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THE DEMAND FOR FOOD IN WYOMING  
Problems and Prospects

by

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REFERENCE ROOM  
1974

A Research Paper  
submitted in partial fulfillment of  
the requirements for the degree of

Master of Science

Department of Agricultural Economics

MICHIGAN STATE UNIVERSITY

## ACKNOWLEDGEMENTS

I would like to express my gratitude to Dr. John Allen, my major professor. His understanding of my problems, his encouragement, guidance and willingness to help enabled me to continue my studies.

I would also like to thank Dr. Glenn Johnson for his help, especially at the beginning of my Master of Science program.

Finally, my special thanks to my dear friend, Joan S. Norat, for her help and for making my English readable.

The responsibility for any errors within this work remains absolutely my own.

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## ABSTRACT

In recent years, Egypt has had a very precarious food situation because of limited cultivated area. Effective demand for food is outrunning the available supply. A high population growth rate together with rapid social change and mass movement of labor contribute to the severe food shortage.

As the income per capita increases, and the other factors of production continue to shift from rural to urban areas, prices for food are increasing causing obstacles for the economic growth.

This study has focused on the problem of the demand for food, and the economic relationship between the demand for food on the one hand and population growth and per capita income on the other. Also discussed is the possibility of increasing the supply of food to meet the large increasing demand, which must be fulfilled through increasing food production, increasing food imports or some combination of the two.

Prospects for increasing the supply of food in the short run by increasing the productivity are possible for all products, but it seems best for certain crops such as maize, vegetables, fruit, and oil crops.

Increasing productivity can greatly help in solving the food problem but cannot solve all the problems without efforts to increase the cultivated area at the same time. The only hope for Egypt to increase the cultivated

area is to look to the desert -- which constitutes 95 per cent of its area -- as a major untapped resource. Yet the efforts by the government and social institutions should increase to reduce the population growth rate. Without reducing the number of babies born every day, the problem of food in Egypt will be very difficult to solve.



## CHAPTER 1

### INTRODUCTION

#### The Problem

In recent years, Egypt has experienced a precarious food situation because of its limited cultivated area. Its soil is too precious and its water too scarce to be wasted on wheat and maize or even on rice (in which Egypt can compete only with difficulty with other countries).

Large increases in the demand for food products are expected in the near future as economic development takes place. In addition, effective demand now for food is outrunning the available supply, even with recent increases in imports.

A high population growth rate of about 2.8 per cent, together with rapid social change has contributed to severe food shortages. Population growth of this rate requires the investment of 9 per cent of G.N.P. just to maintain per capita income. A secondary problem is the difficulty of increasing food and agricultural production by the same proportion. The reason for growing food shortages is simply stated: There is little new land that can be readily brought under the plow, and the yield per feddan<sup>1</sup> cannot be raised much more than it now is under the existing technology.

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1. One feddan is equal to 1.038 acres.

The annual income per capita in Egypt is about \$140, which places it among the poorer countries in the world. Where the per capita income is low, a high proportion of it has to be spent on food products since they are the basic necessities of life.

Great changes occur in the structure of the demand for food. The most important factors affecting these changes are the increasing income per capita and the mass movement of labor and other factors of production from rural to urban areas. As a result, prices of food are going up causing inflation and forcing a reduction of development expenditures and the over-all rate of economic growth.

Serious problems will face Egypt in her balance-of-payments if she increases her imports of food relative to exports. The growing deficit in her balance-of-payments would ultimately necessitate a reduction in imports of machinery and consequently a slowdown in industrialization.

#### Objectives of the Study and Hypotheses

The objective of the paper is to determine the factors affecting changes in the demand for food, and identify those factors that have caused shortages of food. The author will recommend reasonable solutions to problems caused by these factors.

Specifically, the objectives of this study are:

1. To study the factors which influence increasing

demand for food. The magnitude of these factors will be identified.

2. To analyze the economic impact of per capita income and population growth on the demand for food.

3. To project future consumption levels for food and identify steps necessary to support consumption rate in the food production sector and imports policies.

The following hypotheses will be tested:

1. Increasing per capita income and population growth are the most significant factors affecting the demand for food.

2. With the present lagging productivity relative to the rate of population growth, unless drastic measures are taken to increase food supply, Egypt will face severe shortages in food products.

3. Major differences in consumption patterns exist between urban and rural areas -- urban people consuming more food, but spending relatively smaller proportions of income for food.

#### Methodology and Information Sources

There is no empirical test hypothesis related with the objectives. Therefore, no attempt is made to design a field survey or a mathematical model. Rather, the attempt is to examine available data and previous studies related to the problem of the demand for food in Egypt within the framework of economic theories.

The analysis consists of the selection and methodical presentation of the relevant information in relation to the objectives stated. The data are given mainly in an aggregate form and are selected from various national and international sources.

Definition of Terms Used

Feddan: The area unit in Egypt equivalent to 1.038 acres, or 0.420 hectares or 4201 square meters.

Fellah: The Egyptian farmer.

(LE): The Egyptian pound, equivalent to 100 piasters (PT) or 1000 millimes (mms.). LE=£2.30.

## CHAPTER 2

### THE CHARACTERISTICS OF EGYPTIAN ECONOMY

The Egyptian economy was based on the private enterprise system with a very limited government role before the new regime that took over in 1952. Distribution of income and wealth was extremely unequal. After July 1952 the multimillionaire (Pasha) has no longer existed. Land possessed by individuals in excess of 100 feddans was expropriated and gradually redistributed according to the land reform law. In 1956 the government nationalized foreign properties (mainly British and French) which included the main part of the banking and insurance systems and segments of industry.

In 1961 large-scale nationalization followed which involved all big industries and trade enterprises. The main economic justification stated by the government for the decision was the need to bring investment and savings under direct control.

These steps have transformed the country's productive system from a private enterprise market economy into an unique mixed system in which the most significant decisions concerning production and investment are taken by the State.

#### Agricultural Production and Land Area

The area of Egypt is about one million square kilometers or nearly 238 million feddans, of which only about 5.9 million feddans or about 2.5 per cent are cultivated.

Between 1937 and 1960 the expansion of the cultivated and cropped area was small, falling far behind the rapid growth in population.

Table 1: Cultivated and cropped areas.<sup>2</sup>

| Year | Cultivated area<br>(No. of feddans<br>planted) |       | Cropped area<br>(Cultivated area x no. of<br>crops grown annually) |       |
|------|--|-------|--|-------|
|      | Feddian (1000)                                 | Index | Feddian (1000)   | Index |
| 1937 | 5281   | 100   | 8358   | 100   |
| 1947 | 5761   | 109   | 9167   | 110   |
| 1960 | 5918   | 112   | 10,397   | 124   |

Between 1937 and 1960 the cultivated and cropped area increased by only 12 per cent and 24 per cent, respectively; whereas population increased by 62 per cent. The per capita share of agricultural land declined, so as to give Egypt one of the lowest per capita shares of agricultural land in the world.

The High Dam has increased the cultivated area by 1.3 million feddan through land reclamation. It also will enable the abolition of the basin system in upper Egypt of 0.7 million feddan,<sup>3</sup> thereby permitting multiple cropping instead of a single crop each year. As a result of the High Dam the cultivated area has been increased by 2 million feddan.

2. United Arab Republic Central Statistical Committee, Basic Statistics (June, 1962), p. 62

3. Statistical Handbook of U.A.R. 1952-1966 (Cairo, 1967).

Table 2: Value of agriculture output 1960-1964  
(in L.W. million).<sup>4</sup>

| Groups of Products | 1960 | 1961 | 1962 | 1963 | 1964 |
|--------------------|------|------|------|------|------|
| Field crops        | 380  | 326  | 397  | 405  | 453  |
| Vegetables         | 39   | 42   | 51   | 60   | 67   |
| Fruits             | 26   | 24   | 29   | 32   | 33   |
| Animal Products    | 105  | 110  | 116  | 131  | 163  |
| Total              | 550  | 501  | 593  | 628  | 721  |

Table 2 shows a reduction of the total value of agricultural output in 1961, caused by the disastrous cotton crop that year. The value of total agricultural production has been increased by 40 per cent from 1960 to 1964.

The index of agricultural output shows an average rate of increase in total production of about 6 per cent during the period of 1953 to 1962 (Table 3).

Table 3: Index of agricultural output (1953=100).<sup>5</sup>

| Year    | Index | Year | Index | Year | Index |
|---------|-------|------|-------|------|-------|
| 1935-39 | 102.0 | 1951 | 92.2  | 1958 | 125.5 |
| 1940    | 97.0  | 1952 | 108.1 | 1959 | 130.6 |
| 1941    | 90.0  | 1953 | 100.0 | 1960 | 134.4 |
| 1942    | 94.0  | 1954 | 112.2 | 1961 | 118.0 |
| 1943    | 110.0 | 1955 | 111.2 | 1962 | 145.9 |
| 1944    | 100.1 | 1956 | 110.2 | 1963 | 161.3 |
| 1950    | 104.0 | 1957 | 123.2 |      |       |

4. U.A.R. Ministry of Agriculture, The Monthly Bulletin of Agricultural Economics and Statistics (July, 1964), Vol. 17, p. 55.

From 1937 to 1960, food production rose by 46 per cent, while the population increased by 64 per cent. This has resulted in a 10 per cent fall in per capita food supplied from domestic production.<sup>6</sup>

The major field crops grown in Egypt are cotton, wheat, corn, rice, maize, clover, onion, and sugar cane. Of less importance are beans, nuts, sesame, and flax. About 94 per cent of the cropped area is put to field crops. Cotton is the principal cash crop and the main source of foreign exchange from the agricultural sector. It takes up about 16 per cent of the field crops' cropped area and accounts for about 35 per cent of the group's output value.

