

*Final Report*

# **Egypt: Poultry Trade Policy Study**

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## **PREFACE**

This report is based on a study conducted by the Development Economic Policy Reform Analysis (DEPRA) Project, under contract to the United States Agency for International Development, Office of Economic Policy and Analysis, Cairo, Egypt (USAID / Egypt). Contract No 263-C-00-96-00001-00, Task Order 17).

The DEPRA Project in the Ministry of Trade and Supply is intended to support trade policy reform in Egypt through the provision of technical assistance and services to the Ministry with particular focus on international trade export promotion and trade policy analysis. The study was conducted by Dr. Ali Ahmed Ibrahim Ali, Dept. of Agricultural Economics, Zagazig University and was supervised by Dr. Rollo Ehrich, Trade Policy Advisor/Trade Facilitator, DEPRA/MOTS and Dr. Gamal Siam, Trade Policy Advisor DEPRA/MOTS.

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The views expressed herein are those of the author and are not intended as statements of policy or opinion of either USAID, the Ministry of Trade and Supply, opinions of the experts who provided assistance for this study, or the DEPRA Project.

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## **Executive Summary**

### **Background**

The poultry production sector in Egypt has witnessed dramatic development due to economic trends and policy shifts occurring during the last two decades. The poultry production sector in Egypt is one of the most feasible sources of animal protein. The poultry industry is relatively more efficient than red meat in providing a cheap protein source to fulfill Egyptian population requirements. Investment in this industry has risen to high levels in the last two decades.

Economic policies adopted in the last two decades have to a large extent encouraged expansion of investment in poultry industry. This trend was the result of increased credit facilities, credit subsidies, input price subsidies (mainly yellow corn, baby chicks, exchange rate), and the provision of other incentives such as tax breaks to the private sector to expand poultry production further.

This industry is comprised of several large supporting industries, including the production of baby chicks locally from broiler parent stock and grand-parent stock. The total number of parent stock farms are about 129 and 1865 farms for layers and broilers, respectively. Production capacity is 82.6 and 600.3 million fertile eggs for layers and broilers, respectively. The fertile egg production of broiler grandparent stock farms is estimated at 7.1 million eggs. The hatcheries sector increased in capacity after 1985, when complete reliance on imports to meet the requirements of baby chicks for the industry was eliminated. The total number of automatic hatcheries is estimated at 126 with a total capacity of 779 million eggs per year and utilized capacity of 371 million eggs, producing about 277 million baby chicks per year.

Broiler feed production factories expanded rapidly during the 1985-1997 period, increasing from 593 tons/hour in 1991 to 739 tons/hour in 1996. Poor marketing and processing infrastructure, such as a lack of automatic slaughter houses, was a major obstacle to the development of a modern broiler industry in Egypt. Recently, the total production capacity of slaughter houses increased rapidly. The total production capacity is estimated at 72.3 thousand birds/ hour (151.8 million birds/year).

The Egyptian economy is now moving deliberately towards full liberalization and privatization. The effects of liberalization may be to squeeze domestic production in the short-run, as current production is inefficient by global standards. Most technical coefficients for the broiler industry are below world standards.

### **Study Objectives**

The Egyptian broiler industry is protected by a high import tariff. It is hypothesized, therefore, that broiler production is inefficient because domestic prices for broilers exceed world prices.

The objective of this study is to assess the potential impact of specific trade policy changes concerning the poultry sector on producers, consumers, and traders. Given this broad objective, the study analyzes the production and marketing situation for poultry in Egypt and estimates domestic supply and demand functions and elasticities. Consumer and producer surpluses, net economic gains and losses in production and consumption and change in

government revenue are estimated under changes associated with the shift from an import ban to an 80 percent tariff and for additional tariff levels. The seven-equation system presented in Section (6.0) measures the impacts of import tariffs on key variables associated with broilers. It is formed on a Quattro-Pro spreadsheet. Many scenarios examining the impacts of changes in (i) domestic or world prices, (ii) import tariffs on broilers, (iii) supply or demand elasticity for broilers, (iv) exchange rates and (v) levels of domestic production and demand for broilers are assessed.

A full simulation model is constructed and is utilized to test policy hypotheses in order to quantify the impacts of adjusting the trade policy for poultry. Production and economic efficiency measures of the broiler industry in Egypt such as: (a) net production costs per bird marketed and per kg live-weight and (b) profit per kg of live-weight are calculated using farm budget analysis. In addition, efficiency measures related to investment in broiler enterprises [Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), Net Present Worth (NPW), Benefit-Cost Ratio (B/C Ratio) and Capital TurnOver (CTO)] are investigated. Time series analysis of trends, seasonal and cyclical variation for broiler consumer prices are measured to estimate variation in impacts that may occur over time.

## **Methodology**

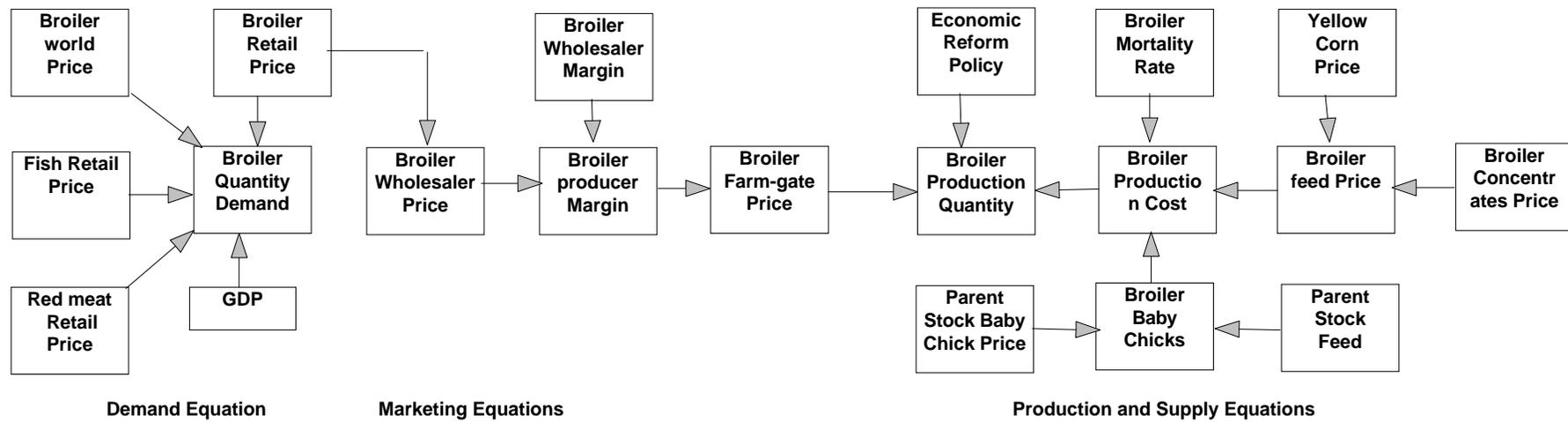
To accomplish the objectives many analytical and quantitative techniques are used. The simulation model of the broiler industry is estimated by multiple regression analysis. The model consists of 9 equations to develop the coefficients linking the factors affecting production, marketing, demand and supply of broilers in Egypt (Figure 1).

The implications of imposing a tariff on poultry imports for the welfare transfers between producers and consumers, and the net gains and losses in economic efficiency and changes in government revenue are analyzed using single market analysis with 7 explanatory equations. Single market analysis is disaggregated to examine the impacts of trade policies such as a tariff on food imports on consumer and producer. The same techniques as followed by Isabelle Tsakok (1990) and Alain de Janvry and Elisabeth Sadoulet (1993) are used to estimate these impacts.

The technical and economic aspects related to the production efficiency concept become of great concern in project implementation and evaluation, especially, at the present transitory period in the Egyptian economy towards market orientation and the related free market mechanisms. An analysis of the potential long-term impacts of the new production environment is urgently needed in order to assess its effect on broiler farms. These farms vary in scale, with the most dominant scale being 5000 birds per lot.

The assessment of the impact of trade policy change must be done in terms of the most important technical and economic factors such as: (a) feed conversion rate, (b) final live-weight at marketing, (c) mortality rate, (d) number of lots per year, (e) farm-gate prices of broilers, (f) feed prices and (g) baby chick prices. The evaluation employs capital efficiency measures, including the [IRR, MIRR, B/C Ratio, NPW and CTO] for the modal farm (5000-bird capacity per lot).

**Figure (1): The Simulation Model For the Factors Affecting Broiler Industry In Egypt.**



The critical levels for these technical and economic factors are also estimated. The critical levels are those that achieve a target Internal Rate of Return of 20%.

Poultry production units are examined through sensitivity analysis to see what would happen if the future sales price of output varies, if the producer fails to adopt new practices as rapidly as anticipated, if production costs are under or over estimated, and if the future productivity of the unit is changed because there is a tendency in broiler projects to be optimistic about potential productivity. The Switching Value Technique is used to determine how such a variable would have to change in an unfavorable direction before the project would no longer meet the minimum level of acceptability as indicated by one of the measures of project worth.

Seven variables are used to examine the efficiency performance of the broiler industry: (a) feed conversion rate, (b) final live-weight at marketing, (c) mortality rate, (d) number of lots per year, (e) farm-gate price of broiler, (f) feed price and (g) baby chick price. By what percentage may: (a) the benefit be reduced or (b) the cost increased, and the project still remain economically viable. For example, the switching value technique is used to estimate the sensitivity of the IRR estimate to changes in assumptions regarding benefits and costs.

The broiler production costs for the modal farm scale (5000 birds/lot) were calculated using farm budget analysis. The farm budget is simply a plan to coordinate the inflows and outflows of resources to achieve a given set of production objectives. Farm budgeting is aimed at organizing resources on a farm to maximize profit. It is prepared primarily to evaluate the efficiency of a particular farm, or a group of farms, within a specific accounting period. It provides the basis for evaluating and comparing the relative profitability of alternative investments.

## **Organization of the Study**

The study includes six chapters. The first chapter deals with poultry production, trade policy related to poultry, trends in production, broiler sector production, factors affecting broiler production such as broiler feed, baby chick capacity and farm scale of broiler farms, and broiler parent stock. In addition, layer production capacity and the scale of layer farms, layer parent stock, improved balady farms, feed requirements, and efficiency criteria for the broiler sub-sector (investment efficiency criteria and farm budget analysis) are examined.

Poultry consumption and marketing are discussed in chapter two and three, respectively. Poultry prices at different levels (retail, wholesale and farm-gate), and gross margins for poultry, trends, seasonal fluctuations and cyclical changes for broiler prices are estimated.

The fourth chapter analyzes world trade in broilers, main exporting countries in the world, international prices by main exporting countries, main countries exporting to Egypt, world prices for broilers in main exporting countries to Egypt, and trends in imports by country.

A simulation model of the commercial broiler sub-sector is developed and quantified in chapter five. The model includes nine equations explaining the factors affecting production, marketing and demand for broilers in Egypt.

Chapter six analyzes the welfare impacts of broiler tariff policy. Four Scenarios measuring the impacts of broiler import tariffs at different levels of domestic and world prices on welfare, economic efficiency and government outlays are developed.

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### ***Conclusions:***

The following conclusions were reached in the analysis:

1. The average idle production capacity of broiler farms increased by 189 million birds (255 percent) between the two periods 1980-86 and 1987-96. Idle production capacity reached 58.7 percent of the total capacity in 1987-96 compared to 21.3 percent during 1980-1986 period.
2. Comparing available production capacity with that actually used, the operating rate for actual use of production capacities during 1987-96 was less than 50%. This was apparently caused by the rapid expansion stimulated by subsidies, and the subsequent reduction in domestic consumption related to high tariffs and the previous ban on imports.
3. Production costs have increased dramatically in recent years. Previous studies have shown an inverse relationship between production costs and production scale. Moreover, underutilized capacity increases unit costs of production significantly. Increased scale reduces unit costs by:
  - a) more effective full-time use of efficient management in conjunction with the manager's technical experience;
  - b) provision of permanent veterinary care and services resulting in good health and low mortality rates for the flock;
  - c) provision of high quality feed mix components at low cost within the farm to insure high conversion rate of feed to broilers and accelerated daily-growth rates resulting in high final live-weight at marketing; and
  - d) the integration of different production stages with sufficient capacities, including broiler parent stock farms, hatcheries, feed factories, broiler production farms and broiler slaughter houses.

The relatively poor technology used in the small-scale farms results in:

- a) significantly lower feed efficiency;
- b) a very high mortality rate and
- c) marketing remarkably small live-weight broilers at the end of the fattening period.

The poor technology used on small-scale farms is due mainly to the failure to exploit economies of scale and modern care systems such as full automatic feeding which decrease feed waste.

High production costs on small scale farms have been exacerbated by rising input prices and marketing problems due to inadequate marketing infrastructure, including slaughter houses and selling lots of broilers at above their economic marketing weights or beyond optimum

marketing age. Consequently, marketing the broiler takes more time, which prolongs the fattening period.

4. In 1996 the production capacity of broiler feed factories amounted to 739 MT/hour or 1774 thousand tons/year, whereas the actual capacity used amounted to only 653 thousand tons. Excess production capacity was about 1121 thousand tons/year. The final result of this excess production capacity in feed mills was very high overhead costs per ton of feed which ultimately caused increased feed prices for broiler producers.
5. Previous studies also revealed that the imbalance between the domestic supply of baby chicks and demand for baby chicks caused a decline in broiler production and, consequently, increased production costs. For the fertile egg production stage, the total production of parent stock was about 306 million fertile eggs, but total hatched eggs were only about 287 million in 1994. This means that 19 million fertile eggs (6%) were sold for consumption. In 1995, the total production of parent stock was about 536 million fertile eggs but total hatched eggs were about 216 million eggs. Thus, 320 million fertile eggs (60%) were sold for daily consumption. This was associated with the fact that total production of fertile eggs exceeded the total capacity of hatcheries.

Regarding the chick production stage, total production reached 201 and 159 million in 1994 and 1995, respectively. Actual capacity for the broiler industry was estimated at 195 and 224 million in 1994 and 1995. Thus, there was surplus in the domestic production of baby chicks estimated at 6.2 million baby chicks (3% of total domestic production) in 1994. In contrast, there was a shortage in the domestic production of baby chicks, estimated at 65.5 million in 1995. The imbalance between supply and demand for baby chicks is due in part to the lack of integration of the marketing and industry chain.

- 6) Small scale still dominates the broiler industry in Egypt. Small-scale production represented 75% of the total production (237.6 million birds) in 1996.
- 7) The efficiency of capital invested in the broiler projects is relatively high. The IRR is quite high (29.7%). The MIRR is in an acceptable range (16.9%). The broiler producer gained 0.19 LE per one Egyptian pound invested in broiler production and can recover the capital invested every 3.37 years.

The changes in IRR, MIRR, B/C Ratio, NPW and CTO resulting from (a) improvement in the feed conversion rate, (b) increase in final live-weight at marketing, (c) improved mortality rate, (d) increase in number of lots per year, (e) increase in farm-gate price of broiler, (f) increase in feed price and (g) an increase in baby chick price were estimated. The results reveal that the changes in farm-gate price of broiler, feed price, feed conversion rate of broiler, and final live-weight of broiler at marketing affect the capital efficiency more than other variables. The profitability of broiler enterprises is very sensitive to changes in these variables. The IRR, NPW and CTO are more sensitive than the other measures to changes in the studied factors. Changes in farm-gate prices of broilers derived from changes in consumer prices, which in turn are related to changes in the broiler tariff, have great impacts on industry performance. In addition, changes in feed price because of increasing ingredient prices will have a negative effect on the broiler industry performance.

- 8) The per capita consumption of poultry meat attributable to balady, commercial broiler and imports was estimated. Per capita broiler consumption decreased during 1986-1990. The poultry production sector is very responsive to changes in the economy, being especially affected by a number of changes associated with liberalization. Changes in policy and the economic system since 1986 have been rapid, requiring the poultry sector to make large adjustments. Both supply and demand have been affected: supply by the reduction in subsidies on inputs, especially feed and baby chicks; and demand by changes in consumer's income, prices of substitute products and tastes and preferences associated with urbanization. Low prices of poultry products in comparison to red meat products caused consumption to increase, given the availability of poultry meat. Also, poultry consumption was particularly sensitive to changes in consumer income. It increases with income and economic development because poultry products are generally considered by consumers as economically superior goods (income elastic).
- 9) Prior to the ban on poultry imports in 1986, imports amounted to about 10 – 15% of total consumption. Further, consumption of balady chicken was about 20% of the total and consumption of commercially produced chicken equaled about 70% of the total. Further research is required to determine substitutability among the three types of chicken and thus to determine the price effect of reducing the tariff. The results will have implications for welfare impact on rural versus urban consumers and on the rich versus the poor. It is hypothesized, pending further analysis, that commercially produced chicken will be a closer substitute for imports than will balady chicken. Thus, welfare effects of reducing the tariff will be stronger in urban areas than in among the rural poor. However, balady chicken is a relatively close substitute for domestically produced commercial birds, so positive welfare effects are expected in rural areas.
- 10) Large-scale production units have greater problems in marketing live broilers than smaller units because marketing operations are dominated by a few wholesalers. Broilers have to be marketed without delay when they reach a specific age or weight because the production operation ceases to be economical. Reasons include: (i) broilers require increasing quantities of feed without a proportional increase in live-weight beyond the critical weight because of the deteriorating feed conversion rate and decreasing daily growth rate, (ii) broilers are subject to diseases over this longer time period, resulting in increasing the mortality rate and decreasing the total live-weight at marketing, (iii) the breeding program is disrupted by delays in marketing and (iv) number of annual production lots is reduced. Production costs therefore increase and annual net farm income decreases when marketing is delayed.

Broiler producers must generally be committed to a specified annual production schedule. At the start of every production year producers require a supply of baby chicks from the baby chick-producing companies. Hence, broiler producers must sell broilers at specific times in order to receive the next scheduled delivery of baby chicks. Most producers however, fail to take the appropriate production planning methods to take into account seasonal fluctuations in demand. This is particularly evident during certain festivals and Ramadan when the broiler consumption is high. Producers' response to such demand shifts tends to be improperly planned. Most of time, supply seems to exceed demand. Thus, actual production is greatly distorted relative to demand and slaughter house capacities are often not enough to absorb the surplus in production. Although vertical coordination of production operations is rarely found, producers would be expected to

consider carefully timing the beginning and the end of fattening lots, and any expansion in production capacity in relation to the plans of other producers in the same area.

Wholesalers, who fully understand the various factors which obligate producers to sell at specific times, exploit the situation by offering relatively low farm-gate prices to producers and sell to retailers at relatively higher prices. Wholesalers attain high margins and work hard to maintain high fixed margins, even if there is a declining trend in farm-gate prices. A previous study showed that the wholesale marketing margin tends to be a constant percentage of the wholesale price, indicating the possibility of the monopoly power at the wholesale level.

- 11) Trends, seasonal variation and cyclical changes in the consumer price of broilers during 1983-1998 period were estimated using three-month moving averages. Consumer prices of broilers increased rapidly between 1985-1989 and 1992-1997. The observed seasonal changes in consumer prices of broilers during the 1983-1998 period indicate that broiler prices are low during winter season and high during summer season. This is because (a) broiler production is high during the winter months, and (b) buffalo veal supply is high during berseem (winter) season.

Cyclical changes in broiler consumer prices during the same period were not significant.

- 12) The coefficient of production with respect to farm-gate prices of broilers is inelastic and very low (0.001). This reflects the predominate influence of other factors, given that cross section data were used. Price changes over time affect production and supply decisions. The supply of broilers with respect to the consumer price is elastic and is close to unity (1.037). Using time series data, the demand with respect to the broiler consumer price is elastic (1.89) whereas the demand with respect to the broiler world price is inelastic (0.227). Income elasticity is high (0.8). These elasticity results imply that: i) broiler production is sensitive to domestic consumer prices with consumer price changes eliciting a proportionate change in broiler supply and ii) the demand for broilers is very elastic (1.89) with respect to price.
- 13) Welfare losses would be very large with the current tariff level of 80%, compared to the net social welfare which would prevail at world prices, if world prices decline by 30 to 40 percent from current (1997) levels. Estimates of net social loss at the 80% tariff level ranged from L.E. 1,000 million to L.E. 1,403 million, depending on the price used to estimate the world price. Reducing the tariff to 30% or 40% is possible without affecting either producer welfare or consumer welfare, i.e., a 40% tariff is more than sufficient to keep out imports of poultry, given the current level of world prices. Imports would begin to enter the Egyptian market at a tariff of about 40% which is equivalent at current levels of world prices to a domestic price of L.E. 7,320/mt. Of course, if world prices were to decline further, a tariff rate above 40% would be necessary to keep out imports. At some level of world prices (about L.E.3000/ton) the full 80% tariff would be necessary to prohibit imports. In that case, net social loss would rise to approximately LE 1 billion per year.

## ***Policy Recommendations***

Overall performance of the poultry industry and net social welfare could be improved by implementing the following recommendations:

1. The current tariff level of 80% would clearly reduce net social welfare by a very large amount, in excess of L.E. 1,100 million, if world prices decline. However, the current tariff rate of 80% greatly exceeds the level required to protect Egyptian producers against competition from imports, given current world price levels and the structure of Egyptian supply and demand. A zero tariff would appear to maximize net social welfare. Therefore, it is recommended that:
  - a) The GOE reduce the tariff immediately to the break-even level of approximately 30-40%, insuring thereby that prices to consumers would not exceed world prices by more than is currently the case. If world prices were to decline, however, consumers would gain more than producers would lose.
  - b) The GOE develop a time-phased schedule to reduce the tariff overtime, at a rate consistent with minimizing disruption of the domestic poultry industry, increasing the efficiency of use of national resources, and maximizing consumer welfare. A rate of 5 – 10% would be consistent with rates for other food products and would generate revenue for the GOE. Higher tariff rates block imports and therefore do not generate revenue.
2. Encourage vertical integration between different levels of the production/ marketing chain (i.e., parent stock production farms, feed mills, broiler production farms, slaughter houses and big refrigerators) to reduce the marketing margins between these levels. The production costs of broilers will decline and farm-gate prices will decline, allowing the demand for broilers to expand. As the demand for broilers increases, the excess production capacities at each of the stages of broiler farms, feed mills and hatcheries may be eliminated.
3. Encourage increased scale through a horizontal integration between small and medium broiler production farms. Economies of scale in large scale farms are due mainly to: (i) effective full-time use of efficient management, in conjunction with a high quality of managerial and technical experience; (ii) provision of permanent veterinary care and services resulting in good health and low mortality rate for flocks; (iii) provision of high quality feed mix components at low cost within the farm to insure high conversion rate of feed and daily growth rate resulting in large final live-weight at marketing, and (iv) provision of relatively high technology used in the large scale farms results in marketing larger broilers at the end of the fattening period.
4. The imbalance between the domestic supply and demand for baby chicks is due in part to the lack of vertical integration and planning between parent stock production farms, modern hatcheries and broiler production farms. Coordination between them in terms of long-term contracts could lead to a stable balance between the domestic supply and demand for baby chicks and reduced fluctuations in prices and supplies.

5. The imbalance between the domestic supply and demand for broilers led to sharp fluctuations in farm-gate prices of broilers, and then great losses for broiler producers, especially during April 1998. This was exacerbated by a willingness to transfer consumption to red meat, especially mutton, during *Aid El-Addeha*. If the slaughter-house and big refrigerator capacities expanded to absorb the excess supply, the broiler producers can market their excess production as cool parts or frozen broilers. So, the coordination between broiler production farms and slaughter-houses will decrease the fluctuation in broiler prices, thereby reducing producer's losses.
6. Current excess capacity in feed mills is associated with high costs per ton of feed. Feed mills must undergo adjustments according to the new liberalized economic conditions in the broiler industry.

## **1. Poultry Production**

### **1.1. Economic Reforms Affecting the Poultry Industry**

A wide range of economic reforms are currently taking place in the whole economy, following the concepts of structural reform, market liberalization and the related privatization programs. Consequently, it is most likely that the cost of various farm inputs and, therefore, production will go up because of the dramatic increase in input prices associated with eliminating input subsidies. Decreasing the present level of trade barriers, especially custom tariffs for imported inputs, following agreements reached under the World Trade Organization (WTO), would offset this to a significant degree.

Financial and price policies which prevailed during the period of government protection and subsidization of the broiler industry led to unbalanced growth in industry's sub-sectors. Some sub-sectors such as broiler production farms, feed factories and hatcheries developed rapidly at the expense of the development of other sectors, including parent stock farms, slaughterhouses and cold storage units.

One of the factors of fundamental importance to broiler production is the possibility of vertical integration. In the first place, broiler production is quite capital intensive. Finance is therefore one of the important factors limiting broiler output. Before 1986, government financial policies were divided into: (1) feed price subsidy for broiler projects, (2) subsidy to the baby chick price for broiler enterprises, (3) subsidized interest rates on production or loans, low exchange rate relative to the US dollar and (4) a subsidy on energy. After 1986, in the context of the Economic Reform and Structural Adjustment Program (ERSAP), these financial policies gradually disappeared. The subsidy for broiler feed components, especially yellow corn, was withdrawn, imports of hatchable fertile eggs and baby chicks declined under a system of incentives for expansion of the domestic industry, subsidized interest rates were replaced with the market interest rate, preferential exchange rates for hard currencies were replaced with banking transactions at free-market exchange rates, and a tax on broiler projects, after giving a grace period after startup, was imposed. Previous studies have concluded that small farms (5 thousand or less) would likely leave the market under the liberalized price regime. Farms with 24 thousand broilers or less per lot may exit the market under completely free market conditions with significant economies of scale and free-market competition, and it is expected that the average size of farms would increase.

Regarding the feed price subsidy, yellow corn, soybean meal, fish meal and animal fat are the important components of broiler feed. The average ratio in physical terms, respectively, is about 65, 15, 3.3 and 0.4 percent in the broiler feed mix. Until 1986, these components were sold to broiler farms and feed mills at prices far below the market price. The continuous growth of the Egyptian broiler industry, the rapid increase in world prices of feed components and devaluation in the exchange rate of the Egyptian pound against hard currencies resulted in continuously increasing pressure on the public budget from the subsidization policy.

The subsidy on broiler feed produced by the single public sector company existing at that time was estimated for three years, 1978, 1979 and 1980, respectively, at about 45, 49 and 31 LE/ton, whereas the subsidy on feed produced by private sector companies was estimated in

the same years at about 42, 47, and 29 LE/ton, respectively. Overall, in the public and private sector, the total subsidy amount for broiler feed amounted to about LE 9.1, 10.8 and 10.9 million. The subsidy amount for broilers was estimated, respectively, to be about 22 and 15 Pt/bird in 1979 and 1980, which was about 29% and 18% of the farm-gate price of broilers in those years.

The subsidy was largely comprised of a direct subsidy on imported components such as yellow corn, sold to broiler producers at 60 LE/ton below its world price. Also an indirect subsidy on other components was affected by allowing the importation of these components at preferential exchange rates. In 1991, a free market exchange rate was introduced and the government withdrew subsidies on feed and broilers.

Baby chicks were also subsidized. Imports of baby chicks and fertile eggs by public sector companies were the two major components in this stage. The total value of the subsidy for baby chicks imported or produced domestically from imported fertile eggs, respectively, was LE 6.8 and 8.1 million in 1979 and 1980.

Interest rates were subsidized. The government adopted a low interest policy on current and capital loans for food-security-related enterprises in order to encourage investment in such activities. At the end of the 1970's, the government allowed investors and broiler farm owners to borrow from the banking system at a low interest rate of 6 percent per annum instead of at the market interest rate of 18%.

Total loans for broiler production increased dramatically from LE 1.8 million in 1979 to LE 16 million in 1980. The total value of the interest rate subsidy was approximately LE 0.3 million in 1980, about 2.2% of the farm-gate price of live-weight broilers. Despite removal of the interest rate subsidy in the mid-eighties, the volume of credit for the broiler industry continued to increase dramatically, reaching LE 1.5 billion in 1990.

Energy was subsidized for broiler farms, with previous studies estimating a subsidy value for the live-weight broiler at LE 12.4 per ton, about 1.2 percent of the farm-gate price per ton of live-weight in 1981. The total subsidy on energy use for broiler production was estimated at LE 8.7 million in 1983/84.

Overall, the subsidy for broiler production, as an outcome of all policies, was estimated at LE 7.7 million in 1979, increasing to L.E. 20.4 million in 1980.

## **1.2. Production Trends**

Farm production, farm prices and farm value of poultry meat production, according to the type of poultry (balady chicken, commercial broilers, ducks, geese, pigeons, rabbits and turkeys), egg production according to the type of poultry (balady eggs and commercial eggs) and manure production according to its source (egg farms and meat farms) are presented in Table (1). Production of poultry meat increased substantially from 1976-1986 to 1986-1996. However, the farm value of eggs decreased in both the balady and commercial egg subsectors. The total farm value of all products, (meat, eggs and manure) increased by about 4 % during the economic reform period 1986-1996. Protection against imports and heavy subsidization of most inputs clearly stimulated a substantial expansion of poultry production in the late 1980's.

Balady poultry numbers on farms, according to type of birds (chicken, ducks, geese, pigeons, rabbits and turkeys) during 1976-1996 are presented in Table (2). The average annual percent change between 1976-86 and 1986-96 period was about 2.2%. Commercial poultry numbers on farms according to the type of poultry, i.e., broilers and layers, is presented in Table (3). Despite the decrease in layer numbers, total commercial poultry numbers increased substantially.

Balady and commercial poultry meat production according the type of poultry is shown in Tables (4) and (5). The average annual percentage change in all items of poultry meat production the production of all types were positive after 1986, except for turkey and spent layer meat production.

Poultry manure production and the trends are presented in Table (5).

### **1.3 Broiler Sub-Sector Production**

Many experts have concluded that three major dominant technical factors control broiler production costs: the feed conversion rate, mortality rate and final live-weight of broiler. It was shown that good performance in production requires that the mortality rate be under 5%, feed conversion rate less than 2 kg of feed for producing 1-kg of live-weight and a final marketing-weight higher than 1.5 kg, live-weight.

Production cost of broilers is highly correlated with the scale of farm production, the feed conversion rate, feed price, baby chick costs, feeding period, number of lots, market live-weight, the management pattern and enterprise type (private vs. public sector) (Figure 2).

Technical parameters for the commercial broiler system during the last years are shown in Table (6). The final weight at marketing equaled expectations of broiler-expert opinion but the feed conversion rates, mortality rates and numbers of days required to reach market weight were not up to world industry standards.

Broiler production, number of broiler farms and production capacities during 1980-96 period are presented in Table (7) and Figures (3) and (4). The following conclusions are pertinent:

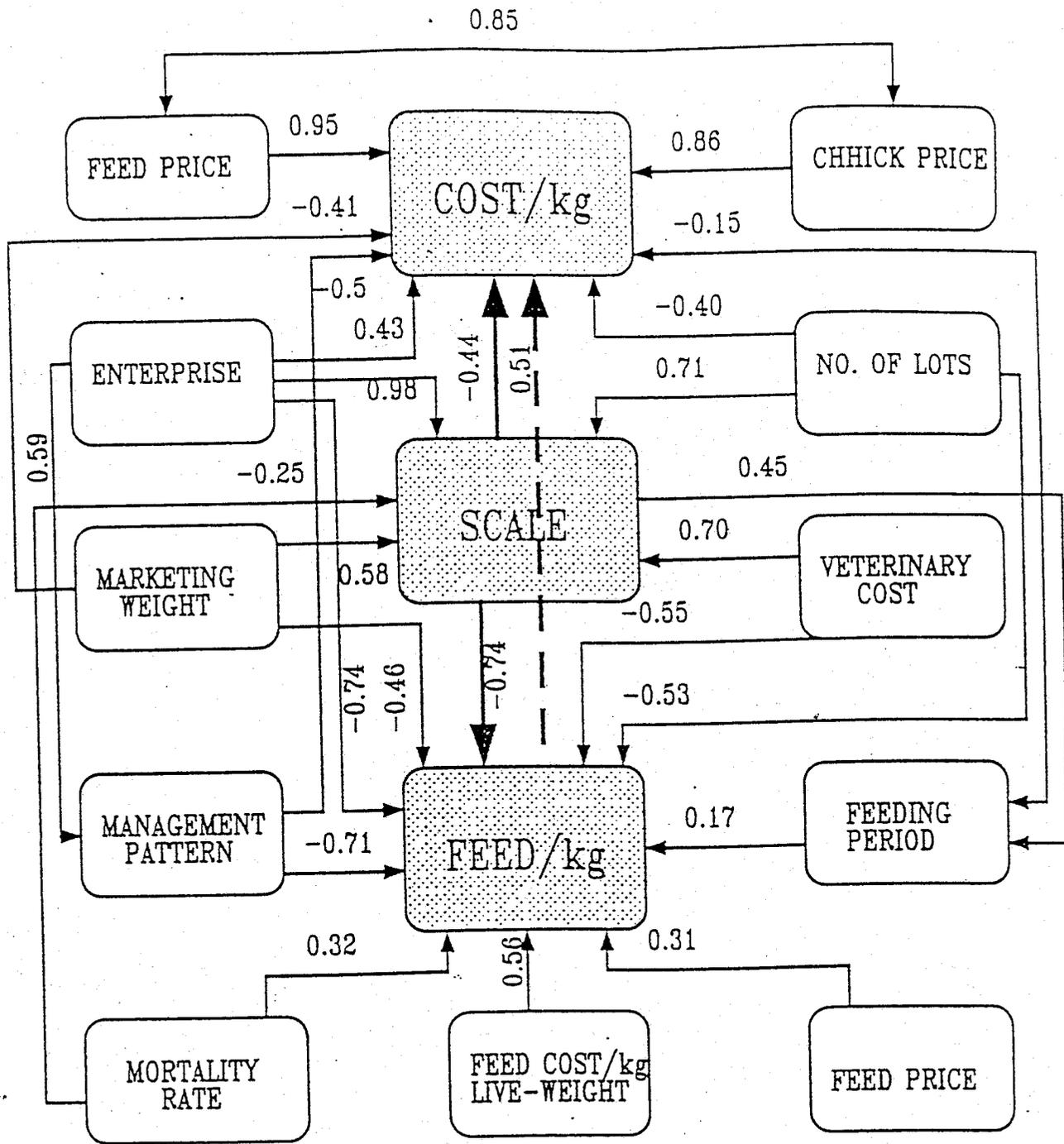
- The total number of broiler farms increased by 51 percent between the periods 1980-86 and 1987-96.
- The average number of broiler farms in production decreased by 3 percent over the same period.
- The average number of idle farms increased by 169 percent between 1980-86 and 1987-96.
- The average available production capacity of broiler farms increased from 348 to 447 million birds, an increase of 28 percent between 1980-86 and 1987-96.
- Average actual production decreased from 274 to 185 million birds (32 percent) between the two periods, 1980-86 and 1987-96.

- The average idle production capacity of farms increased by 189 million birds, (255 percent) between 1980-86 and 1987-96.
- The average idle production capacity as a percentage of the total capacity increased from 21.3% to 58.7% between the same two periods.
- Comparing available production capacity with that actually used, the operating rates for actual use of production capacities during 1987-1996 was less than 50%. This caused a substantial increase in production costs for most private commercial broiler farms, and is reflected in a low level of the use of inputs, especially feed and baby chicks.
- Idle capacity was less than 30 percent prior to the ban on imports in 1989, and over 70 percent following the ban. The ban caused prices to rise and the level of consumption to decline, idling existing production capacity.

