Egyptian Meat Market: Policy Issues in Trade, Prices, and Expected Market Performance

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ABSTRACT

An increase in the demand for meat and slow growth in domestic meat production led to a sharp increase in meat imports in Egypt. Government intervention in the meat market increased to encourage domestic production and to prevent undue price increases. The cost to the Government of subsidizing the livestock sector increased sevenfold during 1977-82. The production response was slow because of structural problems in the industry. Egypt's dependence on imports of red meat is expected to increase from 30 percent in 1982 to about 44 percent in 1990. Growth in poultry production could reduce this dependence, and yield self-sufficiency.

Keywords: Egypt, meat consumption, meat imports, red meat, poultry

Note: Egypt's basic monetary unit is the Egyptian pound, abbreviated in this report as LE.

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SUMMARY

Slow growth in domestic meat production and rapid growth in the demand for meat have caused meat prices to increase recently in Egypt. In an attempt to slow meat price increases, the Government increased imports of frozen meat. Imports accounted for 30 percent of the meat consumed during the eighties. The Government has encouraged domestic production by subsidizing farmers ' feed concentrates and by regulating imports of high-grade fresh meat.

Government intervention proved relatively weak. As a result, the feed-cost subsidy, per metric ton of meat produced, increased by six fold during 1970-82, while total meat production increased by only 2.7 percent. This increase in meat production was inadequate to keep pace with the growing population and the increasing demand for meat which stemmed from income growth. The income elasticities, estimated using data from the 1974-75 national survey, for meat are about 0.97 for red meat and 1.39 for poultry. This positive income elasticity implies that demand will increase by almost 1 percent, with a 1-percent increase in income, and prices will rise if supply does not match demand. The estimated effects of variation in meat availability on retail prices, the price flexibilities for various types of meat, are in the range of 0.43 to 1.14 percent. This means that a 1-percent decline in the supply of fresh meat will lead to about a 0.4- to 1-percent increase in price.

Government policies are not expected to change. The Government is expected to provide subsidized meat to avoid sharp price increases. Red meat production is expected to increase by about 2 percent annually for the remainder of the decade, if the Government's policies do not change. The import share could increase to about 35-44 percent, depending on the magnitude of growth in income. Domestic poultry production could grow significantly and reduce the import share to 14 percent, using a high income growth scenario (4 percent per capita), or the country could reach self-sufficiency, using a slow income growth scenario (2 percent per capita).

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INTRODUCTION

Historically, Government involvement in food markets has been a major part of Egyptian social policy. The open door policy, introduced in 1973, promised the Egyptians a higher standard of living. This policy shift significantly increased incomes and the demand for higher valued commodities such as meat. This increased demand pushed up retail prices. During 1973-82, fresh meat prices increased fourfold, while the consumer price index increased only 2.5 times.

Government intervention in the meat market increased to prevent price hikes and to encourage domestic meat production. This intervention eventually spread throughout the meat-marketing chain from producers to consumers. The Government subsidized feed concentrates, reducing prices to about 25 percent of the 1982 international level, and limited high-quality, fresh meat imports to protect local production. The regulations limiting imports caused domestic meat prices to increase about 40 percent above the 1982 border price.

Despite the Government's protective policies, producer response was low because of a lack of feed. This led to slaughtering animals before finishing and high feed/meat conversion ratios because of the genetic characteristics of local animals. I/

Meanwhile, urban consumers pressured the Government into expanding its role as a major importer of meat. The Government increased frozen meat imports sevenfold during 1973-82 to ease the pressure on meat prices. Frozen meat prices were kept constant in nominal terms, and supplies were rationed and distributed, mostly among urban consumers.

I/ Livestock production appears to be relatively profitable for farmers operating within existing constraints (23_), but the cost of exceeding these constraints is high. For example, farmers must use a government-specified rotation pattern which requires them to plant a certain amount of acreage in cotton, even if Berseem is more profitable. Similarly, subsidized feedstuffs are priced to make livestock production possible (+/- 30 Egyptian pounds LE per ton), but if farmers exceed the subsidized quantity, the free-market price is dramatically higher (+/-180 LE per ton) (23). See references at the end of this report.

Some remaining questions are: What are the implications of current Government policy? Will political concern lead to a dramatic shift in food policies? What is the expected performance of the market?

We examine several issues facing Egyptian planners and policymakers as they attempt to meet the growing demand for meat. Resolving these issues will involve difficult policy choices between production and imports, farmers' income and consumers' welfare, and fiscal restraint and government subsidies. We review the Egyptian market structure and examine the policy tradeoff between producing and importing meat supplies. We also project domestic production and import shares in the market, given expected

policies and domestic economic conditions.

MARKET STRUCTURE

We examined the structure of the Egyptian meat market based on production, consumption, and import characteristics.

Production

Small producers dominate Egyptian livestock production. Livestock production is integrated into farm management systems and plays an important role in maintaining an agricultural and ecological balance, which is especially important in a densely populated country such as Egypt. Cattle and buffalo are used for draft; the main components of their feed are fodder and fodder byproducts. The growing livestock sector must compete with crop production, and it is handicapped by the limited supply of feed.

Most crop production and livestock grazing are concentrated on small farms because agricultural land is limited in Egypt. Three percent of Egypt's total area, or 5.8 million feddan (1 feddan is about equal to 1 acre), is cultivated. All crop areas are irrigated, except for some rain fed areas along the Mediterranean coast. Landholdings are fragmented; the average size of a farm is 2.5 feddan. Egypt imports about 50 percent of its basic foods.