Rice is the second largest agricultural export commodity and is one of the crops that has expanded in acreage since the construction of the High Dam. Onions are the third largest agricultural export, with 40 per cent of the crop exported.

Wheat occupies about 14 per cent of the field and constitutes 12 per cent of agricultural value.

Other vegetables and fruits together occupy 7 per cent of the total cropped area and normally make up 14

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5. Donald C. Head, Growth and Structural Change in the Egyptian Economy (Homewood, Illinois: Richard D. Irwin, Inc., 1967), p. 56.

6. Ibid., 59.



Table 4: Area, production and value of total output for major crops in 1964

|  | AREA             | PRODUCTION            | VALUE OF<br>TOTAL OUTPUT | PERCENTAGE OF   |                        |
|--|------------------|-----------------------|--------------------------|-----------------|------------------------|
|  | Fedden<br>(1000) | Metric Tons<br>(1000) | L.E.<br>(1000)           | CROPPED<br>AREA | VALUE OF AG.<br>OUTPUT |
| <b>A. Field Crops</b>                      |                  |                       |                          |                 |                        |
| Cotton                                     | 1611             | 504                   | 157,083                  | 14.7            | 21.8                   |
| Wheat                                      | 1295             | 1,499                 | 53,959                   | 11.8            | 7.5                    |
| Corn                                       | 1660             | 1,934                 | 57,172                   | 15.2            | 8.0                    |
| Rice                                       | 962              | 2,036                 | 40,098                   | 8.8             | 5.6                    |
| Beans                                      | 408              | 340                   | 26,581                   | 3.7             | 3.0                    |
| Millet                                     | 494              | 740                   | 18,932                   | 4.5             | 2.6                    |
| Sugar Cane                                 | 134              | 5,150                 | 12,389                   | 1.2             | 1.7                    |
| Onions                                     | 134              | 647                   | 6,923                    | 1.2             | .9                     |
| Others                                     | 3481             |                       | 84,486                   | 31.8            | 11.7                   |
| <b>TOTAL FIELD CROPS</b>                   | <b>10,179</b>    |                       | <b>452,621</b>           | <b>92.9</b>     | <b>62.8</b>            |
| <b>B. Vegetables</b>                       | <b>608</b>       | <b>4,278</b>          | <b>67,303</b>            | <b>5.6</b>      | <b>9.3</b>             |
| <b>C. Fruits</b>                           | <b>167</b>       | <b>1,744</b>          | <b>33,223</b>            | <b>1.5</b>      | <b>4.6</b>             |
| <b>D. Livestock and<br/>Dairy Products</b> |                  |                       | <b>167,763</b>           |                 | <b>23.3</b>            |
| <b>TOTAL</b>                               | <b>10,954</b>    |                       | <b>720,910</b>           | <b>100</b>      | <b>100</b>             |

Source: U.A.R. Ministry of Agriculture, The Monthly Bulletin of Agricultural Economics and Statistics, Vol. 17, July, 1966

per cent of the value of agricultural output.

Livestock production represents an important segment of agricultural production, as it accounts for about 23 per cent of the value of agricultural output.

Egypt is considered among the developing countries of the world. One cannot say that the Egyptian agriculture is primitive as is often the case for developing countries, because the yield per feddan is as high as some developed countries, and in many cases exceeds some of them. For example, cotton is about 30 per cent above the United States.

With the present application of technology and production techniques, the agricultural sector in Egypt can be described as utilizing intensive cultivation.

It means, therefore, that simple improvements

in cultivation techniques would have a

significant effect on the high rate of

growth in the high rate of

35 million in 1971. The inhabited area amounts to 40,000 kilometers (4 per cent) on which all Egyptians live, an average of 550 people per square kilometer. This population density is high even compared with other countries -- Germany 198, Japan 238, England 245, and Korea 132.<sup>8</sup>

Egypt, in terms of cultivated area, is perhaps the most densely populated country in the world. About two-thirds of the population depend upon its agriculture, their income and standard of living are bound up with the yield of the land. Their lives and traditions are influenced by rural values.

The following table shows the percentage of rural and urban population.

Table 5: Urban and rural population and their percentage.<sup>9</sup>

| Year | Urban<br>(1000) | Per cent | Rural<br>(1000) | Per cent | Total<br>(1000) |
|------|-----------------|----------|-----------------|----------|-----------------|
| 1907 | 2.125           | 19       | 9.058           | 81       | 11.183          |
| 1927 | 4.382           | 28       | 11.429          | 72       | 15.811          |
| 1960 | 9.651           | 37       | 16.120          | 63       | 25.771          |
| 1966 | 12.042          | 40       | 17.639          | 60       | 29.731          |

There is a strong trend of rural-urban migration. The

8. Sayed Yacel, Agrarian Reform in Egypt (Cairo: 1957), p. 270.
9. Mostafa W. Nazi, Labor Force and Employment in Egypt: A Demographic and Socio-economic Analysis (New York: Praeger Publishers, Inc., 1971), p. 91.

population pressure on the land seems to be one of the causes of out-migration. The urban population has almost doubled from 1907 to 1966.

The birth rate, which is determined mainly by social and religious factors has remained for years at a high level, currently almost 2.8. This high rate creates more problems for an overpopulated country. Since 1964 the population has increased by 6 million and the land area or its productivity have remained essentially stable. Despite the continuous efforts to apply a policy of population control, and the measures that have been taken in the field of family planning, this high rate of population growth is expected to continue with substantial decrease in the crude death rates as a result of improving health conditions and more food expected to be available.

Diagram 1 shows the annual rates of increase and time taken to double population of selected countries. Egyptian population is expected to double within 25 years, whereas the population in Japan doubles every 70 years.<sup>10</sup> The growth in population, crop and cultivated areas has not increased at the same rate. Increase in population between 1952 and 1964 was about 2.5 per cent, the crop area about 13 per cent and the cultivated area up only 8 per cent.

Population growth might become an obstacle to eco-

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10. W. Birmingham and A.G. Ford, Planning and Growth in Rich and Poor Countries (New York: Praeger Publishers, Inc., 1965), p. 251.

Years taken to double population

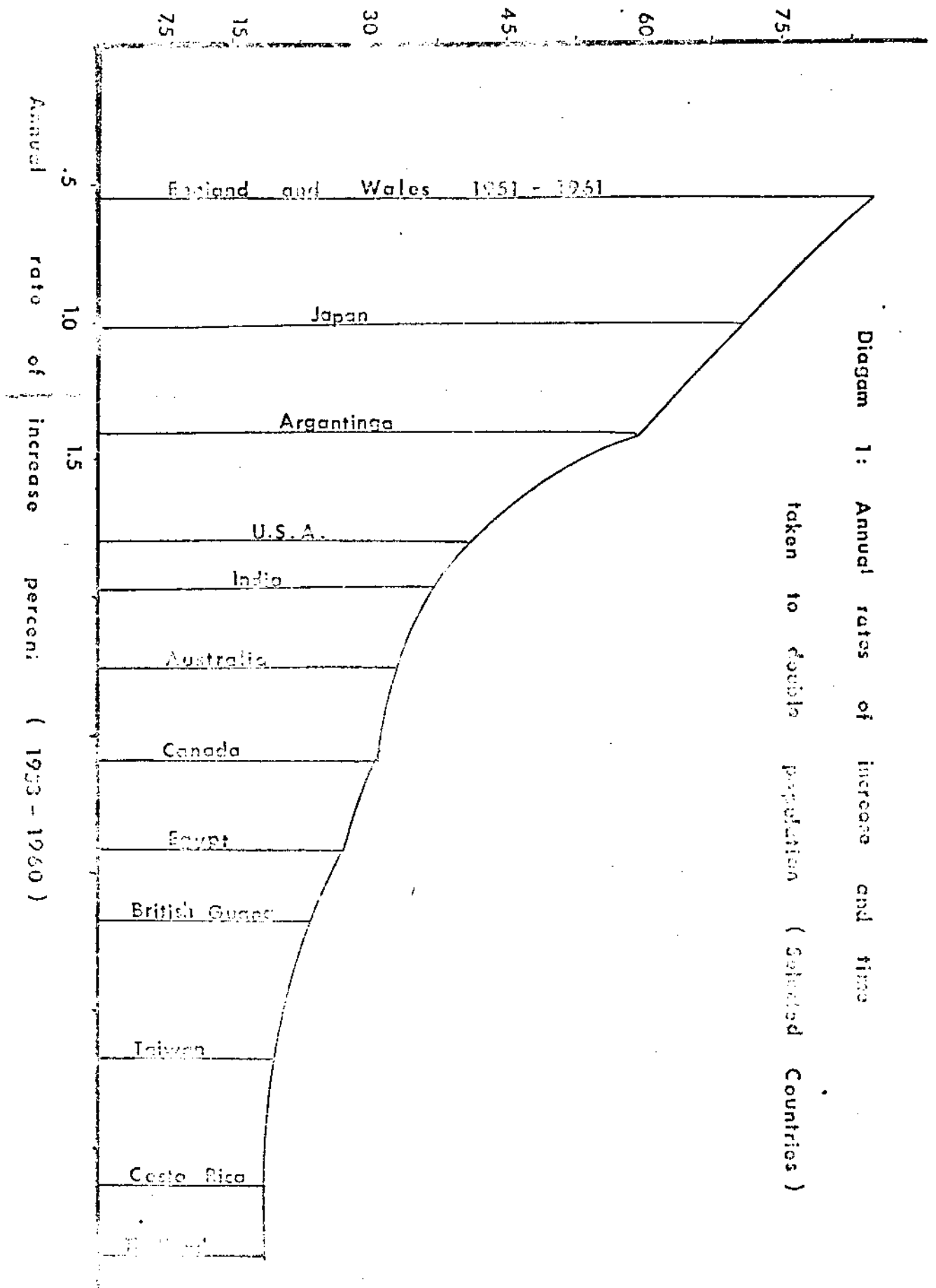


Diagram 1: Annual rates of increase and time taken to double population (Selected Countries)

conomic and social progress if no opportunity is afforded to the increasing numbers of citizens to add to the economic resources of the country. As Matras said, "The society unable to alter its social or technological patterns and unable to expand its physical environment must institutionalize patterns of controlling population growth, or suffer substantial decreases in its levels of living or lose all of its potential growth through high mortality."<sup>11</sup> This statement seems relevant to Egypt's situation. The chances for Egypt seem almost nil to expand its physical environment, and the food-population crisis is so acute that significant remedies are needed urgently.