Small-scale production dominates the broiler industry. Previous studies have shown an inverse relationship between production costs and production scale. Economies of scale arise mainly from: (i) effective full-time use of efficient management, in conjunction with the manager's technical experience; (ii) provision of permanent veterinary care and services resulting in good health and low mortality rates for the flock; (iii) provision of high quality feed mix components at low cost within the farm to insure high conversion rate of feed and daily growth rate resulting in large final live-weight at marketing; and (iv) the integration of different production stages with sufficient capacities, including parent stock farms, hatcheries, feed factories, broiler production farms and broiler slaughter houses.

The relatively poor technology used in the small-scale farms results in: (i) significantly lower feed efficiency; (ii) very high mortality rates and (iii) the marketing of low-weight broilers at the end of the fattening period. The poor technology used on small-scale farms is due mainly to failure to exploit economies of scale and modern care systems such as fully automatic feeding which decreases feed waste. Higher production costs on small scale farms have been accentuated by rising input prices and marketing problems due to inadequate marketing infrastructures such as slaughter houses and selling lots of broilers at above their economic marketing weights or beyond optimum marketing age). Consequently, marketing the broiler takes more time, which prolongs the fattening period.

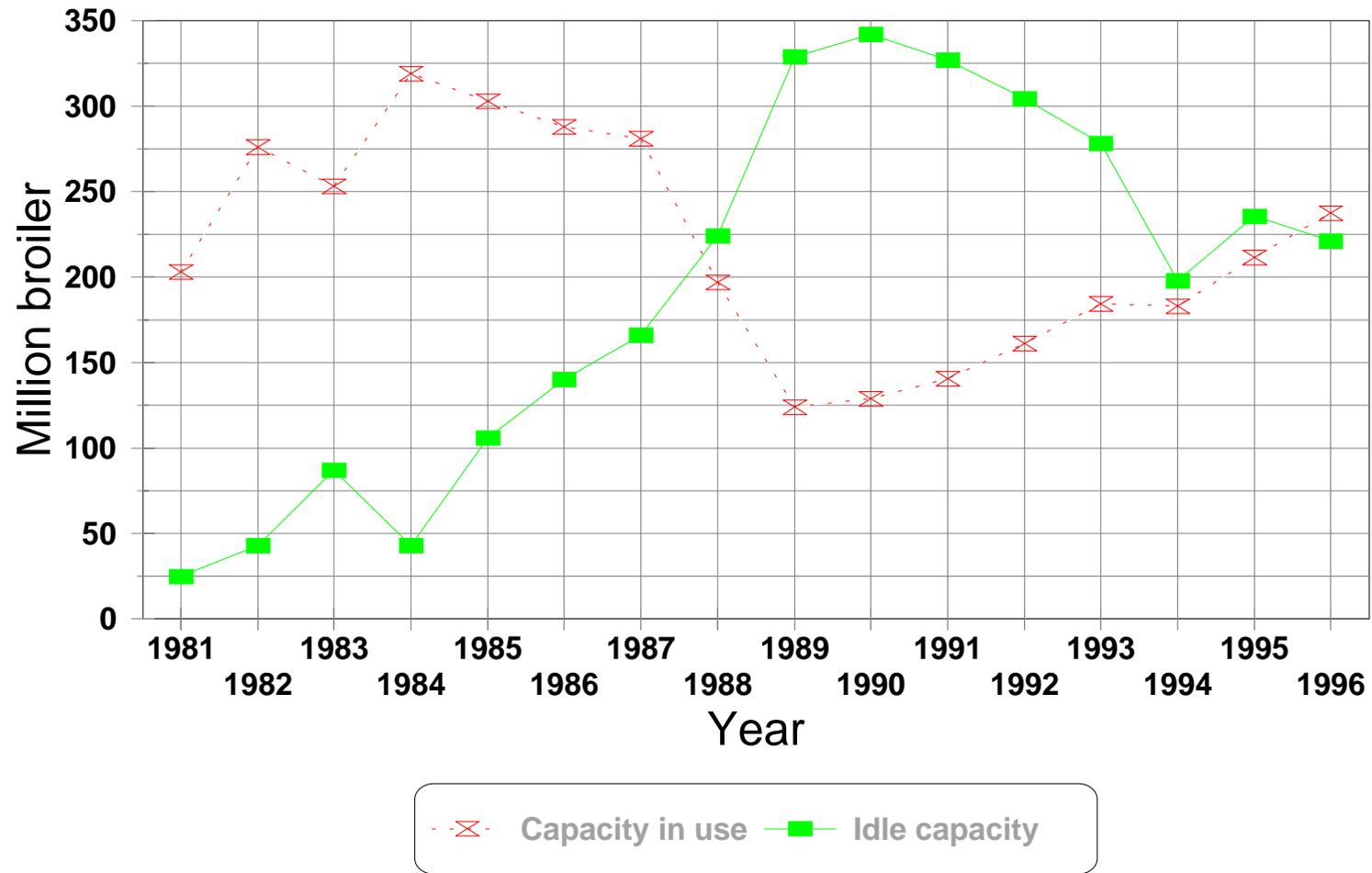
Finally, the average cost structure in the Egyptian poultry industry is high because of the existence of excess capacity, amounting to about 50% of total existing production capacity.



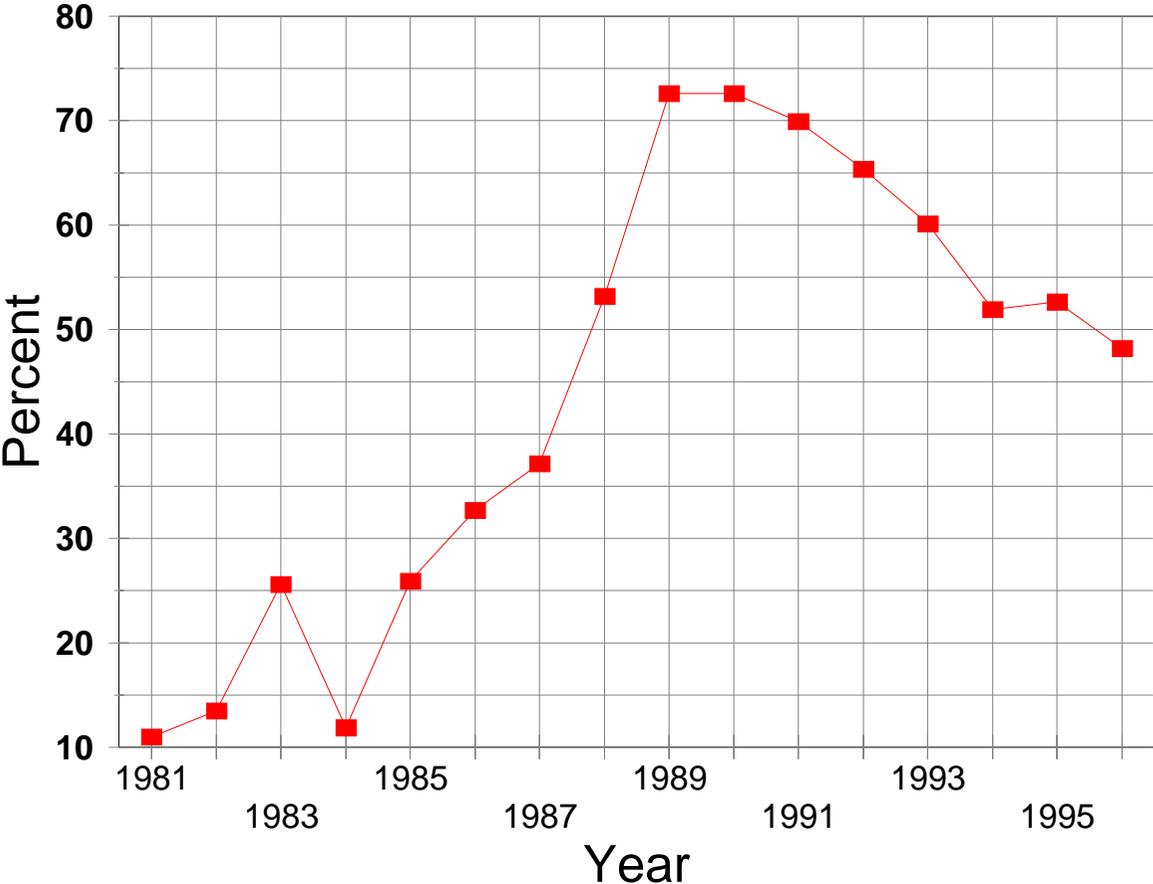
Critical values:  
 1 tail,  $t(p=0.05) = 0.2164$   
 2 tail,  $t(p=0.05) = 0.2561$

FIGURE 2. Correlation coefficients between main variables affecting broiler industry in 1986/87.

**Figure (3): Actual Production and Idle Production Capacity**



**Figure (4): Idle Production Capacity as percentage of Total Capacity**



## **1.4. Factors of Production**

### **1.4.1 Broiler Feed**

With respect to feed input, previous studies have shown that the major obstacles that face broiler producers are a deficit in total and seasonal supply of feed and inconsistency between the supply and demand for feed and variations in feed quality. These factors raised the cost of feed and favored the profitability of public feed mills. Broiler feed factories have an excess production capacity which allows them to produce more than sufficient feed to meet the demand of broiler farms when operating at optimal production levels. In fact, more than half of the production capacity of feed mills remains unused, because broiler production is operating below capacity and because of the high and fluctuating prices of major imported ingredients such as yellow corn, soybean meal and protein concentrates (See Annex Tables 8, 9, 10). Consequently, total feed produced and imported ingredients declined after 1986.

In 1996, available production capacities of broiler feed factories amounted to 739 tons/hour, i.e., 1774 thousand tons per year, whereas actual utilized capacity amounted to 653 thousand tons. Excess production capacity was about 1121 thousand tons (Table 8).

Excess production capacity in feed mills caused fixed or overhead costs per ton to be higher than would otherwise have been the case. Broiler producers thus faced increasing feed prices, which in turn elevated broiler production costs. The prices of broiler feed ranged from 945-1000 LE/ton for starting feed, 915-950 LE/ton for growing feed and 860-950 LE/ton for finishing feed (Table 9).

The quantity of feed produced according to type of feed showed that starting, growing and finishing feed production decreased during the 1992-1996 period. The shortage of feed at the beginning of economic reform period caused some companies to supply the market with large quantities of bad quality feed, which was also associated with increases and fluctuations in feed prices.

The feed ingredients used in broiler production during 1980-1996 are shown in Table (9). Both domestic and imported ingredients declined in use after economic reform policies started, except protein concentrates. The quantity utilized of yellow corn decreased during 1986-1996 because the world price of yellow corn was high, subsidies were removed and the exchange rate appreciated (Table 10).

### **1.4.2. Baby Chicks**

Previous studies revealed that the imbalance between the domestic supply of baby chicks and demand for baby chicks had negative effects on broiler production and, consequently, increased production costs. In 1994, the total production of parent stock was about 306 million fertile eggs (279 million eggs for broilers and 27 million eggs for layers) but production of total hatched eggs was about of 287 million. Thus, 18 million fertile eggs (6%) were sold for daily consumption (Table 11). In 1995, the total production of parent stock was about 536 million fertile eggs (491 million for broilers and 44 million for layers). Total hatched eggs were about 215 million. Thus, 320 million fertile eggs (60% of the total) were sold for daily consumption (Table 11). Apparently the demand for fertile eggs declined much below expectations in 1995. Total domestic production of baby chicks was estimated at 201 million

and 158 million in 1994 and 1995, respectively, but the total actual capacity for the industry is estimated at 195 and 224 million in the same years. Thus, there was surplus in the domestic production estimated at 6 million baby chicks in 1994 (3% of total domestic production) which jumped to a shortage of 65 million baby chicks in 1995 (41%). This dislocation is puzzling as production of broilers increased steadily in that period.

Perhaps the imbalance between supply and demand for baby chicks was due in part to the lack of vertical integration of the marketing and production chain.

#### **1.4.3. Capacity and Farm Scale for Broiler Farms**

Broiler production, number of broiler farms and production capacities according to the production scale during 1980-96 period are shown in Table (12). The following conclusions can be drawn from the Table.

- For large-scale farms (more than 20 thousands birds per year), the number in production represents 8 percent of the total number of 1394 farms. The average operating capacity was 53% of the available production capacity of 67 million birds during the 1992-1996 period.
- For small scale farms (less than 20 thousands birds per year), the number operating represented 60 percent of the total number of 17,068 farms. The average operating capacity represented 43% of the availability production capacity of 392 million birds during the 1992-1996 period.

#### **1.4.4. Broiler Parent Stock**

Broiler parent stock production, number of farms and production capacity, according to production scale, during the 1992-1996 period, are indicated in Table (13). The number of farms in production represents 94 percent of the total number of 882 farms. The average production capacity represented 88% of the total production capacity of 4.9 million birds during 1992-1996 period.

#### **1.5. Layer Production**

The number of layer farms and production capacities according to the farm production scale during the 1992-1996 period are presented in Table (14). The following results are derived.

The average number of operating farms represented 49 percent of the total number of 3419 farms. The average operating capacity was 60% of the available production capacity of 23.2 million birds during 1992-1996 period.

#### **1.6. Capacity and Scale of Layer Farms**

The number of layer farms and production capacities according to production scale during the 1992-1996 period are shown in Table (14). The following conclusions can be summarized from this Table:

- In large scale farms (more than 15 million eggs per year), the average number farms in production was 86 percent of the total number of 545 farms. Operating capacity was 72% of the available production capacity of 13.8 million birds during 1992-1996.
- In small scale farms (less than 15 million eggs per year), the average number of operating farms was 43 percent of the total number of 2992 farms. The average operating capacity was 42.6% of the available production capacity of 8.3 million birds during 1992-1996.

### **1.7. Layer Parent Stock**

The number of layer parent stock farms and production capacity for the 1992-1996 period are indicated in Table (15). The number of farms in production was 73 percent of the total number of 118 farms. The average of capacity in production was 62% of the available production capacity of 633 thousands birds during 1992-1996 period.

### **1.8. Improved Balady Farms**

The number of improved balady farms and production capacities for the 1994-1996 period are indicated in Table (16). Farms in production were 91 percent of the total number of 1078 farms. The average of capacity in production was 62% of the available production capacity of 30 million birds during 1994-1996.

### **1.9. Feed Requirements**

Previous studies showed that the estimated feed required for poultry in terms of dry matter (DM), crude protein (CP) and total digestible nutrients (TDN) was, respectively, about 1477, 295 and 1278 thousand tons in 1992. The total feed requirements in terms of DM, CP and TDN for both meat and egg production distributed to balady and commercial sectors are given in Tables (17-19). After 1986, use of total DM, CP and TDN required for balady and the commercial meat sector increased but declined for balady and commercial layers. This is due mainly to the increase in number of balady birds and commercial broilers and decrease in number of balady and commercial layers during the same period. The assumptions used to estimate poultry feed requirements and manure production are shown in Table (20).

### **1.10. Efficiency Criteria for the Broiler Sub-Sector**

#### **1.10.1. Investment Efficiency Criteria**

The technical and economic aspects related to the production efficiency concept become of great concern in project implementation and evaluation, especially in the present period of transition of the Egyptian economy towards market orientation and related free-market mechanisms.

An analysis of the potential impacts of the new production environment is urgently needed in order to assess its effect on broiler farms. There are different farm production scales. The most dominant scale is 5000 birds per lot. Previous studies concluded that small scale farms (less than 5 thousand birds) are not efficient in terms of total factor productivity.

In theory, risk occurs when the producer is aware of the range of possible outcomes from his decision, as well as the probability associated with each outcome. There are two types of risk: business and financial. First, business risk involves any factor which affects the level of net farm income. Varying one's production decisions may reduce such risks. Six major factors contribute to business risk: (i) yield variation, (ii) price variation, (iii) new technology (and/or lack of knowledge of the producers of current technology), (iv) government programs, (v) legal problems, and (vi) shifts in consumer preferences. Secondly, financial risk reflects the "safety" of the firm in a financial sense, particularly as viewed by a potential lender. It involves the proportion of debt and equity in the entire farm firm, and, particularly, current assets versus current liabilities.

The assessment of both technical and economic factors affecting broiler farms can be accomplished by applying the concept of risk bearing analysis. Risk is associated with variations in both technical and economic coefficients in broiler farms.

The assessment is done in terms of the most important technical and economic valuables, including: (1) feed conversion rates, (2) final live-weight at marketing, (3) mortality rate, (4) number of lots per year, (5) farm-gate price of broiler, (6) feed price and (7) baby chick prices. The evaluation is done by applying capital efficiency measures such as the Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), Net Present Worth (NPW), Benefit Cost Ratio (B/C Ratio) and Capital Turn-Over (CTO) for the modal farm of 5000 birds per lot.

In addition, critical levels of key variables which result in an assumed target Internal Rate of Return of 20% for the above-mentioned technical and economic factors are estimated.

The effects of variability in both technical and economic factors on the efficiency of the modal scale in broiler projects was investigated. As stated by Gittinger, projects should be subjected to sensitivity analysis. Agricultural projects, generally speaking, are sensitive to change in four principal areas: (a) delay in implementation, (b) cost overrun, (c) price of both inputs and outputs; and (d) factor productivity.

The performance variables to be examined through sensitivity analysis are: (1) feed conversion rate, (2) final live-weight at marketing, (3) mortality rate, (4) number of lots per year, (5) farm-gate price of broiler, (6) feed price and (7) baby chick price. The computation estimated the percentage that (a) the benefit was reduced, or (b) the cost was increased, still leaving the project economically acceptable (the project retains an IRR of 20% or more).

Cash flow sheets were estimated for a period of 20 years in order to reflect the productive life of the project, particularly the cost of buildings, which is considered the major component of the investment cost and has a productive life of 20 years. The inflows and total outflows are presented in Table (21).

Estimates of IRR, MIRR, B/C Ratio, NPW and Capital Turn Over for the broiler modal farm are shown in Table (22). The results indicate a relatively high economic efficiency for the capital invested in the broiler projects. The IRR is quite high (29.7%), although it decreased by 12.8% when interest rate paid for funds were added to cash flow (i.e., MIRR = 16.9%). The MIRR is high relative to the opportunity cost of capital, estimated to be about 12%. The

broiler producer can gain 0.19 LE per Egyptian pound invested in broiler production and he can replace the capital invested every 3.37 years.

The changes in IRR, MIRR, B/C Ratio, NPW and CTO as a result of assumed changes in the investigated technical and economic factors (sensitivity analysis) are shown in Table (23). Assumed changes were: (1) a 10% improvement in feed conversion rate, (2) a 10% increase in final live-weight at marketing, (3) a 20% reduction in mortality rate, (4) a 10% increase in the number of lots per year, (5) a 10% increase in the farm-gate price of broilers, (6) a 10% increase in the feed price and (7) a 10% increase in baby chick prices.

The changes in farm-gate price of broiler, feed price, feed conversion rates, and final live-weight of broilers affected the invested capital efficiency measures more than other variables. Broiler enterprises are sensitive to these variables. The IRR, NPW and CTO are more sensitive than the other measures to changes in the studied factors. One important conclusion from the sensitivity analysis is that the changes in farm-gate prices of broiler derived from changes in consumer prices associated with changes in the broiler tariff in the future will impact on industry performance.

The critical levels concerning technical and economic factors affecting investment efficiency are shown in Table (23).

### **1.10.2. Farm Budget Analysis**

The farm budget is a plan to coordinate the inflows and outflows of resources to achieve a given set of production objectives. In other words, farm budgeting is aimed at organizing resources on a farm to maximize profit or return. It is prepared primarily to evaluate the efficiency of a particular farm or enterprise, or a group of farms within a specific accounting period (usually one-year). It provides the basis for evaluating and comparing the relative profitability of alternative investments. It is a financial representation of production relationships in terms of a static model for a certain production period and a certain farm production scale.

Broiler production costs for the modal farm scale (5000 birds) are summarized in Table (24) for the period 1989-1996, the period following the gradual removal of subsidies to this sub-sector. Some familiar economic efficiency measures are also estimated. The net costs per kg of broiler marketed increased from 2.31 LE in 1989 to 3.96 LE in 1996 (an annual increase of 10.2%). The profit per kg of broiler live-weight decreased from .20 LE in 1989 to .06 LE in 1991 because of the gradual withdrawal of input subsidies. After 1991, the increase in farm-gate prices, associated with the ban on broiler imports, caused an increase in the net profit, reaching 29.7% in 1997.

## **2. Poultry Consumption**

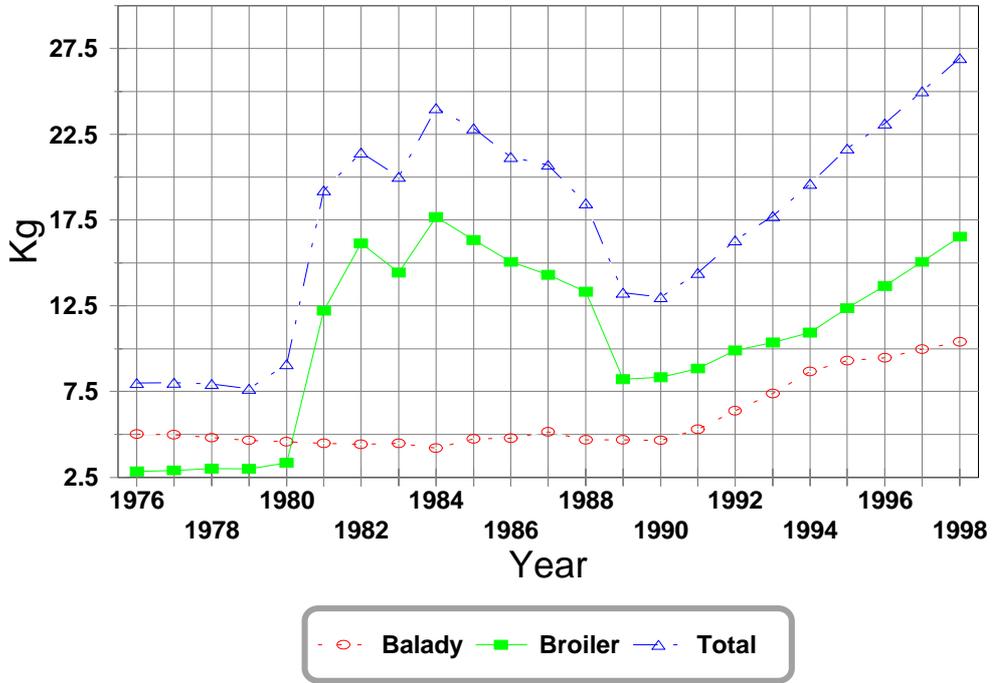
The poultry production sector is very responsive to changes in the economy. This sector has been affected by a number of changes associated with the move to a market economy. Changes in policy and the economic structure since 1986 have been rapid, causing the poultry sector to adjust accordingly. Both supply and demand have been affected; supply by the reduction in subsidies on inputs (especially feed and baby chicks) and demand by changes in consumer income, prices of substitute products, and tastes and preferences associated with urbanization. Due to the relatively low prices of poultry products in comparison to red meat products, consumption can easily be increased if poultry meat is available. Also, poultry consumption is particularly sensitive to consumer income. It increases with income and economic development because poultry products are generally considered by consumers as economically superior goods.

Per capita consumption and total poultry meat distributed between balady, commercial broilers and imports is indicated in Table (25). Per capita consumption, as shown in the Table and Figure (5), decreased during the 1986-1996 period because of the reasons mentioned above, and because prices were inflated by the ban on poultry imports.

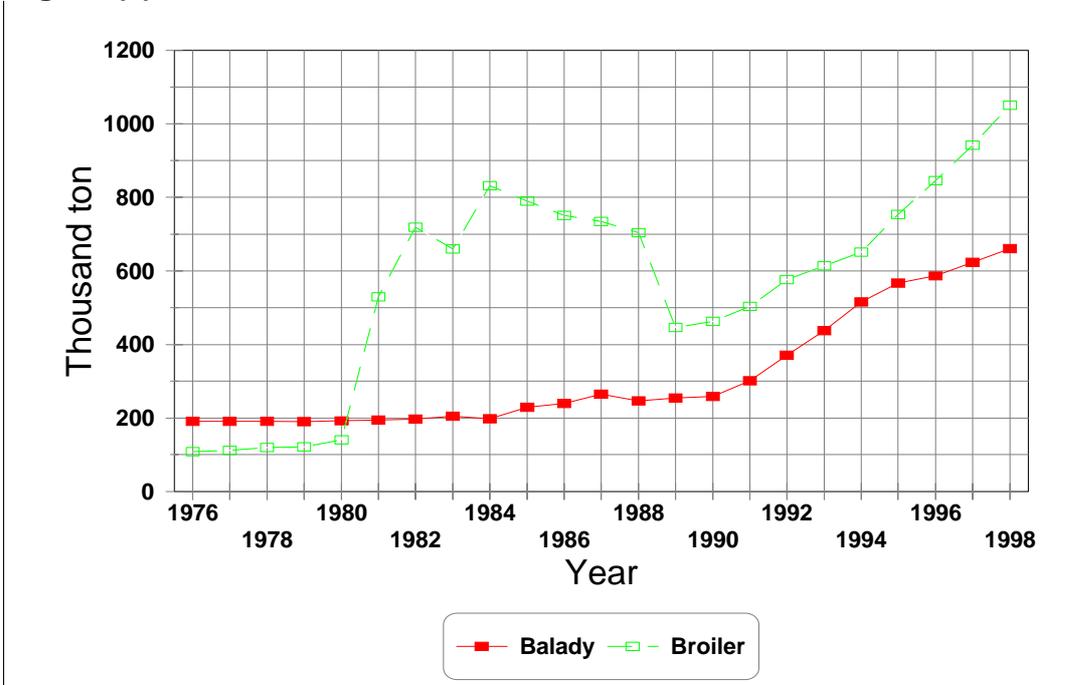
Poultry imports declined to almost zero during the economic reform period (1992-1998), under the ban on imports. Poultry meat availability and per capita availability in the economic reform period increased in comparison to the pre-economic reform period. This reflects an increase in balady and commercial meat production during the last five years.

Total and per capita egg consumption is shown in Table (26) and Figure (6). Both decreased, ostensibly caused by a rise in retail prices, which in turn was related to economic reform policy and the ban on imports of broiler. Beyond that there was a sharp increase in feed prices during the period.

**Figure (5): Per capita consumption of Poultry, 1976-1998**



**Figure (6): POULTRY MEAT AVAILABILITY 1976-1998**



### **3. Poultry Markets**

Small broiler producers sell their output relatively easily in the market. Large-scale producers faced greater problems marketing live broilers, because large lots require complex marketing operations. Such operations have been dominated by a few wholesalers, who appear to have wielded oligopsonistic power following the establishment of the modern broiler industry in Egypt. Broilers have to be marketed without delay when they reach a specific age or weight because the production operation ceases to be economical for the following reasons: (1) broilers require increasing quantities of feed, with a decline in output per unit of feed, because of a deteriorating feed conversion rate and decreasing daily growth rate, (2) other broilers may be infected by diseases which result in increasing the mortality rate and decreasing the total live-weight at marketing, (3) broiler houses become overcrowded, (4) the breeding program cycle will be confused because of delays in marketing and (5) the number of annual production lots is reduced. In sum, production costs increase and the consequent annual net farm income decreases with delays in marketing.

Large broiler producers must be committed to a specified annual production schedule. First, at the start of every production year the producers require a supply of baby chicks from the baby chick-producing companies. Hence, broiler producers must sell broilers at specific times in order to receive the next scheduled delivery of baby chicks. Second, most producers fail to take the appropriate production planning methods both at the farm and area level to take into account seasonal fluctuations in demand, caused by festivals and when the demand for broilers is particularly high. Producer's response to such demand shifts tends to be improperly planned, as, most of time, supply seems to have exceeded demand. Poor production planning greatly distorts the upstream operations because slaughter houses capacities are not enough to absorb the surplus in production. Although precise coordination of production operations is rarely found, producers can be expected to consider carefully timing the beginning and the end of fattening lots and any expansion in production capacity in relation to the plans of other producers in the same area. Producers then plan their own production capacity and timing of production lots accordingly.

Wholesalers, who fully understand the various factors which obligate producers to sell at specific times exploit the situation by offering relatively low prices to producers and by selling to retailers at relatively higher prices. Wholesalers attain high margins and work hard to maintain high fixed margins, even if there is a declining trend in farm-gate prices. A previous study showed that the wholesale marketing margin tended to be a constant percentage of wholesale prices, indicating monopoly power in the wholesale sector.

#### **3.1. Poultry Prices**

##### **3.1.1. Retail Prices**

Poultry prices at retail level by products, (turkey, ducks, geese, chickens, rabbits, pigeon and broilers) are presented in Table (27).

Prices of commercial broilers tended to be 30 – 40 percent lower than the prices of balady chickens. However, prices for the two classes of chickens were very highly correlated. The latter suggests that balady and commercial broilers are very close substitutes.

### **3.1.2. Wholesale Prices**

Poultry prices at wholesale level by products are presented in Tables (28).

### **3.1.3. Farm-Gate Prices**

Poultry prices at the farm-gate level by products are presented in Table (29).

## **3.2. Gross Margins for Poultry**

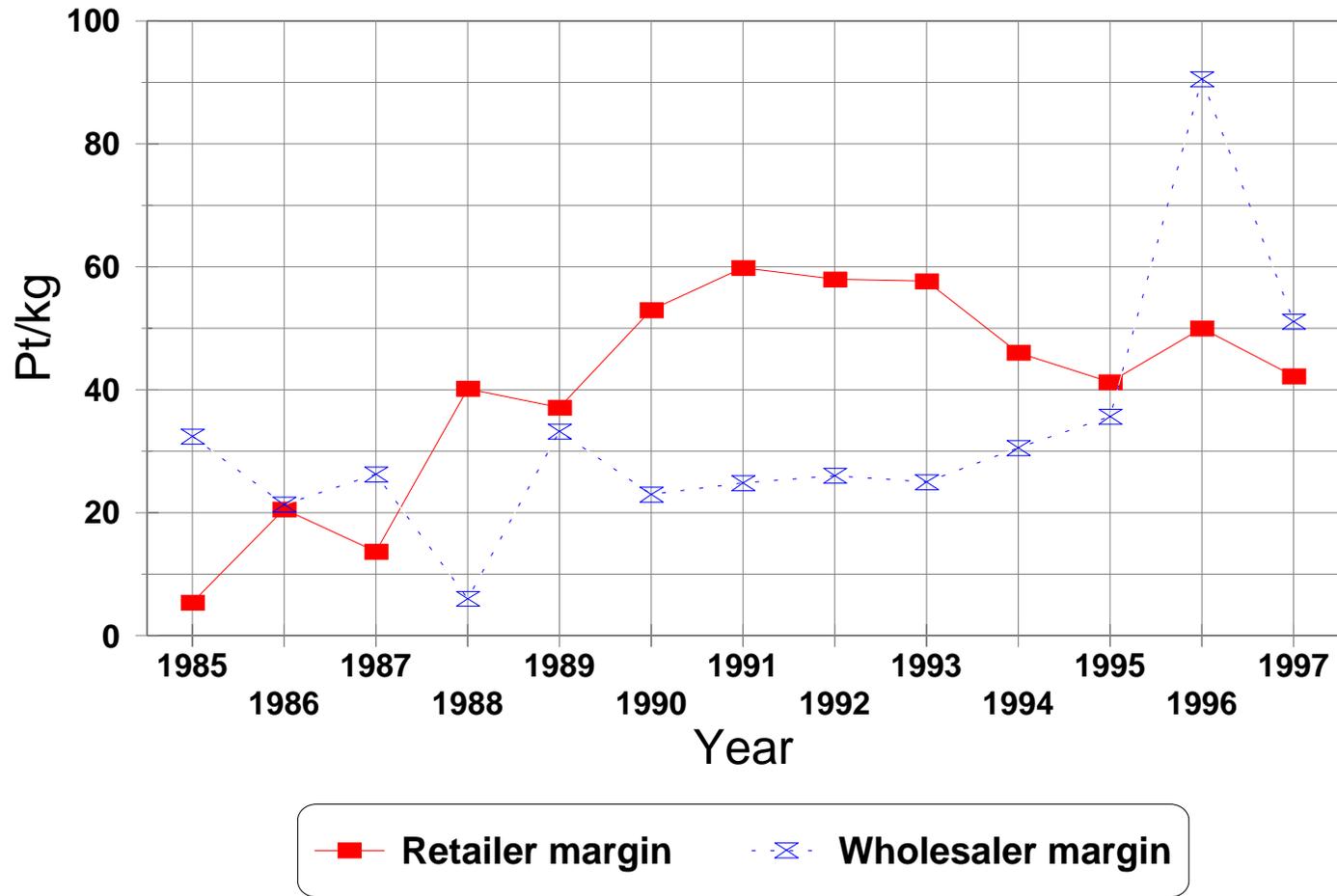
Consumer, wholesale and farm-gate prices, retail and wholesale margins for turkey, chicken, ducks, geese, rabbit and live pigeon are shown in Table (30). The retail and wholesale margins as a percentage of and wholesale prices, respectively, and the average annual percent changes for all levels of prices by type of poultry during the 1985-1997 period, are also presented. Figure (7) presents the fluctuation in the retail and wholesale margins by poultry type during 1985-1997.

- For turkeys, the average retail and wholesale margins were about 79 and 43 Pt/kg, respectively. They represented 10% and 6% of consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between 10.5% and 12.7%.
- For chickens, the average retail and wholesale margins were about 40 and 33 Pt/kg, respectively. They represent 7.2% and 6.4% of the consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between 3.9% and 18.7%.
- For ducks, the average retail and wholesale margins were about 57 and 63 Pt/kg, respectively. They represented 9% and 12.3% of the consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between 4.3% and 19.4%.
- For geese, the average retail and wholesale margins were about 34 and 22 Pt/kg, respectively. They represented 6.3% and 5% of the consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between -5.5% and 10.3%.
- For rabbits, the average retail and wholesale margins were about 61 and 39 Pt/kg, respectively. They represented 9% and 6% of the consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between 10.4% and 22.5%.
- For Pigeon, the average retail and wholesale margins were about 62 and 31 Pt/kg, respectively. They represented 11% and 5% of the consumer and wholesale prices, respectively. The average annual percentage changes in the related prices and margins ranged between 10.5% and 26.4%.