Livestock density in Egypt is among the highest in the world. According to the 1982 census, there were 2.3 million cows, 2.1 million buffalo, 3.1 million sheep, and 2.4 million goats in Egypt. Overall, there were 10.2 million livestock animals, roughly 18 head per 10 feddans (10.5 acres) of cultivated land. From 1960-82, herds grew at an annual rate of 2.8 percent. This rate of growth is significant, because the cultivated area did not increase; by some estimates it even decreased, because of urbanization during that time. The annual rate of growth in herd size was higher for small animals: sheep 3.8 percent and goats 4.7 percent. A feed shortage caused slower annual rates of growth for cattle and buffalo. Sheep and goats are kept in nomadic or semi-nomadic herds; therefore, inventory is almost independent of purchased feed. During 1962-82, red meat production increased by about 2.6 percent annually, while the population increased by 2.8 percent annually.

Livestock in Egypt serve more than one purpose. Draft animals produce most of the milk and meat. This dual use of cattle and buffalo helps explain why domestic meat production has not increased with demand despite government incentives.

The Government established feedlot farms to speed up meat production. However, these operations are quite small. In 1980, the public sector held only 1.3 percent of the cattle and buffalo herds.

The Government has also encouraged growth in the broiler industry to help achieve meat self-sufficiency. The number of commercial broiler farms increased from 2,338 in 1978 to 4,035 in 1981, about 73 percent, while broiler production increased only 17 percent. Poultry seems to offer the best possibility for increasing Egypt's meat production because of the low feed/ meat ratio. However, a high mortality rate and a dependence on imports of feed and baby chicks have slowed growth in the industry.

Although Egypt has imported advanced technologies to increase poultry production, the industry efficiency is low by world standards. Feed efficiency is approximately 2.5 kilograms (kg) of feed per kg of live weight, while the international standard is 2 kg. The average growth period is about 60 days in Egypt,

compared with 50 days internationally. The mortality rate of broilers in Egypt is at least 6 percent, while it is less than 4 percent internationally. Poultry production, as a share of total meat production, has not changed significantly; it was 28 percent in 1964 and 30 percent in 1983.

Feed

The shortage of balanced feed rations constrains the meat industry. Egypt has little natural pasture, and forage and fodder must be produced on irrigated land. The high cost of land reclamation limits the irrigation potential, and the large, rapidly growing population, relative to cultivated area, increases the opportunity cost of using land to produce feed. The feed scarcity is especially severe during the summer (May through October).

The most important components of livestock feed are Berseem (the winter forage crop), concentrated feed, and roughage (mainly wheat and rice, straw, and corn fodder). Berseem competes with cotton and wheat, the main winter crops. During 1960-82, the production of Berseem area increased from 1.2 to 1.8 million feddans, and accounted for about 40 percent of the area cultivated in 1982. This increase is significant because total cultivated land increased by only 200,000 feddans during this period.

In 1982, roughly 4.2 million tons of Berseem was produced as livestock feed. Some of the Berseem produced in the late winter is dried and used during the summer when feed is scarce. Wheat straw, and to a lesser extent rice straw, are other summer roughages. Egyptian farmers also use the leaves and tips of none harvested corn for feed. Some reports indicate that the shortage of summer roughage is so severe in some local markets that the price of wheat straw exceeds the price of the grain.

In addition to green forage and roughage, concentrated feed mix is important in poultry and fed-beef production. The Government provides and distributes subsidized feed concentrates. The production of feed concentrates has increased about 13 percent annually since 1970. Cottonseed cake, the byproduct of cotton ginning and milling, has been the main source of protein for mixed feed, but the feed supply depends on the availability of wheat and rice bran.

In 1974, the Government began importing yellow corn for poultry feed. Because of the increased demand for livestock feed, yellow corn was used, in addition to cotton cake, to increase the feed supply. During 1973-83, the portion of cottonseed cake in feed concentrates declined from 65 percent to 35 percent. Now the major components of the feed mix are: cottonseed cake (35 percent), wheat bran (30 percent), and yellow corn (22 percent). Growth in the production of feed mix is uncertain. Production of cottonseed cake is limited by the stable cotton production area. Other sources of protein are available, but they would have to be imported or compete with other domestically produced crops for land.

Consumption

Cereals heavily dominate the Egyptian diet (table 1). During 1975-76, per capita daily consumption was 2,779 calories. Cereals provided about 67 percent and animal products contributed about 4 percent of calories consumed. Cereals provided 66 percent, animal products 11 percent, and pulses 10 percent of protein consumption. In comparison, 1980 statistics show that in the United States cereals and animal products contributed an average of 20 percent and 43 percent of calories, respectively. Cereals and animal products contributed on average 19 percent and 68 percent of protein consumption respectively.

Per capita meat consumption in Egypt increased during 1965-67, and remained relatively stable during 1968-73. Because of increasing per capita income,

Table 1: Food balance sheet, Egypt (1)

Commodity	Calories		Protein		Fat	
	Number	Percent	Grams	Percent	Grams	Percent
Cereals	1,851	66.6	49.9	67.0	12.6	25.5
Roots and tubers	37	1.3	.7	.9	.1	.2
Sugar and honey	236	8.5	.2	.3	.1	.2
Pulses	102	3.7	7.7	10.3	1.0	2.0
Nuts and oilseeds	22	.8	.9	1.2	1.9	3.8
Vegetables	84	3.0	3.8	5.1	.6	1.2
Fruit	91	3.3	1.2	1.6	.5	1.0
Meat offal	61	2.2	5.2	7.0	4.3	8.7
Eggs	6	.2	.5	.7	.4	.8
Milk	41	1.5	4.2	5.6	1.6	3.2
Oils and fats	230	8.3	.1	.1	25.9	52.3
Others	18	.6	.1	.1	.5	1.0
Total	2,779	100.0	74.5	100.0	49.5	100.0

(1) Average daily per capita consumption, 1975-77. Source: (10)

Meat consumption increased to 15.1 kg in 1982 (table 2). This constitutes a 50-percent increase since 1964. Nevertheless, per capita meat consumption in Egypt remains low by world standards. In 1982, per capita meat consumption averaged about 100 kg in the United States, 50 kg in Saudi Arabia, and 25 kg in Sudan.