#### National Income

National income increased from 1952/53 to 1959/60 from LE 206 million to LE 1289, in current prices. This increase is about 60 per cent, and is an annual compounded increase of 7 per cent. However, over that period the wholesale price index for all commodities has increased by about 18 per cent.

During the first national five-year plan, from 1960/61 to 1964/65, national income increased from its original level of LE 1289 million in 1959/60 to 1634 in 1962/63, in current prices. This is an increase of about 27 per cent in the first three years in the plan. If this trend is sustained in the future, it would be a remarkable achieve-

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11. Judah Matras, Populations and Societies (New York: Prentice-Hall, 1973), p. 65.

ment. It is likely that this will occur.

Table 6 shows the Gross National Income and Product for the period from 1952/53 to 1962/63.

The main objective of the first national plan was to increase national income by 40 per cent. The slight increase in national income from 1959/60 to 1960/61 was due mainly to the disaster of cotton in that year causing a sharp decline in agricultural income. Production of cotton declined by 30 per cent in that year, and its exporting value by 22 per cent compared with 1959/60.<sup>12</sup> Fluctuations in the cotton market also were responsible for the relatively high increase in national income of 1157 million in 1958/59 to 1289 million in 1959/60, or an 11 per cent increase.

The economic sectors contributed in varying degree to the increase of national income. Before the first national plan, during the period from 1952/53 to 1959/60, income from agriculture increased by about 61 per cent. Income from industry and electricity increased by 111 per cent. Income derived from construction, transport, trade, and finance together increased by 78 per cent.

The GNI and annual changes in income from the principal economic sectors for the period from 1960/61 to 1966/67 are shown in Table 7.

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12. Flivahu Kancovskiy, The Economic Impact of the Six-Day War (New York: Praeger Publishers, Inc., 1970), p. 218.

Table 6: Gross National Income and Product, 1952/53 to 1962/63 (L.E. Million, Current Prices)

| YEAR<br>SECTORS             | 1952/<br>1953 | 1953/<br>1954 | 1954/<br>1955 | 1955/<br>1956 | 1956/<br>1957 | 1957/<br>1958 | 1958/<br>1959 | 1959/<br>1960 | 1960/<br>1961 | 1961/<br>1962 | 1962/<br>1963 |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| AGRICULTURE                 | 252           | 262           | 301           | 312           | 374           | 381           | 364           | 405           | 403           | 441           | 469           |
| INDUSTRY AND<br>ELECTRICITY | 127           | 140           | 155           | 170           | 192           | 218           | 240           | 269           | 297           | 344           | 376           |
| CONSTRUCTION                | 25            | 27            | 26            | 27            | 32            | 38            | 43            | 47            | 44            | 99            | 91            |
| TRANSPORT                   | 54            | 55            | 58            | 62            | 58            | 65            | 72            | 92            | 102           | 114           | 124           |
| HOUSING                     | 59            | 56            | 62            | 65            | 67            | 68            | 70            | 73            | 74            | 78            | 78            |
| TRADE AND<br>FINANCE        | 72            | 75            | 83            | 92            | 101           | 109           | 116           | 131           | 147           | 155           | 177           |
| OTHER SERVICES              | 217           | 232           | 235           | 237           | 243           | 247           | 252           | 272           | 297           | 325           | 319           |
| TOTAL                       | 806           | 847           | 920           | 965           | 1,067         | 1,126         | 1,157         | 1,289         | 1,364         | 1,556         | 1,634         |

12. Source: Calculated from Table 1-A-7, Statistical Appendix In Mead, "Growth and Structural Change in the Egyptian Economy", 1967



Table 7: GNP and Annual Changes in Income from Main Economic Sectors (1960/61 - 1966/67)

| YEAR    | ANNUAL % CHANGE<br>IN GNP (IN<br>CONSTANT PRICES) | ANNUAL % CHANGE<br>IN INCOME FROM<br>AGRICULTURE (IN<br>CONSTANT PRICES) | ANNUAL % CHANGE<br>IN INCOME FROM<br>INDUSTRY (IN<br>CONSTANT PRICES) | SHARE OF<br>AGRICULTURE IN<br>GNP (IN CURRENT<br>PRICES) | SHARE OF INDUSTRY<br>IN GNP (IN<br>CURRENT PRICES) |
|---------|---|--|---|--|--|
| 1960/61 | 6.1   | -0.6   | 11.2  | 29.5   | 20.9   |
| 1961/62 | 3.5   | -7.4   | 8.5   | 26.4   | 22.0   |
| 1962/63 | 8.9   | 14.3   | 6.2   | 27.2   | 22.5   |
| 1963/64 | 8.7   | 6.2  | 12.3  | 27.3   | 22.6   |
| 1964/65 | 5.5   | 5.3  | 4.2   | 29.5   | 21.4   |
| 1965/66 | 5.0   | 3.3  | 2.5   | 28.9   | 21.7   |
| 1966/67 | 0.7   | -3.2   | 0.7   | 27.9   | 21.8   |

NOTES: The corrections for price changes were made using 1959/60 as the base year. However, for the 1965/66 and 1966/67, the base year is 1964/65.

10. Source: Table 13, Appendix III in Kanovsky, The Economic Impact of the Six-Day War, 1970, p. 343

During the first five-year plan, the low rate of growth in the agriculture sector as compared to that of industry reflects the emphasis placed on the latter sector in the allocation of investments.

Clearly the Six-Day War in June 1967 depressed importantly all the economic sectors. It declined the percentage of change in GNP from 5.0 per cent in 1965/66 to 0.7 per cent in 1966/67.

The share of agriculture in the national income declined from about 31 per cent in 1959/60 to 29 per cent in 1964/65, while the share of industry increased from 21 per cent in the first year in the national plan to 21 by the end of the plan. This trend of expansion in industry is expected to continue over the years to come because of the greater emphasis the government is placing on industrialization, and the forces of urbanization.

The process of economic development in Egypt creates deficits in the balance-of-payments because demand for export products, that is, primary products, increases less rapidly than demand for import, or fabricated, products. As a whole, the price of primary products is bound to decline over time in relation to the price of manufactured goods.

If Egypt's terms of trade are deteriorating, it will take increasingly larger physical quantities of export (E) to command given quantities of imports (F), thus according to the following equation,  $Mnp + M - E = C + I$ , consump-

tion (C) and investment (I) will be shrinking, there will be less available to Egypt for consumption and investment for economic development.

An increase in foreign capital goods provides the basis for an increase in imports, which, in turn, may cause deficit in the balance-of-payment, but on the other hand, permits an increase in investment which may lead to an increase in net national product.

#### Food Consumption

The level of food consumption is a valid measure of a country's well-being. One indicator of the food situation is the proportion of income expended for food. The higher the proportion of income spent for food, the lower will be that which remains to be spent on discretionary items in the economy. Great disparities in food consumption within Egypt arise from differences in income, occupation, family size, location -- the most important factor behind these disparities, of course, being the difference in levels of income. As Engle Law states, the poorer a family, the greater the proportion of total income used for food.

Food consumption in Egypt, in terms of calories, has improved over recent decades. The kinds of food which represent caloric resources have remained almost constant with cereals, potatoes and other starchy roots and sugar constituting more than 75 per cent of the total caloric intake. See Table 8.

There is no clear-cut measurement of the extent of malnutrition in Egypt, but it is an accepted criterion that if the ratio of calories derived from cereals, sugar and starches to the total calories consumed exceeds two-thirds, it is likely that instances of serious malnutrition exist. Egypt has exceeded the two-thirds ratio during the last three decades and has remained essentially the same since the pre-war years.

Since cereals, sugar and starchy roots are the cheapest foods, one observes a close relationship between the level of per capita income and the percentage of calories derived from these foodstuffs.

For good health the body requires minimum quantities of protein, vitamins and minerals. Protein is necessary for growth and for protection against certain diseases. Table 8 shows that the consumption of protein barely meets minimum requirements. But the level of consumption of animal protein is unsatisfactory, its proportion to total protein being only about 12 per cent. Egypt's consumption of total protein is not too low but the consumption of high quality animal protein in the form of meat, eggs and milk is particularly deficient. It is clear that the problem of nutrition in Egypt is related not so much to the quantity of food consumed, as it is to the quality of the diet.

Table 8: Per capita food consumption in Egypt  
(1934/35 to 1964/64). 15

| Years   | Total calories<br>(Per day) | Total protein<br>(Grams per day) | Animal protein<br>(Grams per day) |
|---------|-----------------------------|----------------------------------|-----------------------------------|
| 1934/35 | 2450                        | 73                               | 9                                 |
| 1947/48 | 2364                        | 68                               | 9                                 |
| 1948/49 | 2370                        | 70                               | 12                                |
| 1951/52 | 2360                        | 70                               | 11                                |
| 1952/53 | 2315                        | 67                               | 11                                |
| 1953/54 | 2520                        | 73                               | 10                                |
| 1954/55 | 2570                        | 75                               | 13                                |
| 1957/58 | 2530                        | 73                               | 12                                |
| 1960/62 | 2670                        | 79                               | 12                                |
| 1963/64 | 2890                        | 85                               | 13                                |
| 1964/65 | 2930                        | 84                               | 13                                |

The general standard of living of Egyptians is still very low because the pressure of population growth swallows up all increases in production.