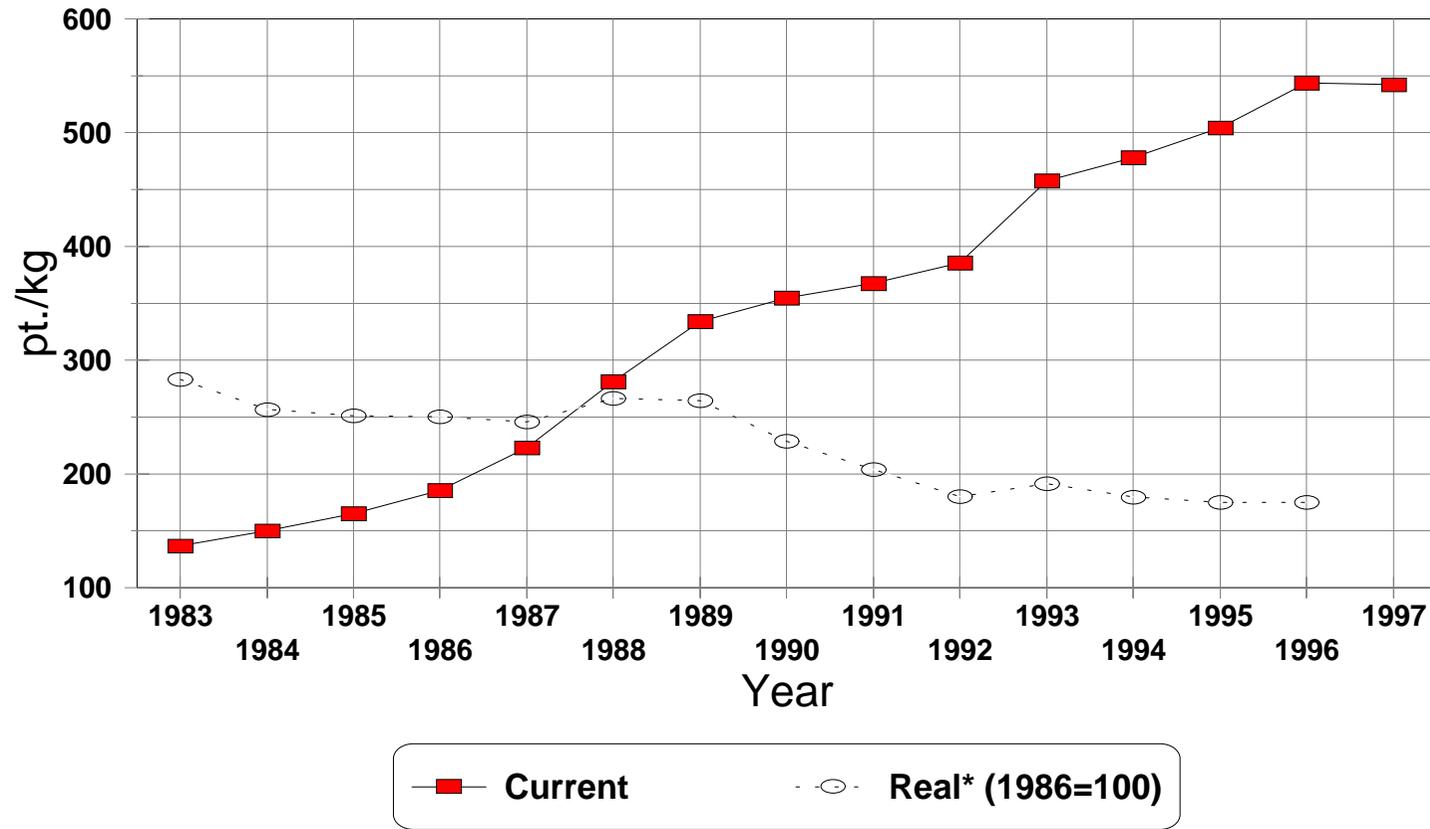
### **3.3. Trends, Seasonal and Cyclical Variation in Prices**

Trends, seasonal and cyclical changes in the consumer price of broilers during the 1983-1998 period were estimated using three-month moving averages. The consumer price of broilers trended up rapidly between the 1985-1989 and 1992-1997 (Figure 8), although real consumer prices actually declined by over 20 percent from 1989 to 1997. Seasonal changes in the broiler consumer price during the 1983-1998 period are shown in (Figure 9) and indicate that broiler prices are lower than the annual average during the winter season (January – June). In contrast, the broiler consumer prices are above the average level during summer season (August – December). This is because broiler production is high during the winter season and low during the summer season and buffalo supply is high in the winter season. There are no apparent cycles in broiler consumer prices during the same period, as shown in Figure (10).

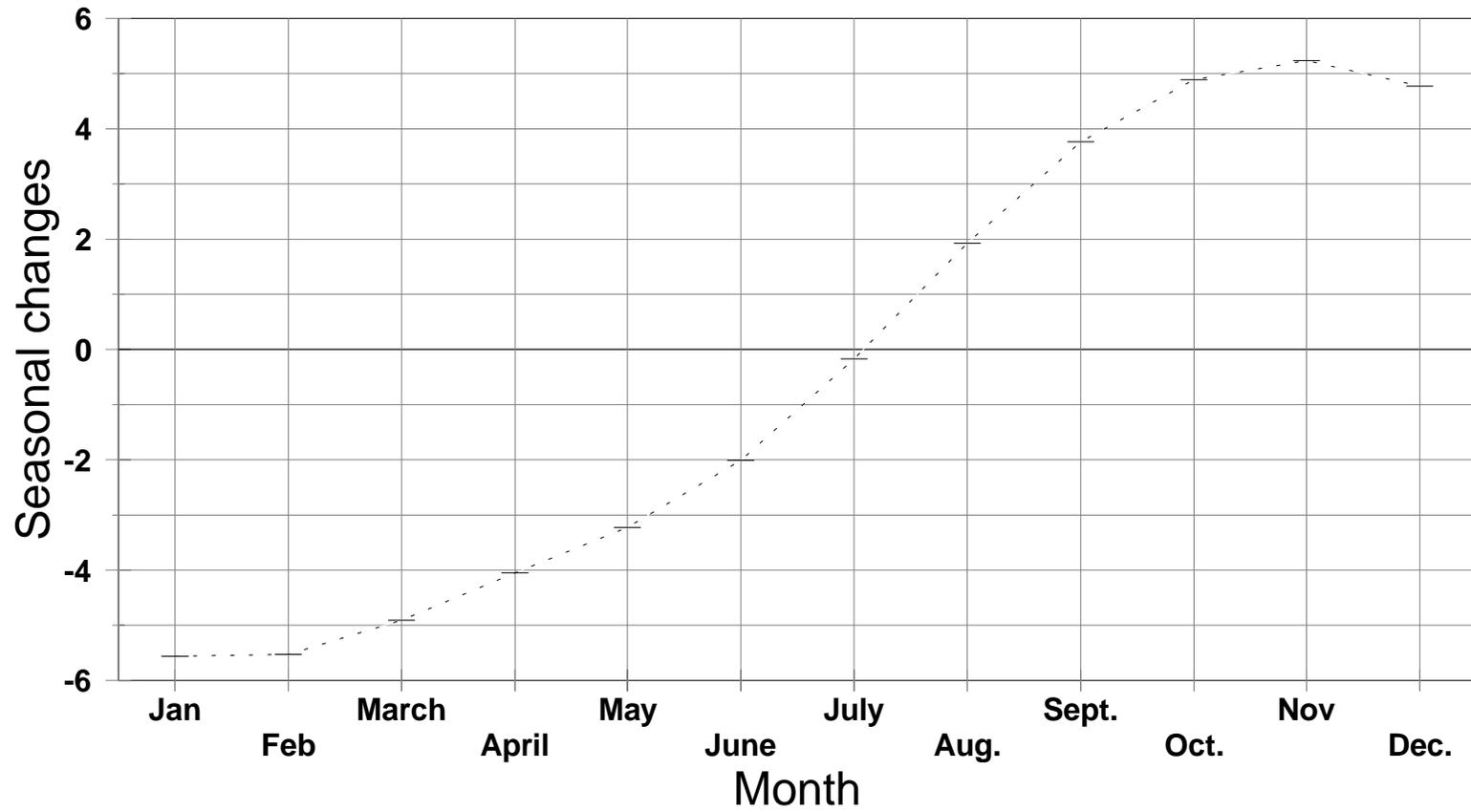
Figure (7): Retailer and Wholesaler Margins for Live Chicken



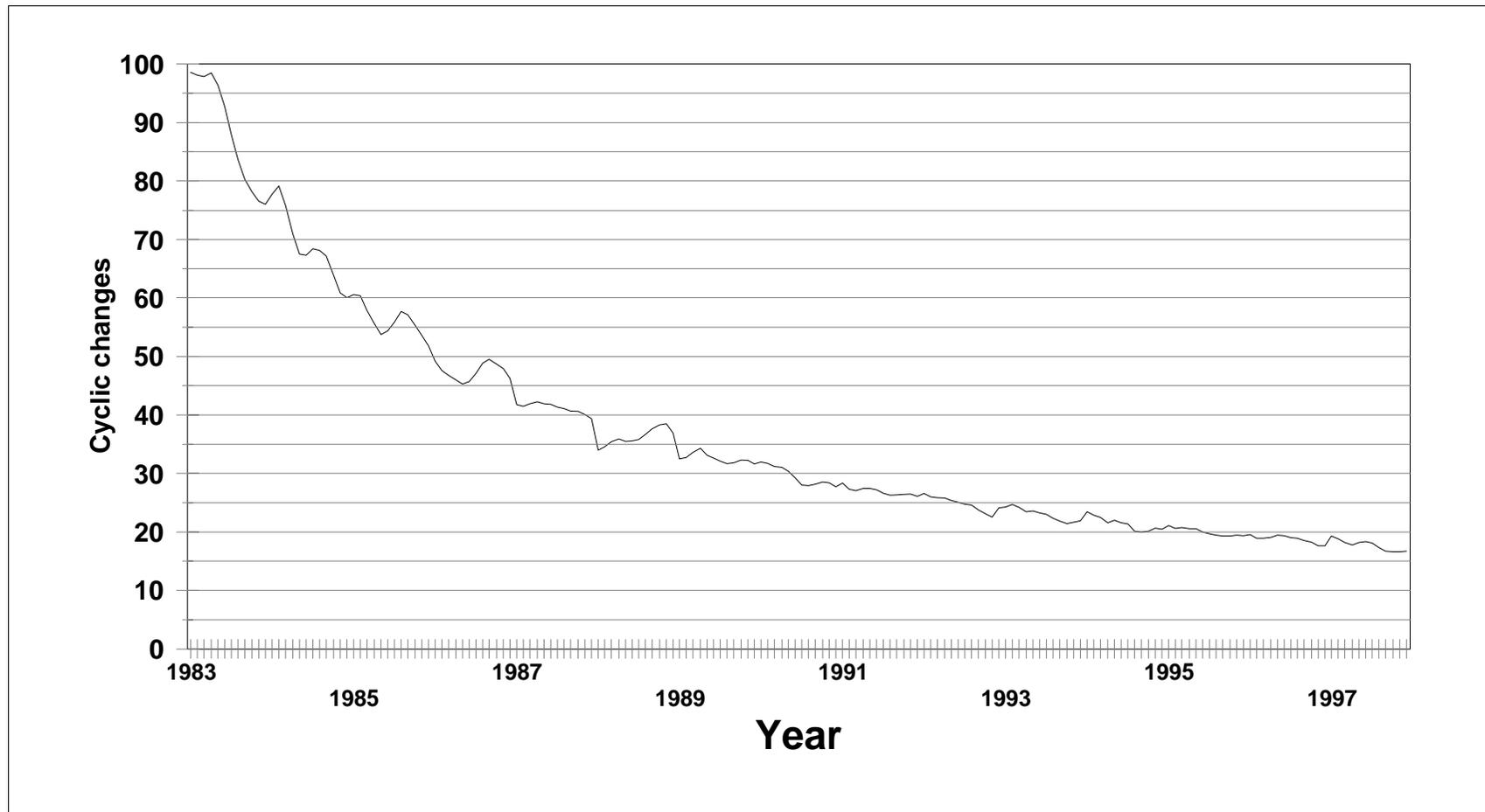
**Figure (8): PRICES FOR COMMERCIAL LIVE BROILERS, RETAIL LEVEL (Pt./Kg)**



**Figure (9): Seasonal Changes in Broiler Consumer Price, 1983-1997**



**Figure (10): Cyclic Changes in Broiler Consumer Price, 1983-1997**



## **4. International Broiler Trade**

### **4.1. Main Poultry Exporting Countries**

Exports of broilers by quantities and values and by major countries during the 1981-1995 period are presented in Table (31). The major broiler exporting countries during the previous period were the United States, France, Netherlands, Brazil, Hungary and Denmark. Their exports for broiler were about 76.4% of world exports of 2.4 million ton. Exports from the US, France, Netherlands, Brazil, Denmark and Hungary represented 20.8%, 16.2%, 15.3%, 10.8%, 6.8%, and 6.5% of the total, respectively.

The actual and estimated export quantities and values for broilers by major countries are presented in Figures (11) and (12). The major export countries increased both export quantities and values during 1981-1995, except Hungary experienced a decreasing trend. Fluctuations in export quantities and values for all exporters appear to have been wide during the 1989-1993 period.

Market shares in world broiler exports by these major countries during the 1981-1995 period are shown in Table (32). The market share of Brazil, Hungary and France decreased dramatically to 0.5, 7.2 and 9.2, respectively in 1990, while the US maintained a 24% share. In contrast, the share of the Netherlands and Denmark in world exports increased rapidly to 31.2 and 19.1 respectively, in 1990. In 1995, the market share of USA, Brazil and France increased rapidly to 41, 9.2 and 15.4 percent.

The annual rate of increase in broiler meat exports from selected countries between 1995-1996, and 1996-1997 are shown (Table 33). The US rate of increase in exports decreased from 18% to 8.4 %, 31.9% to 7.6% for Brazil, 35.1% to 20% for China, 1.2% to 3.7% for European Community and increased from 8.5% to 29.6% for Hong Kong.

### **4.2. Prices in Main Exporting Countries**

Export prices for broilers by major exporting country during the 1981-1995 period are presented in Table (34) and Figure (13). Sharp fluctuations were observed during the 1989-1993 period. Generally, the Netherlands price was above the world price during this period but prices in other countries were below the world average, except that in the USA, Denmark and France prices during 1990-1992 were above the world price Table (35). US export prices were less than 70% of the world average in 1991-95 while prices in Denmark were about 30% above the world average during the same years.

### **4.3. Main Countries Exporting to Egypt**

Egypt's imports (quantity and value) by country and market share by country during 1970-1995 are shown in Table (36) and Table (37). The USA, Brazil and France share in the Egypt's imports of broilers was about 34%, 8%, and 8% respectively, of the total quantity imported during 1970-1989 (388,033 tons). Broiler imports from these countries declined to zero after 1989 because a ban was imposed on broiler imports.

#### **4.4. Broiler Import Prices**

The prices of Egypt's broiler imports by country during 1970-1995 are presented in Table (38). The average broiler import price increased from \$ 443/ton in 1977 to \$2654/ton in 1989. After 1989, prices fluctuated between \$1775/ton and \$1133/ton. The 1993-95 average price was about \$1440 ton.

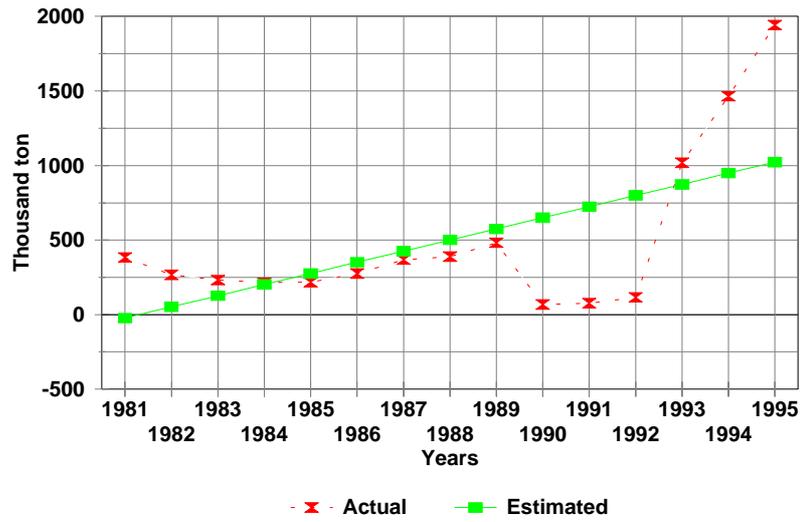
Prices in the United States and Brazil tended to be relatively low, 40 – 50% lower than European prices, during the last 3 or 4 years.

#### **4.5. The Share of Exports to Egypt by Country of Origin**

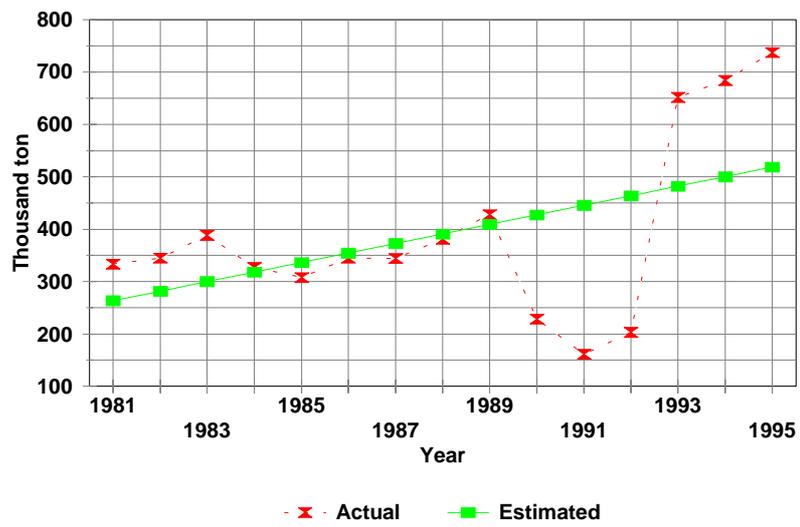
Market shares are presented in Table (37) for 1970-95. Prior to 1989 the US share averaged 34%, but dropped to zero in 1989 under the ban on imports. Brazil and France exported significant amounts to Egypt prior to the 1989 Ban. "Other" countries exported very small amounts to Egypt during 1989-95; less than 10% of quantities imported prior to 1989.

Figure (11): Export quantity by Major Countries, 1981-1995

USA



France



Netherlands

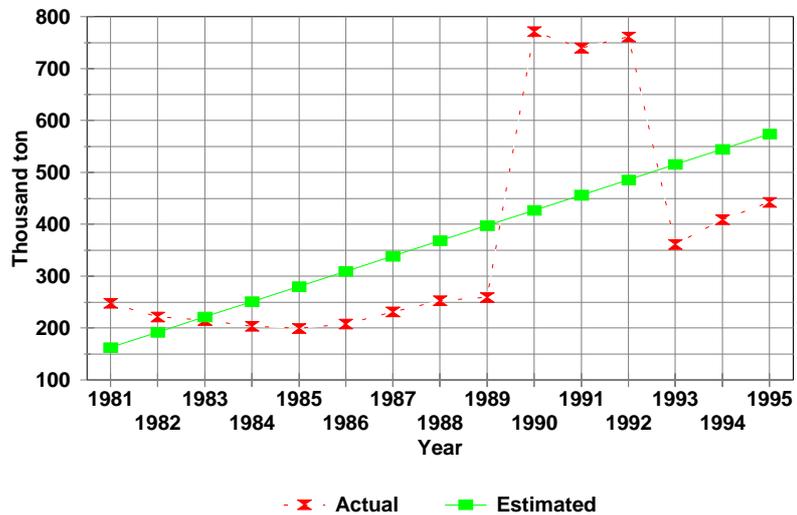


Figure (11): Continued

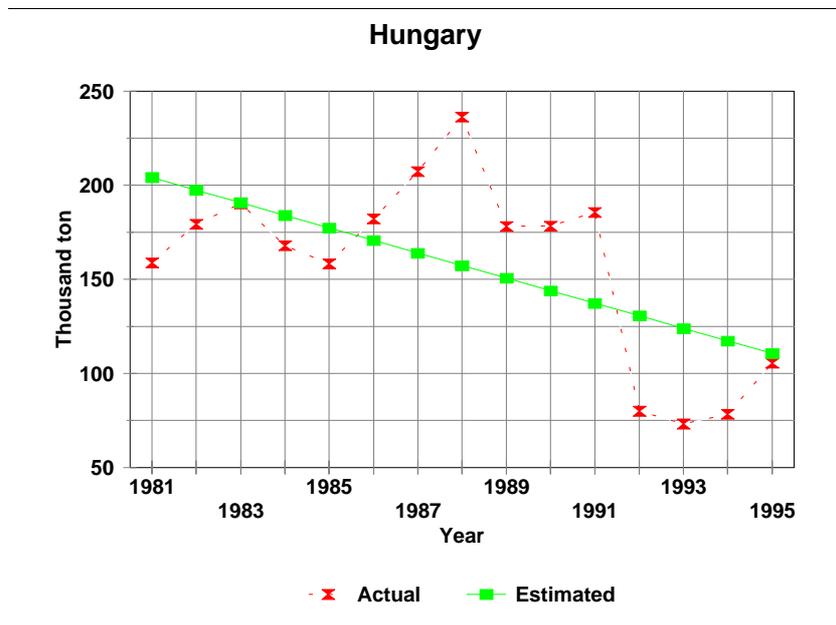
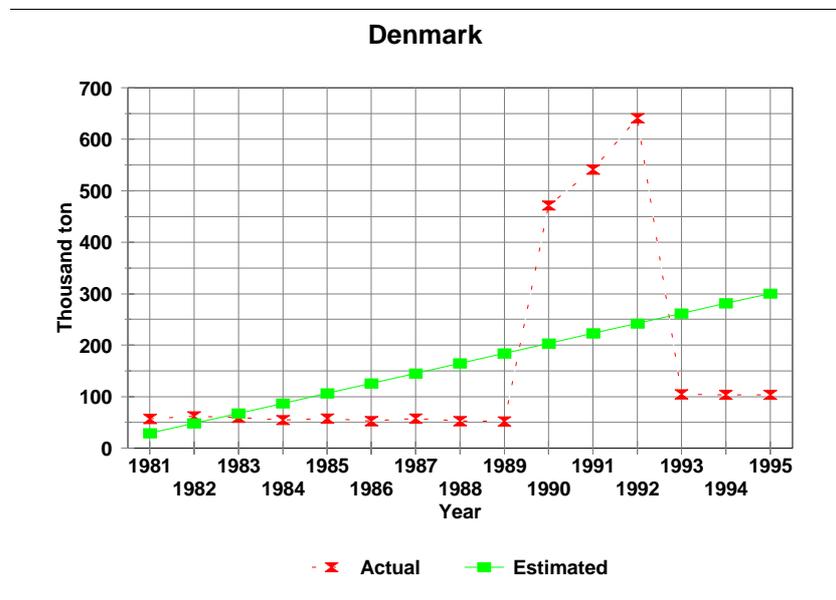
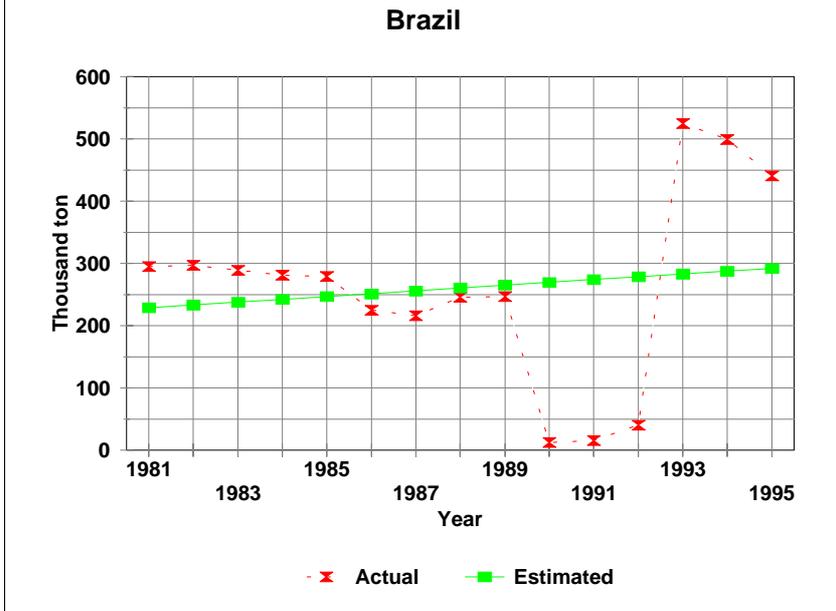
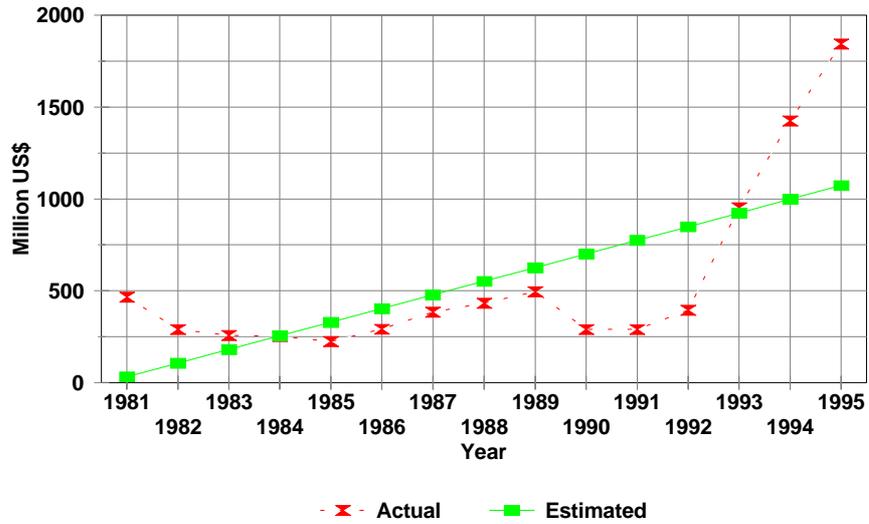
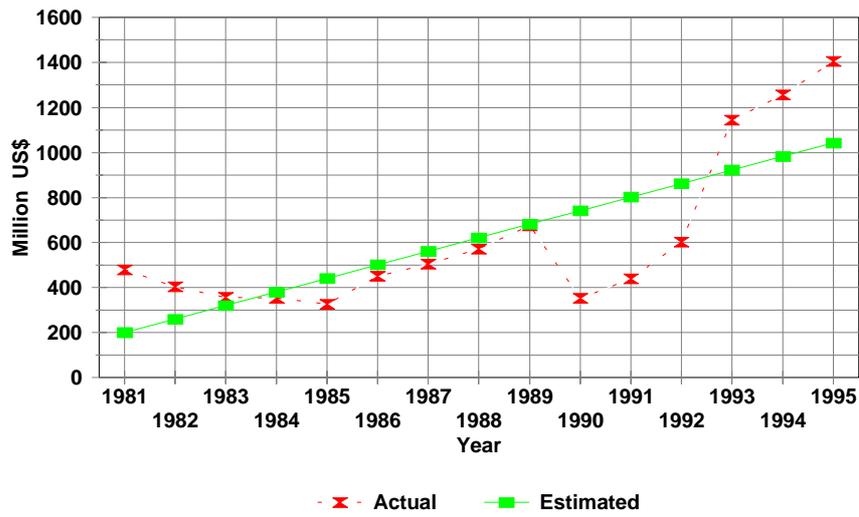


Figure (12): Export Values by Major Countries, 1981-1995

USA



France



Netherlands

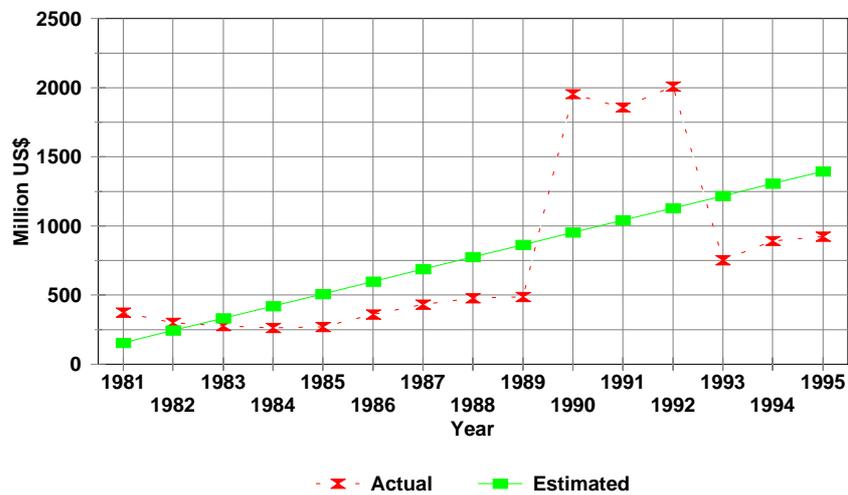
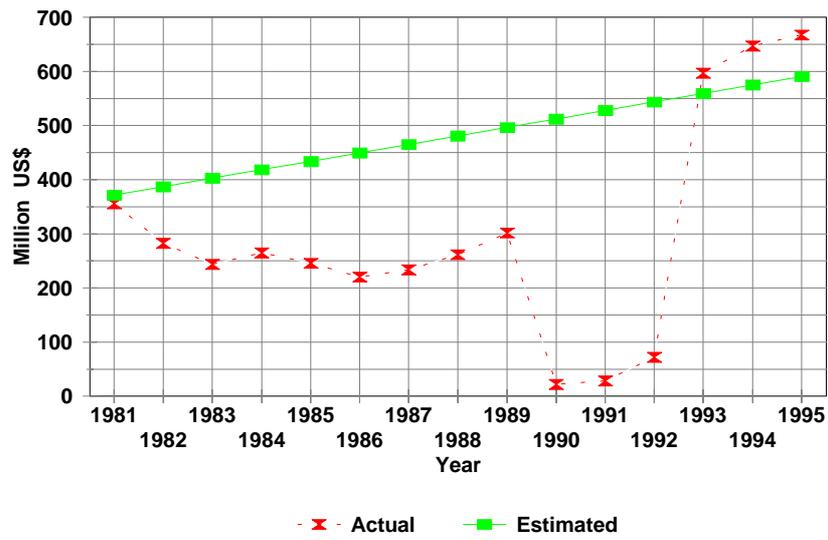
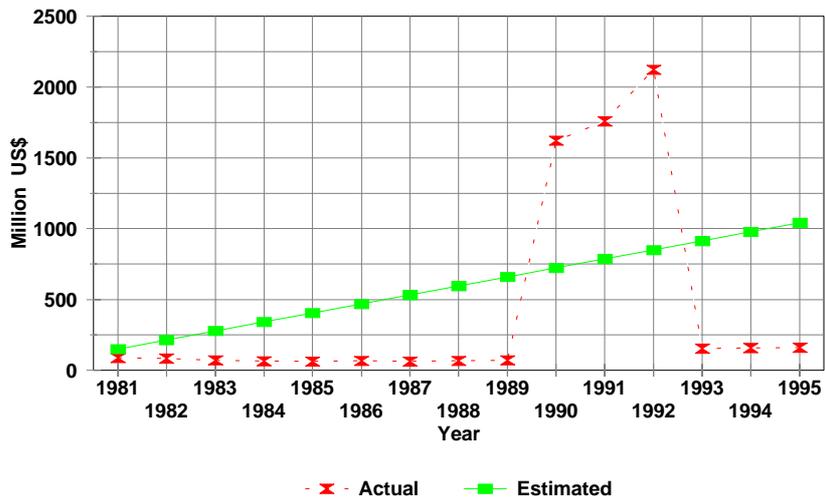


Figure (12): Continued

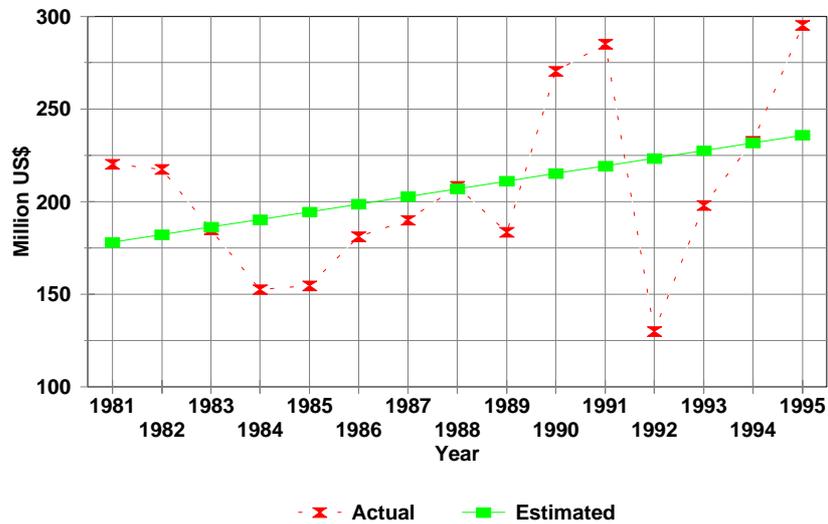
### Brazil



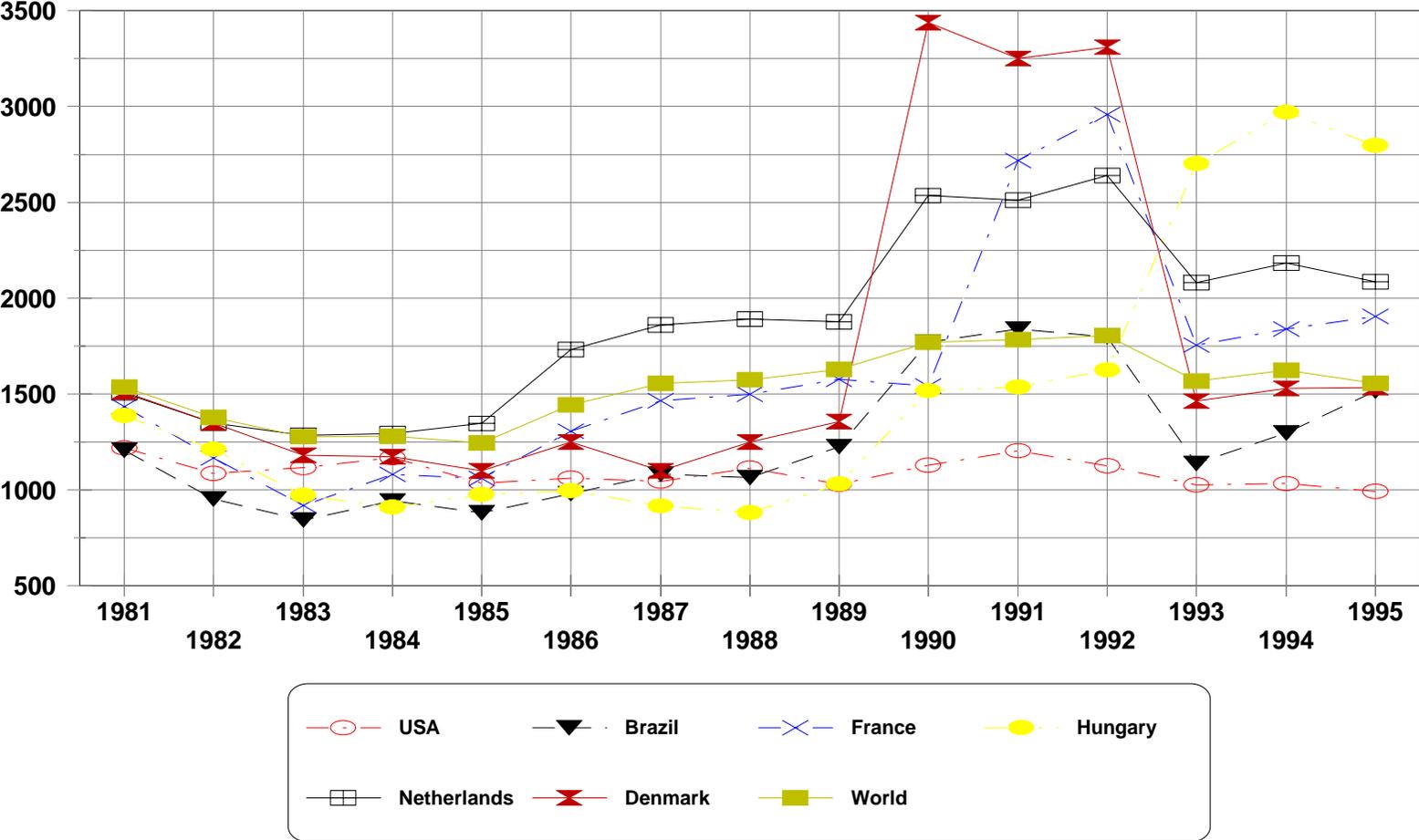
### Denmark



### Hungary



**Figure (13): The World Prices of Broiler Exports By Major Countries**



## **5. A Simulation Model of the Broiler Sub- Sector**

### **5.1. Objectives of the Model**

The study aims at estimating the impacts of factors affecting the broiler industry in Egypt using a simulation model of the broiler sub-sector. All the factors directly affecting the production, demand and marketing of broilers are included in the model.