Per capita consumption of red meat was 30 percent higher in urban areas (10.15 kg) than in rural areas (7.11 kg), according to the 1974 consumption survey. Per capita consumption of poultry in urban and rural areas was the same, 3.2 kg. Rural residents produced 80 percent of the poultry supply but purchased only 20 percent. This ratio was reversed in urban areas.

Meat consumption varies according to family income in both rural and urban areas (figs. 1 and 2). Red meat consumption in urban areas ranged from 2.7 kg to 47.5 kg per capita. The high-income group in urban areas (33 percent of the population) consumed 58 percent of fresh meat. All income groups consumed equal amounts of frozen meat, which is recognized in Egypt as inferior in quality. Consumption of red meat in rural areas ranged from 3 kg to 25 kg per capita. The high-income group (27 percent of the population) consumed 40 percent of the total meat supply, while the low-income group (35 percent of the population) consumed only 18 percent. Frozen meat accounted for less than 1 percent of total meat consumption in rural areas. Frozen meats are not available in most rural areas because of lack of refrigeration.

Table 2: Per capita meat consumption, Egypt

Year	Red meat (Kg)	: White meat (Kg)	Total (Kg) (1)	Population (Million)
1964	7.85	2.90	10.75	28.1
1965	7.44	3.03	10.47	29.4
1966	8.26	3.00	11.25	30.2
1967	9.60	3.05	12.66	30.8
1968	9.58	2.86	12.44	31.5
1969	8.90	2.91	11.81	32.3
1970	8.16	2.93	11.08	33.0
1971	8.04	3.00	11.04	33.8
1972	8.20	3.21	11.41	34.6
1973	8.62	2.97	11.60	35.4
1974	9.54	3.09	12.64	36.2
1975	9.56	3.14	12.67	37.0
1976	8.90	3.05	11.95	37.9
1977	9.56	3.30	12.86	38.9
1978	10.57	3.26	13.82	39.9
1979	11.61	3.61	15.22	41.0
1980	10.13	4.72	14.84	42.2
1981	11.03	5.06	16.09	43.3
1982	10.59	4.54	15.13	44.4

(1) Not total due to rounding.

Source: Reference (7)

Imports

In recent years, slow growth in meat production and rapid growth in the demand for meat have caused prices to increase. In an attempt to slow price increases and improve the quality of diets, the Government has sharply increased imports since 1973 (table 3)[1] Imported meat accounted for 3.7 percent of total meat in 1968. During 1967-73, imports were restricted somewhat because of the financial constraints caused by the war in the Middle East and Government policies to increase meat self-sufficiency. The consistent upward trend in meat imports started in 1974 and continued in every year through 1982, except in 1978. Imports reached a high of 31 percent of consumption in 1981.

Limited availability of feed in Egypt and low beef prices in international markets lowered live animal imports as a share of total meat imports from 71 percent in 1964 to 10 percent in 1980 (table 4). Fresh meat prices rose in 1980 because of increased demand, limited supplies, and dissatisfaction with the quality of frozen meat. Therefore, the Government expanded imports of live animals and meat. The Government considered increasing meat supplies by expanding feedlot production (private and public) and by increasing imports of high quality meat and live animals.

Table 3 Meat Production, Imports, Consumption, and Import Share, Egypt

[1] Private imports have been restricted by Government procedures

Year	Domestic Production (000) MT		Meat imports (000) MT	Meat consumption (000) MT	Imports share in consumption (%)
	Red meat	White meat			
1964	211.44	81	31.29	323.73	9.67
1965	199.12	86	36.75	321.87	11.42
1966	236.53	90	28.09	354.62	7.92
1967	299.77	94	17.51	404.27	4.33
1968	301.87	90	15.13	407.00	3.72
1969	288.75	94	15.23	397.98	3.83
1970	263.75	96	23.81	383.57	6.21
1971	260.21	98	35.65	393.86	9.05
1972	277.70	103	32.54	413.25	7.87
1973	301.93	102	24.79	428.72	5.78
1974	336.42	110	32.38	478.81	6.76
1975	317.83	113	56.06	486.89	11.51
1976	288.62	115	68.11	471.73	14.44
1977	303.52	121	95.67	520.19	18.39
1978	361.24	115	94.03	570.27	16.49
1979	411.01	120	111.34	642.34	17.33
1980	355.95	123	163.40	642.34	25.44
1981	343.00	135	210.20	688.20	30.54
1982	345.00	150	177.00	679.00	26.07

Source: Reference (7).