Egypt was considered a food exporting country until 1946. Since 1947 it has been a net food importer. These imports which accounted for £7.27 million in 1950 and £7.35 million in 1951 have made it possible to maintain the level of food consumption. From 1952 to 1960, food production increased by more than 30 per cent as shown in Table 9. During that period net food imports decreased.

15. Derived from Table 1, Galal Amin, Food Supply and Economic Development, (London: University of London, 1966), p. 56.

Table 9: Index numbers of Agricultural Output: Major Commodity Groups (1953 = 100)

| YEARS   | FIBER | CEREALS | PULSES | OIL GRAINS | OTHER CROPS | VEGETABLES | FRUITS | ANIMAL PRODUCTS | TOTAL FOOD PRODUCTION |
|---------|-------|---------|--------|------------|-------------|------------|--------|-----------------|-----------------------|
| 1935-39 | 126.6 | 88.5    | 137.0  | 109.8      | 69.9        | 58.8       | 46.5   | 84.0            | 84.0                  |
| 1948    | 124.0 | 94.7    | 131.5  | 108.7      | 88.8        | 88.8       | 61.9   | 105.0           | 96.6                  |
| 1949    | 125.3 | 90.3    | 139.7  | 105.4      | 83.2        | 82.3       | 64.6   | 105.0           | 94.1                  |
| 1950    | 120.3 | 86.7    | 98.6   | 105.4      | 82.5        | 70.6       | 63.7   | 107.6           | 91.6                  |
| 1951    | 113.9 | 83.2    | 108.2  | 103.2      | 83.9        | 75.9       | 80.0   | 110.9           | 92.4                  |
| 1952    | 141.8 | 77.9    | 109.6  | 127.4      | 88.8        | 95.3       | 96.3   | 102.5           | 96.6                  |
| 1953    | 100.0 | 100.0   | 100.0  | 100.0      | 100.0       | 100.0      | 100.0  | 100.0           | 100.0                 |
| 1954    | 108.9 | 113.3   | 115.1  | 106.5      | 117.5       | 113.5      | 98.1   | 110.1           | 110.9                 |
| 1955    | 105.1 | 109.7   | 121.9  | 105.4      | 119.6       | 117.6      | 105.1  | 107.6           | 110.1                 |
| 1956    | 102.5 | 117.7   | 102.7  | 105.4      | 117.5       | 124.7      | 88.8   | 117.6           | 115.1                 |
| 1957    | 127.8 | 115.0   | 121.9  | 121.9      | 125.9       | 131.8      | 106.5  | 117.6           | 117.6                 |
| 1958    | 143.0 | 104.4   | 117.8  | 132.9      | 125.9       | 144.1      | 112.6  | 119.3           | 115.1                 |

Table 9, continued

|      |       |       |       |       |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1959 | 145.6 | 112.4 | 104.1 | 134.0 | 137.1 | 171.8 | 107.0 | 121.8 | 120.2 |
| 1960 | 154.4 | 115.9 | 135.6 | 140.7 | 137.8 | 178.2 | 113.5 | 117.6 | 122.7 |
| 1961 | 109.9 | 105.3 | 76.7  | 95.6  | 133.6 | 187.1 | 130.7 | 120.2 | 114.3 |
| 1962 | 151.9 | 137.2 | 147.9 | 141.8 | 146.9 | 205.3 | 131.6 | 122.7 | 137.8 |
| 1963 | 145.6 | 136.3 | 123.3 | 144.0 | 164.3 | 230.6 | 139.5 | 181.5 | 157.1 |

16. Source: Table III-A-2 in Mead, Growth and Structural Change in the Egyptian Economy, 1967. p/ 319

Wheat imports decreased from over one million tons in 1952 to only 10 thousand in 1954, and none was imported in 1955, whereas rice exports increased. Since 1960, food imports began to rise again, mainly from the United States.

Cereals are considered a main source of nourishment to the Egyptian population. Wheat, maize and rice provide almost half of the caloric intake. Over the past two decades these crops have continued to increase in production. From 1953 to 1963, cereal crops as a group increased by about 36 per cent, vegetables by 130 per cent, fruits by 39 per cent, and animal production increased by about 81 per cent. Due to the population growth, only a slight improvement was made in the levels of caloric consumption.



## CHAPTER 3

### FACTORS AFFECTING THE DEMAND FOR FOOD

#### Introduction

Egypt, as most developing countries, suffers from overpopulation in the sense that existing employment opportunities do not absorb the increase in supply of labor. Indeed, population growth, by creating an increasing demand for food, tends to reduce the contribution which food supply can make to economic development.

Population growth and per capita income are the two major determinants of the demand for food. The demand for food will increase as population increases and/or as per capita income rises. If the per capita income increases, only part of the increment may be spent on food. The part which will be spent on food is determined by the income elasticity of demand for food.

If we considered the per capita income, along with population, as the only determinants of the demand for food, then per capita income will decline as population increases, population growth will tend to influence demand in two different directions. If total income increases less rapidly than population, the demand for food will tend to rise as a result of the growth in population but to fall as a result of the fall in per capita income. It follows that as the rate of growth of population rises, the rate of increase in the demand for food may not rise to the same extent and in some circumstances may even fall if the effect of the decline in per capita income is strong

enough to more than offset the direct effect of population growth.

In any over-populated country, a rise in the rate of growth of population may lead to a rise in the rate of growth of total income if, for instance, it intensifies the efforts of the country to promote a more rapid economic growth or if it leads to larger amounts of foreign aid. Thus it is more reasonable not to generalize about the kind of relationship between the rate of growth of population and that of total national income.

Mathematics and Economics Relationships

Between Population Growth,

Per Capita Income and Demand for Food

By the following equation we can generalize the effect of a change in the rate of growth of population on the rate of increase in the demand for food.

$$D = P + NX (P+1)$$

where: D = the percentage of change in demand for food in a given period.

P = percentage of change in population.

X = percentage of change in per capita income.

N = the income elasticity of demand for food.

Since:  $X = \frac{1+Y}{1+P} - 1$

where Y is the percentage change in aggregate income, the first equation can be written in the simpler form.<sup>17</sup>

$$D = P + NY - NP$$

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17. Galal Atin, Food Supply and Economic Development (University of London, 1966), p. 27.

The following relationship between P and D can be made from the above equation.

1. If  $N =$  unity, D will remain constant whatever the value of P.

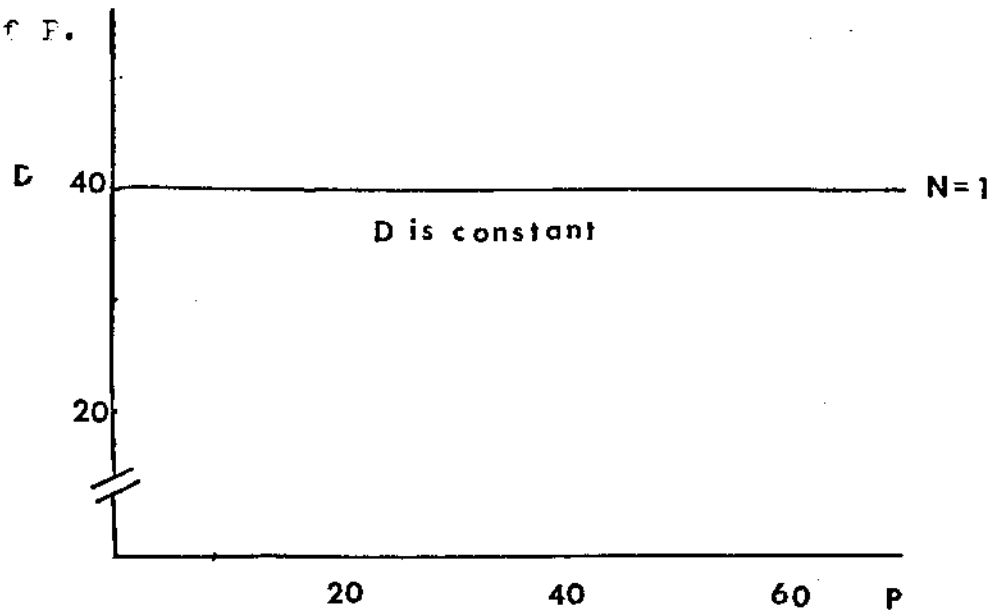


Figure 1: Income elasticity equals unity.

2. If  $N$  is less than unity, D will always increase as P increases.

3. If  $N$  is less than unity, the greater  $N$  the smaller the change in D resulting from a given change in P.

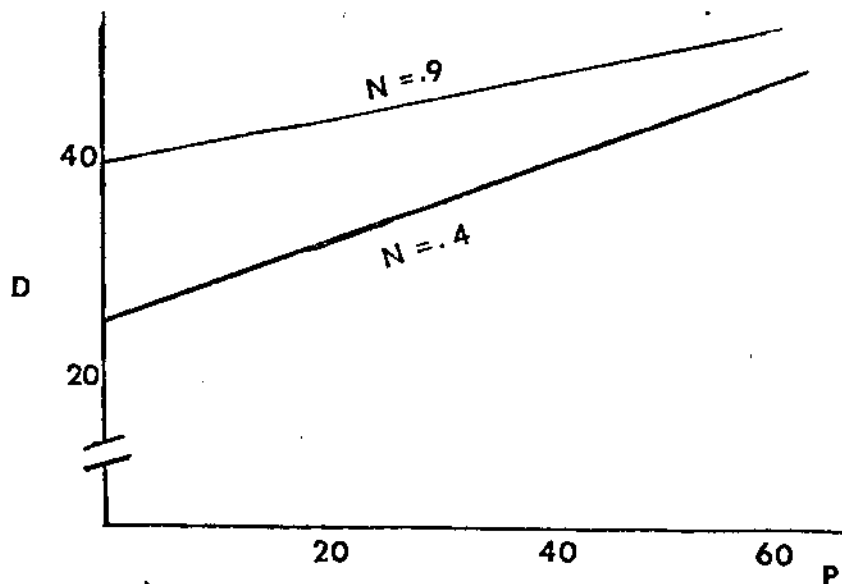


Figure 2: Income elasticity less than unity.