### **5.2. Mathematical Formulation**

#### **5.2.1. Production and Marketing Equations Block (supply side)**

On the production and marketing side, seven equations, representing broiler production, broiler production costs, broiler feed production costs, broiler baby chick production costs, broiler farm-gate price, producer margin (incentive) and broiler wholesale price, are formulated and discussed below.

According to supply theory, the key factors affecting the broiler industry are broiler farm-gate price and the costs of production. The first equation for broiler production is:

$$PROD = f(PRC^G, COST) \quad (1)$$

Previous studies [1] showed that the broiler feed price, the one-day-old chick price, mortality rate and feed conversion rate (feed in kgs producing one kg of live-weight broiler) are the main factors affecting broiler production costs. The correlation coefficients between the production costs and broiler feed price; one-day-old chick price and feed conversion rate were estimated at 0.95, 0.86 and 0.51, respectively. The second equation for broiler production costs is:

$$COST = f(PRC_{FB}, PRC_{bchk}, MRT.R, F.Eff.) \quad (2)$$

The most important items in the broiler feed costs are the domestic yellow corn price and protein concentrate prices. Yellow corn represents 75% of feed costs and protein concentrates another 20%. The broiler feed price is a function of the factors represented in equation (3) below:

$$PRC_{FB} = f(PRC_{YC}^d, PRC_{CNST.}) \quad (3)$$

The dominant variables affecting the costs of producing a one day old chick in broiler production are the broiler parent stock feed price and the one day old chick price:

$$PRC_{bchk} = f(PRC_{Pf}, PRC_{Pchk}) \quad (4)$$

The farm-gate price of live-weight broilers is mainly determined by production costs at live-weight and the producer margins for live-weight broilers. Since the production cost at live-weight is included in the first equation, the farm-gate price equation can have the following form:

$$PRC^G = f( PRDCR MRGN) \quad (5)$$

Previous studies indicated that the producer margin (i.e., producer incentive) is the most important factor affecting the broiler industry. The industry will expand rapidly if the producer incentive is positive and decline if it is negative. The producer incentive depends mainly on the wholesale prices of live broilers and the wholesale price-margin. The same studies showed that the broiler industry in Egypt is still suffering from monopolistic conditions at the wholesale level. Thus, the wholesale margin and the level of wholesale prices are very important factors affecting the producer margin:

$$PRDCR MRGN = f( PRC^{WhlSL}, WHLSL MRGN) \quad (6)$$

According to derived demand theory, the wholesale price of broilers is derived from the consumer price. Equation (7) depicts such a relationship as follows:

$$PRC^{WhlSL} = f( PRC^{CNSMR} ) \quad (7)$$

### 5.2.2. Demand Side Equation:

The demand for broiler arises from the consumer's willingness and ability to purchase the broiler. Consumer demand theory postulates that the quantity demanded for any commodity is a function of the price of the commodity, consumer income, the prices of related (substitute and complementary) commodities and consumer tastes. Based on this and results from previous studies, the demand function for broilers is formulated as follows:

$$T.DEMAND = f( PRC^{CNSMR}, PRC^w_{BRL}, PRC_{BF}, PRC_{MTN}, PRC_{FSH}, GDP) \quad (8)$$

### 5.2.3. The Supply Equation

The supply function is estimated to measure the impacts of tariffs and bans on imports of broilers and to estimate producer surplus. The quantity of broilers supplied is a function of consumer prices of broilers and a dummy variable reflecting the impacts of economic reform policies on the supply of broilers (equation 9).

$$T.SUPPLY = f( PRC^{CNSMR}, DUMMY) \quad (9)$$

Variables comprising the model are defined as follows:

PROD = Domestic production of broilers (tons)

COST = Costs of production (LE/ton)

PRC<sup>G</sup> = Farm-gate price of broilers (LE/ton)

PRC<sub>FB</sub> = Price of feed (LE/ton)

$PRC_{YC}^d$  = Domestic price of yellow corn (\$/ton)

$PRC_{CNST}$  = Price of concentrates (LE/ton)

$PRC_{bchk}$  = Price of one-day-old chicks (LE/1000 chicks)

$PRC_{Pchk}$  = Price of one-day-old chick for parent stock (LE/1000 chicks)

$PRC_{Pf}$  = Price of feed for parent stock (LE/ton)

$PRC^{WHLST}$  = Wholesale price of broilers (LE/ton)

$PRC^{CNSMR}$  = Consumer price of broilers (LE/ton)

$MRT.R$  = Mortality rate of broilers

$F.Eff.$  = Feed efficiency (Rate of conversion of feed to broilers)

$PRC_{BLR}^w$  = World price of broilers (LE/ton)

$PRC_{BF}$  = Beef consumer price (LE/ton)

$PRC_{MTN}$  = Consumer price mutton (LE/ton)

$PRC_{FSH}$  = Weighted average consumer price of fish (LE/ton)

$GDP$  = Gross Domestic Product (LE)

$PRDCR MRGN$  = Producer margin

DUMMY = dummy variable equal to 0 before the economic policy reform period  
and  
equal to 1 during the reform period.

Time series data from secondary sources for all variables from 1970 to 1996 were used to estimate the demand and supply equations. The data include consumer prices of broilers, beef, mutton, fish and GDP deflated by the consumer price index (CPI). The world price of broilers was not deflated by the world price index in order that future projections could be made. The quantity produced and the current consumer price for broilers during the 1976-1998 period were used to estimate the supply function.

Cross-section data for all related variables from 1981/82, 1986/87, 1992 and 1997 years were used to estimate the production equations. Data collected in 1997 cover the major producing farms in the broiler and feed industry.

### 5.3. Model Estimation

#### 5.3.1 Production and Marketing Equations

$$(1) \text{ PROD} = 712.02 - 0.139 \text{ Cost} + 0.0437 \text{ PRC}^G$$

$$\begin{matrix} (16.3) & (-6.34) & (1.90) \\ R^2 = 0.53 & \& F\text{-ratio} = 49.9 \end{matrix}$$

$$(2) \text{ Cost} = 1551.5 + 1.336 \text{ PRC}_{FB} + 0.703 \text{ PRC}_{bchk} + 25.78 \text{ MRT.R}$$

$$\begin{matrix} (2.99) & (199) & (2.09) & (3.4) \\ R^2 = 0.801 & \& F\text{-ratio} = 119.3 \end{matrix}$$

$$(3) \text{ PRC}_{FB} = 87.41 + 0.718 \text{ PRC}_{YC}^d + 0.227 \text{ PRC}_{CNST.}$$

$$\begin{matrix} (0.52) & (6.96) & (2.13) \\ R^2 = 0.66 & \& F\text{-ratio} = 89.2 \end{matrix}$$

$$(4) \text{ PRC}_{bchk} = -168.4 + 0.663 \text{ PRC}_{Pf} + 0.074 \text{ PRC}_{Pchk}$$

$$\begin{matrix} (-2.3) & (5.66) & (15.05) \\ R^2 = 0.91 & \& F\text{-ratio} = 439.7 \end{matrix}$$

$$(5) \text{ PRC}^G = 3.95 + 0.429 \text{ PRDCRMRGN}$$

$$\begin{matrix} (105.3) & (2.21) \\ R^2 = 0.42 & \& F\text{-ratio} = 4.91 \end{matrix}$$

$$(6) \text{ PRDCRMRGN} = -360.5 + 0.092 \text{ PRC}^{WhSL} + 0.307 \text{ WHLSLMRGN}$$

$$\begin{matrix} (-2.03) & (2.084) & (3.86) \\ R^2 = 0.30 & \& F\text{-ratio} = 19.6 \end{matrix}$$

$$(7) \text{ PRC}^{WhSL} = 858.3 + 0.697 \text{ PRC}^{CNSMR}$$

$$\begin{matrix} (4.84) & (19.93) \\ R^2 = 0.82 & \& F\text{-ratio} = 397.3 \end{matrix}$$

#### 5.3.2. Demand Side Equations:

$$\text{Ln T.DEMAND} = 12.16 - 1.89 \text{ Ln PRC}^{CNSMR} - 0.227 \text{ Ln PRC}^w_{BRL} +$$

$$\begin{matrix} (3.76) & (-7.89) & (-1.89) \end{matrix}$$

$$0.114 \text{ Ln PRC}_{red} + 0.031 \text{ Ln PRC}_{FSH} + 0.7997 \text{ Ln GDP}$$

$$\begin{matrix} (0.22) & (0.064) & (4.59) \\ R^2 = 0.91 & \& F\text{-ratio} = 53.94 \end{matrix}$$

### 5.3.3. Supply Side Equation:

$$\ln T.SUPPLY = -2.11 + 1.036 \ln PRC^{CNSMR} - 0.41 DUMMY$$

$R^2 = 0.78$       &       $F - ratio = 47.12$

(-1.19)      (5.92)      (-1.82)

- The values between parenthesis are “t” ratios.
- An F ratio in excess of approximately 2 denotes significant regression.

The statistical conclusions that can be drawn from the equation estimation are summarized as follows:

- Most of the estimated parameters are statistically significant. The variables that were not statistically significant were consumer prices of red meat and fish.
- In Equation (2), the feed efficiency variable was removed because its parameter was not significant.
- In Equation (8), the statistical parameters of consumer price variables for mutton and beef were not statistically significant and their signs do not agree with economic logic. These factors were replaced with the consumer price of red meat.
- The broiler demand function was estimated in double logarithmic form, which provided the best fit, improving the significance of the parameters of the variables affecting quantity demanded. The estimated production function for live-weight broilers and the demand function for broiler meat are shown in Figures (14 and 15).

### 5.4. Production, Supply and Demand Elasticities

The factor elasticities for the production and marketing equations block are presented in Table (39). The production elasticities for the farm-gate price, production costs, mortality rate and producer margin are inelastic and very low, reflecting the dominant effect of other factors, given that cross-section data were used. Price tends not to vary across farms during a given time period. The production elasticities for broiler feed price, broiler baby chick price, yellow corn price, protein concentrate prices, parent stock baby chick price and parent stock feed price are inelastic but they are not low. Production response relative to changes in the wholesale price is very elastic as estimated from time-series data. It is also elastic with respect to the broiler wholesaler margin and broiler consumer price. The supply of broilers is elastic and close to unity.

The demand with respect to the domestic broiler consumer price is very elastic but is inelastic with respect to the world price of broilers. Consumption is elastic with respect to income.

Figure (14 ): Supply Function for broiler at current prices, 1970-1996

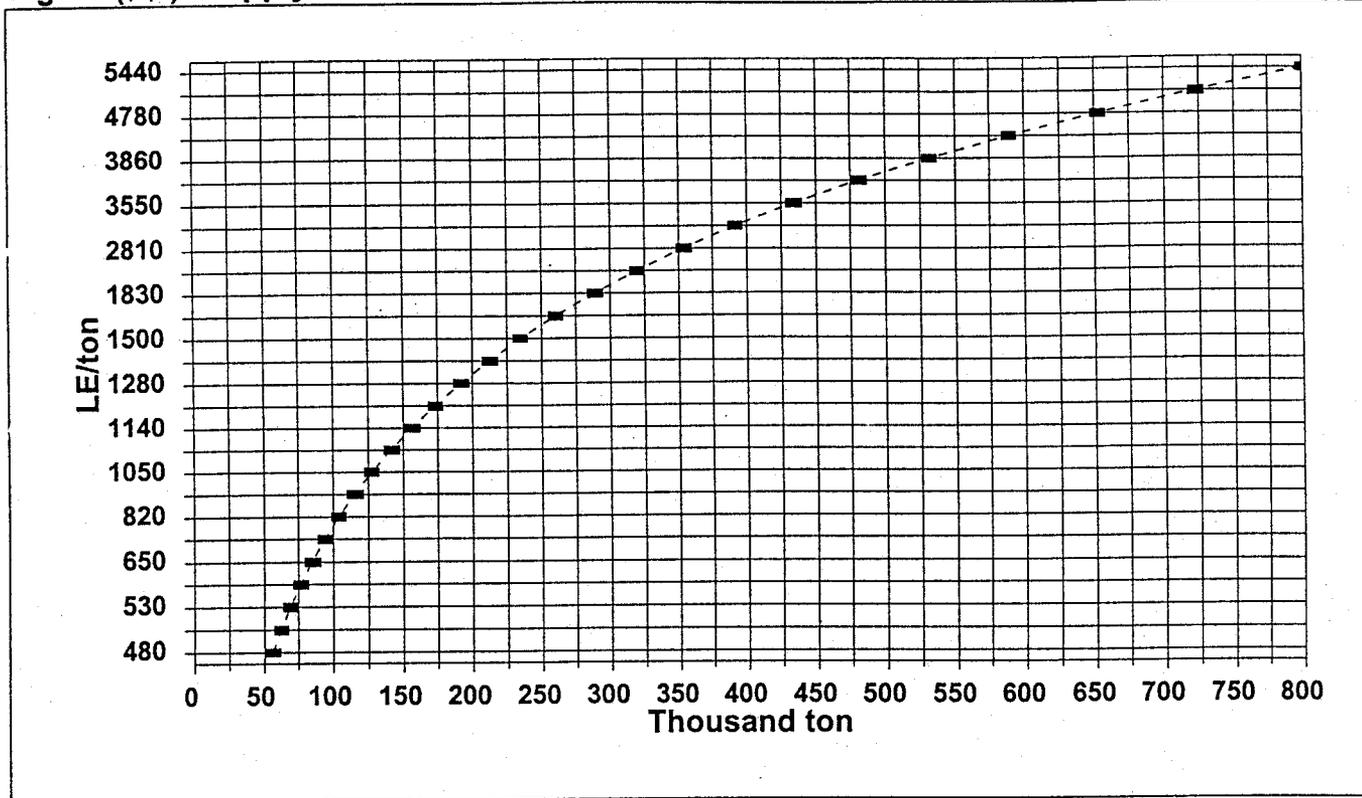
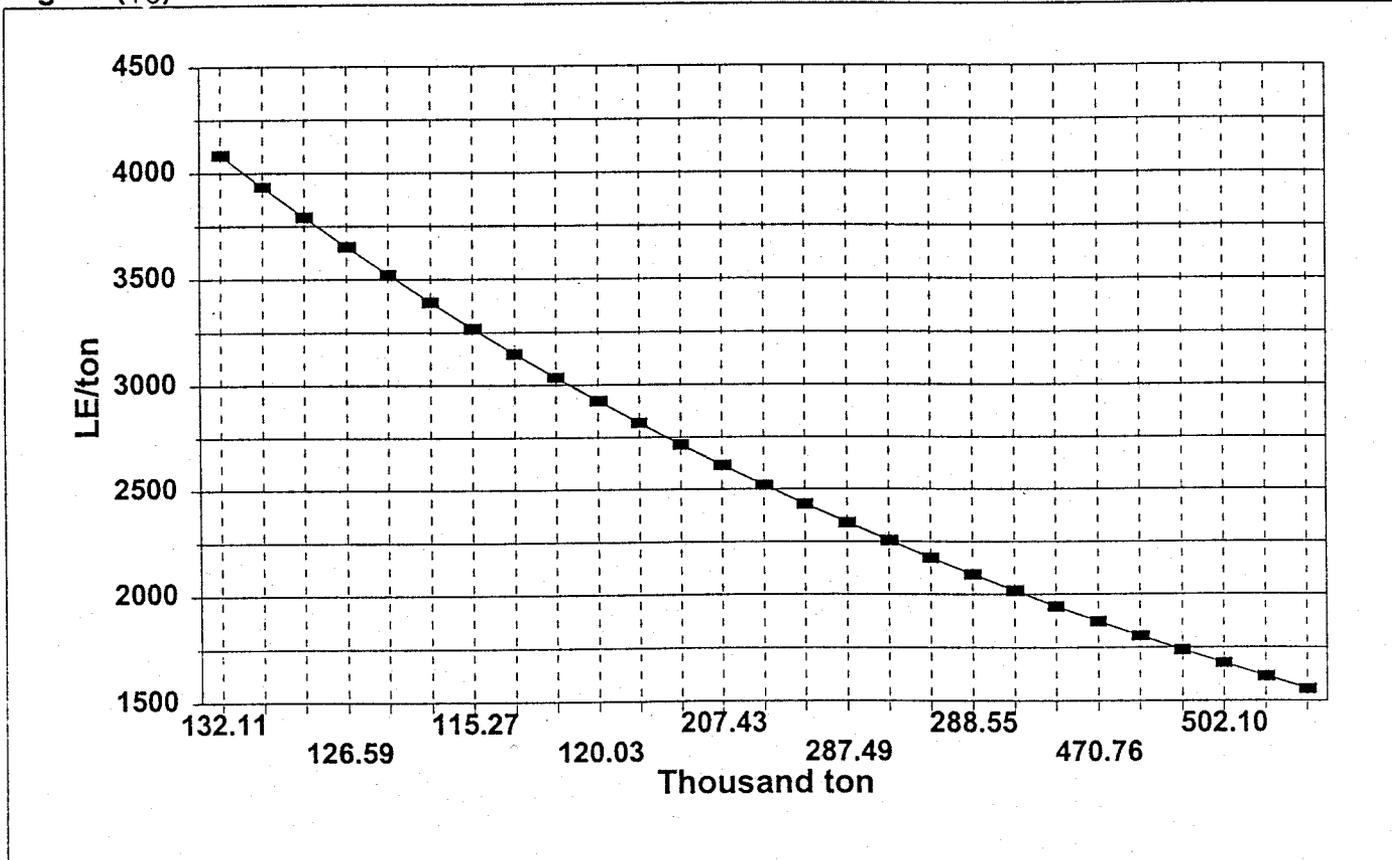


Figure (15): Demand Function For broiler at Real Prices, 1970-1996



## **6. Analysis of the Welfare Effects of the Broiler Tariff Policy**

This section estimates the welfare implications of imposing tariffs on poultry imports, especially with respect to welfare transfers between producers and consumers, and the net gains and losses in economic efficiency. Tariffs are generally used by developing countries to protect producers of industrial goods, foster the growth of domestic industry, and to substitute domestic production for imports. Agricultural tariffs may also become increasingly common in efforts to protect domestic producers from depressed prices in international markets, even where the commodity is important to domestic consumers. This is in effect the official case for imposing a broiler import tariff of 80 percent in Egypt. With the elimination of subsidies to the broiler sector, the government placed a ban on broiler imports until June 1997, at which time the ban was eliminated and an 80% tariff was imposed.

### **6.1 Theoretical Background**

Figure (16) illustrates from a theoretical point of view the effects of introducing a tariff on broilers that raises the domestic price above the world price. The initial supply and demand conditions are shown in the figure by the supply curve  $S(d)$ , the demand curve  $D$ , and the supply curve of imports from the rest of the world  $S(W)$ , which is horizontal because the importing country is small in the world market. Before the tariff is imposed, the domestic price is the same as the world price  $P^b$ , and consumers are willing to purchase quantity  $Q4$  at this price. At this relatively low price, domestic producers are willing to supply only the quantity  $Q1$ , and the remainder,  $Q4 - Q1$ , must be supplied from imports.

If an import tariff is imposed at the ad valorem rate  $t$ , the domestic price rises above the world price  $P^b$  to  $P^d$ , and the supply curve of imports is raised vertically to  $S(w)$ . At the higher price, consumers reduce their purchases of the commodity to  $Q3$ , while domestic producers respond to the higher price and increase output to  $Q2$ . Thus, the quantity of imports declines to  $Q3 - Q2$  because of reduced consumption and expanded production of broilers.

The analysis that follows shows that the 80 percent import tariff on broilers greatly impacts government revenue, economic efficiency and welfare of producers and consumers.

Regarding government revenue, the budget revenue increases with the imposition of tariff on broilers because government authorities now collect tariff revenue if the tariff is not too high. The amount is equal to the quantity of imports ( $Q3-Q2$ ) times the amount of tariff per unit ( $P^d-P^b$ ), i.e., the total is shown by the rectangle  $GKBF$ . This area also represents a transfer from consumers because it was formerly part of consumer surplus. In planning potential tariff receipts, the higher domestic price reduces demand for imports, and thus revenue will be collected on the smaller quantity of imports ( $Q3-Q2$ ) times the per unit tariff, not on the former, larger quantity of imports ( $Q4-Q1$ ). With the imposition of the tariff and the resulting smaller quantity of imports, the budget has a reduced import bill, or foreign exchange outlays. The import bill correspondingly falls by the amount represented by rectangle  $Q1HCQ4$ , to rectangle  $Q2GFQ3$ .

Domestic consumers are clearly worse off after introduction of the tariff because they face higher prices for what they consume from both domestic production and imports. The consumer welfare loss due to higher prices is equal to area  $1 + 2 + 3 + 4$  in Figure (16). The

areas 2 and 4 (the shaded triangles) represent the net economic loss in production ( $NEL_P$ ) and net economic loss in consumption ( $NEL_C$ ), respectively. These losses are incurred because with the tariff in effect, production expands in response to higher domestic prices, consumers reduce their consumption of broilers and transfer parts of their surplus to producers and the government budget, and the government has more revenue and a reduced outlay of foreign exchange for imports.

Regarding efficiency, a change in the price of the commodity serves to reallocate resources in the economy. The tariff distorts relative prices, causing more investment in production than warranted by world prices and less consumption. The net loss to the country from imposing the import tariff comprises the lost consumer surplus that is not recovered by producers (through increased producer surplus) or by the government (through tariff revenue). This loss is represented in Figure (16) by the triangles FBC and HKG.

The net economic loss in consumption ( $NEL_C$ ), represented by triangle FBC (area 4) in the figure is also a loss in efficiency because consumers are shifting part of their expenditures for broilers to some other good or service from which they derive less utility or benefit. Consumers are now paying a higher price for a protected commodity and consuming less, a situation that is clearly damaging to consumer well-being.

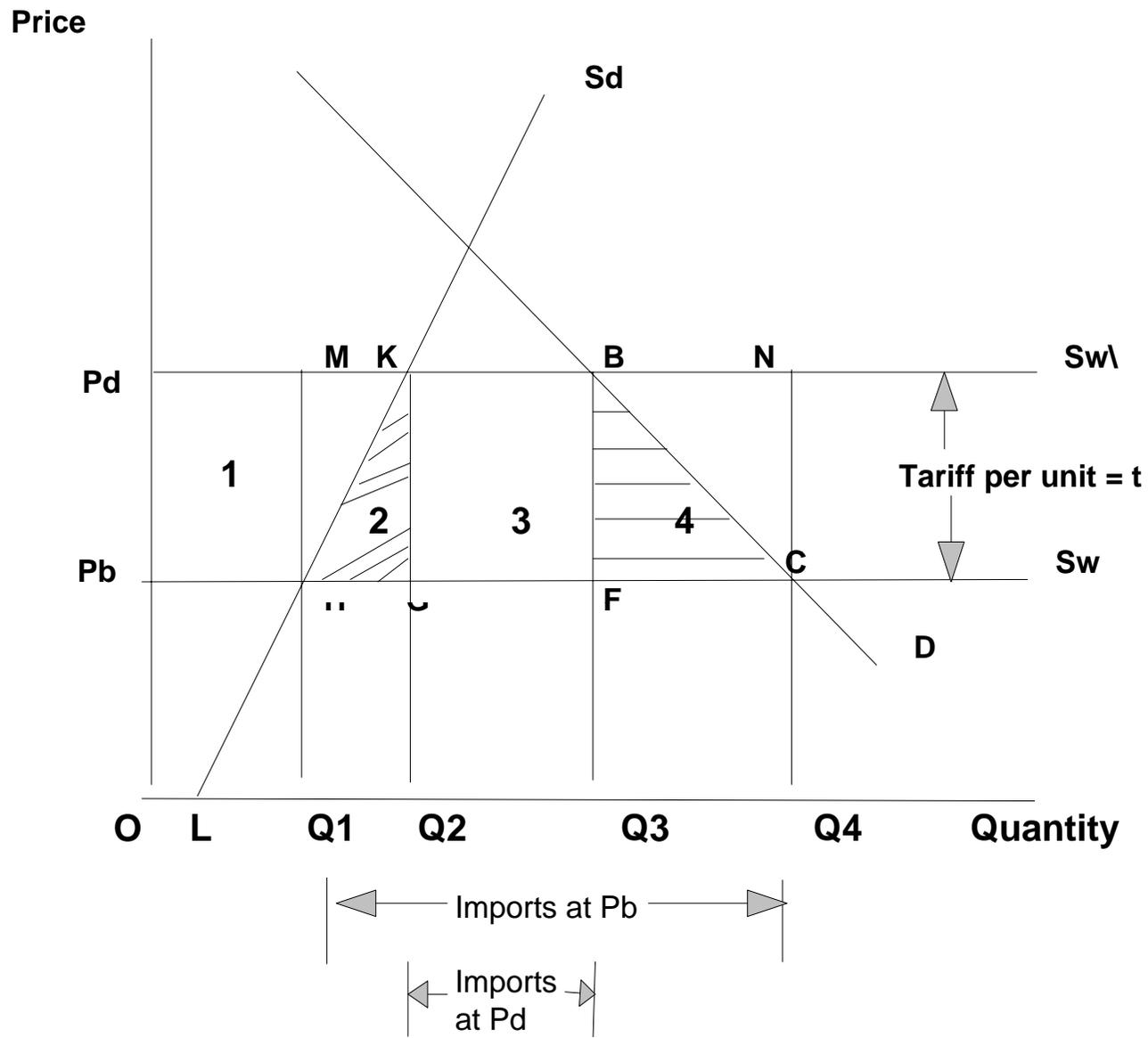
The net economic loss in production ( $NEL_P$ ), represented by triangle HKG (area 2), is a loss in efficiency because resources are being pulled into poultry production, away from other activities with higher productivity. In other words, increasing costs are being incurred as more broiler production is generated, at the expense of other more efficient enterprises.

In terms of the welfare of consumers, they are clearly worse off after introduction of the tariff because they face a higher price for the commodity than before. With the higher unit price, total consumer expenditures for the commodity increase from the rectangle ( $OP^b CQ4$ ) to the rectangle ( $OP^d BQ3$ ). Consumer loss is measured by the change in consumer surplus, and it is shown by the area  $P^b P^d B C$ .

On the side of farmers, they are better off with the higher domestic price because they receive greater revenue for current production, and they find it profitable to expand output, from H to K on the supply curve, (Figure 16), and produce quantity  $Q2$ . Their total revenue rises to  $OP^d KQ2$ , which comprises the cost incurred, indicated by area  $LKQ2$  and the producer surplus of  $OPKL$ . The gain in producer surplus is  $P^b P^d KH$  in Figure (16) that comes at the expense of consumers.

The net impacts of the import tariff on broilers can be calculated through the following equations:

**Figure (16): Tariff on Imports of Food Commodity (Broiler)**



$$(1) \text{ Change in government budget } (\Delta B) = (NPC - 1) \{W (1 + N_d (NPC - 1)) - V [1 + E_s (NPC - 1)]\}$$

$$(2) \text{ Change in foreign exchange outlays } (\Delta FE) = - (NPC - 1) (E_s V - N_d W)$$

$$(3) \text{ Net Economic Loss in Production (NELP)} = 0.5 E_s (NPC - 1)^2 V$$

$$(4) \text{ Net Economic Loss in Consumption (NELC)} = 0.5 N_d (NPC - 1)^2 W$$

$$(5) \text{ Change in Producer Surplus } (\Delta PS) = [(NPC - 1) V] + NELP$$

$$(6) \text{ Change in Consumer Surplus } (\Delta CS) = - [(NPC - 1) W] - NELC$$

$$(7) \text{ Net Social Loss (NSL)} = \Delta PS + \Delta CS + \Delta B$$

Where:

NPC = Nominal Protection Coefficient.

W = Value of consumption (with free trade) at border prices.

V = Value of domestic production (without intervention) at border prices.

$N_d$  = Elasticity of demand.

$E_s$  = Elasticity of supply.

Ps = Producer surplus

Cs = Consumer surplus

B = Government revenue

To further analyze the implications of the import tariff on the broiler market, one should consider the efficiency loss relative to agricultural GDP or even relative to income gains of producers, and also whether there are political gains. Very small efficiency losses that may have been incurred by such a tariff may be justified in return for substantial political gains. Such reasoning may be correct for the short run and for fairly small changes where other markets are unaffected. But calculations of static efficiency losses may not provide much insight into longer-run dynamic efficiency losses, or even the trend of such losses. The tariff to protect broiler producers may provide a less risky and more profitable investment climate that permits a more competitive broiler sector to evolve, in which case the dynamic effects would be to raise the efficiency of the economy. On the other hand, the tariff may induce investment into a high-cost broiler production and hence divert resources better invested in other activities with more economic potential. In this case the small static efficiency losses would be compounded into substantial dynamic efficiency losses through progressive distortions in the resource allocation and cost structure of the agricultural sector.

The above seven-equation system is estimated on a Quattro-Pro spreadsheet. Thus, many scenarios to examine the impacts of changes in: (i) domestic or world prices, (ii) import tariff on broiler, (iii) supply or demand elasticity of broiler, (iv) exchange rate and (v) levels of domestic production or demand for broiler can be easily assessed.

## 6.2. Applications to Egypt's Broiler Import Tariff:

To assess the impact of broiler trade policy in Egypt the single-market analysis discussed above was applied. Demand and supply elasticities for broilers needed for such an application have been estimated from the simulation model presented in Section (5.2). Different policy scenarios are considered, aiming at determination of the direction and magnitude of the impact of possible changes in price policy. However, it should be pointed out that such single-market analysis does not formally incorporate the magnitude of spillover and feedback effects which, if considered potentially significant, require more sophisticated analytical techniques such as multi-market, sectoral, or computable general equilibrium analysis (CGE). The results and discussion of the model applications and scenarios are presented below.

### 6.2.1. The Equivalent World Price

#### 6.2.1.1. The 1<sup>st</sup> Scenario: The Equivalent World Price Vs. Actual Egyptian Consumer Price

The average per unit price of frozen whole birds shipped from Brazil to the Middle East was \$ 1349/ton in 1997. Ali Ibrahim (1983) showed that the equivalent world consumer price was more than the CIF price by 14%. Thus, the equivalent world consumer price is estimated to be about 1538 US\$ or LE 5228 per ton of poultry. The short-run supply and demand elasticities of broilers in Egypt were estimated from the previously presented simulation model. The resulting values were, respectively, 1.04 and -1.89, Tables (1) and (40). The current domestic price of frozen poultry in 1997 was 6700 LE/ton, exceeding the equivalent world price by 28%. The results of the welfare analysis of broiler trade distortions are presented in Figure (17) and Tables (1) and (40). The prevailing, "revealed" import tariff on broilers in this case is equal to 28%. Production at the current domestic price was 30% higher than at the world price and consumption was 29% lower.

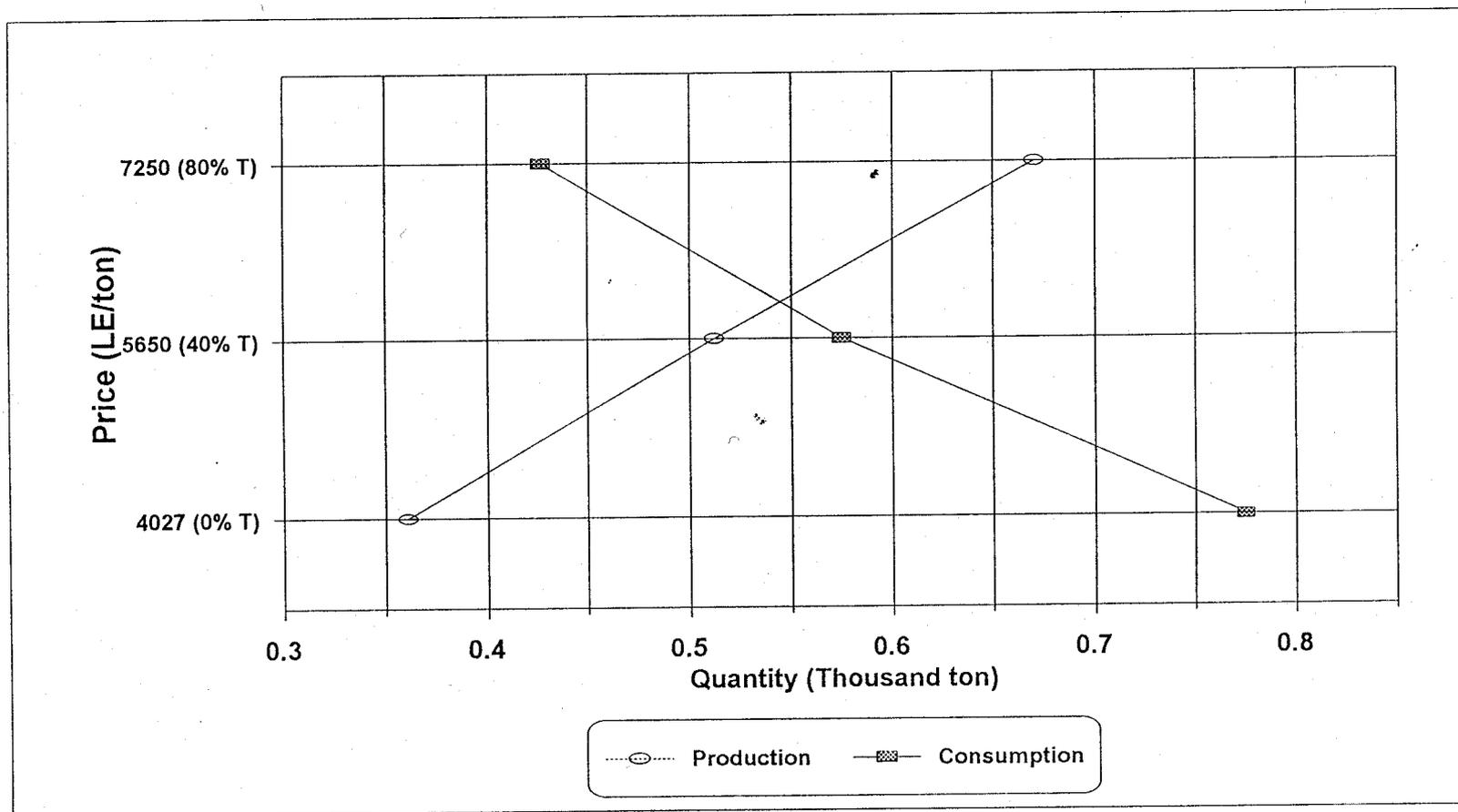
The net economic loss in both production and consumption attributable to the 28% revealed tariff, relative to what would have prevailed at a zero tariff rate, was 246 L.E. million: 85 LE million in production and 162 L.E. million in consumption. As a result of the revealed tariff (28%), broiler consumers lose 942 L.E. million and broiler producers gain 651 L.E. million. Government revenue increased by 44 L.E. million. The balance of payments increased by 1236 LE million.

Table (1): Welfare Analysis of at Different Levels of Expected Consumer Prices and Different Levels of Tariff

Level of tariff	Price LE/ton	Production (million ton)	Consumption (million ton)	Producer surplus (million LE)	Consumer surplus (million LE)	Net social loss (million LE)
Zero %	5229	0.386	0.75	0	0	0
20%	6300	0.47	0.57	459	-709	-143
Current						
28%	6700	0.50	0.53	651	-942	-246
40%	7320	0.55	0.49	974	-1301	-449
50%	7850	0.59	0.46	1274	-1586	-653
60%	8350	0.63	0.44	1577	-1858	-875
70%	8900	0.68	0.42	1934	-2143	-1145
80%	9430	0.72	0.41	2289	-2448	-1440

Source: Table (40).