Table 4 Egypt Imports 0f Live Animals, Frozen Red Meat, and Poultry in Tons

Year	Live animals (1)			•	Total red meat	Poultry	Total Meat
	Beef	Sheep and goats	Camels	Frozen red meat:			
1965	4,046.70	72.9	11,033	18,493	33,645.60	3,104	36,749.60
1966	3299.7	0	11,566	12,754	27,619.70	474	28,093.70
1967	1,384.90	0	10,629	5,403	17,416.90	88	17,504.90
1968	337.5	0	11,276	3,513	15,126.50	0	15,126.50
1969	266.6	0	12,483	2,479	15,228.60	0	15,228.60
1970	1,905.10	462.6	13,613	7,264	23,244.70	567	23,811.70
1971	4,693.00	245.4	16,841	10,316	32,095.70	3,550	35,645.70
1972	1,827.30	205.1	14,421	8,013	24,466.40	8,078	32,544.40
1973	2,520.00	105.8	13,194	5,700	21,519.80	3,272	24,791.80
1974	888.8	457.9	16,036	13,000	30,382.70	2,000	32,382.70
1975	5.8	408.8	12,622	40,000	53,036.60	3,026	56,062.60
1976	0	52.8	12,844	54,713	67,609.80	504	68,113.80
1977	0	59.9	14,135	74,000	88,194.90	7,476	95,670.90
1978	662.1	77.1	13,084	65,202	79,025.20	15,000	94,025.20
1979	135.6	t 4.8	11,209	71,986	83,335.40	28,000	111,335.40
1980	0	0	8,834	78,562	87,396.00	76,000	163,396.00
1981	29,475.00	0	11,800	87,925	129,200.00	81,000	210,200.00

(1) Carcass weight. Source: (9).

Poultry accounted for about 8 percent of meat imports during 1965-67, and declined until 1968-69 when

Egypt did not import any poultry. During 1970-78, less than 10,000 tons of poultry were imported. Since 1978, poultry imports have increased significantly. In 1981, they accounted for about 39 percent of total meat imports and 12 percent of meat consumption. Because of the Government's policy of encouraging domestic poultry production and the large ending stocks of poultry, about 85,000 metric tons in 1981, the Government restricted poultry imports during the first half of 1982. However, by the second half of 1982, import restrictions were lifted and 58,000 metric tons of poultry (the equivalent of about 26 percent of annual consumption) were imported. Poultry imports increased because of the slow rate of growth in domestic production relative to the growth in demand.

Until recently, Egypt imported most of its poultry from the United States and the European Community (EC). Since late 1978, Brazil and, to a lesser extent, Greece have become important suppliers of poultry. Frozen beef is imported mainly from the EC, Australia, Argentina, and Uruguay with market shares of 62 percent, 18 percent, 13 percent, and 6 percent, respectively, in 1982.

GOVERNMENT POLICIES

The Government has two major policy goals: to provide all Egyptians with adequate, basic food at reasonable prices, and to become self-sufficient in as many food commodities as possible. Egypt is concerned with food self-sufficiency because the country's production falls far short of its needs, and rising imports place a burden on its foreign exchange reserves. Imports accounted for about 50 percent of Egypt's basic food commodities (cereals, meat, vegetable oil, beans, and sugar) in 1982.

The major factors affecting food utilization are population growth, rising per capita income, and Government policy. Egypt's population growth rate is 2.8 percent. At this rate, by the year 2000, Egypt's population would be approximately 70 million. Real per capita income growth has been in the range of 5 to 7 percent during the past 5 years. In addition, the Egyptian food economy largely depends* on political decisions, particularly import quotas and consumer prices. The Government wants to control inflation by holding down prices of major foods. But, Government policies of stable and low consumer prices may conflict with goals of food self-sufficiency and reduction of dependence on imports.

The Government has multiple policy objectives for the livestock and poultry sector, including increasing meat production and safeguarding consumer welfare by preventing substantial price increases. The Government's policies encourage livestock production activities with higher value added per unit of product marketed, increase the income of small farmers and stimulate rural employment, improve the country's supply of protein, and increase the supply of livestock products to keep pace with the increased demand which is expected to grow more rapidly with rising income.

Production

The Government implemented a wide range of programs and input subsidies to increase meat production. Government policies toward livestock producers are very complicated. The reason is partly due to the role of livestock in the Egyptian farming system, and partly due to the Government's extensive involvement in the agricultural sector. Livestock are used in many other farming activities (animals are used for draft purposes and to provide manure) and as a source of income (dairy and meat products). Livestock also compete with crops for land and consume feed crops. Therefore, all agricultural policies influence the livestock sector.

In general, statistics indicate that the Government has encouraged livestock production. While Government expenditures on food subsidies increased fourfold during 1977-82, livestock sector subsidy costs to producers and consumers increased 7 times (table 5). Feed concentrates are the major subsidized input provided to livestock producers. The Government has a long-standing policy of providing feed concentrates at fixed prices, which are substantially lower than international prices (table 6).

Initially, the cheaper feed did not sufficiently stimulate meat production. As a result, the feed cost subsidy per metric ton of meat produced was increased from 69 LE in 1970 to 409 LE in 1982.

Producers responded slowly to the input subsidies because of structural problems and distribution policies for feed concentrates. Producers receive feed concentrates according to a Government quota system. In principle, the Government provides the specified feed quota to all farmers. The quota varies with the type of animal, and is believed to provide less than 100 percent of the animal's feed requirement. In practice, however, there is an active black market for feed concentrates. In 1983, mixed feed prices were as high as 180 LE per ton, or six times the Government's selling price.

Animal efficiency in Egypt is generally quite low. Many cows and buffaloes are used for draft until they are old. But then, the animal's weight gain is low and off-take feed/meat ratios are poor. The average weight gain for local, multipurpose animals is about 0.4 to 0.5 kg per day. If animals are kept for fattening only, this rate increases to 0.6 or 0.7 kg per day. On the other hand, because of the high demand for meat and the scarcity of feed, several thousand calves are slaughtered every year without finishing.

