that the seller loads the ship or other conveyance at the specified delivery point with the buyer paying freight charges.

Foreign material: Nonwheat material of similar size and weight to wheat kernels.

Gluten: A tenacious, elastic protein substance found especially in wheat flour that gives cohesiveness to dough.

Grade: A number or letter designation assigned to grain based on an established set of criteria.

Grade factor or grade determining factor: Those characteristics of grain used to determine the numerical grade. The grade factor is based on quantitative limits (either maximums or minimums) placed on each factor for each grade.

Grain grades and standards: Specific standards of grain quality established to maintain uniformity of grains from different lots and permit the purchase of grain without the need for visual inspection and testing by the buyer.

Hard Red Spring wheat: Spring seeded; includes the following three subclasses: dark northern, northern, or red: This wheat is high in protein and has a vitreous endosperm, is used primarily to produce bread flour and is produced in the upper Great Plains.

Hard Red Winter wheat: Fall seeded; This wheat may be either dark hard, hard, or yellow hard, medium to high in protein, a vitreous endosperm, and used primarily to produce bread flour. It is produced in the lower Great Plains.

Hard wheat: A generic term applied to wheat with a vitreous endosperm suitable for making bread flour or semolina; yields coarse, gritty flour that is free-flowing and easily sifted; and flour consists primarily of regularly shaped particles of whole endosperm.

Impurities: Any nongrain material contained within a shipment that could hinder the processing of a grain or detract from its end value.

Intrinsic value or end-use value: Characteristics critical to the end-use of grain. These are nonvisual and can only be determined by analytical tests. For example, the intrinsic quality of wheat is determined by characteristics such as protein, ash, and gluten content.

Moisture content: The amount of water in grain; measured by the weight of water as a percentage of the total weight of the grain including water (wet basis) or total weight of the dry matter excluding water (dry basis).

Nongrade determining factor: Factors that influence the quality of grain but are not taken into account in the grading of grain. These factors must be reported as information whenever an official inspection is made.

Nonmillable material: All material that is not wheat, includes shrunken and broken kernels.

Physical quality: Grain characteristics associated with the outward appearance of the grain kernel, including kernel size, shape, color, moisture, damage, and density.

Premiums: Prices that exceed the base price offered for grains with higher quality characteristics than specified. Generally calculated for factors that increase the value of the grain in market channels.

Public Law 480 (PL-480): Common name for the Agricultural Trade Development Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and encourage economic development in developing countries.

Sanitary quality: Grain characteristics associated with cleanliness. They include the presence of foreign material that detracts from the overall value and appearance of the grain, including the presence of dust, broken grain, rodent excreta, insects, residues, fungal infection, and nonmillable matter.

Screenings: The material removed from grain by means of mechanical sizing devices; generally include broken grain as well as nongrain material removed on the basis of density or particle size with mechanical cleaners.

Semolina: A coarse separation of endosperm extracted from Durum wheat to make pasta.

Shrunken and broken kernels: All matter that passes through a 0.064 inch by 3/8 inch oblong-hole sieve.

Soft wheat: A general term describing wheat with a chalky endosperm suitable for making pastry flour; yields a very fine flour consisting of irregularly shaped fragments of endosperm cells that adhere and sift with difficulty.

Spring wheat: A general term for wheat that is grown in the spring and harvested in the summer or fall; It has a relatively high protein content and is used in bread flours.

Test weight: Weight per unit volume as measured in pounds per bushel as defined in the United States. Determined by weighing the quantity of grain required to fill a 1-quart container. The international equivalent measure is kilograms per hectoliter (conversion factor 0.77).

Uniformity: Conformity within and between shipments for quality attributes; such as physical, milling, and baking performances.

Wheat middlings: Fine particles of the bran and the wheat kernel. Normally used for livestock feed.

White wheat: Fall or spring seeded; it includes four subclasses: hard, soft, club, western: It is soft or hard and low in protein and is used mainly for pastry flours and oriental noodles.

Winter wheat: A general category describing wheats that are sown in the fall, lie dormant in the winter, and are harvested the following spring or summer.

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