Figure 2 shows that the greater the value of  $N$ , the smaller the slope of the curve, that means the smaller the increase in  $D$  resulting from a given change in  $P$ . At any value of  $N$  below unity the slope of the curve always is positive.

4. If  $N$  is greater than unity,  $D$  will decline as  $P$  increases.

5. If  $(\frac{Y}{P} = 1 - \frac{1}{N})$ ,  $D$  will be zero, that is, the demand for food will remain constant.

6. If  $(\frac{Y}{P} < 1 - \frac{1}{N})$ ,  $D$  will be negative, that is, the demand for food will decline.

The last three relationships can be illustrated by the following diagram.

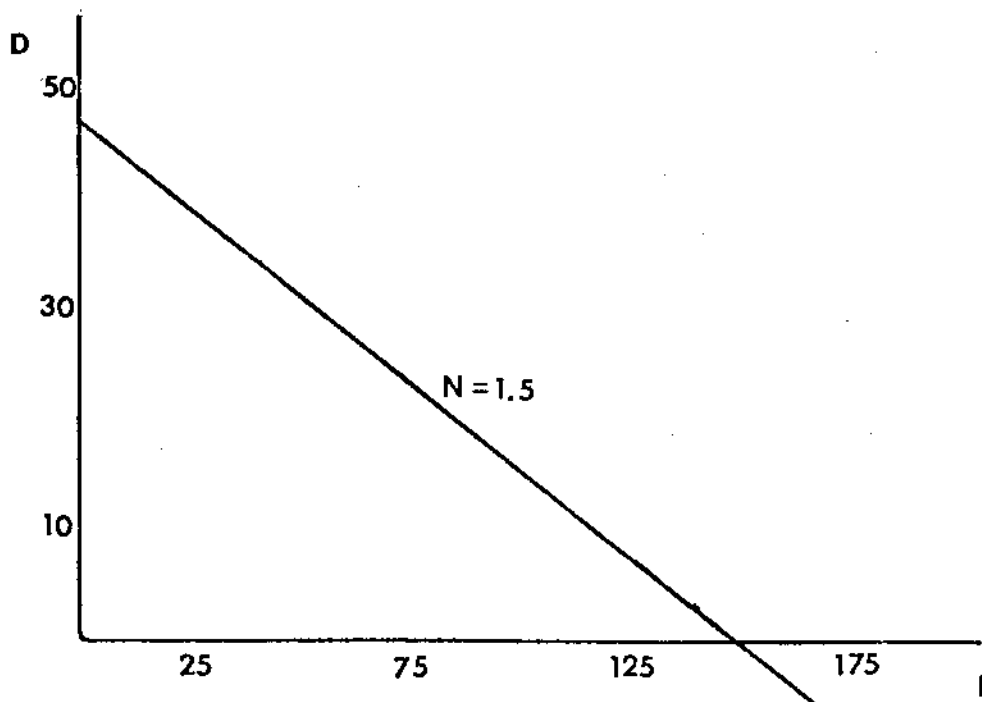


Figure 3: Income elasticity greater than unity.

Figure 3 shows that at  $N$  higher than unity (1.5) and  $Y$  is constant at 50 per cent

$D = \text{zero when } P = 150.$

D = negative when F is greater than 150

At point E, where  $F = 150$ , we find that  $\frac{Y}{P} = 1 - \frac{1}{N}$ .

Point beyond E, we find that  $\frac{Y}{P} < 1 - \frac{1}{N}$ .

For any value of N greater than unity, and whatever the value of Y, the slope of the curve is always negative.

From the above discussion we can see (as in Figure 2) the higher the income elasticity of demand for food the smaller the effect of changes in the rate of population growth on the rate of increase in demand. It follows that in poor countries like Egypt where N is high a reduction in rate of population growth will not bring as much relief from food shortage as would an equal reduction in a less poor country with a lower income elasticity of demand.

Other factors influence demand for food rather than population growth.

#### Urban and Rural Regions

There is a range within which food expenditure changes as income and location change. More expensive foods are bought as income rises. Also, total food expenditure is different from urban and rural areas. Expenditures are more equally distributed in rural than in urban areas. This is explained first by the qualities as well as prices paid that differ much more in urban than in rural areas. Second, incomes, occupations, social status, and tastes are more varied in urban areas.

Table 10: Percentage of total expenditure in urban

and rural areas.<sup>10</sup>

| Food Items | Urban | Rural | Weighted Average |
|------------|-------|-------|------------------|
| Food       | 47    | 63    | 55               |
| Clothing   | 8     | 8     | 8                |
| Housing    | 12    | 5     | 8.5              |
| Fuel       | 0     | 4     | 2                |
| Transport  | 4     | 2     | 3                |
| Education  | 4     | 0     | 2                |
| Health     | 3     | 2     | 2.5              |
| Others     | 12    | 12    | 12               |
| Total      | 100   | 100   | 100              |

In 1961, the National Planning Committee found that urban people spent more on housing than that spent by rural people. Moreover, they spent double the amount of money on transportation and four times more on education as people in the rural areas.

As shown in Table 11, the most unequal distribution of expenditures among food items existed between fruits and meat. This inequality in the distribution of expenditures on these expensive items of food can be related to price and quality differentials. The lower income people do not necessarily consume relatively smaller quantities, but rather lower qualities.

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10. Calculated from Charles Issawi, Egypt in Revolution (London: Oxford University Press, 1963), p. 123.

Table 11: Percentage of items of food expenditure in urban and rural areas (1958/59).<sup>19</sup>

| Food Items              | Urban | Rural | Weighted Average |
|-------------------------|-------|-------|------------------|
| Cereals and starches    | 27.4  | 41.8  | 34.5             |
| Dried legumes           | 2.6   | 4.2   | 3.4              |
| Meat, fish and eggs     | 21.2  | 17.1  | 19.2             |
| Oils and fats           | 3.8   | 2.4   | 3.1              |
| Milk and dairy products | 12.8  | 12.6  | 12.7             |
| Vegetables              | 7.4   | 5.1   | 6.3              |
| Fruit                   | 6.4   | 3.0   | 4.7              |
| Sugar                   | 6.4   | 6.5   | 6.4              |
| Other food stuffs       | 5.8   | 2.0   | 3.9              |
| Beverages               | 6.2   | 5.3   | 5.8              |
| Total                   | 100.0 | 100.0 | 100.0            |

As a result of the Egyptian Family Budget Survey of 1958/59, it is observed that total expenditure on food and beverages accounts for about 47 per cent of the total annual expenditure in urban areas, and about 62 per cent in rural areas, with an overall average of about 55 per cent. In 1960, the corresponding percentages were 22 per cent for the United States, 23 per cent for Canada, 47 per cent for Yugoslavia, 52 per cent for Ceylon, and 70 per cent for Nigeria.<sup>20</sup>

19. Ibid.

20. Galal Amin, Food Supply and Economic Development (London: University of London, 1966), p. 61.

As shown in Table 11, the expenditure on cereals and starches consisted of more than one-third of the total expenditures on food items. In rural areas, the share of cereals and starches is as high as 42 per cent. The sources of animal protein (meat, fish and eggs) account for about one-fifth. However, the distribution of total expenditures does not disclose the whole picture, as the prices of most cereals and other basic items are usually controlled and/or subsidized, while relatively more expensive items (meat, fish and fruit) are not.

#### Prices

Egypt is among the most economical countries in which to live in the world. A study made comparing the cost of living among various cities put Cairo at the bottom of the list and New York City at the top. The main components of cost of living, food, rent and services, are relatively the cheapest; most kinds of foods are abundant the whole year around, rents are controlled and the price of services is determined by the low level of wages and is usually low.

The purchasing power (which relates to wages and prices) of the Egyptian pound is very high but it is difficult to evaluate the purchasing power of it in terms of working-class income, since the Egyptian pattern of consumption differs completely from the American. However, it appears that the Egyptian pound buys relatively more at lower income levels than at high income levels. Families with an annual income of LE 100 spend 65-70 per cent of it



on food while those with an income of LE 600 or over devote only 35 per cent of it to food.

Table 12: Prices of selected food items a year around (1961).<sup>21</sup>

| Food Item       | Price (¢) | Unit            |
|-----------------|-----------|-----------------|
| Eggs            | 30-35     | Dozen           |
| A loaf of bread | 1.5       | One-third pound |
| Flour           | 10        | Kilogram        |
| Rice            | 9         | Kilogram        |
| Beef or veal    | 65-70     | Kilogram        |
| Vegetables      | 5-12      | Kilogram        |
| Fruit           | 8-16      | Kilogram        |

It seems that even with these relatively low prices, prices compared to the per capita income are still high. With the existing purchasing power of Egyptian pound and the present per capita income, prices of food items can be considered very high if we compare them with those of a country as the United States.

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21. Charles Issawi, Egypt in Revolution (London: Oxford University Press, 1963), p. 114.