Other Government policies designed to increase livestock production include: special animal insurance programs, imports of improved breeds, free veterinary and artificial insemination services, and an agricultural extension network which provides advice on livestock production.

Table 5 Government expenditures on food subsidies, Egypt

Year	Livestock and poultry (Million L.E.)		Food sector (L.E.)	
	Total	Per capita	Total	Per capita
Calendar Year:				
1977	19.6	0.51	333.9	8.6
1978	9.4	0.24	423.5	10.6
Fiscal year: (1)				
1979	41.5	1	896.6	21.6
1980/81	93.4	2.19	1,108.00	26.1
1981/82	145.2	3.31	1,475.40	33.6

(1) Fiscal year begins July 1.

(2) Sources: Reference (8) and (9).

Consumption

The food policy and food distribution system in Egypt is a major component of a complex and extensive

Government market intervention. The goal of this policy is to provide all consumers with basic food at affordable prices. At the retail level, the distribution system combines private and Government activities. In each neighborhood, one private grocer is authorized to distribute the subsidized and rationed food. Eligible families, registered with the designated grocer, receive a ration book. Less than 10 percent of the population, primarily landlords, stockholders, owners of large businesses, and families of emigrant workers, is ineligible to receive rationed food.

Table 6 Efficiency of feed mix subsidies, Egypt

Year	Feed mix Price (LE / metric Ton) (1)		Quantity of feed mix produced	Cost per unit of meat product (L.E.)	
	Official	International equivalent	(000) MT	Current	: Deflated (1975 = 100)
1970	13.5	77.4	323	69.4	91.9
1971	13.5	73.8	372	76.7	102.2
1972	13.5	72.6	410	78.1	102.8
1973	13.5	76.9	453	71.1	87.5
1974	21	88	531	79.8	85.8
1975	21	78.9	527	70.1	70.1
1976	25	97.7	639	135	125.2
1977	25	106.7	785	150.9	128.1
1978	25	105.7	950	161.1	119
1979	30	104.2	1,112	155.4	105
1980	30	130.5	1,300	272.8	167.4
1981	30	142	1,406	329.4	183
1982	30	135	1,500	409.1	194.8

(1) International equivalent feed mix prices are based on international prices (using free-market exchange rate) for different feed mix components.

Source: (7).

Government-imported frozen red meat and poultry are rationed. In 1983, the Government rationed one chicken and 2 kg of red meat per family per month. Consumers can obtain an additional chicken by forfeiting their red meat ration. In practice, however, purchases of rationed meat depend on meat availability, and distribution is restricted to stores with freezers, mainly stores in urban areas. Because the ration supply is limited, excess demand is channeled to the open market.

Imported, frozen red meat (sold on ration) has the lowest retail price (table 7). Most of the fresh meat from private farms (domestically produced) is of a higher quality than the frozen meat (imported), and it is sold at free-market prices. Consumer prices for red meat increased by about 50 percent in 1980 because of the meat shortage. The Government intervened and set ceiling prices at the wholesale and retail levels. In the private sector, however, fixed prices, which are not market-clearing prices, have not been enforced, and meat is frequently sold at prices which are considerably higher than the price set by the Government.

Overall, prices of fresh meat (except frozen red meat) increased by 16 percent annually during 1970-82. This rate was much higher than the inflation rate (measured by the consumer price index) of 10 percent during the same period. Prices of frozen meat, a rationed and subsidized commodity, did not

change during this period.

Imports

Egypt, like many other developing countries, tends to overvalue its currency. The Government conducts most agricultural trade at the official foreign exchange rate. Private sector imports are financed using a mixture of the official exchange rate for a specified share and the higher parallel rate (free-market rate) for the rest.

The Government is the main importer of meat in Egypt, although private companies are allowed to import meat. Because of a combination of foreign currency regulations, controls on marketing margins, and import license restrictions, the private sector has imported little meat since the mid-seventies. The private sector must buy 50 percent of the hard currency needed to import on the free market. The free-market rate, which is about 25-30 percent higher than the official exchange rate, significantly increases importing costs. On the other hand, the Government sets a 9-percent markup limit as the marketing margin for importers, calculated at the official exchange rate. The high direct import cost and the high commission fee required to work as a Government agent discourage private sector participation in the import market. This implicit import restriction protects local production; therefore, domestic prices have exceeded international prices by a comfortable margin, as high as 80 percent (table 8).

In summary, Government involvement in the meat sector is extensive and its cost is growing. The effects of Government policies are so widespread that it is difficult to untangle them. The Government's objective is to encourage meat production by subsidizing feed and restricting imports to allow prices of fresh meat to rise. The cost to consumers, especially urban consumers, is compensated to some extent by imports of frozen meat, which are subsidized and sold at low prices.

MARKET BEHAVIOR AND GOVERNMENT REACTIONS

Historically, meat production in Egypt has been inadequate to keep pace with the growing population, not to mention the increased demand stemming from other causes. Despite the Government's protective policies, meat production has been growing by only about 2 percent annually during the past 20 years. Research indicates that the structural problems facing the meat industry are difficult to overcome. Constraints such as shortages of feedstuffs and poor productivity of local animal breeds (aggravated by disease and poor nutrition) cannot be relaxed substantially in the foreseeable future.

Because production is relatively stagnant, demand is the leading factor affecting meat prices in Egypt. The income elasticities estimated, using cross-sectional survey data for 1965/66 and 1974/75, are reported in table 9[1]. A comparison of the estimated results indicates that in 1974/75, red meat and poultry income elasticities were higher in urban areas than in rural areas. This might be because of less variation in the diet of rural residents with increased incomes compared with urban residents. High population growth and high meat income elasticities increase meat consumption in urban areas and force the Government to increase imports.