Figure (17): Production and Consumption under different Levels of Tariff



### **6.2.1.2. The 2<sup>nd</sup> Scenario: The Equivalent World Price Vs. Expected Consumer price with a 40% Tariff**

The estimated domestic consumer price of poultry with a 40% tariff is LE 7320 per ton. The results of welfare analysis are presented in Figure (17) and Tables (1) and (40). Production at the domestic price plus 40% tariff is higher by 42% than at the world price and consumption is lower by 35%. The net economic loss in both production and consumption totaled LE 449 million. As a result of the tariff broiler consumers lose L.E. 1301 million and broiler producers gain L.E. 974 million. In this scenario, the domestic price was estimated by adjusting the retail price of live broilers to reflect costs of processing and marketing. The first scenario, above, used the reported price of frozen broilers.

Some error in measurement is possible, with the price of frozen broilers being determined in a “thin” market and estimates of coefficients of processing and marketing necessarily were somewhat arbitrary. However, one may conservatively conclude that the current real tariff lies somewhere between 30 and 40 percent.

### **6.2.1.3. The 3<sup>rd</sup> Scenario: The Equivalent World Price Vs. Expected Consumer Price at 80% tariff**

The expected domestic consumer price of poultry at 80% tariff, given the current world price, is about LE 9430/ton. The results of the welfare analysis are presented in Figure (17) and Tables (1) and (40). Production at the world price plus an 80% tariff is 87% more than at the world price and consumption is lower by 45%. The net social loss in both production and consumption totaled L.E. 1440 million.

## **6.2.2. World Price at which Imports will Occur at Various Tariff Levels**

It was shown above that the actual (revealed) tariff rate in the Egyptian poultry market is approximately equal to 30 - 40% of the equivalent world price. In that range, domestic supply and demand seem to be in equilibrium and imports do not occur. Given a nominal tariff rate of 80%, it is useful to estimate the level of world price at which imports would begin to occur. According to Table (2) and Table (41), the world price of broilers would theoretically have to fall to L.E. 3060 before imports would occur, given a nominal tariff rate of 80%. At a tariff rate of 40%, world prices would only have to decline to L.E. 3927 to allow imports to be competitive in the Egyptian market.

Viewed another way, given static supply and demand conditions in Egypt, the normal tariff rate could be reduced from 80% to around 40% without stimulating imports, given the current level of world prices. Domestic producers could market 0.5 million tons at LE 7320 per ton and consumers would absorb most of the amount of domestic production at that price. If world prices decline to LE 3723, domestic prices would fall to LE 5,212, imports would equal 0.36 million tons, domestic production would fall to 0.386 million tons and consumption would rise to 0.75 million tons.

In terms of net social welfare, reducing the tariff to 40% (the current “real” rate), and assuming a decline in world price to LE 3,723 per ton, producers lose LE 1,313 million, consumers gain LE 2,240 million, and the “budget” gains LE 89 million, giving a net social gain of LE 1016 million.

Table (2) Break-Even Prices at Various Tariff Rates

Level of Tariff %	The World Prices at which Imports Occur
0	4027
37	3950
40	3927
80	3060

Sour: Table (41)

Clearly the 80% tariff is ineffective, given current supply and demand conditions in Egypt and the current level of world prices. Apparently a tariff of approximately 40% is sufficient to discourage imports given the current level of world prices. However, at that tariff rate, any decline in the world price would result in imports, with consequent losses to Egyptian producers.

World prices have fluctuated between LE 3,202/MT and L.E 4078/MT since 1988 (Table 3). Thus, reducing the tariff to 40% runs the risk of competition from imports, given current levels of world prices. It is clear, on the other hand, that within this range of prices net social gains from lower prices and increased imports would remain positive (consumers would gain more than producers lose and the budget impact would be positive).

Table (3) World Price of Broilers, 1988-1997  
(LE/Ton)

1988	3,776
1989	3,482
1990	3,824
1991	4,078
1992	3,814
1993	3,475
1994	3,502
1995	3,366
1996	3,522
1997	3,202

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TABLE (1): SUMMARY: FARM VALUE OF POULTRY MEAT, EGGS, AND MANURE PRODUCTION FOR 1976-1998

Year	Meat Value:			Egg Value:			Manure Value	ALL PRODUCT TOTAL Mil.L.E.
	Balady	Commer- cial	TOTAL Mil.L.E.	Balady	Commer- cial	TOTAL Mil.L.E.		
1976	18	72	204	12	24	36	1	240
1977	20	81	222	14	30	44	1	266
1978	22	98	247	15	31	46	1	294
1979	26	115	282	22	45	67	1	350
1980	35	165	386	32	66	99	1	486
1981	50	735	1037	36	73	109	3	1149
1982	56	1164	1493	43	87	130	4	1627
1983	61	1280	1640	56	115	171	5	1816
1984	37	1845	2238	62	128	191	7	2435
1985	100	1778	2259	65	133	198	7	2464
1986	122	1727	2268	66	136	202	7	2477
1987	194	1865	2531	90	184	274	8	2813
1988	160	2019	2778	109	222	331	7	3116
1989	188	1348	2248	167	339	506	6	2760
1990	269	1542	2548	141	287	428	6	2982
1991	393	1632	2837	159	327	486	7	3329
1992	535	1894	3417	148	301	449	8	3874
1993	969	2277	4809	162	330	492	9	5310
1994	1312	2567	5766	188	355	543	10	6319
1995	1551	3185	6923	201	384	585	13	7521
1996	2004	3675	8159	226	459	685	14	8859
1997	2447	4521	9948	264	536	800	17	10765
1998	2977	5561	12125	308	626	934	20	13079
Average Annual Percent Change								
1976-86	21.0%	37.4%	27.2%	18.9%	18.8%	18.8%	28.6%	26.3%
1986-98	30.5%	10.2%	15.0%	13.7%	13.6%	13.6%	9.1%	14.9%

Source:

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TABLE (1): FARM VALUE OF POULTRY MEAT AND EGG PRODUCTION, 1976-1998 (Continued)

Year	Balady Chickens:			Commercial Broilers:			Ducks:		
	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.
1976	123.7	77	95.2	108.9	66	71.9	11.1	57	6.3
1977	125.1	79	98.9	111.6	73	81.5	11.2	65	7.3
1978	126.6	82	103.8	119.6	82	98.1	11.4	72	8.2
1979	128.0	92	117.8	122.4	94	115.0	11.6	80	9.3
1980	129.4	119	154.0	140.6	117	164.5	11.7	107	12.5
1981	130.9	161	210.7	528.8	139	735.0	11.9	147	17.5
1982	132.3	174	230.2	718.4	162	1163.8	12.1	161	19.5
1983	133.7	182	243.4	659.6	194	1279.7	18.6	171	31.8
1984	117.9	206	242.9	830.9	222	1844.6	22.6	195	44.1
1985	146.5	214	313.5	790.0	225	1777.5	23.3	212	49.4
1986	153.4	229	351.3	751.0	230	1727.4	23.4	225	52.7
1987	176.6	253	446.8	734.2	254	1864.9	23.8	252	60.0
1988	152.2	306	465.6	703.4	287	2018.8	24.2	317	76.7
1989	153.9	348	535.7	446.5	302	1348.3	23.0	366	84.2
1990	168.9	390	658.8	463.0	333	1541.8	23.0	397	91.3
1991	197.6	403	796.5	503.8	324	1632.4	24.0	413	99.1
1992	231.2	408	943.4	575.7	329	1893.9	44.6	423	188.7
1993	270.5	568	1536.7	613.8	371	2277.3	53.7	619	332.4
1994	316.5	606	1918.2	651.6	394	2567.2	64.6	672	434.4
1995	348.2	625	2176.1	753.0	423	3185.4	71.1	738	524.7
1996	368.2	747	2750.5	844.9	435	3675.4	71.5	821	587.1
1997	390.6	841.9	3288.7	941.1	480.4	4521.1	78.9	944.7	745.2
1998	413.7	948.8	3925.5	1048.3	530.5	5561.3	87.0	1087.1	945.9
Average Annual									
Percent Change									
1976-86	2.2%	11.5%	13.9%	21.3%	13.3%	37.4%	7.7%	14.7%	23.6%
1986-98	8.6%	12.6%	22.3%	2.8%	7.2%	10.2%	11.6%	14.0%	27.2%

[1] Winrock International Institute For Agricultural Development

[2] Central Agency for Public Mobilisation and Statistics

TABLE (1): FARM VALUE OF POULTRY MEAT AND EGG PRODUCTION, 1976-1998 (Continued)

Year	Geese:			Pigeons:			Rabbits:		
	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.	Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.
1976	9.4	53	5.0	24.0	52	12.5	21.0	52	10.9
1977	9.5	62	5.9	22.1	60	13.2	20.9	61	12.7
1978	9.6	68	6.5	20.1	66	13.3	20.7	68	14.1
1979	9.7	72	7.0	18.1	75	13.5	20.7	78	16.1
1980	9.7	98	9.5	18.4	107	19.7	20.5	106	21.7
1981	9.8	140	13.7	18.8	135	25.3	20.4	145	29.5
1982	9.9	145	14.4	19.2	142	27.3	20.2	160	32.3
1983	10.0	157	15.7	19.7	155	30.5	20.0	162	32.4
1984	12.3	177	21.8	20.9	177	37.0	21.3	188	40.0
1985	12.6	193	24.3	21.6	188	40.6	22.0	206	45.3
1986	12.8	208	26.6	22.2	207	46.0	22.6	216	48.8
1987	13.0	236	30.7	22.9	237	54.3	23.3	242	56.4
1988	13.2	282	37.2	23.5	278	65.4	23.9	302	72.3
1989	13.4	332	44.5	24.2	329	79.6	24.6	344	84.7
1990	14.9	371	55.3	22.8	362	82.7	24.7	373	92.3
1991	18.0	378	67.9	26.5	369	97.8	30.4	380	115.5
1992	21.6	400	86.4	30.8	399	122.8	37.3	407	151.9
1993	26.0	548	142.5	35.7	563	201.1	45.9	600	275.2
1994	31.3	604	189.1	41.5	581	241.0	56.3	653	367.9
1995	34.4	600	206.6	45.6	654	298.4	62.0	770	477.2
1996	34.6	669	231.6	43.2	683	295.2	64.4	882	568.2
1997	37.1	764.5	283.5	44.6	782.1	348.7	68.3	1023.7	699.6
1998	39.7	873.6	347.0	46.0	895.7	411.8	72.5	1188.2	861.4
Average Annual									
Percent Change									
1976-86	3.1%	14.7%	18.2%	-0.8%	14.8%	13.9%	0.7%	15.3%	16.2%
1986-98	9.9%	12.7%	23.9%	6.3%	13.0%	20.1%	10.2%	15.3%	27.0%

[1] Winrock International Institute For Agricultural Development

[2] Central Agency for Public Mobilisation and Statistics

TABLE (1) : FARM VALUE OF POULTRY MEAT AND EGG  
PRODUCTION, 1976-1998 (Continued)

Year	Turkeys: Prod- uction 000MT	Farm Price Pt./Kilo	Farm Value Mil.L.E.	FARM VALUE OF TOTAL MEAT Mil.L.E.
1976	2.7	75	2.0	204
1977	2.7	88	2.4	222
1978	2.8	96	2.6	247
1979	2.8	107	3.0	282
1980	2.8	137	3.9	386
1981	2.9	182	5.2	1037
1982	2.9	189	5.5	1493
1983	2.9	218	6.4	1640
1984	3.0	251	7.4	2238
1985	3.0	281	8.4	2259
1986	4.8	309	14.9	2268
1987	4.9	369	18.0	2531
1988	9.9	423	42.0	2778
1989	14.8	477	70.7	2248
1990	4.8	534	25.7	2548
1991	5.0	550	27.5	2837
1992	5.2	570	29.6	3417
1993	5.4	813	43.8	4809
1994	5.6	855	47.8	5766
1995	5.8	954	55.0	6923
1996	4.9	1050	51.2	8159
1997	5.0	1206.5	60.7	9948
1998	5.2	1386.2	72.0	12125
Average Annual Percent Change				
1976-86	6.0%	15.2%	22.2%	27.2%
1986-98	0.6%	13.3%	14.0%	15.0%

[1] Winrock International Institute For Agricultural Development

[2] Central Agency for Public Mobilisation and Statistics

TABLE (1) : FARM VALUE OF POULTRY MEAT AND EGG PRODUCTION  
1976-1998 (Continued)

Year	Balady Eggs:			Commercial Eggs			TOTAL FARM VALUE OF EGGS Mil.L.E.
	Prod- uction Mil.Eggs	Farm Price Pt./Egg	Farm Value Mil.L.E.	Prod- uction Mil.Eggs	Farm Price Pt./Egg	Farm Value Mil.L.E.	
1976	451.5	2.6	12	1053.5	2.3	24	36
1977	469.8	3.0	14	1096.2	2.7	30	44
1978	499.8	3.0	15	1166.2	2.7	31	46
1979	533.4	4.2	22	1244.6	3.6	45	67
1980	547.5	5.9	32	1277.5	5.2	66	99
1981	522.9	6.8	36	1220.1	6.0	73	109
1982	634.5	6.7	43	1480.5	5.9	87	130
1983	756.0	7.4	56	1764.0	6.5	115	171
1984	832.2	7.5	62	1941.8	6.6	128	191
1985	918.6	7.1	65	2143.4	6.2	133	198
1986	882.6	7.5	66	2059.4	6.6	136	202
1987	1096.8	8.2	90	2559.2	7.2	184	274
1988	1148.1	9.5	109	2678.9	8.3	222	331
1989	1321.8	12.6	167	3084.2	11.0	339	506
1990	1060.8	13.3	141	2475.2	11.6	287	428
1991	1060.8	15.0	159	2475.2	13.2	327	486
1992	962.1	15.4	148	2244.9	13.4	301	449
1993	962.4	16.8	162	2245.6	14.7	330	492
1994	964.2	19.5	188	2249.8	15.8	355	543
1995	950.4	21.2	201	2217.6	17.3	384	585
1996	1004.1	22.5	226	2342.9	19.6	459	685
1997	1047.2	25.2	264	2443.6	21.9	536	800
1998	1092.2	28.2	308	2548.5	24.6	626	934
Average Annual Percent Change							
1976-86	6.9%	11.2%	18.9%	6.9%	11.1%	18.8%	18.8%
1986-98	1.8%	11.7%	13.7%	1.8%	11.6%	13.6%	13.6%

[1] Winrock International Institute For Agricultural Development

[2] Central Agency for Public Mobilisation and Statistics

TABLE (1): FARM VALUE OF POULTRY MEAT AND EGG PRODUCTION  
1976-1998 (Continued)

Year	Manure from Egg Production			Manure from meat		
	000MT	Farm Price of Manure L.E./Ton	Manure Value Mil.L.E.	000MT	Farm Price of Manure L.E./Ton	Manure value Mil.L.E.
1976	48.8	2.3	0	201.0	2.3	0
1977	51.2	2.6	0	202.7	2.6	1
1978	54.9	2.9	0	209.6	2.9	1
1979	57.9	3.1	0	211.1	3.1	1
1980	60.1	3.9	0	230.5	3.9	1
1981	57.5	4.3	0	632.2	4.3	3
1982	69.4	5.0	0	826.9	5.0	4
1983	82.6	6.0	0	765.3	6.0	5
1984	90.6	6.8	1	941.7	6.8	6
1985	99.9	6.8	1	899.7	6.8	6
1986	96.8	7.3	1	874.3	7.3	6
1987	119.5	7.7	1	855.4	7.7	7
1988	125.7	8.7	1	635.1	8.7	6
1989	144.4	10.5	2	442.8	10.5	5
1990	121.4	10.8	1	461.8	10.8	5
1991	115.6	11.0	1	516.1	11.0	6
1992	100.8	11.3	1	599.3	11.3	7
1993	100.8	11.6	1	660.4	11.6	8
1994	88.5	12.5	1	727.9	12.5	9
1995	96.2	13.75	1	828.9	13.75	11
1996	98.4	14.25	1	905.2	14.25	13
1997	102.1	15.7	2	979.8	15.7	15
1998	105.9	17.3	2	1060.6	17.3	18
Average Annual Percent Change						
1976-86	7.1%	12.2%	20.2%	15.8%	12.2%	30.0%
1986-98	0.8%	7.4%	8.2%	1.6%	7.4%	9.2%

[1] Winrock International Institute For Agricultural Development

[2] Central Agency for Public Mobilisation and Statistics

TABLE (2) : POULTRY NUMBERS ON FARMS, Balady, 1976-1998

Year	Balady:						BALADY TOTAL
	Chickens	Ducks	Geese --(000)---	Pigeons	Rabbits	Turkeys	
1976	26,375	3,294	5,221	10,080	5,994	705	51,669
1977	26,680	3,343	5,269	9,275	5,961	715	51,243
1978	26,986	3,392	5,316	8,449	5,926	724	50,793
1979	27,292	3,440	5,395	7,588	5,903	733	50,351
1980	27,597	3,489	5,411	7,749	5,850	742	50,838
1981	27,903	3,538	5,460	7,882	5,818	751	51,352
1982	28,208	3,589	5,508	8,071	5,768	761	51,905
1983	28,514	3,634	5,555	8,260	5,723	770	52,456
1984	28,820	3,684	5,603	8,456	5,674	779	53,016
1985	29,125	3,732	5,650	8,659	5,941	788	53,895
1986	32,735	6,973	5,706	8,976	5,885	1,267	61,542
1987	33,125	7,090	5,800	9,245	6,056	1,287	62,603
1988	33,515	7,205	5,895	9,520	6,231	2,614	64,980
1989	33,905	7,321	5,989	9,801	6,409	3,901	67,326
1990	37,208	8,137	6,658	9,245	6,442	1,266	68,956
1991	43,533	9,795	8,014	10,732	7,914	1,315	81,303
1992	50,933	11,790	9,646	12,459	9,722	1,365	95,915
1993	59,591	14,191	11,611	14,464	11,943	1,418	*****
1994	69,720	17,082	13,976	16,792	14,672	1,472	*****
1995	76,692	18,790	15,374	18,471	16,139	1,517	*****
1996	81,103	18,899	15,457	17,497	16,777	1,283	*****
1997	86,042	20,050	16,398	18,563	17,799	1,361	*****
1998	91,283	21,271	17,397	19,693	18,883	1,444	*****
Average Annual							
Percent Change							
1976-86	2.2%	7.8%	0.9%	-1.2%	-0.2%	6.0%	1.8%
1986-98	8.9%	9.7%	9.7%	6.8%	10.2%	1.1%	8.8%

Source:

- (1) Winrock International Institute For Agricultural Development. "Animal Protein Food System: Increasing Efficiency of Production, Processing and Marketing, Vol. II, December 1993.
- (2) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of the Statistical Year Book.
- (3) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of Livestock Statistics.

TABLE (3): POULTRY NUMBERS ON FARMS,  
COMMERCIAL, 1976-1998

Year	Commercial:		Commercial
	Layers	Broilers ----Mil.----	TOTAL
1976	4	41	44.7
1977	4	42	45.9
1978	4	45	49.2
1979	4	46	50.4
1980	5	53	57.6
1981	4	203	207.4
1982	5	276	281.3
1983	6	253	259.3
1984	7	319	325.9
1985	8	303	310.6
1986	7	288	295.4
1987	9	281	290.1
1988	10	197	206.6
1989	11	124	135.0
1990	10	129	138.5
1991	9	141	149.5
1992	8	161	168.8
1993	8	172	179.6
1994	6	183	189.1
1995	7	212	218.6
1996	7	238	244.6
1997	7	261	267.9
1998	7	286	293.4
Average Annual Percent Change			
1976-86	7.2%	21.5%	20.8%
<b>1986- 95</b>	-0.6%	-1.9%	-1.9%

- (1) Winrock International Institute For  
Agricultural Development
- (2) Estimates from the Central Agency for Public  
Mobilisation and Statistics. Interpolations of  
hatchings were made for individual years.  
Number of Layers were estimated from egg  
numbers produced.

TABLE (4): POULTRY MEAT PRODUCTION, BALADY, 1976-1998

Balady:							
Year	Chickens	Ducks	Geese	Pigeons	Rabbits	Turkeys	BALADY total
	-	-	----- (000) M.Tons -----	M.Tons	-	-	-
1976	123.7	11.1	9.4	24.0	21.0	2.7	191.8
1977	125.1	11.2	9.5	22.1	20.9	2.7	191.5
1978	126.6	11.4	9.6	20.1	20.7	2.8	191.1
1979	128.0	11.6	9.7	18.1	20.7	2.8	190.8
1980	129.4	11.7	9.7	18.4	20.5	2.8	192.6
1981	130.9	11.9	9.8	18.8	20.4	2.9	194.6
1982	132.3	12.1	9.9	19.2	20.2	2.9	196.6
1983	133.7	18.6	10.0	19.7	20.0	2.9	204.9
1984	117.9	22.6	12.3	20.9	21.3	3.0	198.0
1985	146.5	23.3	12.6	21.6	22.0	3.0	229.0
1986	153.4	23.4	12.8	22.2	22.6	4.8	239.2
1987	176.6	23.8	13.0	22.9	23.3	4.9	264.5
1988	152.2	24.2	13.2	23.5	23.9	9.9	246.9
1989	153.9	23.0	13.4	24.2	24.6	14.8	254.0
1990	168.9	23.0	14.9	22.8	24.7	4.8	259.2
1991	197.6	24.0	18.0	26.5	30.4	5.0	301.5
1992	231.2	44.6	21.6	30.8	37.3	5.2	370.7
1993	270.5	53.7	26.0	35.7	45.9	5.4	437.2
1994	316.5	64.6	31.3	41.5	56.3	5.6	515.9
1995	348.2	71.1	34.4	45.6	62.0	5.8	567.1
1996	368.2	71.5	34.6	43.2	64.4	4.9	586.9
1997	390.6	75.9	36.7	45.8	68.3	5.2	622.6
1998	414.4	80.5	39.0	48.6	72.5	5.5	660.5
Average Annual Percent Change							
1976-86	2.2%	7.7%	3.1%	-0.8%	0.7%	6.0%	2.2%
1986-98	8.6%	10.8%	9.7%	6.8%	10.2%	1.1%	8.8%

Source:

- (1) Winrock International Institute For Agricultural Development. "Animal Protein Food System: Increasing Efficiency of Production, Processing and Marketing, Vol. II, December 1993.
- (2) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of the Statistical Year Book.
- (3) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of Livestock Statistics.

TABLE (4): POULTRY MEAT PRODUCTION,  
COMMERCIAL, 1976-1998 (Continued)

Year	Commercial:		COM- MERCIAL TOTAL
	Spent Layers ----- (000)	Broilers M.Tons--	
1976	3	106	109
1977	3	109	112
1978	3	116	120
1979	3	119	122
1980	3	137	141
1981	3	525	529
1982	4	714	718
1983	5	655	660
1984	5	826	831
1985	6	784	790
1986	6	745	751
1987	7	727	734
1988	7	696	703
1989	8	438	446
1990	7	456	463
1991	7	497	504
1992	6	570	576
1993	6	608	614
1994	5	647	652
1995	5	748	753
1996	5	840	845
1997	5	936	942
1998	6	1,044	1050
Average Annual Percent Change			
1976-86	7.2%	21.5%	21.3%
1986-98	0.1%	2.8%	2.8%

[1] Winrock International Institute For  
Agricultural Development

[2] Estimates based on Livestock Statistics  
Report, 1988, Central Agency For Public  
Mobilisation and Statistics

TABLE (5): POULTRY MANURE PRODUCTION 1976-1998

Year	From Meat Production:			From Egg Production			TOTAL FROM MEAT AND EGG PRODUCTION
	Balady -	Com-mercial (000) M.Tons	TOTAL	Balady -	Com-mercial (000) M.Tons	TOTAL	
1976	91.6	109.4	201.0	18.2	30.6	48.8	249.8
1977	90.6	112.1	202.7	18.9	32.3	51.2	253.9
1978	89.5	120.1	209.6	20.1	34.8	54.9	264.5
1979	88.3	122.8	211.1	21.5	36.4	57.9	269.0
1980	89.0	141.5	230.5	22.0	38.1	60.1	290.7
1981	90.3	541.9	632.2	21.1	36.4	57.5	689.6
1982	90.1	736.8	826.9	25.5	43.9	69.4	896.3
1983	89.9	675.4	765.3	30.4	52.2	82.6	847.9
1984	90.2	851.6	941.7	33.5	57.1	90.6	1032.4
1985	90.9	808.9	899.7	37.0	62.9	99.9	999.7
1986	105.5	768.8	874.3	35.5	61.3	96.8	971.1
1987	105.3	750.1	855.4	44.2	75.3	119.5	974.9
1988	109.2	525.9	635.1	46.2	79.5	125.7	760.8
1989	111.7	331.0	442.8	53.2	91.2	144.4	587.1
1990	117.5	344.4	461.8	42.7	78.7	121.4	583.2
1991	140.5	375.6	516.1	42.7	72.9	115.6	631.7
1992	168.7	430.6	599.3	38.7	62.1	100.8	700.2
1993	201.0	459.4	660.4	38.7	62.1	100.8	761.2
1994	239.1	488.8	727.9	38.8	49.7	88.5	816.4
1995	264.0	564.9	828.9	38.3	58.0	96.2	925.1
1996	271.0	634.3	905.2	40.4	58.0	98.4	1003.6
1997	288.0	695.7	983.7	41.0	59.9	100.9	1084.6
1998	306.0	763.1	1069.1	41.5	62.0	103.5	1172.6
Average Annual Percent Change							
1976-86	1.4%	21.5%	15.8%	6.9%	7.2%	7.1%	14.5%
1986-98	9.3%	-0.1%	1.7%	1.3%	0.1%	0.6%	1.6%

Source : Calculated from Tables 17 and 20.

Table( 6): Parameters for Commercial Broiler System during the Period 1993-1997

Character	Units	1993 field trip Parameters	Abdul Aziz estimates	Source:1,2, 3 Parameters	1997 field survey Parameters
Days to market	days	48.0	45	56.37	48
Weight at marketing	kg.	1.6	1.725	1.630	1.65
Feed intake during grow out	kg./bird	3.94	4.14	4.08	3.96
Feed conversion	kg/kg	2.5	2.4	2.50	2.4
Mortality	%	5-8%	8.5	5.1	2.2 - 10%
Dressing	%	75.0	70.0	75.0	73

Soures:

- (1) A.A.Ibrahim, An Analytical Economic Study for Broiler and Substitutes in Egypt  
Dept. of Agr. Econ., Zagazig University, 1992
- (2) El-Sayed A. & Samah H., Economic Analysis for Poultry Production and Marketing  
for Poultry Production and Marketing in Egypt.  
in Egypt, The Egyptian Journal Of Agricultural Economics, Vol. 2, No. 2, Sep. 1992.
- (3) Field Study Sample Survey, 1987/86
- (4) Field Survey for the Major Broiler Companies, 1997

**TABLE(7) : BROILER PRODUCTION, NUMBER OF BROILER FARMS, AND PRODUCTION CAPACITIES, 1980-1996**

Year	Number of broiler farms			Avail. prod. capacity	Actual production	Idle prod. capacity	Idle prod. capacity as % of total capacity
	Total	In production	Idle				
	nos.	nos.	nos.				
1980	3035						
1981	7158	6373	785	228.00	203.00	25	10.96
1982	12760	11040	1720	319.00	276.00	43	13.48
1983	13607	10125	3482	340.00	253.00	87	25.59
1984	14495	12773	1722	362.00	319.00	43	11.88
1985	16366	12124	4242	409.00	303.00	106	25.92
1986	17129	11526	5603	428.00	288.00	140	32.71
1987	17897	11250	6647	447.00	281.00	166	37.14
1988	16868	12565	4303	421.00	197.00	224	53.21
1989	18125	7960	10165	453.00	124.00	329	72.63
1990	18844	8235	10609	471.00	129.00	342	72.61
1991	18699	6340	12359	467.80	140.68	327	69.93
1992	18453	8844	9609	465.49	161.26	304	65.36
1993	19284	11036	8248	462.51	184.31	278	60.15
1994	17705	11567	6138	380.89	183.08	198	51.93
1995	17932	12469	5463	447.17	211.65	236	52.67
1996	18374	13076	5298	458.80	237.61	221	48.21
<b>Average 1980-86</b>	<b>12079</b>	<b>10660</b>	<b>2926</b>	<b>348</b>	<b>274</b>	<b>74</b>	<b>0.21</b>
<b>Average 1987-1996</b>	<b>18218</b>	<b>10334</b>	<b>7884</b>	<b>447</b>	<b>185</b>	<b>263</b>	<b>58.67%</b>

Sources:

- (1) Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.
- (2) Ministry of Planning, Department of Agriculture Planning, unpublished data.
- (3) A.A.Ibrahim, "Economic Study of Poultry In Sharkia Governate. Unpublished M.Sc. thesis, Zagazig University, Department of Agricultural Economics, 1983.
- (4) A.A.Ibrahim, "An Analytical Economics Study of Broiler in Egypt and Substitutes" Unpublished Ph.D. Thesis, Zagazig university, Department of Agr. Economics, 1992

TABLE (8): CAPACITY UTILIZATION OF BROILER FEED MILLS, 1991-1996

Year	No. of Mills	Mill capacity (ton/hour)	Total feed produced (000)	Type of feed			Price of feed		
				Starting	Growing	Finishing	Starting	Growing	Finishing
				(ton)	(ton)	(ton)	(L.E./ton)	(L.E./ton)	(L.E./ton)
1991	54	593	680						
1992	52	536	654	329764	118513	205723	680-720	580-610	560-670
1993	55	693	632	318671	114526	198803	730-775	610-630	680-740
1994	55	693	649	327431	117675	204268	775-900	630-670	735-860
1995	65	730	663	334245	120124	208519			
1996	66	739	653	329221	118318	205385	945-1000	915-950	860-950
Average Annual Percent Change									
1991-96	4.10%	4.50%	-0.81%	-0.04%	-0.04%	-0.04%			

(1) Feed and Food, Unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

TABLE (9): FEED INGREDIENTS USED IN BROILER PRODUCTION, 1980-1996

Year	Total feed produced '000 t	Domestic Ingredients		Imported ingredients				
		Maize '000 t	W. bran '000 t	Soybean meal tons	Meat meal tons	Fish meal tons	Other conc. tons	Yellow corn '000 t
1980	700	498	84	11429	2821	53444	175	596
1981	800	462	102	157771	3123	59170	193	1289
1982	931	502	101	164745	1800	33785	109	1296
1983	1247	526	100	144526	7400	35180	1196	1397
1984	1558	555	91	348428	4453	41135	732	1311
1985	1800	553	94	480349	4640	24400	1240	1364
1986	1900	436	96	273331	12750	26640	940	1303
1987	1900	163	136	280757	n.a.	13844	2610	1551
1988	1900	184	142	216550	2414	12200	3899	1651
1989	1630	288	159	257519	n.a.	3990	5372	1131
1990	1122	462	203	179694	2800	4500	7000	1297
1991	680	242	131	133349	7253	5600	6300	667
1992	654	233	126	128250	6975	8455	19076	642
1993	632	225	122	123936	6741	9850	18435	620
1994	649	231	125	129618	6926	11895	18941	457
1995	663	236	128	129618	7070	12869	19336	457
1996	653	232	126	126121	6964	14859	19045	456
Average Annual Percent Change								
1976-86	18.1%	-2.2%	2.3%	69.7%	28.6%	-11.0%	32.3%	13.9%
1986-93	-10.1%	-6.1%	2.7%	-7.4%	-5.9%	-5.7%	35.1%	-10.0%

Source: (1) Ministry of Agriculture, Central Administration of Animal Production, Public Administration of Feed, Unpublished data.  
(2) CAPMAS, International Trade Statistics, various years.