## CHAPTER 4

### SOURCE OF INCREASING FOOD SUPPLY

#### Horizontal Expansion of Cultivated Land

It may be that the only hope for Egypt to increase the cultivated land is to look toward the huge desert areas which constitute 95 per cent of the country and appear at this time to be its major unlimited resource.

In 1830-40, the cultivated area was two million feddan, in 1930-40 it was nearly 5,800,000 and crop area nearly 9,200,000 feddan. Between 1940-60, the expansion of cultivated and cropped area was small and still fell far short of the rapid growth of population. Therefore, the per capita share of agricultural land declined to leave Egypt one of the lowest per capita shares of agricultural land in the world.

Despite the seeming difficulty in significantly expanding cultivated land beyond that claimed with the construction of the High Dam, the government engaged in systematic study of rain-fall, underground water and soil and as a result has successfully improved 60,000 feddan for pastures. Another project involving 20,000 feddan is in process.

The most important project depending upon the underground water is the New Valley (depressions in the Western Desert). Cultivable land in these depressions has been estimated at three million feddan. But it remains questionable if sufficient water can be tapped for the project.

Another important project is the Quttara Depression (200 kilometers west of the Delta and 50 meters below sea level). Cheap electricity generated from this project could be used in distillation of sea water to use in cultivating more land.

Egypt depends completely upon the Nile River to irrigate its land. Almost all of the available water has been used. It is estimated that the maximum area that could be cultivated in Egypt is 10 million feddans which means a possible increase of only 25 per cent after 1970.<sup>22</sup> Therefore, the only hope of any significant horizontal expansion after the High Dam seems to lie in the discovery of yet unknown economical methods for the utilization of underground water to cultivate more land.

#### Vertical Expansion of Cultivated Land

Food supply can be increased by increasing the yield per feddan as well as increasing the cultivated land. It would seem essential that both the horizontal and vertical expansion be implemented simultaneously to meet the increasing demand for food.

By increasing the fertilizer consumption, seed selection, pesticides, and drainage, the yields per feddan can be significantly increased. The yield per feddan of wheat, rice and sugar cane, besides other crops, has shown an increase during the last three decades. The most important

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22. Galal Amin, Food Supply and Economic Development (London: University of London, 1966), p. 70.

factor behind this increase is the use of fertilizers. Despite the consumption of fertilizers per feddan in Egypt being very high compared with other countries, it is still far behind the optimum level. Rates of fertilization do not at the present time correspond to the actual plant requirements and there is room for increasing the consumption of nitrogen, phosphate and potassium required for plants to increase the yield per feddan.

Egypt can increase the available supply of food by exercising greater control of animal and plant pests and diseases. Egypt loses annually the equivalent of 10 per cent of its total food production to plant diseases alone.

Small farmers own 75 per cent of the farm animals. They are not able to provide sufficient medical care for them. Therefore, animal diseases cause damage approximating 25 per cent of the value of livestock production annually.

Insufficient storage results in a loss of 8 per cent of the production of fruit and vegetables and 4 per cent of the production of cereals.<sup>23</sup> The use of better quality seeds can raise the productivity by about 20 per cent.

#### Need for Improved Drainage

The improvement in the Egyptian drainage system can contribute substantially to the increase of cultivated land, as well as raising the yield per feddan.

Most of the land is still drained by free flow, but

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23. Ibid., p. 73

about 1200 thousand feddens in lower and upper Egypt are served by mechanized drainage.

During the last three decades much work has been invested to improve the drainage system. Egypt constructed more than 13,000 kilometers of drains. Nevertheless, drainage is still very weak. Main drains are generally available, but they need deepening and more pumps. Field drains are inadequate owing to the high cost of land they occupy; moreover, they are difficult to connect with the main collectors through neighboring plots whose original canals were constructed according to each fellah's individual needs rather than through community cooperation.

Improving drainage can raise productivity by about 30 per cent. This can be accomplished by the extension of public drainage canals and by the replacement of the present open drains with covered drains. The system of covered drains contributes to a rise of agricultural production by adding 750,000 fedden to the present cultivated land which is occupied by open drains, and by raising soil fertility, thus increasing the productivity of the land.

#### Developing Seafood Resources

Despite Egypt having coasts stretching for more than 1500 miles along the Mediterranean and the Red Sea, as well as having the Nile water and a number of large lakes, Egypt is still a net importer of seafood. In terms of demand, seafood is not a uniform commodity but can be used directly as a food supplement in the form of a protein con-

concentrate.

The production of seafood is estimated to be about 140,000 tons, which means the average per capita is about 5 kilograms, compared to 40 in Japan and 30 in Britain.<sup>24</sup> The Mediterranean and Red seas provide 25 per cent of the output, the lakes 60 per cent and the Nile and canals 15 per cent.

The prices of seafoods are relatively high because seafoods are highly perishable and require relatively sophisticated processing, distribution and marketing techniques. In addition, costs of production are high because of inefficient methods of fishing.

There are 400 motor boats engaged in deep-sea fishing. New equipment is needed to increase their efficiency. By changing the traditional methods of fishing from sailing boats to more newly equipped boats, the production of seafood can increase substantially. The government plans to build a large shipping fleet with the help of European countries, and steps will be taken to reorganize the fishing industry.

Exploitation of the lake which is formed by the High Dam (Lake of Nassar) can increase the production of fish by 50,000 tons a year, or by 35 per cent of the annual production.

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24. Charles Issawi, Egypt in Revolution (London: Oxford University Press, 1963), p. 152.

Mechanization of Agriculture

Egyptian agriculture is still wasteful in its use of virtually all factors of production. The cheapness of labor and the skill of the fellah with his traditional instruments have slowed the adoption of machinery, except for irrigation and drainage.

An important aspect of the mechanization of agriculture is that it conserves livestock. Comparing the cost of machinery with that of animals as well as human labor, a study for a single farr has proved that using tractors on farms exceeding 50 feddan is more economical than using animal power.

Mechanization will decrease agricultural employment by creating a surplus of 140,000 laborers which can be absorbed into the production and service sectors of the economy.

Mechanization will relieve a number of cows and buffalo from work which will increase their production of milk and meat by about 50 per cent.<sup>25</sup>

For countries to change from a primitive agricultural system to a mechanized system with increased productivity requires a heavy investment. In Egypt studies have shown that unskilled labor represents no cost to society. Research done by the Central Planning Committee in 1961 showed productivity can be increased equally well

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25. Galal Amin, Food Supply and Economic Development. (London: University of London, 1966), p. 75.

through the use of abundant agricultural labor as through the use of machines. It is uneconomical to replace labor and draft animals with tractors and threshing machines in Egypt.

#### Food Import and Export

Importing more food is another important source of increasing food supply. In recent years imports have represented about 20-25 per cent of national income while exports have been somewhat lower. The four main food exports (rice, onion, ground nuts, fruits and vegetables) constituted around 12 per cent of the total exports.

The problems facing Egypt's exportation of food relate both to international demand and to its own supply. On the demand side, one problem is the tendency of the terms of trade of primary products to decline relatively to those of manufactured products. In addition, the future does not seem bright for Egyptian prices for food exports. A study by the Food and Agriculture Organization of international demand and supply of rice shows that the international price of rice will, on the most favorable assumption, remain constant but may tend to decline if the large rice-consuming countries of the Far East are to continue what they have already begun of their intensive drive toward self-sufficiency. The main problem facing exportation of food is the defects in the services essential for marketing foods to the international market. Also, distribution services are sometimes uneconomical so that a high profit margin on internal dis-



tribution and a high cost of packing reach levels out of proportion with the value of the product. More important, however, is the problem of the limited quantities available for export.

It seems, therefore, that there will not be significant changes in the quantities of food for export for a long time. The growth of production relative to that of population will not leave surplus for exportation.

From 1945 to 1951 imports of consumer goods have been growing rapidly with food items chief among them. The following table shows that from 1960 to 1962 the increase in consumer goods imports represents more than 40 per cent of the total increase of private consumption.<sup>26</sup> Most of this increase was wheat.

Table 13: Consumption, consumer goods imports, its ratio and propensity to imports consumer goods (selected years).<sup>27</sup>

| Years | Consumption<br>C<br>(L\$ Mill.) | Consumer Goods Imports<br>FC<br>(L\$ Mill.) | FC/C | $\Delta FC/\Delta C$ |
|-------|---------------------------------|---|------|----------------------|
| 1945  | 409                             | 23  | 0.06 |                      |
| 1948  | 521                             | 71  | 0.14 | 0.43                 |
| 1951  | 748                             | 102   | 0.14 | 0.14                 |
| 1954  | 606                             | 49  | 0.07 |                      |
| 1960  | 1064                            | 58  | 0.05 | 0.02                 |
| 1962  | 1164                            | 90  | 0.08 | 0.32                 |

26. Donald C. Read, Growth and Structural Change in the Tanzanian Economy (Homewood, Ill.: Richard Irwin, Inc., 1967), p. 172.

27. *Ibid.*, p. 159 and 172.

Table 13 shows also that the propensity to import consumer goods ( $\Delta YC/\Delta C$ ) increased during 1954 to 1962 from 0.02 to 0.32, meaning that consumer goods represent a great amount of imported goods.

As industrialization takes place in Egyptian economy, the proportion of imports of machinery and transport equipment to total imports will increase. Therefore, it is expected that per capita consumption of imported food will decline in the coming immediate years.

It seems that it is possible for Egypt to increase the food production through agricultural development, to increase per capita supply of food and to reduce the quantity of imported food each year. Through available technology and resources Egypt has the potential of increasing food production. For this to occur, however, technology and resources must be combined in a more efficient way.