National income elasticities were higher for poultry than for fresh red meat. This indicates that growth in income and population increases poultry prices.

[1] There were 75,000 and 62,000 observations in the 1965/66 and 1974/75 surveys, respectively. In both surveys, the ratio of urban to rural observations was two to one. Data were classified into 16 income groups.

Table 7 Free-market retail prices of meat, Egypt (LE per kilogram)

Year	Culled meat	Veal	Sheep and goat	Fed beef	Poultry	Frozen red meat
1970	0.58	0.8	0.72	0.64	0.48	—
1971	0.58	0.86	0.78	0.7	0.52	—
1972	0.62	0.9	0.85	0.76	0.58	—
1973	0.72	1	0.9	0.8	0.65	0.68
1974	0.85	1.2	1.05	0.87	0.72	0.68
1975	.9,5	1.35	1.3	1.08	0.85	0.68
1976	1	1.7	1.5	1.35	1	0.68
1977	1.1	1.8	1.6	1.6	1.1	0.68
1978	1.3	1.9	1.65	1.65	1.2	0.68
1979	1.6	2.3	2.2	2.2	1.5	0.68
1980	1.9	2.7	2.5	2.5	1.6	0.68
1981	2.25	3.5	3	3	1.7	0.68
1982	2.7	4	3.75	3.75	1.8	0.68

— = Not applicable. Sources: (2) and (9).

Table 8 Relation of beef import cost and domestic retail price at L.E. / MT, in Egyptian Market

Year	Import unit value	Marketing cost	Border price	Price differential (retail-import)	Foreign exchange bias (1)
1970	233	23.1	256.1	323.9	258.7
1971	309	23.8	332.8	247.2	283.3
1972	242	24.3	266.3	353.7	206.9
1973	165	25.4	490.4	229.6	339.3
1974	416	28.1	444.1	405.9	262.3
1975	300	30.9	330.9	619.1	244.7
1976	323	34	357	643	289.5
1977	471	38.3	509.3	590.7	396.5
1978	436	42.6	478.6	821.4	367
1979	1,173	46.9	1,219.90	380.1	88.2
1980	1,128	57.5	1,185.50	714.5	194.2
1981	1,330 -	70.2	1,400.20	849.8	93.5
1982	1,505	85	1,590.00	1,110.00	238.5

(1) Based on the difference of the black-market rate (LE per U.S. dollar) from the official rate.
Sources: Import unit values from Ref. (9) marketing costs from Ref. (19).

Estimated results for 1965/66 and 1974/75, indicate that income elasticities for fresh red meat declined from 1.02 to 0.97, and income elasticities for poultry declined from 1.54 to 1.39. Increases in income and consumption are expected to lead to a decline in the income elasticity for a commodity.

The positive and almost one—to—one relationship between income and per capita quantities of meat demanded indicates that a 1-percent increase in income will increase demand by almost 1 percent. This implies that if growth in demand and supply are not matched, prices will rise or fall, depending on the imbalance. Therefore, given the constraints facing the meat production sector, if imports are not increased to fill the gap between demand and supply, in the short run, prices for fresh meat will rise sharply. Hence, imports play a critical role in managing prices of highly inelastic short-term production.

To show the effect of variation in meat availability on prices, the price flexibilities for various fresh meats were estimated. We analyzed time series data for 1964-81. The equations specify meat substitutes, income (deflated by private consumption expenditures), and price (deflated by the consumer price index) as a function of total quantities of fresh meat available on the market. The equations were estimated for: culled meat (old cows), veal, fed beef, sheep and goats, poultry, and total red meat (see appendix).

There is almost no substitution among various types of meat because of the low level of per capita consumption and the shortage of meat at retail outlets which limits consumer choices. The direct price flexibilities (percentage change in the price of meat caused by a 1-percent change in quantity of meat) are summarized:

Culled meat	1.14	Sheep and goats	.59
Veal	.69	Total red meat	.49
Fed beef	.41	Poultry	.43

The direct price response to a change in the quantity of various types of fresh meat ranges from 0.43 to 1.14. (In effect, a 1-percent decline in the quantity of fresh meat will lead to about a 1-percent increase in meat prices. Culled meat has the highest price flexibility, 1.14. Culled meat, the cheapest and lowest quality fresh meat, is almost comparable to frozen meat imports. Because of its low price, low-income people consume the most culled meat. The release of subsidized meat imports influences livestock prices in Egypt.* The Government uses imports to stabilize prices rather than to achieve consumption targets. Historically, price increases, resulting from shortages or changes in Government policies, have provoked strong consumer reaction. When the Government planned to decrease food price subsidies, there were food riots in 1977. A meat shortage led to price increases and consumer protests in 1980. These incidents, and those in Morocco and Tunisia in 1984, illustrate the difficulty government faces in modifying long-time food subsidies.

An import function shows the effect of public pressure on meat price increases when the Government imports meat. The red meat import equation specifies the quantity of Government meat imports (MIMP) as a function of fresh meat prices (RMP, the average retail price of local meat lagged by 1 year), international meat price (WMP), and the country's export earnings (EXE). The equation in log form is:

$$MIMP = 4.411 + 1.455\,RMP + 0.121\,EXE - 0.310\,WMP$$

(t) (1.76) (3.59) (.373) (1.87)

$R^2 = 0.93$ $D = 1.27$

As expected, the local price determines import levels. However, the local price of 1 year lagged was statistically more significant than the current price, perhaps because of Government methods of decision making. The Ministry of Supply specifies the quantity of meat imports. The Ministry of Treasury actually determines the amount of foreign exchange to be used for imports. Statistical results indicate that the world market price plays an important role in determining the actual quantity of meat imports. A 1-percent increase in the world price reduces the quantity of meat imports by 0.3 percent. Export earnings are not a significant factor in determining meat import levels. Livestock imports and subsidies remain a small part of the Government's food budget. Therefore, it is reasonable to assume that variations in export earnings would not be transferred to variations in quantities of imported meats.