**Table (10) : World and Estimated Domestic Prices of Yellow Corn during 1976-1996**

Year	World Price (\$ / ton)	Shadow Exchange Rate (P.t./\$)	Domestic price valued at shad. exch. rate (LE/ton)
1976	171.32		
1977	129.6		
1978	132.9		
1979	90.67	85	77.07
1980	171.91	85	146.12
1981	243.59	93.3	227.27
1982	231.48	110.3	255.32
1983	145.22	117	169.91
1984	205.49	126.8	260.56
1985	152.01	147.2	223.76
1986	173.61	180.9	314.06
1987	214.26	231.8	496.65
1988	236.43	240.6	568.85
1989	222.39	263.2	585.33
1990	228.08	274.3	625.62
1991	133.85	333.2	445.99
1992	123.14	332.1	408.95
1993	111.67	335.2	374.32
1994	130.05	339.5	441.52
1995	144.02	339.1	488.37
1996	Na	-	520.00
Average Annual Percent Change			
1976-86	0.1%	11.4%	22.2%
1986-93	-2.1%	7.2%	5.0%

Source: (1)Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) A.A.Ibrahim, "An Analytical Economic Study for Broiler and Substitute in Egypt" Dept of Agr. Econ., Zagazig University, 1992

**Table (11): Parent Stock Fertile Eggs, Actual Hatching Capacity and Actual Capacity of Broiler and Layer, 1993-1996**

Year	Parent stock fertile eggs			Actual hatching capacity		Broiler	Layer	Total	Changes
	Broilers	Layers	Total	Eggs	Baby chick	baby chicks	baby chicks		
	.....	Thousand	.....	.....	Thousand	.....	Thousand	.....	
1993				188438	141994	184312	13844	198156	-56162
1994	279057	27080	306137	287273	201210	183079	11983	195062	6148
1995	491632	44792	536424	215982	158649	211646	12507	224153	-65504
1996	533718	44910	578628	357881	266705	237605	16337	253942	12763

Source: (1)Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

**TABLE (12) : BROILER PRODUCTION, NUMBER OF BROILER FARMS, AND PRODUCTION CAPACITIES ACCORDING TO PRODUCTION SCALE**

Units\ Year	Number of broiler farms			Avail. prod. capacity	Actual produ- ction	Actual production capacity as % of total capacity
	Total	In prod- uction	Idle			
	nos.	nos.	nos.	thousand broilers	thousand broilers	
<b>..... Large Scale Farms (More than 20 thousand birds/lot) ...</b>						
1992	374	312	62	83546	46412	55.55
1993	970	760	210	32087	15141	47.19
1994	1132	863	269	48047	22670	47.18
1995	2222	1859	363	83830	43736	52.17
1996	2270	1904	366	89989	58254	64.73
<b>Average</b>	<b>1393.6</b>	<b>1139.60</b>	<b>254.00</b>	<b>67499.84</b>	<b>37242.60</b>	<b>53.37</b>
<b>%</b>	<b>100</b>	<b>81.77</b>	<b>18.23</b>	<b>100</b>	<b>55.17</b>	
<b>..... Small Scale Farms (Less than 20 thousand birds/lot) ....</b>						
1992	18079	8532	9547	465494	140676	30.22
1993	18314	10276	8038	430420	169171	39.30
1994	16573	10704	5869	332843	160409	48.19
1995	16271	10610	5661	363337	167910	46.21
1996	16104	11172	4932	368879	179351	48.62
<b>Average</b>	<b>17068.2</b>	<b>10258.80</b>	<b>6809.40</b>	<b>392194.56</b>	<b>163503.40</b>	<b>42.51</b>
<b>%</b>	<b>100</b>	<b>60.10</b>	<b>39.90</b>	<b>100</b>	<b>41.69</b>	

Source: (1) Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

**TABLE(13) : BROILER PARENT STOCK PRODUCTION, NUMBER OF FARMS, AND PRODUCTION CAPACITIES ACCORDING TO THE PRODUCTION SCALE**

Units\ Year	Number of farms			Avail. prod. capacity	Actual produ- ction	production capacity as % of total capacity
	Total	In prod- uction	Idle			
	nos.	nos.	nos.	thousand broilers	thousand broilers	
1992	62	52	10	3350	3071	91.67
1993	129	116	13	4605	4211	91.44
1994	732	705	27	4664	4018	86.15
1995	1624	1536	88	5815	5034	86.57
1996	1865	1759	106	6152	5132	83.42
<b>Average</b>	<b>882.4</b>	<b>833.60</b>	<b>48.80</b>	<b>4917.20</b>	<b>4293.20</b>	<b>87.85</b>
<b>%</b>	<b>100</b>	<b>94.47</b>	<b>5.53</b>	<b>100</b>	<b>87.31</b>	

Source: (1)Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

**TABLE (14): NUMBER OF LAYER FARMS, AND PRODUCTION CAPACITIES ACCORDING TO THE PRODUCTION SCALE**

Year	Units\	Number of farms			Avail. prod. capacity	Actual production	Actual production capacity as % of total capacity
		Total	In production	Idle			
		nos.	nos.	nos.	thousand layers	thousand layers	
<b>..... Large Scale Farms (More than 15 million eggs) .....</b>							
1992		572	480	92	13225	10034	75.87
1993		510	460	50	12443	9455	75.99
1994		489	410	79	10134	7802	76.99
1995		590	489	101	14727	10015	68.00
1996		565	514	51	18383	12027	65.42
<b>Average</b>		<b>545.2</b>	<b>470.60</b>	<b>74.60</b>	<b>13782.40</b>	<b>9866.60</b>	<b>72.46</b>
<b>%</b>		<b>100</b>	<b>86.32</b>	<b>13.68</b>	<b>100</b>	<b>71.59</b>	
<b>..... Small Scale Farms (Less than 15 million eggs) .....</b>							
1992		3548	1776	1772	9628	4688	48.69
1993		3470	1715	1755	9532	4389	46.04
1994		2994	1019	1975	9717	4181	43.03
1995		2094	738	1356	7597	2492	32.80
1996		2854	1170.6	1683.4	4826.8	1851.6	38.36
<b>Average</b>		<b>2992</b>	<b>1283.72</b>	<b>1708.28</b>	<b>8260.16</b>	<b>3520.32</b>	<b>41.79</b>
<b>%</b>		<b>100</b>	<b>42.91</b>	<b>57.09</b>	<b>100</b>	<b>42.62</b>	
<b>..... Total Number of Farms .....</b>							
1992		4120	2256	1864	22853	14722	64.42
1993		3980	2175	1805	21975	13844	63.00
1994		3483	1429	2054	19851	11983	60.36
1995		2684	1227	1457	22324	12507	56.02
1996		2828	1336	1492	29046	16337	56.25
<b>Average</b>		<b>3419</b>	<b>1684.60</b>	<b>1734.40</b>	<b>23209.80</b>	<b>13878.60</b>	<b>60.01</b>
<b>%</b>		<b>100</b>	<b>49.27</b>	<b>50.73</b>	<b>100</b>	<b>59.80</b>	

Source: (1) Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

**TABLE (15): NUMBER OF LAYER PARENT STOCK FARMS, AND PRODUCTION CAPACITIES**

Year	Units\ Total	Number of farms			Avail. prod. capacity	Actual produ- ction	production capacity as % of total capacity
		In prod- uction	Idle				
	nos.	nos.	nos.	thousand birds	thousand birds		
1992	138	67	71	940	480	51.06	
1993	148	95	53	1039	545	52.45	
1994	67	61	6	297	204	68.69	
1995	106	97	9	379	347	91.56	
1996	129	109	20	510	384	75.29	
<b>Average</b>	<b>117.6</b>	<b>85.80</b>	<b>31.80</b>	<b>633.00</b>	<b>392.00</b>	<b>67.81</b>	
<b>%</b>	<b>100</b>	<b>72.96</b>	<b>27.04</b>	<b>100</b>	<b>61.93</b>		

Source: (1)Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

**TABLE (16): IMPROVED BALADY PRODUCTION, NUMBER OF FARMS, AND PRODUCTION CAPACITIES, 1994-1996**

Units\ Year	Number of farms			Avail. prod. capacity	Actual produ- ction	Idle prod. capacity	Idle production capacity as % of total capacity
	Total	In prod- uction	Idle				
	nos.	nos.	nos.	thousand birds	thousand birds	thousand birds	
1994	635	591	44	47765	29122	18643	39.03
1995	1295	1163	132	21477	14041	7436	34.62
1996	1305	1194	111	21393	13261	8132	38.01
<b>Average</b>	<b>1078</b>	<b>983</b>	<b>96</b>	<b>30212</b>	<b>18808</b>	<b>11404</b>	<b>37.22</b>
<b>%</b>	<b>100</b>	<b>91.13</b>	<b>8.87</b>	<b>100</b>	<b>62.25</b>	<b>37.75</b>	

Source: (1) Ministry of Agriculture, Central Administration of Agricultural Economics, unpublished data.

(2) Ministry of Agriculture, Central Administration of Agricultural Economics, Livestock Statistics, Different Issues.

TABLE (17): TOTAL FEED REQUIREMENTS (DRY MATTER) FOR MEAT AND EGG PRODUCTION, 1976-1996

Year	For Meat Production:			For Egg Production:		
	Balady -	Com- mercial (000) M.Tons	TOTAL -----	Balady -	Com- mercial (000) M.Tons	TOTAL -----
1976	398.2	475.9	874.1	79.0	133.2	212.2
1977	393.9	487.5	881.4	82.2	140.4	222.6
1978	388.9	522.3	911.2	87.5	151.2	238.7
1979	383.8	533.9	917.7	93.4	158.4	251.8
1980	387.2	615.1	1002.3	95.8	165.6	261.4
1981	392.4	2356.1	2748.5	91.5	158.4	249.9
1982	391.9	3203.4	3595.2	111.1	190.8	301.9
1983	390.9	2936.4	3327.3	132.3	226.8	359.1
1984	392.0	3702.4	4094.4	145.7	248.4	394.1
1985	395.2	3516.7	3912.0	160.8	273.6	434.4
1986	458.8	3342.6	3801.4	154.5	266.4	420.9
1987	457.7	3261.4	3719.1	192.0	327.6	519.6
1988	474.7	2286.5	2761.1	201.0	345.6	546.6
1989	485.9	1439.2	1925.1	231.4	396.4	627.7
1990	510.8	1497.2	2008.0	185.7	342.0	527.7
1991	610.8	1633.0	2243.8	185.7	316.8	502.5
1992	733.6	1872.1	2605.7	168.4	270.0	438.4
1993	873.8	1997.5	2871.2	168.5	270.0	438.5
1994	1039.7	2125.1	3164.8	168.8	216.0	384.8
1995	1147.8	2455.9	3603.7	166.4	252.0	418.4
1996	1178.0	2757.7	3935.7	175.8	252.0	427.8
1997	1252.0	3024.9	4276.8	178.0	260.6	438.6
1998	1330.4	3317.9	4648.3	180.4	269.5	449.8
Average Annual						
Percent Change						
1976-86	1.4%	21.5%	15.8%	6.9%	7.2%	7.1%
1986-98	9.3%	-0.1%	1.7%	1.3%	0.1%	0.6%

Source:

- (1) Winrock International Institute For Agricultural Development. "Animal Protein Food System: Increasing Efficiency of Production, Processing and Marketing, Vol. II, December 1993.
- (2) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of the Statistical Year Book.
- (3) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of Livestock Statistics.

TABLE (18): POULTRY FEED (CP) REQUIREMENTS 1976-1998

Year	For Meat Production:			For Egg Production:			TOTAL FOR MEAT AND EGG PROD- UCTION
	Balady -	Com- mercial (000) M.Tons-----	TOTAL -----	Balady -	Com- mercial (000) M.Tons-----	TOTAL -----	
1976	79.6	95.2	174.8	15.8	26.7	42.5	217.3
1977	78.8	97.5	176.3	16.5	28.1	44.6	220.9
1978	77.8	104.5	182.3	17.5	30.3	47.8	230.0
1979	76.8	106.8	183.6	18.7	31.7	50.4	234.0
1980	77.4	123.1	200.5	19.2	33.1	52.3	252.8
1981	78.5	471.3	549.8	18.3	31.7	50.0	599.8
1982	78.4	640.8	719.2	22.2	38.2	60.4	779.6
1983	78.2	587.4	665.6	26.5	45.4	71.9	737.5
1984	78.4	740.7	819.1	29.2	49.7	78.9	897.9
1985	79.0	703.5	782.6	32.2	54.8	86.9	869.5
1986	91.8	668.7	760.5	30.9	53.3	84.2	844.7
1987	91.5	652.5	744.0	38.4	65.6	104.0	848.0
1988	94.9	457.4	552.3	40.2	69.2	109.4	661.7
1989	97.2	287.9	385.1	46.3	79.3	125.6	510.7
1990	102.2	299.5	401.7	37.2	68.4	105.6	507.3
1991	122.2	326.7	448.9	37.2	63.4	100.6	549.4
1992	146.7	374.5	521.2	33.7	54.0	87.7	609.0
1993	174.8	399.6	574.4	33.7	54.0	87.7	662.1
1994	207.9	425.1	633.1	33.8	43.2	77.0	710.1
1995	229.6	491.3	720.9	33.3	50.4	83.7	804.6
1996	235.6	551.7	787.3	35.2	50.4	85.6	872.9
1997	250.4	605.1	855.5	35.6	52.2	87.8	943.3
1998	266.1	663.8	929.8	36.1	53.9	90.0	1019.9
Average Annual Percent Change							
1976-86	1.4%	21.5%	15.8%	6.9%	7.2%	7.1%	14.5%
1986-98	9.3%	-0.1%	1.7%	1.3%	0.1%	0.6%	1.6%

Source : Calculated from Tables (2), (20) and (26)

TABLE (19): POULTRY FEED (TDN) REQUIREMENTS 1976-1998

Year	For Meat Production:			For Egg Production			TOTAL FOR MEAT AND EGG PROD- UCTION
	Balady -	Com- mercial (000) M.Tons-----	TOTAL	Balady -	Com- mercial (000) M.Tons-----	TOTAL	
1976	344.4	411.7	756.1	68.4	115.2	183.6	939.7
1977	340.7	421.7	762.4	71.1	121.4	192.6	955.0
1978	336.4	451.8	788.2	75.7	130.8	206.4	994.7
1979	332.0	461.9	793.9	80.8	137.0	217.8	1,011.6
1980	334.9	532.2	867.0	82.9	143.2	226.1	1,093.2
1981	339.4	2,038.3	2,377.7	79.2	137.0	216.2	2,593.9
1982	339.0	2,771.3	3,110.2	96.1	165.0	261.1	3,371.3
1983	338.1	2,540.3	2,878.4	114.5	196.2	310.6	3,189.1
1984	339.0	3,203.0	3,542.1	126.0	214.8	340.8	3,882.9
1985	341.8	3,042.4	3,384.2	139.1	236.6	375.7	3,759.9
1986	396.8	2,891.8	3,288.6	133.6	230.4	364.0	3,652.6
1987	395.9	2,821.5	3,217.4	166.1	283.3	449.4	3,666.8
1988	410.6	1,978.1	2,388.6	173.8	298.9	472.7	2,861.4
1989	420.2	1,245.1	1,665.3	200.1	342.8	542.9	2,208.3
1990	441.8	1,295.3	1,737.1	160.6	295.8	456.4	2,193.5
1991	528.3	1,412.8	1,941.1	160.6	274.0	434.6	2,375.7
1992	634.5	1,619.6	2,254.1	145.7	233.5	379.2	2,633.3
1993	755.7	1,728.0	2,483.8	145.7	233.5	379.2	2,863.0
1994	899.3	1,838.5	2,737.8	146.0	186.8	332.8	3,070.6
1995	992.8	2,124.7	3,117.4	143.9	218.0	361.9	3,479.3
1996	1,018.9	2,385.7	3,404.7	152.0	218.0	370.0	3,774.6
1997	1,082.9	2,616.9	3,699.7	154.0	225.4	379.4	4,079.1
1998	1,150.7	2,870.4	4,021.1	156.0	233.1	389.1	4,410.2
Average Annual							
Percent Change							
1976-86	1.4%	21.5%	15.8%	6.9%	7.2%	7.1%	14.5%
1986-98	9.3%	-0.1%	1.7%	1.3%	0.1%	0.6%	1.6%

Source : Calculated from Tables (2), (20) and (26)

TABLE (20) : ASSUMPTIONS USED TO ESTIMATE POULTRY  
FEED REQUIREMENTS AND MANURE PRODUCTION

(Annual Requirement)

Kind:	Dry Matter	Crude Protein	Total Digestible Nutrients	Manure Production DM %
-----Kilograms Per Year-----				
Commercial Broilers	3.744	0.749	3.239	23%
Balady Chickens	8.100	1.620	7.006	23%
Commercial Layers	36.000	7.205	31.136	23%
Balady Layers	31.508	6.305	27.254	23%

Table (21): IRR, NPW, Benefit Cost Ratio and Capital Turnover of The Modal Broiler Farm in 1997

Items	Unit	Years																			
		-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Inflow:</b>																					
<b>Broiler</b>																					
Scale	No.	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200
Number of lots	No.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mortality Rate	%	5%	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Average Live-weight	kg	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Price / kg	Le	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Sub-total		175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247	175247
<b>Broiler Manure:</b>																					
Quantity	C.M.	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Price / Cubic meter	LE	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Sub-total		3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250	3250
<b>Sacks:</b>																					
Number	No.	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248
Price / Sack	LE	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Sub-total		499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2	499.2
Loans	LE																				
<b>Total Inflow</b>		178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996	178996
<b>Outflow:</b>																					
<b>Variable Costs:</b>																					
<b>Feed costs:</b>																					
Quantity / kg	Kg	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Price / kg	LE	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929	0.929
Sub-total		95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8	95649.8
<b>1-day old Chick</b>																					
Number/ lot	No.	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200
Price / chick	LE	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Sub-total		31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720	31720
Labor cost	LE	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550
Medicine & Veterinary	LE	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650
Others	LE	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
Sub-total	LE	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750	7750
<b>Total Variable Costs</b>		135120	135120	135120	135120	135120	135120	135120	135120	135119.8	135120	135120	135120	135120	135120	135120	135120	135120	135120	135120	135120
<b>Fixed Costs:</b>																					
Buildings	LE	80000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment	LE	15000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rent	LE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance	LE	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Taxes & Fees	LE	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Interest	LE	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
Others	LE	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280	280
Sub-total	LE	95000	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500	15500
<b>Total Outflow</b>	LE	95000	150620	150620	150620	150620	150620	150620	150620	150620	150619.8	150620	150620	150620	150620	150620	150620	150620	150620	150620	150620
<b>Net Benefit Stream</b>	LE	-95000	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.86	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9	28375.9
<b>IRR =</b>		29.70%																			
<b>MIRR =</b>		16.91%																			
<b>B / C Ratio =</b>		1.19 LE																			
<b>NPW =</b>		92,330 LE																			
<b>Capital Turnover =</b>		3.3665 Years																			

Sources: (1) Compiled and computed from Esmat S. and Isabella Z. , The Economic Efficiency of Poultry Production Farms in The Modern Sector at Sharquia Governorate. The Egyptian Journal of Agricultural Economics, Vol. 6, No. 1, March 1996.

(2) Compiled and Computed from Mohamed G. A. el Azayem, An Economic Study of Meat Chicken Production Projects in Giza Governorate The Egyptian Journal of Agricultural Economics, Vol. 6, No. 1, March 1996.

(3) Ali Ahmed Ibrahim, An Analytical Economic Study for broiler In Egypt and Substitutes, Zagazig University, Department of Agricultural Economics, Unpublished Ms.C. Thesis, 1992

**Table (22): IRR, MIRR, B/C Ratio, NPW and CTO for Broiler Modal Farm**

	IRR		MIRR		BCR		NPW		CTO	
	Value	Change %	Value	Change %	Value	Change %	Value	Change %	Value	Change %
<b>Base values</b>	<b>29.70%</b>		<b>16.91%</b>		<b>1.19</b>		<b>92,330</b>		<b>3.37</b>	
The feed conversion rate improved by 10%	39.84%	34.11	18.53%	9.59	1.27	6.75	151,482	64.06	2.51	-25.43
Number of lots produced increased by 10%	32.74%	10.23	17.44%	3.15	1.19	0.00	109,971	19.11	3.05	-9.28
Mortality Rtae improved by 20%	31.68%	6.65	17.26%	2.08	1.20	1.03	103,798	12.42	3.16	-6.24
Final live-weight increased by 10%	38.19%	28.56	18.29%	8.19	1.23	3.23	141,812	53.59	2.62	-22.22
Farm-gate price increased by 10%	48.30%	62.59	19.62%	16.02	1.30	9.79	201,274	117.99	2.07	-38.50
Feed price increased by 10%	19.21%	-35.32	14.64%	-13.40	1.12	-5.97	32,869	-64.40	5.21	54.62
Baby chick price increased by 10%	26.28%	-11.53	16.25%	-3.89	1.16	-2.06	72,611	-21.36	3.81	13.03

Source: Computed and Compiled from Table (21)

**Table (23): The Critical Levels of Studied Factors**

Factors	Base value	Critical value	Change %
Number of lots / year	5	3.45	-31.00
Mortality rate (%)	5	9.8	96.00
Marketing Live-weight (Kg)	1.62	1.467	-9.44
Farm-gate price of broiler (LE/Kg)	4.3	4.083	-5.05
Feed conversion rate (kg)	2.4	2.623	9.29
Feed price (LE/kg)	0.929	1.015	9.26
Baby chick (LE/bird)	1.22	1.56	27.87

Source: Computed and Compiled from Table (21)

**Table (24): Average Production Costs per 5000 Bird lots of Broiler Chickens, (average of 5 lots/year)**

Item	Year:	1989 (1)&(2)	1990 (3)	1991 (4)	1993 (5)	1993 (6)	1995 (7)	1996 (8)
Variable costs:								
Feed costs		12915	15120	15561	14085	15175	17565	18580
Labor cost		536	616	708	1115	600	385	0
Medicine		600	800	1120	900	650	0	1050
Veterinary		200	200	230	60	310	1015	600
Others (4)		240	295	700	1720.45	1023	1075	1228
Sub-total		14491	17031	18319	17880.45	17758	20040	21458
Fixed costs:								
Day-old chicks		3275	3530	4015	4750	4600	5760	6000
Depreciation		300	300	300			195	876.5
Maintenance		100	100	120	75			
Taxes & fees		320	370	420				
Others (5)		184	204	225	1000			737.5
Imputed interest					402	400	451	483
Sub-total		4179	4504	5080	6227	5000	6406	8097
<b>Total costs</b>								
		<b>18670</b>	<b>21535</b>	<b>23399</b>	<b>24108</b>	<b>22758</b>	<b>26446</b>	<b>29555</b>
Less revenue from:								
Manure		625	688	750	500	500	570	300
Feed bag sales		168	189	210	126	140	195	145
Net cost of production		<b>17877</b>	<b>20658</b>	<b>22439</b>	<b>23482</b>	<b>22118</b>	<b>25681</b>	<b>29110</b>
Mortality rate		5.10	5.10	5.10	4.90	6.00	7.00	8.00
No. birds marketed		4745	4745	4745	4755	4700	4650	4600
Average liveweight/kg		1.63	1.63	1.63	1.60	1.60	1.55	1.60
Liveweight marketed		7734	7734	7734	7608	7520	7208	7360
<b>Net cost/bird marketed</b>		<b>3.768</b>	<b>4.354</b>	<b>4.729</b>	<b>4.938</b>	<b>4.706</b>	<b>5.523</b>	<b>6.328</b>
<b>Net cost/kg marketed</b>		<b>2.31</b>	<b>2.67</b>	<b>2.90</b>	<b>3.09</b>	<b>2.94</b>	<b>3.56</b>	<b>3.96</b>
<b>(liveweight)</b>								
Farmgate price/kg		2.51	2.84	2.96	3.41	3.50	3.85	4.25
Broiler revenue		19413	21966	22894	25943	26320	27749	31280
<b>Profit per kg liveweight</b>		<b>0.20</b>	<b>0.17</b>	<b>0.06</b>	<b>0.32</b>	<b>0.56</b>	<b>0.29</b>	<b>0.29</b>

Sources:

- (1) Ali Ahmed Ibrahim, An Economic Study for Poultry In Sharkia Governorate, Zagazig University, Department of Agricultural Economics, Unpublished Ms.C. Thesis, 1983
- (2) Ali Ahmed Ibrahim, An Analytical Economic Study for broiler In Egypt and Substitutes, Zagazig University, Department of Agricultural Economics, Unpublished Ms.C. Thesis, 1992
- (3) El-syed, A and Samah, H. S. Economic Analysis for Poultry Production and Marketing in Egypt , Egyptian Journal of Agricultural Economics, Economics, Vol.2, No. 2., 1992
- (5) MILARCGYPT, Chairman office, Unpublished data.
- (6) Based on Winrock international team field survey.
- (7) Compiled and computed from Esmat S. and Isabella Z. , The Economic Efficiency of Poultry Production Farms in The Modern Sector at Sharquia Governorate. The Egyptian Journal of Agricultural Economics, Vol. 6, No. 1, March 1996.
- (8) Compiled and Computed from Mohamed G. A. el Azayem, An Economic Study of Meat Chicken Production Projects in Giza Governorate". The Egyptian Journal of Agricultural Economics, Vol. 6, No. 1, March 1996.

TABLE (25): POULTRY MEAT CONSUMPTION 1976-1998

Year	Balady -----	Com- mercial (000) M.Tons	Imports -----	TOTAL Consum- ption	Pop- ulation Mil.	Per Capita Consumption		
						Balady .....	Com- mercial (kg)	Total .....
1976	191.8	108.9	5.0	305.7	38,198	5.0	2.9	8.0
1977	191.5	111.6	6.0	309.1	38,494	5.0	2.9	8.0
1978	191.1	119.6	5.0	315.8	39,767	4.8	3.0	7.9
1979	190.8	122.4	0.0	313.2	40,889	4.7	3.0	7.7
1980	192.6	140.6	50.0	383.2	42,126	4.6	3.3	9.1
1981	194.6	528.8	110.0	833.3	43,322	4.5	12.2	19.2
1982	196.6	718.4	39.0	954.0	44,506	4.4	16.1	21.4
1983	204.9	659.6	51.0	915.6	45,721	4.5	14.4	20.0
1984	198.0	830.9	100.0	1128.9	46,990	4.2	17.7	24.0
1985	229.0	790.0	86.0	1105.0	48,349	4.7	16.3	22.9
1986	239.2	751.0	65.0	1055.3	49,863	4.8	15.1	21.2
1987	264.5	734.2	65.0	1063.7	51,349	5.2	14.3	20.7
1988	246.9	703.4	25.0	975.3	52,827	4.7	13.3	18.5
1989	254.0	446.5	20.0	720.5	54,259	4.7	8.2	13.3
1990	259.2	463.0	2.0	724.2	55,635	4.7	8.3	13.0
1991	301.5	503.8	15.0	820.3	56,922	5.3	8.9	14.4
1992	370.7	575.7	2.0	948.4	58,103	6.4	9.9	16.3
1993	437.2	613.8	0.04	1051.1	59,230	7.4	10.4	17.7
1994	515.9	651.6	0.09	1167.6	59,540	8.7	10.9	19.6
1995	567.1	753.0	0.23	1320.4	60,955	9.3	12.4	21.7
1996	586.9	844.9	0.00	1431.8	61,900	9.5	13.6	23.1
1997	622.6	941.7	0.00	1564.3	62,524	10.0	15.1	25.0
1998	660.5	1049.5	0.00	1710.1	63,493	10.4	16.5	26.9
Average Annual								
Percent Change								
1976-86	2.2%	21.3%	29.2%	13.2%	2.7%	-0.5%	18.1%	10.2%
1986-98	8.8%	2.8%	-67.2%	4.1%	2.0%	6.7%	0.8%	2.0%

Source:

- (1) Winrock International Institute For Agricultural Development. "Animal Protein Food System: Increasing Efficiency of Production, Processing and Marketing, Vol. II, December 1993.
- (2) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of the Statistical Year Book.
- (3) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of Livestock Statistics.

TABLE (26): EGG PRODUCTION AND AVAILABILITY 1976-1998

Year	Production:					Imports	TOTAL AVAILABILITY	Pop-ulation (000)	Per Capita Avail-ability
	Balady Layers	Com-mercial Layers	Balady Eggs Mil.	Com-mercial Eggs	TOTAL				
1976	2.5	3.8	452	1,054	1,505	0	1,505	38,198	39
1977	2.6	3.9	470	1,096	1,566	0	1,566	38,494	41
1978	2.8	4.2	500	1,166	1,666	0	1,666	39,767	42
1979	3.0	4.4	533	1,245	1,778	6	1,784	40,889	44
1980	3.0	4.6	548	1,278	1,825	38	1,863	42,126	44
1981	2.9	4.4	523	1,220	1,743	246	1,989	43,322	46
1982	3.5	5.3	635	1,481	2,115	126	2,241	44,506	50
1983	4.2	6.3	756	1,764	2,520	171	2,691	45,721	59
1984	4.6	6.9	832	1,942	2,774	90	2,864	46,990	61
1985	5.1	7.7	919	2,143	3,062	138	3,200	48,349	66
1986	4.9	7.4	883	2,059	2,942	140	3,082	49,863	62
1987	6.1	9.1	1,097	2,559	3,656	135	3,791	51,349	74
1988	6.4	9.6	1,148	2,679	3,827	69	3,896	52,827	74
1989	7.3	11.0	1,322	3,084	4,406	0	4,406	54,259	81
1990	5.9	8.8	1,061	2,475	3,536	0	3,536	55,635	64
1991	5.9	8.8	1,061	2,475	3,536	0	3,536	56,922	62
1992	5.3	8.0	962	2,245	3,207	0	3,207	58,103	55
1993	5.3	8.0	962	2,246	3,208	0	3,208	59,230	54
1994	5.4	8.0	964	2,250	3,214	0	3,214	59,540	54
1995	5.3	7.9	950	2,218	3,168	0	3,168	60,955	52
1996	5.6	8.4	1,004	2,343	3,347	0	3,347	61,900	54
1997	5.7	8.5	1,017	2,373	3,390	0	3,390	62,524	54
1998	5.7	8.6	1,030	2,404	3,434	0	3,434	63,493	54
Average Annual Percent Change									
1976-86	6.9%	6.9%	6.9%	6.9%	6.9%		7.4%	2.7%	4.6%
1986-98	1.3%	1.3%	1.3%	1.3%	1.3%		0.9%	2.0%	-1.1%

Source:

- (1) Winrock International Institute For Agricultural Development. "Animal Protein Food System: Increasing Efficiency of Production, Processing and Marketing, Vol. II, December 1993.
- (2) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of the Statistical Year Book.
- (3) Arab Republic of Egypt, Central Agency for Public Mobilisation and Statistics, annual issues of Livestock Statistics.

TABLE (27): LIVE MALE TURKEY PRICES, RETAIL LEVEL (Pt./Kg)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	Average
1976	96	100	102		108	104	103	104	104		107	110	104
1977		112	113				119	121	124	126	129	131	122
1978	129	129	133	130	128	128	133	134	135	137	142	142	133
1979	141	147	145	146	145	143	144	148	153	157	160	160	149
1980	157	162	170	173	176	177	183	188	236	215	220	234	191
1981	235	231	251	248	246	265	261	256	256	263	264	259	253
1982	260	263	259	259	256	258	252	266	271	271	268	274	263
1983	274	273	279	289	299	301	303	305	311	318	329	355	303
1984	333	336	329	349	353	348	348	355	358	358	360	359	349
1985	365	368	364	368	381	379	386	407	419	412	414	422	390
1986	411	417	421	425	425	432	431	431	433	439	444	442	429
1987	443	449	458	468	470	487	498	506	510	816	520	530	513
1988	556	556	557	557	569	580	591	612	615	618	618	617	587
1989	611	623	638	657	675	671	679	591	696	696	701	710	662
1990	715	725	705	726	726	739	737	744	750	772	775	780	741
1991	750	742	746	760	764	754	750	754	785	785	788	790	764
1992	790	781	787	800	805	783	793		800	789			792
1993	800	800	850	850	900	900	925	925	950	950	100	1050	833
1994	850	850	900	900	950	950	975	975	1000	1000	1050	1100	958
1995	900	900	1000	1000	1025	1025	1100	1100	1100	1100	1150	1150	1046
1996	1200	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1200	1075
1997	1400	1350	1350	1350	1350	1350	1350	1350	1350				1356

Source : (1)Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27): PRICES FOR LIVE BALADI CHICKENS, RETAIL LEVEL (Pt./Kg)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	Average
1976													
1977													
1978	112	111	114	113	112	113	112	114	115	116	118	119	114
1979	120	121	121	124	123	121	125	127	130	134	139	142	127
1980	141	144	149	149	150	151	158	166	180	193	194	206	165
1981	214	207	205	220	230	226	225	228	225	236	230	229	223
1982	233	235	238	233	236	239	233	246	249	249	260	245	241
1983	235	230	234	243	252	253	254	257	264	271	270	276	253
1984	276	282	279	282	281	280	295	294	293	293	293	293	287
1985	295	300	290	293	298	294	291	298	301	300	303	305	297
1986	304	309	311	313	319	317	313	322	324	333	332	327	319
1987	335	335	336	339	343	315	363	356	362	371	377	380	351
1988	387	390	392	394	401	412	428	444	454	463	463	468	425
1989	458	463	466	464	485	480	485	492	477	500	501	527	483
1990	539	525	521	541	541	545	543	549	546	553	552	551	542
1991	547	546	549	550	560	566	569	569	569	565	564	562	560
1992	562	569	561	568	572	561	571						566
1993	600	620	600	625	625	600	610	620	625	650	660	680	626
1994	625	650	625	650	650	625	625	650	650	700	700	725	656
1995	600	600	625	650	650	625	650	700	700	720	725	750	666
1996	750	750	750	800	800	800	825	825	825	810	810	820	797
1997	750	750	750	800	800	850	855	825	850				803

Source : (1) Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27): PRICES FOR LIVE DUCKS, RETAIL LEVEL (Pt./Kg)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	Average
1976	74	75	77	78	79	78	77	80	80	80	84	85	79
1977	85	86	88	89	89	87	88	92	93	95	98	98	91
1978	99	100	100	99	99	99	97	99	101	103	105	105	100
1979	106	107	107	107	105	105	108	109	114	119	123	125	111
1980	129	132	137	138	138	136	142	145	177	179	151	184	149
1981	195	195	188	208	204	201	214	212	210	214	208	207	205
1982	205	213	227	214	218	224	230	234	234	225	230	227	223
1983	223	221	226	231	234	239	237	243	247	249	249	250	237
1984	253	263	258	260	267	270	273	277	280	282	286	287	271
1985	288	298	295	295	305	292	286	294	302	293	293	292	294
1986	293	297	310	320	313	314	313	310	317	317	320	320	312
1987	323	325	328	331	344	353	355	366	360	368	373	375	350
1988	382	391	401	413	424	441	454	465	475	479	482	484	441
1989	470	487	486	491	503	503	514	514	523	526	532	548	508
1990	555	549	556	557	557	551	552	552	549	546	546	547	551
1991		534	539	550	570	582	594	590	579	583			569
1992			582	580					602	609			593
1993	700	720	700	700	710	720	725	700	700	730	730	750	715
1994	725	750	725	725	730	750	750	740	740	750	750	750	740
1995	750	750	750	800	800	850	850	825	850	850	900	900	823
1996	1000	850	850	850	850	850	900	900	900	900	1000	1000	904
1997	1150	1100	1100	900	900	1000	1100	1100	1100				1050

Source : (1)Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27): PRICES FOR LIVE GEESE, RETAIL LEVEL (Pt./Kg)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	Average
1976	69	72	73	74	74	74	72	73	73	74	76	80	74
1977	80	81	84	85	85	82	83	86	88	90	92	93	86
1978	96	93	94	92	92	91	90	99	95	98	98	98	95
1979	99	99	99	99	101	98	98	100	105	108			101
1980	125	129	132	138	138	138	142	145					136
1981	195	195	188	189	190	192	201	197	189	197		207	194
1982	190	197	193	199	200	204	207	208	209	207			201
1983	219	221	204	212	215	219	218				227	229	218
1984	228	235	238	245	247	250	259	250			254	257	246
1985	264	266	259	264	271	266	264	270	274	270	274	276	268
1986	273		272	287	284	286	283	295	296	302	296	301	288
1987	302	286	296	308	319	328	331	341	347	353	360	356	327
1988	366	369	371	391	401				389		402	448	392
1989	444	447	444			453	465	446		482		512	461
1990	512	508	515		518	516	519	520	519	516			516
1991		534	539	519	519	521	527	525	523	525			526
1992	540		558	546	541			561	561	577			555
1993	600	600	625	625	600	620	610	600	675	675	650	700	632
1994	650	650	675	675	650	660	650	640	725	725	700	700	675
1995	650	655	675	675	650	650	650	650	725	725	750	750	684
1996	650	690	700	700	700	700	700	700	735	735	745	750	709
1997	700	700	700	700	700	750	750	750	750				722

Source : (1)Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27) PRICES FOR LIVE RABBITS, RETAIL LEVEL (Pt./Kg)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	Average
1976	68	70	71	72	72	73	71	72	74	75	77	79	73
1977	79	80	81	83	84	80	81	85	87	91	93	93	85
1978	93	94	94	94	93	92	90	93	96	99	100	101	95
1979	102	103	101	103	102	98	101	106	113	118	122	125	108
1980	139	139	130	141	131	142	141	148	177			188	148
1981	201	228	193	207	203	199	189	193	200	199		209	202
1982	215	219	224	212	218	223	221	229	223	231	241	209	222
1983	215	217	218	225	225	225	223				241	243	226
1984	245	252	259	259	262	264	269	264			267	271	261
1985	278	283	286	283	280	280	279	285	283	293	298	304	286
1986	300		312	299	293	291	296	300	299	306	302	302	300
1987	312	308	323	326	333	334	343	350	357	346	326	374	336
1988	384	396	399	403	470				417		423	462	419
1989	466	459	461			475	477	478		498		511	478
1990	522	519	519		518	516	516	518	515	520			518
1991		512	532	524	529	527	532	532	531	536			528
1992			563	548	550	560	570		580	586			565
1993	680	680	725	725	750	750	775	780	780	800	800	825	756
1994	700	700	750	750	775	775	800	800	800	820	825	825	777
1995	800	800	800	850	850	850	900	900	900	900	950	950	871
1996	1050	950	950	950	950	950	1050	1050	1000	1000	1000	1000	992
1997	1050	1050	1050	1050	1050	1050	1050	1050	1050				1050

Source : (1) Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27): PRICES FOR LIVE PIGEON, RETAIL LEVEL (Pt./PAIR)

Year	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec	AVERAGE
1976	67	70	70	72	71	71	70	72	74	77	78	77	72
1977	77	79	81	82	83	80	81	82	86	89	91	91	83
1978	90	92	94	91	89	89	88	90	92	95	95	99	92
1979	100	99	98	99	97	98	99	102	110	113	119	121	105
1980	131	136	137	144	135	142	144	147	198			177	149
1981	176	190	189	181	176	188	184	202	188	190		198	187
1982	188	197	198	186	179	195	199	210	207	212	201	200	198
1983	200	203	206	209	211	215	217				233	239	215
1984	237	238	238	242	243	247	251	252			254	258	246
1985	257	259	254	257	259	260	259	263	265	263	268	270	261
1986	287		277	277	280	277	276	281	293	301	306	304	287
1987	314	296	312	313	322	324	320	328	350	349	367	358	329
1988	361	366	373	375	383						416	429	386
1989	421	430	445			449	459	471		483		503	457
1990	502	505	506		501	503	496	508	499	502			503
1991		429	507	506	517	533	532	532	536	526			513
1992	541	540	546	539				570	570	575			555
1993	560	560	575	580	625	650	700	700	720	720	750	800	662
1994	575	575	600	620	640	700	700	730	750	750	800	825	689
1995	600	600	650	650	650	750	750	750	800	800	850	950	733
1996	800	800	800	800	850	850	850	850	900	900	900	900	850
1997	900	950	1000	1050	1050	1050	1050	1100	1100				1028