## CHAPTER 5

### EXPECTED DEMAND AND SUPPLY OF FOOD

#### IN EGYPT'S DOMESTIC MARKET

The principal problem confronting the food market at the present time is that the demand for food is increasing more rapidly than the supply. As the growth in production fails to keep pace with the growth of population, there will continue to be a shortage of food. Egypt must improve the quality of food as well as the quantity to meet the future demand.

#### Food Supply and Population Growth

The general fertility rate in Egypt has been constant in the past several years, as reflected in census reports. There is no reason to believe that it will show significant improvement. The fertility rate depends upon several economic and social factors. A rise in per capita income may be conducive to an attitude favoring a smaller number of children. At the same time it may lead to a reduction in malnutrition which in its turn may contribute to greater fecundity. While it is not expected the fertility rate will change, the mortality rate is expected to decline.

means of increasing the yield and greater crop intensity on existing cultivated land.

#### Food Demand and Economic Development

As the economic development processes continue, the demand for food is expected to increase as a result of the rise in income quite apart from that resulting from population growth.

Income elasticity of demand for food will probably as a result of the rise in per capita income, decline; but it is not likely to fall below 0.6.

It is estimated that if the ten year plan (1960-1970) maintains its goals the increase in the demand for food resulting from an increase in population and a rise of national income will be about 70 per cent. If income elasticity of demand for food is approximately 0.7 in the first five years of the plan and around 0.6 in the second five years, food production in Egypt will increase only slightly less fast than the demand; and Egypt will not have to import much more food in the 1970's than it did in the 1960's.

This projection of demand should be taken as a rough estimate because two factors are likely to make the actual increase in demand higher than that projected. The first is money income, which will most probably rise faster than real income making for an additional demand for food. The second is the redistribution of income which will most probably move in favor of the lower income groups, elevat-

ing the average income elasticity of demand. Other factors, such as changes in habits and tastes related to food consumption, changes in the relative prices of food in relation to other goods, and changes in the age and sex composition of the population may be important and have not been taken into account. Their effect, however, is likely to be very small compared with changes in population and per capita income.

#### Food Prices and Government Control

During the period, 1935 to 1960, food supply increased more rapidly than population so that some rise in per capita supply was achieved. Despite this, the supply falls far short of the increase in total demand which is the result of both population growth and per capita income. The rate of increase in food prices reached its highest level during World War II, but gradually declined up to the mid-fifties as can be seen from Figure 4. After 1956, prices rose by an increasing rate until 1960. Prices would have risen faster if the government had not put them under controls. The government is continuing to control prices of most important food items (wheat, maize, rice, sugar, and other items), measures implemented by the Ministry of Supply and the police.

The government, in order to insure effective price controls, has taken measures to influence the supply of food items rather than the demand for them. Firstly, wheat is being heavily subsidized in order to maintain

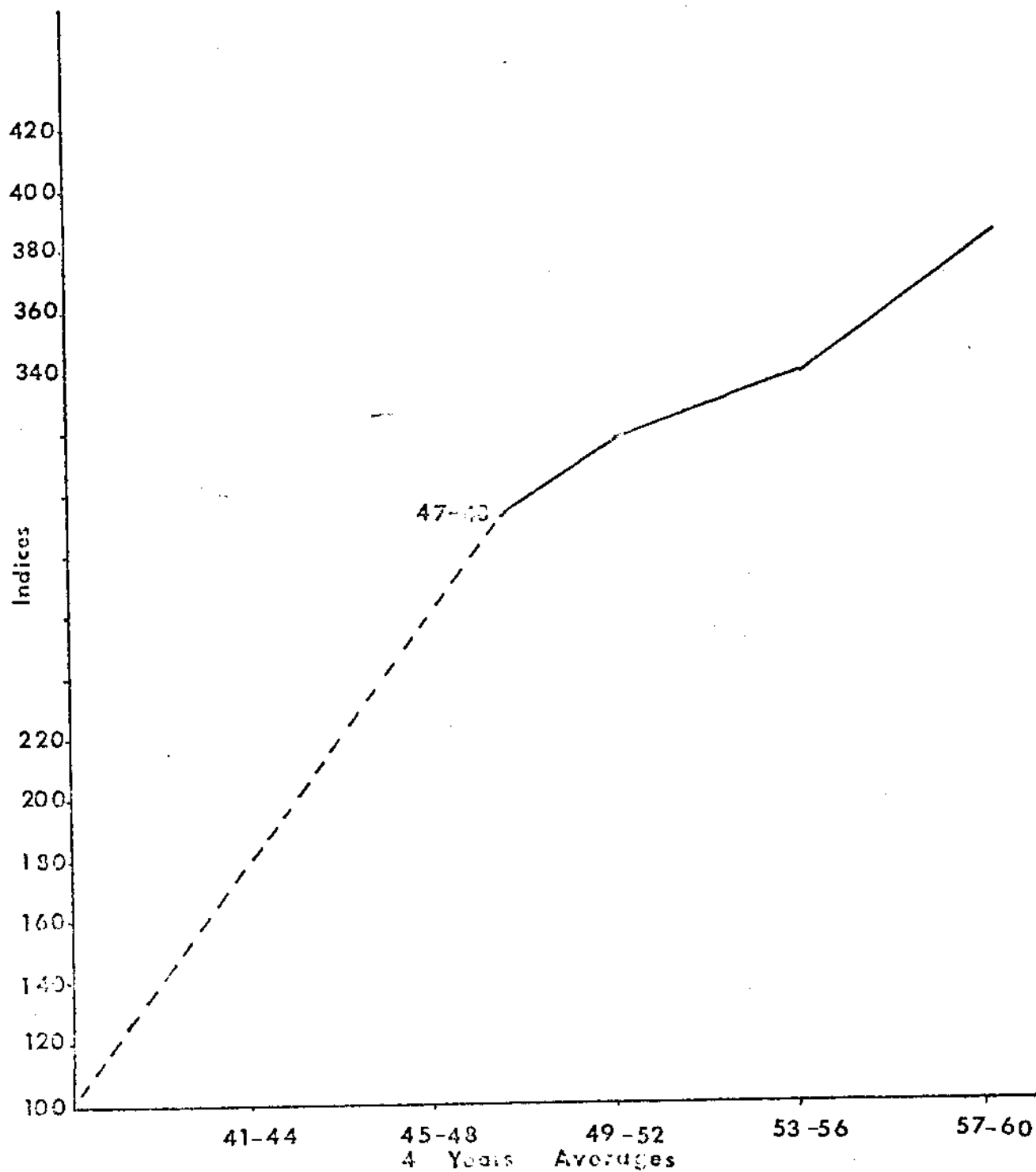


Figure 4 Indices of prices of all food items

low prices of imported wheat. Secondly, a certain proportion of the wheat and rice is requisitioned by the government every year at the price fixed annually by the government. Finally, in 1962 and 1963, the government nationalized flour and decorticating mills.

Increases in the price of food creates great pressure for the wage rate to rise. This, in turn, if not matched by a rise in the prices of manufactured goods tends to reduce the rate of profit and thus affect adversely the accumulation of capital. On the other hand, the prices of manufactured goods may be prevented from rising unless matched by an increasing supply of money. But if the money supply does increase sufficiently, inflation may set in with its several harmful effects on economic development. Government control of food prices in Egypt has succeeded to a large extent in avoiding these harmful effects, but not in eliminating them. Despite government control, food prices have risen.

## CHAPTER 6

### CONCLUSION: A PLAN

#### TO HELP SOLVE

#### THE FOOD SHORTAGE IN EGYPT

The most important characteristic of the Egyptian economy is the heavy dependence upon the agricultural sector as a source of both domestic food supply and export earnings.

Food supply in Egypt has failed throughout the last decades to match demand. Food production has lagged behind population growth; and increasing imports of food have had to compete with the importation of capital goods. But even with rapidly increasing imports, food consumption has shown only little improvement. Therefore, it is expected that the Egyptian standard of living will remain low until the population growth rate can be decreased through control of family size by means of education and by changing the idea among villagers that family control is against God's wish.

It is clear that an acceptable balance between food and population cannot be achieved by focusing efforts exclusively on the food situation. As President Johnson said in his message to the United Nations at its twentieth anniversary, "Let us act on the fact that less than five dollars invested in population control is worth one hun-



dred dollars invested in economic growth."<sup>29</sup>

This study has shown that large increases in the demand for food products are expected due to projected population growth and economic development. Each percentage gain in economic development creates an additional demand for food of 0.6 or 0.7 per cent.<sup>30</sup> This demand must be fulfilled by increasing food production, increasing food imports or some combination of the two. During the last two decades, agricultural output has increased on essentially the same cultivated area.

It seems that to solve this problem all the sectors of production and services must work together dynamically and efficiently, the cooperation among them must be complete at all levels; similar cooperation must exist between private enterprise and government to allow the creation of a system of allocation of resources which will lead to the highest possible benefits for all Egyptians.

The attempt must be made to predict the probable demand for food from the available information. Prediction based solely on population growth and per capita income will likely be faulty.

Full utilization of the resources should be maintained. The decisions on how best to utilize these re-

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29. Lester Brown, "World Food/Population Problems: An Overview," Alternatives for Balancing World Food Production Needs (Iowa State University Press, 1967), p. 3.

30. Robert de Vries, "World Population, Food Demand and Agriculture Sciences During the Last Fifty Years," Agriculture Science and World Food Supply.

sources depend upon the appraisal of demand in the domestic market and upon international markets in which Egypt hopes to sell as a means of earning the foreign exchange it needs for development.

Proposed goals of the plan:

1. The increase of food production within Egypt.
2. The stabilization of food prices by improved marketing and management techniques.
3. Encouragement of family planning through education, change in government policy and improved standard of living to reduce the rate of population growth.