Table 9 Cross-section estimate of income/consumption relationships, Egypt

commodity and Region	Constant		Income Response coefficient		R^2	Durbin statistic
	Estimate	t-value	Estimate	t-value		
1965/66						
Red meat						
Rural	-1.98	4.74	1.01	11.68	0.96	1.15
Urban	-2.56	8.93	1.05	28.75	0.98	1.58
Total	1.7	6.94	1.02	14.8	0.94	1.61
Poultry						
Rural	-4.13	7.51	1.39	9.73	0.87	1.68
Urban	15.57	9	2.51	11.41	0.9	1.43
Total	5.13	9.13	1.54	11.17	0.89	1.5
1974/75						
Red meat						
Rural	-2.03	3.37	0.92	6.42	0.75	2.61
Urban	-2.54	19.9	1.02	34.42	0.98	1.73
Total	-2.27	9.03	0.97	16.76	0.95	2.36
Poultry						
Rural	-3.84	11.02	1.12	13.73	0.93	1.44
Urban	11.17	4	1.81	4.09	0.55	1.95
Total	4.89	13.21	1.32	15.57	0.94	1.92

PROJECTIONS of CONSUMPTION, PRODUCTION and IMPORT SHARE

In the short run (5 to 10 years), it is reasonable to assume that the socioeconomic factors and structural relationships of consumption will remain constant. Therefore, our econometric results project red meat and poultry consumption to 1985 and 1990. The projections are based on the following assumptions:

(1) The Egyptian Government does not change its policies regarding red meat and poultry; (2) relative prices of meats remain constant; (3) population grows at an annual rate of 2.7 percent until 1990; and (4) annual per capita real income growth is 2 percent for the first scenario, and 4 percent for the second scenario.

The income elasticities derived from the 1974/75 consumption survey were used to project red meat and poultry consumption to 1985 and 1990. The results were:

	1980 Base Period	1985 Projection	1990 Projection
	1,000 metric tons		
Scenario 1:			
Red meat	434	547.8	690.8
Poultry	199	259.9	339.4
Scenario 2:			
Red meat		589.1	779.9
Poultry	199	277.6	387.3

Our projections for the slower rate of income growth indicate that red meat and poultry consumption would increase at annual rates of 4.6 and 5.3 percent, respectively. The higher income growth rate results in a larger increase in consumption. The annual rate of consumption growth for the second scenario is 5.6 percent for red meat, and 6.76 percent for poultry.

We determined which sources could supply meat to satisfy the demand. Imports' share of projected consumption depends on production expansion and Government policies.

Half of Egypt's agricultural land is devoted to clover production (in winter months). Therefore, expanding livestock production would require allocating more of the vital and limited irrigated crop acreage to feed crops. Because Egypt imports many foods, options for expanding livestock production are limited. The 2-percent increase in red meat production over the next 10 years is the most optimistic Government forecast. Assuming a 2-percent increase in production, imports would increase to 37 percent (2 percent income growth) and 44 percent (3 percent income growth) of total red meat consumption by 1990.

In contrast, self-sufficiency in poultry production is possible, and it is also a major Government policy goal. The Government encourages the private sector to develop more intensive production by providing more subsidized inputs, technical assistance, and credit. This effort should increase poultry production and decrease imports. The Government projects that the 10-percent annual increase in production from 1980 to 1981 will continue. If this projection is accurate, Egypt will become self-sufficient in poultry production by 1990, using the slow income growth scenario, and it will be able to reduce imports to 14 percent of consumption using the high income growth demand projection.

CONCLUSION

The Egyptian economy is highly regulated by the Government. The country's increasing dependence on imports is central to the Government's planning, because imports account for about half of the major staple foods consumed. Consequently, the Government is seriously investigating ways to increase food production and to reduce food spending.

Supply and demand projections show that Egypt will be a net importer of meat, even taking the optimistic Government production growth estimates, in the years ahead. With respect to producers, the Government's protective policy is expected to continue. The Government is aware of the structural problems facing the meat sector. Nevertheless, because most of the high-quality meat is consumed by high- and middle-income people, the protective policy implies an income transfer from these groups to small farmers.

Population growth, running at about 3 percent annually, even with no per capita income growth, will ensure that demand increases at a faster rate than domestic meat production. The estimated price flexibilities of 0.43 to 1.14 support the conclusion that prices will increase significantly if supply does not keep pace with demand.

In Egypt, as in most developing countries, the price of meat is a yardstick of inflation and economic prosperity. Egypt's present generation has grown up expecting the Government to provide most essential food items. The Government’s policies toward consumers are likely to be influenced by past protests which were followed by increases in food prices in Egypt, Morocco, and Tunisia. Therefore, the Government is expected to continue importing food to manage and control price increases.

What economic condition would induce the Government to confront the political risk and stop runaway consumption? It is fairly safe to assume that the performance of the nonagricultural sector, revenues from the Suez Canal, rapid development of oil resources, and foreign financial assistance (used mostly to finance food imports) will be used to maintain per capita consumption, at least at historical levels, to prevent political backlash until the end of the eighties.