Source : (1)Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (27): PRICES FOR COMMERCIAL LIVE BROILERS, RETAIL LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.	Average
1983	126	127	134	140	142	140	140	139	136	140	139	138	137
1984	141	154	155	137	136	146	149	162	162	159	149	148	150
1985	156	158	155	148	150	152	167	182	185	179	175	177	165
1986	163	166	167	167	167	172	186	203	211	213	202	210	185
1987	192	201	214	212	217	223	227	233	239	240	242	239	223
1988	227	238	260	260	261	266	280	296	310	328	325	327	281
1989	286	290	342	331	325	326	340	340	339	371	371	347	334
1990	348	343	350	351	355	345	336	341	370	371	371	376	355
1991	340	340	344	352	368	366	364	377	381	394	393	395	368
1992	370	371	379	385	384	383	396	401	407	381	381	390	386
1993	455	475	425	450	450	455	460	475	450	463	460	475	458
1994	475	487.5	450	475	450	500	475	475	450	500	500	500	478
1995	475	488	475	513	488	500	500	513	513	525	525	538	504
1996	513	513	500	538	545	550	563	563	588	563	550	543	544
1997	555	540	510	525	525	570	570	550	535				542

Source : (1)Monthly Bulletin and Consumer Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1992.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE MALE TURKEY PRICES, WHOLESALE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979						122.4						144	133.20
1980				148	147.2	147.1	150	150.9	200.5	183	179	184	165.52
1981	186	190.1	194.8	196.5	198.5	201.1	202.5	204.2	204.4	204.5	206.8	207.6	199.75
1982	214.1	212	213.9	200	200	220.7	212.5	221	229	224	214	240	216.77
1983	251	253	255	252	259.2	264	268	272	282.2	281.4	288.9	286.2	267.74
1984	287	291	290	302	307	303	303	326	320	326	326	326	308.92
1985				312	319	319	323	326	344	349	343	354	332.11
1986	363	370	351	359	360	368							361.83
1987						438				433	436	427	433.50
1988				585	531	570			592			567	569.00
1989	529	563	570				576	606	588	591	633	635	587.89
1990			698		767		767	767	824	726	689	682	740.00
1991	653	674	676	726	721	724			731			704	701.13
1992			697	715	715	703	706	708	717	714	736	754	716.50
1993	757	770	799	848	811	815	814	803	811	842	848	843	813.42
1994				850	849	848	847	866	875	875	868	891	863.22
1995	850	850	900	900	925	925	1000	1000	1000	1000	1050	1050	954.17
1996	1100	900	900	900	900	900	900	900	900	900	900	1100	933.33
1997	1200	1100	1100	1100	1100	1100	1100	1100	1100				1111.11

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE BALADI CHICKEN PRICES, WHOLESAL LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979						110.8			117.2			128.9	118.97
1980				131.7	131.1	131	132.9	133.7	166	162.8	159.9	164	145.90
1981	161.2	166	170	170.4	171	174	176.6	179.5	178.3	178.9	180.7	180.8	173.95
1982	187.1	196.1	187.5	220	220	210	183.2	196	203	203	205	229	203.33
1983	223	226	228	244.5	251	252.7	244	244	240	251	253	247.9	242.09
1984	259	264	272	273	273	272	280	281	286	285	286	287	276.50
1985				288	293	295	289	293	298	292	289	290	291.89
1986	298	299	293	298	300	300							298.00
1987						337				337	337	338	337.25
1988				370	383	386			387			396	384.40
1989	395	433	428				407	445	446	477	493	490	446.00
1990			473		477		489	490	492	495	498	500	489.25
1991	492	489	490	482	505	503			518			519	499.75
1992			512	521	520	509	498	497	504	497	499	526	508.30
1993	540	547	566	571	570	570	576	571	571	585	569	587	568.58
1994				602	594	596	587	625	623	612	621	632	610.22
1995	600	600	625	650	650	625	650	600	600	625	625	650	625.00
1996	700	700	700	750	750	750	775	775	775	760	760	770	747.08
1997	700	700	700	750	750	800	825	800	825				761.11

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE DUCK PRICES, WHOLESALE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979						92.5			103.3			111.6	102.47
1980				120.8	119.6	119.5	124.4	124.9	163.6	158.1	153.8	157	137.97
1981	158.1	161.2	164	163.4	163.9	164	167.6	169.7	170.2	170.2	169.3	170.7	166.03
1982	175.2	175	175.7	200	200	181.7	182	187	188	187	190	197	186.55
1983	200	200	204	207	218	218	220	225	235	229	237	231	218.67
1984	237	249	251	251	252	258	267	268	272	277	278	278	261.50
1985				278	278	278	282	278	286	289	286	286	282.33
1986	282	282	283	285	285	295							285.33
1987						331				346	348	348	343.25
1988				388	393	393			404			386	392.80
1989	404	425	426				363	469	460	481	468	480	441.78
1990			416		491		502	507	503	496	507	509	491.38
1991	489	503	509	504	517	525			519			534	512.50
1992			527	555	541	546	549	533	551	555	570	571	549.80
1993	553	580	622	641	640	613	624	625	637	638	622	637	619.33
1994				682	640	638	659	692	685	699	717	694	678.44
1995	700	700	725	725	725	750	750	725	750	750	775	775	737.50
1996	900	750	750	750	750	750	850	850	850	850	900	900	820.83
1997	1050	1000	1000	800	800	900	1000	1000	1000				950.00

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE GEESE PRICES, WHOLESALE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979									94.6			99.4	97.00
1980							111.6	113.3	143.8	136.2	137	140.3	130.37
1981	142	145.8	146	147.2	148	148.3	146.4	149	149	150.4	151.5	152.8	148.03
1982	157	156	157.1	200	200	168.8	159	164	169	166	173	175	170.41
1983	178	179	183	186	195	195.7	196.4	204	207.5	209.7	213.8	213.8	196.82
1984	221	225	226	227	227	226	231	237	237	237	237	232	230.25
1985				236	236	236	236	240	256	252	261	263	246.22
1986	268	273	273	276	278	279							274.50
1987						309				337	331	334	327.75
1988				362	366	369			372			363	366.40
1989	356	415	415				411	419	426	444	452	466	422.67
1990			467		482		495	500	494	489	497	494	489.75
1991	482	480	491	484	510	493			504			513	494.63
1992			507	511	524	525	511	506	507	514	530	530	516.50
1993	498	512	537	536	554	555	557	552	555	560	580	585	548.42
1994				595	578	599	598	613	608	613	649	639	610.22
1995	600	600	625	625	650	650	600	600	625	625	650	650	625.00
1996	625	640	650	650	650	650	700	700	725	725	750	750	684.58
1997	725	700	700	700	700	700	750	700	725				711.11

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE RABBIT PRICES, WHOLESALE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979						86			93.8			106.7	95.50
1980				112.9	112	111.8	115.6	119.5	161.6	152.3	141.5	152.1	131.03
1981	148	153	151	150.7	152.5	149.4	151.3	153.2	154.4	157.8	160.8	161.5	153.63
1982	166.6	166.1	168.5	175	175	175	167	175	178	178	184	201	175.77
1983	203	208	206	211	219	218.7	213	215	219.4	218	220	224.8	214.66
1984	233	237	240	241	243	253	250	258	255	256	259	265	249.17
1985				274	275	274	274	266	267	270	269	268	270.78
1986	290	288	284	285	284	283							285.67
1987						322				322	324	329	324.25
1988				380	386	384			373			376	379.80
1989	386	415	415				422	436	436	464	453	480	434.11
1990			461		442		470	479	475	478	482	477	470.50
1991	487	473	485	474	488	478			499			512	487.00
1992			511	520	517	507	505	515	528	543	557	563	526.60
1993	551	567	595	622	607	587	604	603	623	605	620	618	600.17
1994				637	646	655	648	659	662	662	683	670	658.00
1995	700	700	700	750	750	750	800	800	800	800	850	850	770.83
1996	900	850	850	850	850	850	900	900	900	900	900	900	879.17
1997	1000	1000	1000	1000	1000	1000	1000	1000	1000				1000.00

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (28): LIVE PIGEON PRICES, WHOLESALE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1979						84.1			94.5			100.3	92.97
1980				111.4	110.8	110.3	117.9	124.2	161.6	142.7	144.7	143.6	129.69
1981	141	145	144	147.2	148	148.3	153.1	155.1	153.8	155.7	159.4	158	150.72
1982	160.5	161	161.6	160	162	167.9	160	166	172	168	174	179	166.00
1983	180	180	183	186	195	195.7	197	202	211.9	214	213.5	213.8	197.66
1984	214	222	224	226	227	230	233	241	241	244	247	248	233.08
1985				241	242	250	254	252	256	248	252	252	249.67
1986	252	252	248	250	250	249							250.17
1987						286				313	313	316	307.00
1988				355	364	364			356			374	362.60
1989	359	370	373				387	412	410	417	439	462	403.22
1990			442		435		435	438	428	336	431	430	421.88
1991	432	433	450	450	465	456			464			487	454.63
1992			494	508	490	492	486	502	512	512	508	504	500.80
1993	496	524	544	568	590	570	564	568	582	589	576	586	563.08
1994				583	561	563	574	575	586	597	610	604	583.67
1995	550	550	600	600	600	650	650	650	700	700	750	850	654.17
1996	700	700	700	700	750	750	750	750	800	800	800	800	750.00
1997	800	850	900	1000	1000	1000	1000	1000	1000				950.00

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

**TABLE (29): LIVE MALE TURKEY PRICES, FARMGATE LEVEL (Pt./Kg)**

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976	82.2	83.5	85	91.5	90.8	92.6	93	93.5	92	92	94	96.3	90.53
1977	93.5	93.5	94.6	105	102.1	101.5	106.7	108.5	108.9				101.59
1978	113.3	116.8	119	126.5	114.7	116.7			122.9	129.7	126.6	131.9	121.81
1979	130.8	131.3	130.2	130.4	127.6	124.6	126.2	129.3	132.8	139.7	142.3	144	132.43
1980	144.8	146	150.5										147.10
1981													
1982													
1983													
1984									297			298	297.50
1985			293	301	302	302	314	318	325	325	329	336	314.50
1986	343	349	345	351	351	351							348.33
1987						369				390	395	400	388.50
1988				483	521	526			537			543	522.00
1989	502	520	520				536	560	560	561	595	602	550.67
1990			663				730	729	783	690	655	648	699.71
1991	620	640	642	690	685	688			694			669	666.00
1992			622	679	679	668	671	673	681	678	699	716	676.60
1993	719	723	759	806	770	774	773	763	770	800	806	801	772.00
1994				808	807	806	805	823	831	831	824	846	820.11
1995						822			822	835	840	824	828.60
1996				874	876	907	885	933	955	955	955	955	921.67
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (29): LIVE BALADI CHICKEN PRICES, FARMGATE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976	79.9	80.7	80.6	81	82	82.3	84.6	84.7	85	85	85	85	82.98
1977	85.7	85.9	88.9	88.8	88.6	85.9	91.1	93.7	94.9				89.28
1978	98.8	99.7	101.1	100	101	99.4			101.3	107.7	111.9	111.3	103.22
1979	111.3	111.7	111.6	112.7	112.7	110.8	113.7	116.2	117.2	126.3	126.8	128.9	116.66
1980	137.7	134	138.2										136.63
1981													
1982													
1983													
1984									259			262	260.50
1985			254	254	256	256	257	259	267	263	261	268	259.50
1986	261	280	278	279	281	281							276.67
1987						321				304	311	308	311.00
1988				366	367	381			384			394	378.40
1989	375	395	395				396	408	408	436	451	451	412.78
1990			449				465	466	467	470	472	475	466.29
1991	467	465	466	458	480	478			492			493	474.88
1992			482	495	494	484	473	472	477	472	474	500	482.30
1993	513	520	538	542	542	582	547	542	542	556	541	558	543.58
1994				572	564	566	558	594	592	581	590	600	579.67
1995						581			589	604	585	588	589.40
1996				631	635	657	644	644	674	674	674	676	656.56
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (29): LIVE DUCKS PRICES, FARMGATE LEVEL (Pt./Kg)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976													
1977	65.8	67.6	68	69	69.9	70.8	72.9	72.8	72.8	73	73	74.8	70.87
1978	76.3	76.3	77.3	77.8	77.8	76.4	74.8	80.7	81.6				77.67
1979	88.6	88.5	89.1	98.4	90.4	86			88.4	92.5	92.9	95.4	91.02
1980	95.2	95.4	95.4	96.5	94.7	92.5	95.1	101.9	103.3	108.8	109.5	111.6	99.99
1981													
1982													
1983													
1984	111.9	120.9	124.6										119.13
1985									238			245	241.50
1986			258	257	257	254	252	249	258	257	266	270	257.80
1987	259	264	267	271	273	274							268.00
1988						319				333	331	333	329.00
1989				371	375	377			398			383	380.80
1990	385	402	402				440	440	440	461	448	460	430.89
1991			471				472	482	478	471	482	484	477.14
1992	465	478	484	479	491	499			493			507	487.00
1993			501	537	514	519	549	506	523	527	541	542	525.90
1994	525	551	630	609	608	583	593	594	605	606	591	605	591.67
1995				648	608	690	626	657	696	693	691	771	675.56
1996				731	733	737	732	741	745	746	750	751	740.67
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (29): LIVE GEESE PRICES, FARMGATE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976	60.8	63.4	64.1	67	66.7	66.5	67.1	65.1	64.5	64.5	65	70.2	65.41
1977	72.8	72.9	74.6	74.8	74.8	72	74.7	76	77.1				74.41
1978	82	84	83	81.1	83.7	79.6			85	86.3	86	86	83.67
1979	86.5	86.5	86.3	88	85.9	83.8	86.5	93.4	94.6	95	97	99.4	90.24
1980													ERR
1981													
1982													
1983													
1984									209			223	216.00
1985			220	222	223	223	226	233	247	248	254	255	235.10
1986	248	254	251	258	259	259							254.83
1987						300				316	311	314	310.25
1988				340	348	358			369			351	353.20
1989	341	368	368				395	395	399	420	429	440	395.00
1990			444				470	475	469	465	472	469	466.29
1991	458	456	466	460	485	468			479			487	469.88
1992			582	485	495	499	485	481	482	488	503	503	500.30
1993	473	486	510	509	526	527	529	524	527	532	551	556	520.83
1994				565	549	569	568	582	578	582	616	607	579.56
1995						591			598	609	601	602	600.20
1996				645	645	660	649	663	689	689	689	689	668.67
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (29): LIVE RABBIT PRICES, FARMGATE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976	60.7	62.3	62.3	63.7	63.8	64	64	64	63.8	64.5	65	67	63.76
1977	68	68.3	71	70.4	70.4	69.3	70.8	73.8	75.1				70.79
1978	83.3	83.1	82.6	83.9	83.7	83.3			86.2	86.2	86	88.3	84.66
1979	90	91.5	90.1	91.4	89	86	88	92	93.8	101.1	103.2	106.7	93.57
1980	115.2	114.9	118.8										116.30
1981													
1982													
1983													
1984									228			246	237.00
1985			256	258	260	260	262	261	263	261	261	262	260.40
1986	285	278	277	276	267	266							274.83
1987						314				328	330	338	327.50
1988				358	364	364			370			375	366.20
1989	365	397	397				404	414	414	438	438	456	413.67
1990			438				447	455	451	454	458	453	450.86
1991	463	449	461	450	464	454			474			486	462.63
1992			485	494	491	482	479	489	502	516	529	534	500.10
1993	523	535	565	591	576	558	574	573	592	575	589	587	569.83
1994				605	614	622	616	636	629	629	649	637	626.33
1995						684		680	701	601	665	637	661.33
1996				729	758	758	747	795	798	808	808	808	778.78
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (29): LIVE PIGEON PRICES, FARMGATE LEVEL (Pt./Kg)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Average
1976	57.6	59.9	60.2	61	61.3	61.2	61.5	61	62.4	67	67	67.3	62.28
1977	66	68.2	68.9	70.8	77.5	69	70	71.2	72.1				70.41
1978	76.9	78.7	80.4	80.5	76.2	74.7			78.1	79.5	79.6	79.6	78.42
1979	84.4	85.8	85.7	86.2	84.1	84.1	86.2	89.1	94.5	97.5	98.6	100.3	89.71
1980	102.3	109.4	112.3										108.00
1981													
1982													
1983													
1984									231			233	232.00
1985			236	235	235	242	242	246	246	240	240	241	240.30
1986	346	244	243	247	247	247							262.33
1987						294				304	305	314	304.25
1988				346	345	346			356			365	351.60
1989	340	347	347				360	375	375	382	404	425	372.78
1990			420				413	416	407	414	409	409	412.57
1991	410	412	428	428	442	433			441			463	432.13
1992			469	483	466	467	462	477	489	486	483	488	477.00
1993	471	499	517	539	561	542	535	540	553	559	547	557	535.00
1994				554	533	535	545	546	557	567	579	574	554.44
1995						594			703	607	608	609	624.20
1996				664	673	695	674	671	692	694	694	694	683.44
1997													ERR

Source : (1) Quarterly Bulletin and Prices for Food Group, Central Agency for Public Mobilization and Statistics (CAPMAS) through the period 1976 - 1996.

(2) Ministry of Trade and Supply, General Administration of Animal Products, Unpublished data through the period 1993-1997.

TABLE (30): LIVE MALE TURKEY PRICE MARGINS, RETAILER AND WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	390	332.11	314.50	58.11	14.89	17.61	5.30
1986	429	361.83	348.33	67.18	15.66	13.50	3.73
1987	513	433.50	388.50	79.38	15.48	45.00	10.38
1988	587	569.00	522.00	18.06	3.08	47.00	8.26
1989	662	587.89	550.67	74.28	11.22	37.22	6.33
1990	741	740.00	699.71	1.02	0.14	40.29	5.44
1991	764	701.13	666.00	62.89	8.23	35.13	5.01
1992	792	716.50	676.60	75.40	9.52	39.90	5.57
1993	833	813.42	772.00	19.92	2.39	41.42	5.09
1994	958	863.22	820.11	95.11	9.92	43.11	4.99
1995	1046	954.17	828.60	91.67	8.76	125.57	13.16
1996	1075	933.33	921.67	141.67	13.18	11.67	1.25
1997	1356	1111.11	1050.00	244.44	18.03	61.11	5.50
<b>Average</b>				<b>79.16</b>	<b>10.04</b>	<b>42.96</b>	<b>6.16</b>
Average Annual Percent Change							
1985-1997	10.93%	10.59%	10.57%	12.72%		10.92%	

Source: computed from Tables (27-29).

TABLE (30) : LIVE BALADI CHICKEN PRICE MARGINS, RETAILER AND WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	297.31	291.89	259.50	5.42	1.82	32.39	11.10
1986	318.58	298.00	276.67	20.57	6.46	21.33	7.16
1987	350.93	337.25	311.00	13.68	3.90	26.25	7.78
1988	424.58	384.40	378.40	40.18	9.46	6.00	1.56
1989	483.08	446.00	412.78	37.08	7.68	33.22	7.45
1990	542.21	489.25	466.29	52.96	9.77	22.96	4.69
1991	559.59	499.75	474.88	59.84	10.69	24.88	4.98
1992	566.26	508.30	482.30	57.96	10.24	26.00	5.12
1993	626.25	568.58	543.58	57.67	9.21	25.00	4.40
1994	656.25	610.22	579.67	46.03	7.01	30.56	5.01
1995	666.25	625.00	589.40	41.25	6.19	35.60	5.70
1996	797.08	747.08	656.56	50.00	6.27	90.53	12.12
1997	803.33	761.11	710.00	42.22	5.26	51.11	6.72
<b>Average</b>				<b>40.37</b>	<b>7.23</b>	<b>32.76</b>	<b>6.44</b>
Average Annual Percent Change							
1997-85	8.64%	8.31%	8.75%	18.66%		3.87%	

Source: computed from Tables (27-29).

TABLE (30): LIVE DUCKS PRICE MARGINS, RETAILER AND WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	294.24	282.33	241.50	11.91	4.05	40.83	14.46
1986	311.98	285.33	257.80	26.64	8.54	27.53	9.65
1987	350.08	343.25	268.00	6.83	1.95	75.25	21.92
1988	440.88	392.80	329.00	48.07	10.90	63.80	16.24
1989	507.93	441.78	380.80	66.15	13.02	60.98	13.80
1990	551.30	491.38	430.89	59.93	10.87	60.49	12.31
1991	568.81	512.50	477.14	56.31	9.90	35.36	6.90
1992	593.28	549.80	487.00	43.48	7.33	62.80	11.42
1993	715.42	619.33	525.90	96.08	13.43	93.43	15.09
1994	740.42	678.44	591.67	61.97	8.37	86.78	12.79
1995	822.92	737.50	675.56	85.42	10.38	61.94	8.40
1996	904.17	820.83	740.67	83.33	9.22	80.17	9.77
1997	1050.00	950.00	882.00	100.00	9.52	68.00	7.16
<b>Average</b>				<b>57.39</b>	<b>9.04</b>	<b>62.87</b>	<b>12.30</b>
Average Annual Percent Change							
1997-85	11.18%	10.64%	11.40%	19.40%		4.34%	

Source: computed from Tables (27-29).

TABLE (30): LIVE GEESE PRICE MARGINS, RETAILER AND WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% Of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	268.18	246.22	235.10	21.96	8.19	11.12	4.52
1986	288.49	274.50	254.83	13.99	4.85	19.67	7.16
1987	327.12	327.75	310.25	-0.63	-0.19	17.50	5.34
1988	391.93	366.40	353.20	25.53	6.51	13.20	3.60
1989	461.43	422.67	395.00	38.76	8.40	27.67	6.55
1990	515.92	489.75	466.29	26.17	5.07	23.46	4.79
1991	525.67	494.63	469.88	31.04	5.91	24.75	5.00
1992	554.93	516.50	500.30	38.43	6.92	16.20	3.14
1993	631.67	548.42	520.83	83.25	13.18	27.58	5.03
1994	675.00	610.22	579.56	64.78	9.60	30.67	5.03
1995	683.75	625.00	600.20	58.75	8.59	24.80	3.97
1996	708.75	684.58	668.67	24.17	3.41	15.92	2.33
1997	722.22	711.11	675.00	11.11	1.54	36.11	5.08
<b>Average</b>				<b>33.64</b>	<b>6.31</b>	<b>22.20</b>	<b>4.73</b>
Average Annual Percent Change							
1997-85	8.61%	9.24%	9.19%	-5.52%		10.31%	

Source: computed from Tables (27-29).

TABLE (30): LIVE RABBIT PRICE MARGINS, RETAILER AND WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	286.08	270.78	260.40	15.30	5.35	10.38	3.83
1986	299.88	285.67	274.83	14.22	4.74	10.83	3.79
1987	335.89	324.25	327.50	11.64	3.47	-3.25	-1.00
1988	419.09	379.80	366.20	39.29	9.37	13.60	3.58
1989	478.06	434.11	413.67	43.95	9.19	20.44	4.71
1990	518.06	470.50	450.86	47.56	9.18	19.64	4.17
1991	528.44	487.00	462.63	41.44	7.84	24.38	5.01
1992	565.30	526.60	500.10	38.70	6.85	26.50	5.03
1993	755.83	600.17	569.83	155.67	20.60	30.33	5.05
1994	776.67	658.00	626.33	118.67	15.28	31.67	4.81
1995	870.83	770.83	661.33	100.00	11.48	109.50	14.21
1996	991.67	879.17	778.78	112.50	11.34	100.39	11.42
1997	1050.00	1000.00	882.00	50.00	4.76	118.00	11.80
<b>Average</b>				<b>60.69</b>	<b>9.19</b>	<b>39.42</b>	<b>5.88</b>
Average Annual Percent Change							
1997-85	11.44%	11.50%	10.70%	10.37%		22.46%	

Source: computed from Tables (27-29).

TABLE (30): LIVE PIGEON PRICE MARGINS, RETAILER AND  
WHOLESALE LEVELS (Pt./Kg)

YEAR	CONSUMER PRICE Pt/kg	WHOLESALE PRICE Pt/kg	FARMGATE PRICE Pt/kg	RETAILER MARGIN Pt/kg	% of consumer price	WHOLESALE MARGIN Pt/kg	% of Wholesale price
1985	261.18	249.67	240.30	11.52	4.41	9.37	3.75
1986	287.13	250.17	262.33	36.96	12.87	-12.17	-4.86
1987	329.43	307.00	304.25	22.43	6.81	2.75	0.90
1988	386.11	362.60	351.60	23.51	6.09	11.00	3.03
1989	457.33	403.22	372.78	54.10	11.83	30.44	7.55
1990	502.53	421.88	412.57	80.66	16.05	9.30	2.21
1991	513.17	454.63	432.13	58.54	11.41	22.50	4.95
1992	554.54	500.80	477.00	53.74	9.69	23.80	4.75
1993	661.67	563.08	535.00	98.58	14.90	28.08	4.99
1994	688.75	583.67	554.44	105.08	15.26	29.22	5.01
1995	733.33	654.17	624.20	79.17	10.80	29.97	4.58
1996	850.00	750.00	683.44	100.00	11.76	66.56	8.87
1997	1027.78	950.00	795.00	77.78	7.57	155.00	16.32
<b>Average</b>				<b>61.70</b>	<b>10.73</b>	<b>31.22</b>	<b>4.77</b>
Average Annual Percent Change							
1997-85	12.09%	11.78%	10.48%	17.25%		26.35%	

Source: computed from Tables (27-29).

Table (31): Exports of Broiler (Quantities and Values) By Major Countries During 1981-1995

Year	USA		Brazil		France		Hungary		Netherlands		Denmark		World	
	Quantity (Ton)	Value (000 \$)												
1981	382668	466354	294812	355730	333281	478369	158809	220131	247983	373282	57037	86200	1758510	2701081
1982	266888	289390	296767	282304	345004	402545	179371	217335	221550	298901	61734	83269	1708865	2354590
1983	231000	257794	289301	243574	388330	356393	190253	184738	215178	276142	59422	70133	1643639	2097647
1984	215668	252109	281207	265153	326959	353391	167927	152518	204118	263948	54594	64036	1517750	1943328
1985	217049	224664	279343	246130	307750	325763	158244	154536	199560	268579	57375	63071	1521164	1891914
1986	275392	291914	224652	220306	345094	450450	182083	181082	208233	360661	52263	65265	1652163	2383502
1987	368000	384035	215693	233696	344024	504426	207353	189959	231369	430380	57375	63071	1880948	2926467
1988	388999	433391	245682	261355	381157	571176	236235	208194	252744	477911	52263	65265	2000363	3151918
1989	481649	494931	246593	301858	427637	674656	178064	183537	259088	486330	52106	70595	2126823	3464403
1990	596314	672888	12468	22067	228551	352108	178295	270395	771110	1955525	471557	1621833	2475077	4379997
1991	679854	817913	15415	28330	161551	439063	185550	285000	739922	1857907	541214	1759445	2722426	4853272
1992	825144	928464	40142	72195	203304	601430	80000	130000	761333	2008686	641329	2122839	3056451	5516506
1993	1073481	1100613	525062	596819	651968	1144691	73251	197906	361344	751762	104994	153497	3333598	5222665
1994	1519419	1570414	499329	646842	684013	1256691	78361	232650	408920	892859	103518	158238	3961386	6432103
1995	2040556	2025713	440634	667331	737423	1405507	105520	295194	442374	923093	103570	158976	4782969	7436785
1996	2387983	2482838												
1-8 / 1997	1655733	1564142												
Average	637472	680706	260473	296246	391070	621111	157288	206878	368322	775064	164690	440382	2409475	3783745
Changes (%)	26.46	17.99	10.81	7.83	16.23	16.42	6.53	5.47	15.29	20.48	6.84	11.64	100.00	100.00

Source: FAO, Trade Year Book, Different Issues.

**Table (32): World Market Share By Major Export Countries During 1981-1995**

Year	USA	Brazil	France	Hungary	Netherlands	Denmark	Others	World
1981	21.76	16.76	18.95	9.03	14.10	3.24	16.15	100
1982	15.62	17.37	20.19	10.50	12.96	3.61	19.75	100
1983	14.05	17.60	23.63	11.58	13.09	3.62	16.44	100
1984	14.21	18.53	21.54	11.06	13.45	3.60	17.61	100
1985	14.27	18.36	20.23	10.40	13.12	3.77	19.84	100
1986	16.67	13.60	20.89	11.02	12.60	3.16	22.06	100
1987	19.56	11.47	18.29	11.02	12.30	3.05	24.30	100
1988	19.45	12.28	19.05	11.81	12.63	2.61	22.16	100
1989	22.65	11.59	20.11	8.37	12.18	2.45	22.65	100
1990	24.09	0.50	9.23	7.20	31.15	19.05	8.76	100
1991	24.97	0.57	5.93	6.82	27.18	19.88	14.65	100
1992	27.00	1.31	6.65	2.62	24.91	20.98	16.53	100
1993	32.20	15.75	19.56	2.20	10.84	3.15	16.30	100
1994	38.36	12.60	17.27	1.98	10.32	2.61	16.86	100
1995	42.66	9.21	15.42	2.21	9.25	2.17	19.09	100
<b>Average</b>	<b>23.17</b>	<b>11.83</b>	<b>17.13</b>	<b>7.85</b>	<b>15.34</b>	<b>6.46</b>	<b>18.21</b>	<b>100</b>

Source: Calculated from Table (31)

**Table (33): Broiler Meat Situation in Selected Countries, 1995-1997**  
(Thousand tonnes, ready - to - cook equivalent)

		1995	1996	1997	1996/95 %change	1997/96 %change
Production	World	55500	58400	62600	5.23	7.19
	United States	13786	14516	15285	5.30	5.30
	China	9347	11000	12500	17.68	13.64
	Europ. Communities	7788	8131	8357	4.40	2.78
	Brazil	4040	4160	4357	2.97	4.74
	Mexico	1554	1590	1680	2.32	5.66
	Japan	1282	1249		-2.57	
	Thailand	830	910	945	9.64	3.85
	Canada	861	895	911	3.95	1.79
	South Africa	736	789	811	7.20	2.79
Russian Federation	859	765	719	-10.94	-6.01	
Argentina	700	660	680	-5.71	3.03	
Exports*	World	4529	5270	5606	16.36	6.38
	United States	1969	2324	2518	18.03	8.35
	Europ. Communities	853	863	831	1.17	-3.71
	Hong Kong	470	510	661	8.51	29.61
	Brazil	430	567	610	31.86	7.58
	China	370	500	600	35.14	20.00
Imports	Russian Federation	800	900	1090	12.50	21.11
	China	446	671	900	50.45	34.13
	Hong Kong	710	785	871	10.56	10.96
	Japan	536	559		4.29	
	Saudi Arabia	290	297	247	2.41	-16.84
	Europ. Communities	210	283	287	34.76	1.41
	Mexico	163	177	194	8.59	9.60
	Canada	105	115	118	9.52	2.61
	South Africa	64	75	90	17.19	20.00
Consumption	United States	11766	12131	12740	3.10	5.02
	China	9582	11300	11800	17.93	4.42
	European Communities	7154	7548	7811	5.51	3.48
	Brazil	3623	3680	3720	1.57	1.09
	Russian Federation	1900	1900	1809	0.00	-4.79
	Japan	1798	1802		0.22	
Per Capita Consumption (kgs.)	Hong Kong	46	50	47	8.70	-6.00
	United States	44.1	45	46.9	2.04	4.22
	Israel	44.3	43.9	44.3	-0.90	0.91
	Singapore	39.1	38.7		-1.02	
	Saudi Arabia	32.6	32.8	32.2	0.61	-1.83
	Canada	30.5	31	32	1.64	3.23
	Brazil	26	26		0.00	
	Australia	25.7	26.7	27	3.89	1.12

\* World exports are net of EC intra-trade.

Source: WTO Secretariat, FAO, USDA.