#### Food Production

Increase in food production could be achieved by vertical or horizontal expansion of cultivated land or by both simultaneously, as was mentioned previously. In addition, Egypt could build a cooperative system to help the fellah to increase his productivity. Presently, cooperatives represent only a fraction of Egyptian agricultural affairs. The government could extend these to represent all the fellaheens' interests in production and marketing. The brief experience with the agrarian reform cooperatives, as well as the larger experience with credit cooperatives, should suggest to the government that it could influence the process of cultivation more easily by working through groups representing the fellaheen, for example by offering lower prices to these groups for seeds.

fertilizer and farm implements.

Egyptian agriculture does not seem to require extensive mechanization, but for certain tasks machines could raise yields. The government could encourage co-operatives and individual farmers to buy tractors, diesel pumps and drilling equipment by establishing a network of maintenance and repair stations for agricultural machinery throughout the countryside.

At the present time in Egypt, the arrangement for the cultivation of land may be classified as either modern or traditional. Modern farming is conducted by supervised cooperatives, located on the lands confiscated under agrarian reform. In the traditional sector, farms consist of separate holdings scattered over several fields. In addition to the waste of labor time involved in traveling among scattered plots, a variety of different plants are found within a small area leading to inefficient farming and a reduction of productivity per feddan. By following a national plan similar to that used by the agrarian reform cooperatives, the fellahen could consolidate their tiny plots. Each field could then produce a single crop, the yield of which could be increased through scientific rotation and seed selection, and improved use of fertilizers and water.

It is obvious that much more can be done to increase agricultural production through increased use of machinery and by the utilization of more advanced technology. There

are four general ways in which technology promises to increase the output of food producing resources:

1. It can increase the yield of all food-producing resources now under utilization.

2. It can promote the employment of resources that are not now used.

3. It can develop better conditions to permit adequate exchange of food items between surplus countries and developing countries.

4. It can develop a nutritive value from materials not presently serving as human food.<sup>31</sup>

Specifically, agricultural yields can be increased through the following means:

1. Manipulation of the genetic character of the plant.

2. Protection of the plant against diseases and pests.

3. Improvement of water supplied to the plant.

4. Addition of mineral nutrients to the land.

Improvement in seed and protection of plants against diseases and pests requires relatively little capital.

Egypt could afford to make significant progress in this area within the near future. On the other hand, capital requirements to increase food-supply by means of irriga-

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31. F. Schermer, "Population, Natural Resources and Technology," Population Geography Reader (New York: McGraw-Hill, Inc., 1970), p. 476.

tion and other land improvement, as well as through the use of equipment and fertilizers, are enormously costly projects and are expected to progress more slowly.

Any plan proposed to alleviate Egypt's food shortage problems must take into consideration Egypt's soil, climate, location, and abundant labor supply. If full advantage is taken of these resources, Egypt may become an exporter of flowers, fruits and vegetables and other foods. When and if this occurs, it will be accompanied by a reduction in the production of cereals and rice, and by an increase in mechanization which will release a large number of animals from farm work to devote them entirely to meat and dairy production. Such a shift would simultaneously increase returns per feddan several fold, absorb a much larger amount of the labor force and, by reducing rice cultivation, release an appreciable amount of water for more land.

Beyond this transformation in agriculture, the principal hope for Egypt to increase food-supply domestically is by the cultivation of its deserts. The extremely small amounts of underground water that may be expected for any Eastern or Western desert and the lack of available capital and technology limit this hope.

Some crops are watered too intensively and at the wrong times. Part of the problem is that many fields are deficient in drainage canals and as a result the salinity of the soil has risen over the years. Yield would be

raised and water would become available to cultivate additional land if the fellahen could be persuaded to scientifically regulate the flow of water to and from their lands.

The government could increase meat production and per capita income of fellahen through free or subsidized distribution of chicks. Similar distribution of young fruit trees to be planted around hores and on the banks of canals would increase production of fruit. These two programs could be carried out with low cost to the government relative to the ultimate benefits gained by individuals and the country as a whole.

#### Administration of Marketing System related to Food Demand

One of the most basic marketing problems is the inability of the producer to get his product to market because of the lack of suitable roadways and/or vehicles of transport. Profit incentives to producers are cancelled out by high-cost transportation, either in the form of direct charges per unit volume moved or through losses and quality deterioration, as in the case of perishable products like vegetables, fruits, eggs, livestock, or milk.

Proper storage facilities to protect agricultural products against deterioration and loss are also fundamental. It follows that producers are likely to be hesitant to increase their output if there is danger that their products could deteriorate before sale or if suitable storage is so expensive that it makes the crop unprofitable to raise.

Egypt suffers from both of these marketing handicaps. Stable and reasonable prices are very important incentives to increased production. Unless fellahaen have confidence that prices will bear some relation to cost, they will hesitate before incurring additional work or expense to increase their output or to raise quality.

If the marketing system is to play its proper role in solving the problems of demand for food and contribute to the economic development of Egypt, there are several steps the government could take to directly influence marketing. It could take the responsibility of locating foreign or domestic buyers for products, arrange transport from the place of production, supervise suitable packing, containers, grading, and transport to the buyers' depot or market. The government could also become more active in situations which necessitate storage of products for the purpose of spreading over time the supply to be placed on the market or when processing is needed to assist in conservation of products.

\* The establishment of specialized packing, processing, storage, and wholesaling facilities would be a more dynamic instrument for marketing improvement than the present day structure of interdependent, small-scale supply and distribution enterprises. The government has financed investments in some physical structures for such purposes without creating the necessary complementary programs to

insure efficient use. A national plan aimed at correcting these malpractices is vital.

Government could offer supplemental services that would facilitate the marketing process and maximize returns, such as advisory programs for producers and handlers on seed selection, harvesting and selling, methods of storage, as well as control of sales practices and the training of operational marketing personnel. Strict control of product quality standards is necessary to maintain a country's image in the international markets and should be considered within a national plan.

In Egypt, the process of marketing, from the research level to regulation, is hampered by the lack of assigned responsibility to a particular government department. Elements of marketing services and controls are administered by different organizations with no coordination. Departments of agriculture, industries, cooperatives, agriculture banks, and municipalities are all involved. A national plan must determine and regulate the responsibility of each department to increase the efficiency of the entire marketing system.

The inefficiency of public services and operating performance of the marketing system is caused partially by the lack of personnel trained in marketing. Many government officials with years of service has little or no training. This situation must be corrected by the creation of special training programs.



Social Implications

Egypt must put forth more effort to educate the masses of rural people in the need for family planning. This would involve the teaching of new value systems to people who presently regard a large family as an asset. Education through the various media, public schools, religious leaders, physicians, and government sponsored efforts is probably the most effective long-term means to such attitudinal change.

Presently, the government sponsors distribution of free or subsidized contraceptives but the rural people are distrustful and unaccepting of them due to the disagreeable side-effects of the earliest products. Here again education can be beneficial in the attempt to alter the attitudes of the rural people who produce so many children.

It seems imperative that the government's policy of awarding increased allotment for each additional child born into a family should be altered. In the past, families were awarded more for each child with no limit on the number of children. Presently this sum is reduced in a decreasing rate for children past the fifth. Lowering this limit with no increase in allotment at all beyond the second child would encourage family control. The other economic advantages presently gained through having a large family could also be limited or curtailed. For example, for each additional family member families receive

more oil and sugar through a rationing plan. The government could eliminate these policies for ones that would encourage, rather than seeming to discourage, family control.

Another potentially effective means of controlling population that would have to come from government policy would be to elevate the marriage age for both men and women. For women, the minimum age could possibly be set at around 21 years, for men around 25, thereby reducing the number of productive years.

Egyptian custom discourages young people from holding jobs and being contributing members of society until after they complete college. The government could create programs of productive employment that would actively involve these young people, at least during the summer vacations, so that they become producers for Egypt as well as consumers.

Village life offers little in the area of cultural interests and entertainment. People have little to occupy their leisure time or to challenge their intelligence outside of the family. Libraries, movie houses, public coffee shops, civic centers would increase the attractiveness of village life, perhaps slowing the migration rate to the cities which are already overcrowded. Additional people in the cities put pressure on the entire economic system. Increased demand drives up the prices of food for rural as well as for urban people, the system of distribution

is strained and services become more costly and inefficient.

Emigration to other Arab states and to Africa is an alternative to the pressing problem. Educated and trained Egyptians have helped to satisfy the needs in those other countries for teachers, technicians and physicians. In addition to the reduction of number by this means, there is the additional potential benefit of money coming back to Egypt through those people who leave to work elsewhere.

Decentralization of industry should be considered by a national plan. Encouragement and assistance by the government to develop certain industries away from metropolitan areas would benefit both cities and villages, reducing some of the pressure on service sectors, housing, transportation, schools, and so on in the cities. The creation of employment in the villages could discourage emigration to the cities.

Finally, the ability of the government to successfully execute any plan depends greatly upon the cooperation of manufacturers, householders and farmers. If manufacturers and farmers do not maintain the plan's goals for output of consumer goods, the additional incomes created by public investment would create strong inflationary pressures, thereby jeopardizing the success of the plan, as was mentioned previously. The pressures of local demand on the available supply of consumer goods would probably reduce the sales of Egyptian commodities overseas and at the same time increase imports, thus diverting scarce foreign exchange away from planned areas. Therefore, it is imperative that the political sector attempt to change the Egyptian people's values and customs so that they will help in Egypt's development and maintenance of the goals of the national plan.

The plan cannot achieve its goals without the complete cooperation across the economic, social and political sectors of Egypt, each working in harmony with the others toward Egypt's development.

Egypt's future depends upon commitment and cooperation from every Egyptian.

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