APPENDIX: Time-Series Price Flexibilities of Demand

In Egypt, the annual supply of meat is determined by production decisions producers make based on past prices and feed constraints. Red meat consumption is the sum of fresh red meat and frozen imports. The Government imports frozen meat based on expectations of excess market demand, subsidizes the price, and distributes rationed quantities. Most fresh red meat is domestically produced, but small quantities are also imported. Consumers buy fresh meat at free-market prices.

The production flexibility of red meat in Egypt is limited. Increasing the supply of red meat requires an increase in breeding, followed by a gestation and feeding period of over 1 year. Importing live animals lacks the required flexibility to adjust to market conditions because of policy and technical constraints. Government regulations, limited port facilities, and transportation problems significantly limit changing import quantities during any period.

Poultry can be produced in less time than red meat. This allows more flexibility for the supply to adjust to market conditions. However, serious problems in Egypt's poultry industry limit the possibility of greatly increasing production in a short time.

Given the nature of meat production and Egypt's limited supply flexibilities in the short term, our time-series analysis estimates the reduced form of the normal demand relationship. The specification is based on prices of different meats as a function of quantities of meat consumed:

$$P_{it} = a + b_i Q_{lt} + {}^{b}2\, Q_{jt} + {}^{b}3\, Y_t + U_{it}$$

where: P_{it} is the real price of meat (type i), Q_{lt} is the Per capita quantity of meat (i) consumed, Q_{jt} is the quantity of other meat (j) consumed, Y_t is the real per capita private consumption expenditure as a proxy for income, and U_{it} is the disturbance term.

Price flexibilities of demand (percentage change in price caused by a 1-percent change in quantity) are the parameters associated with various quantities of meat consumption.

The Egyptian Government (MOA and MOS) report the time-series data for production, prices, and imports used in our analysis. The red meat production data for culled meat, fed beef, sheep and goats, and veal are derived from official inspected slaughter data, using a fixed carcass weight (appendix, table 1).

Data for 1964-80 were used for our analysis. The demand equations for various meats are represented by a constant elasticity functional form. Ordinary least squares (OLS) techniques were used for estimation, and the "Cohrane-Orcutt" iterative procedure was used for auto-correlation problems.

We deflated price and income variables by the Consumer Price Index (CPI) in the equations. Including quantities of meat substitutes generally gave poor and theoretically inconsistent results. When

the quantities of other fresh meats and frozen red meat were introduced, only the coefficient for frozen red meat was significantly different than zero.

Appendix table 1 Domestic meat production of Egypt (000) MT (1)

Year	Culled	Fed beef	Sheep and goats	Veal	Pork	Total
1964	29.27	36.97	8.89	8.12	1.32	84.57
1965	26.44	35.84	7.22	8.98	1.17	79.65
1966	32	40.89	8.72	11.72	1.28	94.61
1967	33.57	59.92	11.44	10.65	1.53	117.11
1968	37.14	60.28	11.17	10.61	1.54	120.74
1969	36.58	58.45	9.14	9.76	1.57	115.5
1970	29.27	58.27	8.35	7.94	1.67	105.5
1971	26.04	61.01	8.29	7.24	1.5	104.08
1972	26.29	68.05	8.05	7.07	1.62	111.08
1973	28.37	75.13	7.87	7.39	2.02	120.78
1974	33.32	83.99	7.27	7.87	2.12	134.57
1975	32	77.47	7.94	7.49	2.23	127.13
1976	30.01	67.96	7.69	7.27	2.43	115.36
1977	27.81	75.4	8.26	7.65	2.29	121.41
1978	37.8	86.14	9.13	9.18	2.25	144.5
1979	44.86	98.81	8.99	8.96	2.78	164.4
1980	37.84	85.42	7.74	8.5	2.88	142.38
1981	50.81	86.44	4.03	7.24	2.93	156.45

(1) Official slaughterhouse data. Source: (7).

The estimated equations for various meats are:

(2) Meat of Culled Animals (Cows and Buffaloes)

$$LPC = 8.38 - 1.14LQC - .049LFM + .096LDI$$

(t) (3.56) (3.77) (2.79) (1.69)

$R^2 = .74$ $D = 1.55$

2) Veal:

$$LPV = 3.54 - .867LQV + .677LDI$$

(t) (4.67) (4.57) (5.58)

$R^2 = .83$ $D = 1.12$

3) Fed beef:

$$LPF = 4.50 - .405LQF + .118LFM + .546LDI$$

(t) (3.27) (1.92) (2.74) (2.27)

$R^2 = .92$ D = 1.69

4) Sheep and goats:

LPS = 6.01 - .589LQS + .045LFM + .234LDI

(t) (5.76) (4.21) (1.44) (1.57)

R^2 - .88 D = 1.82

5) Total red meat:

LPR = 6.38 - .486LQR + .042LFM + .446LDI

(t) (3.81) (2.26) (1.12) (2.19)

$R^2 = .54$ D = 1.64

6) Poultry:

LPP = 4.65 - .429LQP + .098LFM + .226LDI

(t) (4.50) (1.44) (1.89) (6.42)

$R^2 = .72$ D = 1.61

Where: IPC is the deflated culled meat price, LQC is per capita culled meat consumption, LFM is per capita frozen meat, LDI is deflated per capita private consumption expenditure, LPV is deflated veal price, LQV is per capita veal consumption, LPF is deflated fed beef price, LQF is per capita fed beef consumption, LPS is deflated mutton price, LQS is per capita sheep and goat meat consumption, LPR is average deflated red meat price, LQR is per capita red meat consumption, LPP is deflated poultry meat price, and LQP is per capita poultry consumption.

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