**Table (34): The Export Prices for Broiler By Major Exporting Countries During 1981-1995**

Year	USA \$/ton	Brazil \$/ton	France \$/ton	Hungary \$/ton	Netherlands \$/ton	Denmark \$/ton	World \$/ton
1981	1218.69	1206.63	1435.33	1386.14	1505.27	1511.30	1536.01
1982	1084.31	951.26	1166.78	1211.65	1349.14	1348.84	1377.87
1983	1115.99	841.94	917.76	971.01	1283.32	1180.25	1276.22
1984	1168.97	942.91	1080.84	908.24	1293.11	1172.95	1280.40
1985	1035.08	881.10	1058.53	976.57	1345.86	1099.28	1243.73
1986	1059.99	980.65	1305.30	994.50	1732.01	1248.78	1442.66
1987	1043.57	1083.47	1466.25	916.11	1860.15	1099.28	1555.85
1988	1114.12	1063.79	1498.53	881.30	1890.89	1248.78	1575.67
1989	1027.58	1224.11	1577.64	1030.74	1877.08	1354.83	1628.91
1990	1128.41	1769.89	1540.61	1516.56	2535.99	3439.31	1769.64
1991	1203.07	1837.82	2717.80	1535.97	2510.95	3250.92	1782.70
1992	1125.21	1798.49	2958.28	1625.00	2638.38	3310.06	1804.87
1993	1025.27	1136.66	1755.75	2701.75	2080.46	1461.96	1566.68
1994	1033.56	1295.42	1837.23	2968.95	2183.46	1528.60	1623.70
1995	992.73	1514.48	1905.97	2797.52	2086.68	1534.96	1554.85
1996	1039.72						
1-8/1997	944.68						
Average	1091.77	1235.24	1614.84	1494.80	1878.18	1719.34	1534.65

Source: Calculated from Table (31)

**Table (35): Price Ratios for Broiler Exports of the Major Exporting Countries During 1981-1995**

Year	USA	Brazil	France	Hungary	Netherlands	Denmark	World (%)
1981	79.34	78.56	93.45	90.24	98.00	98.39	100.00
1982	78.69	69.04	84.68	87.94	97.91	97.89	100.00
1983	87.44	65.97	71.91	76.08	100.56	92.48	100.00
1984	91.30	73.64	84.41	70.93	100.99	91.61	100.00
1985	83.22	70.84	85.11	78.52	108.21	88.39	100.00
1986	73.48	67.98	90.48	68.94	120.06	86.56	100.00
1987	67.07	69.64	94.24	58.88	119.56	70.65	100.00
1988	70.71	67.51	95.10	55.93	120.01	79.25	100.00
1989	63.08	75.15	96.85	63.28	115.24	83.17	100.00
1990	63.77	100.01	87.06	85.70	143.31	194.35	100.00
1991	67.49	103.09	152.45	86.16	140.85	182.36	100.00
1992	62.34	99.65	163.91	90.03	146.18	183.40	100.00
1993	65.44	72.55	112.07	172.45	132.79	93.32	100.00
1994	63.65	79.78	113.15	182.85	134.47	94.14	100.00
1995	63.85	97.40	122.58	179.92	134.20	98.72	100.00
Average	72	79	103	97	121	109	100

Source: Calculated from Table (31)

Table (36): Egypt's Broiler Imports (Quantity and Value) by Country During 1970-1995

Year	USA		Brazil		France		Others		Total	
	Quantity (ton)	Value (000)								
1970							567	128	567	128
1971							3446	765	3446	765
1972					692	152	2400	549	3092	701
1973					463	124	1704	406	2167	530
1974									Na	Na
1975							2134	876	2134	876
1976									Na	Na
1977	5880	2778					742	158	6622	2936
1978	5787	4290					1965	922	7752	5212
1979	13522	12634			749	223	2302	1956	16573	14813
1980	45049	39399			622	483	6986	7194	52657	47076
1981	52650	51696	18613	17227	5118	5825	4116	3936	80497	78684
1982	11972	10555					107	159	12079	10714
1983					10378	7697	1041	869	11419	8566
1984							2004	946	2004	946
1985	4888	3198	47833	44252	284	223	0		53005	47673
1986	17907	22427	11535	13196	4661	7162	2637	3622	36740	46407
1987							56242	87470	56242	87470
1988	15937	29295	792	1658					16729	30953
1989					19497	51754			19497	51754
1990							2438	2794	2438	2794
1991							1460	1471	1460	1471
1992							523	797	523	797
1993							40	71	40	71
1994							94	165	94	165
1995							226	256	226	256
<b>Total</b>	<b>173592</b>	<b>176272</b>	<b>78773</b>	<b>76333</b>	<b>42464</b>	<b>73643</b>	<b>93174</b>	<b>115510</b>	<b>388003</b>	<b>441758</b>
<b>%</b>	<b>44.74</b>	<b>39.90</b>	<b>20.30</b>	<b>17.28</b>	<b>10.94</b>	<b>16.67</b>	<b>24.01</b>	<b>26.15</b>	<b>100</b>	<b>100</b>

Source : Foreign Trade Bulletin, Central Agency for Public Mobilization and Statistics (CAPMAS), different issues

**Table (37): Market Share for Broiler Exporters, 1970-1996**

Year	USA %	Brazil %	France %	Others %	Total %
1970	0	0	0	100	100
1971	0	0	0	100	100
1972	0	0	22.38	77.62	100
1973	0	0	21.37	78.63	100
1974					Na
1975	0	0	0	100	100
1976					Na
1977	88.79	0	0	11.21	100
1978	74.65	0	0	25.35	100
1979	81.59	0	4.52	13.89	100
1980	85.55	0	1.18	13.27	100
1981	65.41	23.12	6.36	5.11	100
1982	99.11	0	0	0.89	100
1983	0	0	90.88	9.12	100
1984	0	0	0	100	100
1985	9.22	90.24	0.54	0	100
1986	48.74	31.40	12.69	7.18	100
1987	0	0	0	100.00	100
1988	95.27	4.73	0	0	100
1989	0	0	100	0	100
1990	0	0	0	100	100
1991	0	0	0	100	100
1992	0	0	0	100	100
1993	0	0	0	100	100
1994	0	0	0	100	100
1995	0	0	0	100	100
<b>Average:</b>					
<b>1970-88</b>	<b>38.14</b>	<b>8.79</b>	<b>9.41</b>	<b>43.66</b>	<b>89.47</b>
<b>1989-95</b>	<b>0.00</b>	<b>0.00</b>	<b>14.29</b>	<b>85.71</b>	<b>100.00</b>

Source: Computed from Table (36)

**Table (38): Prices of Egypt's Broiler Imports by Country During 1970-95**

<b>Year</b>	<b>USA (\$/ton)</b>	<b>Brazil (\$/ton)</b>	<b>France (\$/ton)</b>	<b>Others (\$/ton)</b>	<b>average (\$/ton)</b>
1970				225.75	225.75
1971				222.00	222.00
1972			219.65	228.75	226.71
1973			267.82	238.26	244.58
1974					
1975				410.50	410.50
1976					
1977	472.45			212.94	443.37
1978	741.32			469.21	672.34
1979	934.33		297.73	849.70	893.80
1980	874.58		776.53	1029.77	894.01
1981	981.88	925.54	1138.14	956.27	977.48
1982	881.64			1485.98	886.99
1983			741.67	834.77	750.15
1984				472.06	472.06
1985	654.26	925.14	785.21		899.41
1986	1252.42	1144.00	1536.58	1373.53	1263.12
1987					1555.24
1988	1838.18	2093.43			1850.26
1989			2654.46		2654.46
1990					1146.02
1991					1007.53
1992					1523.90
1993					1775.00
1994					1755.32
1995					1132.74
1996					

**Source: Computed from Table (36)**

**Table (39): Elasticities for the Investigated Factors Affecting Broiler Production and Demand**

	Unit	Average	Parameters	Elasticity
<b>Production and Marketing Equation Variables:</b>				
Broiler production	Ton	346013		
Cost of production	LE/Ton	3870	-0.140	-0.002
Broiler farm-gate price	LE/Ton	4022	0.044	0.001
Broiler feed price	LE/Ton	929	1.336	0.321
Baby chick price	LE/thousand	1221	0.703	0.222
Mortality Rate	Percent	8	25.788	0.057
Yellow corn price	LE/Ton	559	0.718	0.432
Protein concentrates price	LE/Ton	1940	0.227	0.474
Parent stock feed price	LE/Ton	888	0.663	0.482
Parent stock baby chick price	LE/thousand	10765	0.074	0.656
Producer gross margin	LE/Ton	153	0.429	0.071
broiler wholesaler price	LE/Ton	4380	0.092	2.640
Wholesaler gross margin	LE/Ton	358	0.308	0.721
Broiler consumer price	LE/Ton	5050	0.697	0.804
<b>Demand Function Variables:</b>				
Quantity demanded for broiler	Ton	292		
gross domestic product	LE	48067		0.800
World price of broiler	US\$/Ton	971		0.227
broiler consumer price	LE/ton	2098		1.890
<b>Supply Function Variables:</b>				
Quantity Supplied of broiler	Ton	277.5		
Broiler consumer price	LE/ton	2098		1.037
Dummy Variable		0.407		

Source: Computed from The Simulation Model

**Table (40): Welfare Analysis of Broiler Trade Policy Changes and Border Price**

	Unit	Border Price vs. different levels of actual consumer prices		Border price vs. different levels of expected consumer prices for imports						
		Scenario 1	Scenario 2	80% tariff	70% tariff	60% tariff	50% tariff	40% tariff	20% tariff	0% tariff
		<b>Basic data:</b>								
(1)- Domestic price (Pd)	LE/ton	6700.00	7327.92	9430.00	8900.00	8350.00	7850.00	7320.00	6300.00	5227.00
(2)-World price (Pf)	US\$/ton	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>	<b>1537.86</b>
(3)-Exchange rate (EER)	LE/US\$	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
(4)-Border price (Pb)	LE/ton	5228.72	5228.72	5228.72	5228.72	5228.72	5228.72	5228.72	5228.72	5228.72
(5)-Nominal Protection Coefficient (NPC)		1.28	1.40	1.80	1.70	1.60	1.50	1.40	1.20	1.00
(6)-Tariff		0.28	0.40	0.80	0.70	0.60	0.50	0.40	0.20	-0.00
<b>(7)-Modified Tariff (t')</b>		0.22	0.29	0.45	0.41	0.37	0.33	0.29	0.17	-0.00
(8)-Elasticity of Supply (Es)		1.037	1.037	1.037	1.037	1.037	1.037	1.037	1.037	1.037
(9)-Elasticity of Demand (Ed)		-1.890	-1.890	-1.890	-1.890	-1.890	-1.890	-1.890	-1.890	-1.890
(10)-Elasticity of Supply at Pb		<b>1.048</b>	<b>1.053</b>	<b>1.069</b>	<b>1.065</b>	<b>1.060</b>	<b>1.057</b>	<b>1.053</b>	<b>1.045</b>	<b>1.037</b>
(11)-Elasticity of Demand at Pb		<b>-1.042</b>	<b>-0.875</b>	<b>-0.569</b>	<b>-0.624</b>	<b>-0.694</b>	<b>-0.772</b>	<b>-0.877</b>	<b>-1.187</b>	<b>-1.892</b>
(12)-Production at Pd	Million ton	0.50	0.50	0.72	0.68	0.63	0.59	0.55	0.47	0.47
Production at Pb	Million ton	<b>0.386</b>	<b>0.351</b>	<b>0.385</b>	<b>0.386</b>	<b>0.386</b>	<b>0.386</b>	<b>0.386</b>	<b>0.387</b>	<b>0.470</b>
(13)-Consumption at Pd	Million ton	0.53	0.53	0.41	0.42	0.44	0.46	0.49	0.57	0.57
Consumption at Pb	Million ton	<b>0.75</b>	<b>0.82</b>	<b>0.76</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.75</b>	<b>0.57</b>
(14)-Value of Production at Pd (V')	LE million	3350	3664	6742	6008	5261	4632	4011	2961	2457
(18)-Net Economic Loss of producer (NELP)	LE million	<b>85</b>	<b>158</b>	<b>715</b>	<b>544</b>	<b>390</b>	<b>273</b>	<b>172</b>	<b>45</b>	<b>0</b>
(19)-Net Economic Loss for Consumer (NELC)	LE million	<b>162</b>	<b>301</b>	<b>725</b>	<b>601</b>	<b>485</b>	<b>380</b>	<b>277</b>	<b>98</b>	<b>0</b>
(20)-Change in Producer Surplus (PS)	LE million	<b>651</b>	<b>891</b>	<b>2289</b>	<b>1934</b>	<b>1577</b>	<b>1274</b>	<b>974</b>	<b>459</b>	<b>-1</b>
(21)-Changes in Consumer Surplus (CS)	LE million	<b>-942</b>	<b>-1414</b>	<b>-2448</b>	<b>-2143</b>	<b>-1858</b>	<b>-1586</b>	<b>-1301</b>	<b>-709</b>	<b>1</b>
(22)-Changes in Governmental Budget (B)	LE million	<b>44</b>	<b>63</b>	<b>-1281</b>	<b>-936</b>	<b>-593</b>	<b>-341</b>	<b>-121</b>	<b>107</b>	<b>-0</b>
(23)-Changes in Balance Payment (BP)	LE million	<b>-1236</b>	<b>-1483</b>	<b>-2324</b>	<b>-2115</b>	<b>-1902</b>	<b>-1708</b>	<b>-1503</b>	<b>-1038</b>	<b>3</b>
(24)-Change in Balance Payment	US\$	<b>-364</b>	<b>-436</b>	<b>-683</b>	<b>-622</b>	<b>-559</b>	<b>-502</b>	<b>-442</b>	<b>-305</b>	<b>1</b>
(25)-Net Socail Loss (NSL)	LE million	<b>-246</b>	<b>-459</b>	<b>-1440</b>	<b>-1145</b>	<b>-875</b>	<b>-653</b>	<b>-449</b>	<b>-143</b>	<b>-0</b>

Source: Computed from the Simulation Model and Table 38

التقرير النهائي

# السياسة التجارية للدواجن في مصر

أعدت

لحكومة جمهورية مصر العربية  
وزارة التجارة والتموين

مقدمة الى

الوكالة الامريكية للتنمية الدولية

مقدمة من

شركة ناثان اسوشيتس انكوربوريشن

عقد رقم

٢٦٣-٢٠٠-٩٦-١-٠٠٠٠٠٠٠٠



سبتمبر ١٩٩٨

## تقديم

تم إعداد هذا التقرير بناء على دراسة قام بإعدادها مشروع تحليل وإصلاح السياسات الاقتصادية والتنمية (مشروع دبرا) من خلال عقد مع مكتب التحليل الاقتصادي والسياسات بالوكالة الأمريكية للتنمية الدولية (عقد رقم 00-00001-96-C - 263)، (أمر شغل رقم 17).

ويهدف مشروع "دبرا" في وزارة التجارة والتمويل إلى مساندة إصلاح السياسة التجارية في مصر، من خلال تقديم المعونة الفنية والخدمات، إلى الوزارة مع التركيز بوجه خاص على التجارة الدولية، وتشجيع الصادرات، وتحليل سياسات التجارة. وقد قام بإعداد الدراسة الدكتور/ على احمد إبراهيم على، قسم الاقتصاد الزراعي بجامعة الزقازيق، تحت رعاية الدكتور/ رولو إيريك، المستشار بمشروع دبرا، والدكتور/ جمال صيام، مستشار مشروع دبرا ووزارة التجارة والتمويل.

ويود الكاتب أن يعبر عن شكره وتقديره لجميع ملاك ومدراء مشروعات الدواجن، الذين قدموا المعلومات والبيانات المطلوبة لهذه الدراسة. ويتقدم بالشكر أيضاً لمجموعة من الخبراء المصريين، وعلى وجه الخصوص الاستاذ الدكتور/ نجيب الهاللي جوهر، الذي اتاح للدراسة معلومات هامة عن القطاع فضلاً عن إطلاعه على التقرير في مسودته الاولى وتقديم مقترحات مفيدة.

وتعبر الآراء الواردة في هذه الدراسة عن وجهة نظر القائم بإعدادها، ولا تعكس توجيهات أو وجهة نظر الوكالة الأمريكية للتنمية الدولية، أو وزارة التجارة والتمويل، أو آراء الخبراء الذين قدموا المساعدة أثناء إعداد هذه الدراسة، أو مشروع دبرا.

## ملخص تنفيذى

### خلفية عامة :

شهد قطاع الدواجن فى مصر تطورات كبيرة بسبب الاتجاهات الاقتصادية والتحولات التى حدثت فى السياسات خلال العقدين الماضيين . ويعتبر هذا القطاع هو اكثر القطاعات اهمية كمصدر للبروتين الحيوانى فى مصر . وتعتبر صناعة الدواجن اكثر كفاءة نسبيا من إنتاج اللحوم الحمراء فى توفير مصدر رخيص للبروتين للوفاء بمتطلبات الشعب المصرى منه. وقد ارتفع الاستثمار فى هذه الصناعة الى معدلات عالية خلال العقدين الماضيين.

ولقد شجعت السياسات الاقتصادية التى تم انتهاجها خلال العقدين الماضيين، على توسع الاستثمار فى صناعة الدواجن الى حد كبير . ويعود ذلك الاتجاه الى زيادة التسهيلات الائتمانية لهذا القطاع، والائتمان المدعم، ودعم أسعار المدخلات ( الذرة الصفراء، الكتاكيت، سعر الصرف )، بالإضافة إلى تقديم حوافز أخرى مثل التخفيضات المقدمة للقطاع الخاص لتشجيعه على إجراء المزيد من التوسعات فى الإنتاج .

وتشتمل هذه الصناعة على عدد كبير من الصناعات المساندة تتضمن إنتاج الكتاكيت محليا من أمهات وجدود الدجاج . ويبلغ العدد الإجمالي لمزارع الأمهات ١٢٩ مزرعة، ١٨٦٥ مزرعة دجاج بيض وتسمين . وتبلغ الطاقة الإنتاجية ٨٢,٦ ، ٦٠٠,٣ مليون بيضة مخصصة لإنتاج دجاج البيض والتسمين على الترتيب . ويقدر إنتاج البيض المخصب من مزارع جدات دجاج التسمين نحو ٧,١ مليون بيضة . وقد ارتفعت طاقة قطاع التفريخ بعد عام ١٩٨٥ عندما تم إلغاء الاعتماد الكامل على الاستيراد لمواجهة المتطلبات من الكتاكيت اللازمة لهذه الصناعة . ويبلغ العدد الإجمالي لمحطات التفريخ الآلى ١٢٦ محطة بطاقة إجمالية تصل الى ٧٧٩ مليون بيضة سنويا، وتبلغ الطاقة المستغلة ٣٧١ مليون بيضة تنتج حوالى ٢٧٧ مليون كتكوت سنويا .

كما توسعت مصانع إنتاج العلف لتغذية دجاج التسمين بصورة سريعة خلال الفترة ١٩٨٥-١٩٩٧، فقد زادت الطاقة من ٥٩٣ طن/ساعة فى عام ١٩٩١ الى ٧٣٩ طن/ساعة عام ١٩٩٦ . ويتسم التسويق والبنية الأساسية للتصنيع بعدم الكفاءة، ومثال ذلك، الافتقار إلى المجازر الآلية، والتي تعتبر من المعوقات الأساسية أمام تنمية صناعة حديثة لتسمين الدواجن

فى مصر. وفى الوقت الراهن، زادت الطاقة الإجمالية للمجازر بشكل سريع، حيث تقدر بحوالى ٢٢,٣ ألف دجاجة / ساعة (نحو ١٥١,٨ مليون دجاجة سنوياً) .

ويتجه الاقتصاد المصرى حالياً وبشبات نحو التحرير الكامل والخصخصة. على أن التحرير الاقتصادى قد يؤثر بشكل يودى الى ضغط الإنتاج المحلى فى الأجل القصير، لأن الإنتاج المحلى يتصف بانخفاض الكفاءة بالمعايير العالمية . ومن الملاحظ أن معظم المعاملات الفنية فى صناعة الدواجن تقع أدنى من المعايير العالمية .

### أهداف الدراسة :

تتمتع صناعة الدواجن المصرية بحماية عالية بسبب ارتفاع التعريفات الجمركية عالية . وعلى ذلك تتمثل فرضية الدراسة فى " ترجع عدم كفاءة إنتاج الدواجن الى ارتفاع الأسعار المحلية للدواجن بشكل يفوق الأسعار العالمية" .

وتهدف هذه الدراسة الى تقييم الأثر المحتمل لإجراء تغييرات محددة فى السياسة التجارية تتعلق بمنتجى ومستهلكى وتجار قطاع الدواجن . وبافتراض هذا الهدف العريض ، تقوم الدراسة بتحليل الوضع الإنتاجى والتسويقي لقطاع الدواجن فى مصر ، مع عمل تقدير لدوال العرض والطلب المحليين و المرونات المصاحبة لها .

كما تم أيضاً ، تقدير فوائض المستهلك والمنتج ، والمكاسب والخسائر الاقتصادية الصافية فى الإنتاج والاستهلاك ، والتغيرات فى إيرادات الحكومة ، فى ظل التغيرات المصاحبة للتحويل من حظر استيراد الدواجن الى فرض تعريفات جمركية مقدارها ٨٠٪ ، وكذلك لمعدلات إضافية من التعريفات الجمركية .

ويقىس نظام المعادلات (سبع معادلات) الموضح فى الفصل السادس من الدراسة تأثير التعريفات الجمركية على المتغيرات الرئيسية لصناعة الدواجن . وقد تم استخدام برنامج " كواترو- برو " فى تنفيذ ذلك . وقد تم وضع العديد من السيناريوهات لاختبار اثر التغيرات فى كل من :

١- الأسعار المحلية والعالمية .

٢- التعريفات الجمركية للواردات من الدواجن .

٣- مرونة العرض من أو الطلب على الدواجن .

٤- أسعار الصرف الأجنبي .

٥- مستويات الإنتاج والطلب المحليين على الدواجن .

وقد تم بناء نموذج محاكاة كامل لاستخدامه في اختبار فرضية أثر السياسة التجارية ، من اجل القياس الكمي لاثر تعديل هذه السياسات على صناعة الدواجن . كما تم حساب مقاييس الكفاءة الانتاجية والاقتصادية لصناعة الدواجن في مصر ، مثل :

أ - صافي تكلفة الإنتاج لكل كيلو جرام واحد من الدواجن يتم تسويقه، ولكل كيلو جرام من الدجاج الحي .

ب - ربح الكيلو جرام الواحد من الدجاج الحي باستخدام تحليل ميزانية المزرعة. وفضلاً عن ذلك ، تم حساب مقاييس الكفاءة المرتبطة بالاستثمار في مشروعات الدواجن (معدل العائد الداخلي، ومعدل العائد الداخلي المطور، وصافي الثروة الحاضرة، ونسبة المنافع / التكاليف، ومعدل دوران رأس المال) كما تم استخدام تحليل السلاسل الزمنية لتحديد الاتجاه العام، والتغيرات الموسمية والدورية في أسعار الدواجن للمستهلكين، بقصد قياس ذلك التغير في التأثيرات التي يمكن أن تحدث عبر الزمن.

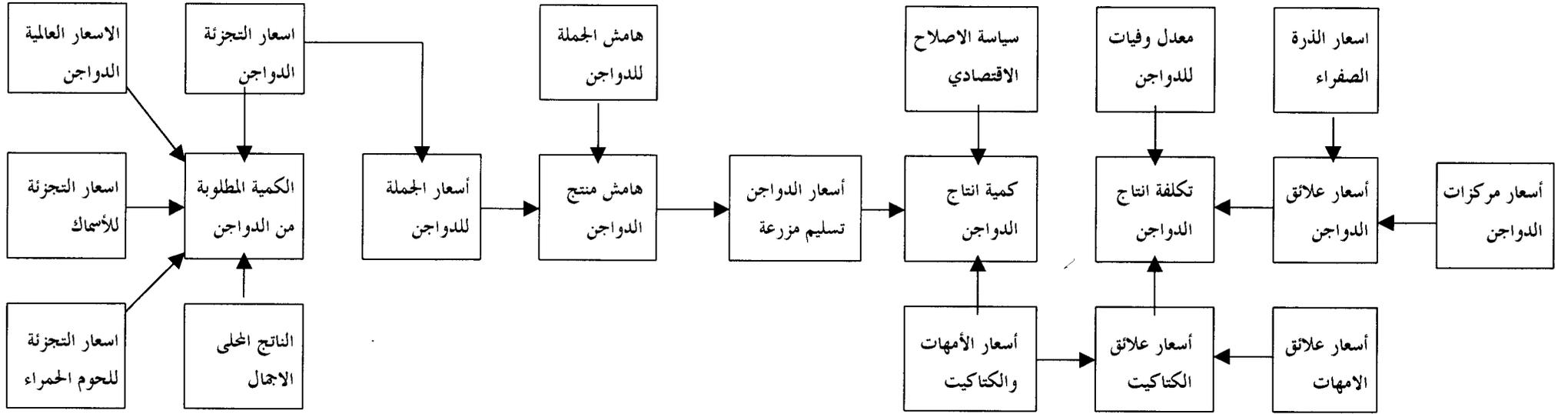
### منهجية الدراسة :

لإنجاز الأهداف المحددة للدراسة ، تم استخدام العديد من الأساليب التحليلية والكمية . كما تم تقدير نموذج المحاكاة لصناعة الدواجن باستخدام تحليل الانحدار المتعدد. ويتكون النموذج من (٩) معادلات للوصول الى المعاملات التي تربط بين العوامل المؤثرة على كل من الإنتاج ، والتسويق ، والطلب ، والعرض ، في صناعة الدواجن المصرية (الشكل رقم ١).

وقد تم تحليل انعكاسات فرض تعريف جمركية على عمليات تحويل الرفاهية بين المنتجين والمستهلكين ، والمكاسب والخسائر الصافية في الكفاءة الاقتصادية ، والتغيرات في الإيراد الحكومي ، باستخدام تحليل السوق الواحد الذي تضمن (٧) معادلات تفسيرية. واستخدم هذا النموذج في اختبار آثار السياسات التجارية مثل اثر فرض تعريف استيراد على واردات الغذاء ، على كل من المنتجين والمستهلكين (تم استخدام نفس الأساليب التي استخدمتها الدراسات التالية في قياس هذه الآثار، Alain de Janvry , Isabelle Tsackok 1990 and Elisabeth Sadoulet 1993).

أن الجوانب الفنية والاقتصادية المرتبطة بمفهوم كفاءة الإنتاج أصبحت محل اهتمام كبير في عمليات تنفيذ وتقييم المشروع، وبصفة خاصة، في مرحلة التحول الراهن في الاقتصاد المصري نحو التوجه السوقي وما يصاحبه من آليات السوق الحرة. ويتطلب الأمر اجراء تحليل للآثار طويلة الأجل لبيئة الإنتاج الحديثة، من أجل تقييم آثارها على مزارع الدواجن.

شكل رقم: ١ نموذج المحاكاة للعوامل المؤثرة في صناعة الدواجن المصري



معادلة الطلب

معادلات التسويق

معادلات الانتاج والعرض

وتفاوت هذه المزارع من حيث سعتها الانتاجية، مع وجود سعة إنتاجية أكثر شيوعاً وهي ٥٠٠٠ دجاجة لكل دورة.

وينبغي أن يتم تقييم أثر تغيير السياسة التجارية في ضوء العوامل الفنية والاقتصادية الأكثر أهمية مثل :

أ- معامل تحويل الغذاء.

ب- الوزن التسويقي النهائي للدواجن الحية.

ج- معدل النفوق .

د- عدد الدورات سنوياً .

هـ- الأسعار المزرعية للدواجن الحية.

و- أسعار الأعلاف .

ز- أسعار الكتاكيت عمر يوم.

ويستخدم التقييم مقياس كفاءة رأس المال ( معدل العائد الداخلي، معدل العائد الداخلي المطور ، نسبة العائد / التكلفة ، صافي الثروة الحاضرة، معدل دوران رأس المال ) للمزرعة ( ذات الطاقة التي تبلغ ٥٠٠٠ دجاجة لكل دورة).

كما تم تقدير المستويات الحرجة لهذه العوامل الفنية والاقتصادية ، ويقصد بها المستويات التي تحقق معدل عائد داخلي مستهدف مقداره ٢٠ ٪ .

كما تم تحليل الوحدات الإنتاجية باستخدام تحليل الحساسية لمعرفة ما يمكن أن يحدث في المستقبل إذا اختلفت الأسعار المستقبلية لبيع الناتج ، أو إذا فشل المنتج في تبنى ممارسات جديدة بالسرعة المتوقعة ، أو إذا كانت نفقات الإنتاج مقومة بأكثر / أو أقل من قيمتها، أو إذا تغيرت إنتاجية الوحدة في المستقبل بسبب وجود تفاؤل في مشروعات الدواجن بشأن الإنتاجية المرتقبة. وقد تم استخدام أسلوب القيمة المحولة (Switching Value) لتحديد كيفية تغيير أي من هذه العوامل في اتجاه غير مرغوب قبل أن يصبح المشروع قادراً على الوفاء بالحد الأدنى المطلوب للقبول ، على النحو الذي يوضحه أحد مقاييس تقييم المشروع.

وقد تم استخدام (٧) متغيرات لاختبار كفاءة الأداء في صناعة الدواجن وهي :

أ- معدل تحويل الأعلاف.

ب-الوزن النهائي للدواجن الحية عند التسويق.

ج-معدل النفوق.

د- عدد الدورات المنتجة سنوياً.

هـ-الأسعار المزرعية للدواجن.

و- أسعار الأعلاف.

ز- أسعار الكتاكيت عمر يوم.

كما تم حساب النسبة التي يتحقق عندها: انخفاض المكاسب أو زيادة النفقة في المشروع، ومع ذلك يظل صالحا من الناحية الاقتصادية. فعلى سبيل المثال، تم استخدام أسلوب القيمة المحولة لتقدير حساسية معدل العائد الداخلي للتغيرات في الفروض المتعلقة بالمنافع والنفقات.

وقد تم حساب تكاليف إنتاج الدواجن في المزرعة ذات السعة القياسية (المنوالية) (5000 دجاجة/ دورة) باستخدام تحليل ميزانية المزرعة. وميزانية المزرعة هي ببساطة، خطة لتنسيق تدفقات الموارد الداخلة والخارجة، لتحقيق مجموعة معينة من الأهداف الانتاجية. وتهدف ميزانية المزرعة الى تنظيم موارد المزرعة من اجل تعظيم الربح. وهي تعد مبدأيا، من اجل تقييم كفاءة مزرعة معينة، أو مجموعة من المزارع، خلال فترة محاسبية محددة. وهي تقدم الأساس لتقييم ومقارنة الربحية النسبية للاستثمارات البديلة.

### هيكल الدراسة :

تتضمن الدراسة ستة فصول. يتناول الفصل الأول، إنتاج الدواجن، السياسة التجارية المرتبطة بالدواجن، اتجاهات الإنتاج، قطاع تسمين الدواجن، العوامل المؤثرة في إنتاج الدواجن مثل أعلاف الدواجن، وطاقة إنتاج الكتاكيت، وحجم المزرعة، ورصيد الأمهات. يضاف الى ذلك دراسة طاقة إنتاج دجاج البيض، وحجم مزارع إنتاج دجاج البيض، طاقة إنتاج دجاج البيض، وحجم مزارع إنتاج دجاج البيض، ورصيد دجاج إنتاج البيض، ومزارع الدجاج البلدى المطورة، ومتطلبات الأعلاف، ومعايير الكفاءة في القطاعات الفرعية لإنتاج الدواجن (معايير كفاءة الاستثمار، وتحليل ميزانية المزرعة).

ويتناول الفصلان الثاني والثالث، الجوانب الخاصة بالاستهلاك والتسويق على الترتيب. وقد تم تقدير أسعار الدواجن عند المستويات المختلفة (التجزئة، الجملة، تسليم المزرعة)، والهوامش الإجمالية في الدواجن، والاتجاهات العامة، والتقلبات الموسمية، والتغيرات الدورية بالنسبة لأسعار الدواجن.

ويحلل الفصل الرابع، التجارة العالمية في الدواجن، والدول المصدرة الرئيسية في العالم، والأسعار العالمية من خلال الدول الرئيسية المصدرة، والدول الرئيسية التي تصدر الى مصر، والأسعار العالمية للدواجن في البلاد الرئيسية المصدرة الى مصر، والاتجاهات العامة للاستيراد من جانب الدولة.

وقدم الفصل الخامس نموذج محاكاة للقطاع الفرعي لإنتاج مزارع الدواجن وتم تقديره كـميا. ويتضمن النموذج (٩) معادلات تشرح العوامل المؤثرة على الإنتاج، والتسويق، والطلب، في قطاع إنتاج الدواجن في مصر.

ويقدم الفصل السادس تحليلاً لآثار الرفاهة الناشئة عن سياسة التعريفات الجمركية على الدواجن المستوردة. وقد تم وضع أربعة سيناريوهات لقياس الآثار الناجمة عن فرض تعريفات جمركية على استيراد الدواجن عند المستويات المختلفة للأسعار المحلية والعالمية، على الرفاهة، والكفاءة الاقتصادية، والإيرادات الحكومية.

### نتائج الدراسة :

توصلت الدراسة الى النتائج التالية:

١- زاد متوسط الطاقة الإنتاجية المعطلة في مزارع الدواجن بحوالي ١٨٩ مليون دجاجة (حوالي ٢٥٥٪) بين الفترة ١٩٨٠-١٩٨٦، والفترة ١٩٨٧-١٩٩٦. وبلغت نسبة الطاقة المعطلة حوالي ٥٨,٧٪ من الطاقة الإجمالية خلال الفترة ١٩٨٧-١٩٩٦، بالمقارنة بنحو ٢١,٣٪ من الطاقة خلال الفترة ١٩٨٠-١٩٨٦.

٢- وبمقارنة الطاقة الإنتاجية المتاحة بالطاقة المستغلة فعلا، وجد أن معدل التشغيل للاستخدام الفعلي لطاقات الإنتاج خلال الفترة ١٩٨٦-١٩٩٦ كانت أقل من ٥٠٪. الأمر الذي يرجع الى التوسع السريع نتيجة الدعم، وما تلا ذلك من انخفاض في الاستهلاك المحلي المرتبط بالتعريفات الجمركية المرتفعة، والحظر السابق على استيراد الدواجن.

٣- زادت نفقات الإنتاج بشكل كبير في السنوات الراهنة. وقد أظهرت الدراسات السابقة وجود علاقة عكسية بين نفقات الإنتاج والسعة الإنتاجية. علاوة على ذلك، تؤدي الطاقة غير المستغلة إلى زيادة تكلفة الوحدة المنتجة بشكل كبير. وزيادة السعة الإنتاجية يقلل تكلفة الوحدة من خلال :

أ- الاستخدام الفعال للوقت الكامل للإدارة الفعالة بالاشتراك مع الخبرة الفنية للمدير.

ب- تقديم الرعاية والخدمات البيطرية المستديمة ينتج عنه صحة جيدة وانخفاض معدل النفوق للدواجن.

ج- تقديم أعلاف ذات مكونات مرتفعة الجودة، وبتكلفة منخفضة داخل المزرعة لضمان معامل تحويل غذائي مرتفع للدواجن، والإسراع بمعدلات النمو اليومي، التي ينتج عنها وزن تسويقي نهائي مرتفع للدواجن الحية.

د- تكامل مراحل الإنتاج المختلفة ذات الطاقة الكافية ، متضمنة مزارع أمهات الدواجن ، ومزارع التفريخ، ومصانع الأعلاف، ومزارع إنتاج دجاج التسمين ، ومجازر الدواجن.

وقد نتج عن استخدام التكنولوجيا الضعيفة نسبيا في المزارع الصغيرة السعة،

ما يلي:

أ- انخفاض في الكفاءة الغذائية بشكل كبير .

ب-معدل نفوق مرتفع جدا .

ج-تسويق دواجن حية ذات أوزان صغيرة بشكل ملحوظ في نهاية فترة التسمين .

ويرجع استخدام التكنولوجيا الفقيرة في المزارع صغيرة السعة أساسا إلى الفشل في استغلال وفورات السعة ونظم الرعاية الحديثة مثل التغذية الآلية، والتي تؤدي إلى تقليل فاقد العلف .

ويلاحظ كذلك أن تكاليف الإنتاج المرتفعة في المزارع الصغيرة قد زادت أكثر بسبب ارتفاع أسعار المدخلات ، ومشاكل التسويق الناتجة عن عدم توافر البنية الأساسية التسويقية بقدر كاف ، وتضمن ذلك المجازر، وبيع دورات الدواجن فوق الأوزان التسويقية الاقتصادية أو بعيدا عن العمر التسويقي الأمثل . وكنتيجة لذلك، يستغرق تسويق الدواجن وقتا أطول، الأمر الذي يطيل فترة التسمين .

٤- في عام ١٩٩٦ بلغت الطاقة الإنتاجية لمصانع علف الدواجن نحو ٧٣٩ طن /ساعة أو ١٧٧٤ ألف طن سنويا ، على حين بلغت الطاقة الفعلية المستغلة ٦٥٣ ألف طن فقط . وكان فائض الطاقة الإنتاجية نحو ١١٢١ ألف طن سنويا . وقد انعكس وجود فائض في الطاقة الإنتاجية في مصانع العلف في ارتفاع نصيب طن العلف من النفقات الثابتة، الأمر الذي ترتب عليه ارتفاع سعر طن العلف بالنسبة لمنتجى الدواجن .

٥- أظهرت الدراسة أن عدم التوازن بين العرض المحلى من الكتاكيت والطلب المحلى عليها ، قد ترتب عليه حدوث انخفاض فى إنتاج الدواجن، مما يترتب عليه زيادة زيادة نفقات الإنتاج . وبالنسبة لمرحلة إنتاج البيض المخصب، كان إجمالي الإنتاج من الأمهات نحو ٣٠٦ مليون بيضة مخصبة، ولكن الرقم الإجمالي المفرخ بلغ ٢٨٧ مليون بيضة مفرخة فقط عام ١٩٩٤ . ويعنى ذلك إن حوالى ١٩ مليون بيضة مخصبة (ما يعادل نسبة ٦٪) قد تم بيعها للاستهلاك كبيض مائدة . وفى عام ١٩٩٥، كان إجمالي إنتاج الأمهات نحو ٥٣٦ مليون بيضة مخصبة، بينما كان إجمالي البيض المفرخ نحو ٢١٦ مليون بيضة فقط . لذلك

فقد تم بيع حوالي ٣٢٠ مليون بيضة مخصصة (تعادل نسبة ٦٠٪) لأغراض الاستهلاك المنزلي اليومي. ومعنى ذلك أن إجمالي إنتاج البيض المخصب يفوق الطاقة الإجمالية لعمليات التفريخ.

وبالنسبة الى مرحلة إنتاج الكتاكيت عمر يوم، فقد وصل الإنتاج الإجمالي الى ٢٠١ ، ١٥٩ مليون كتكوت عمر يوم في عام ١٩٩٤ ، ١٩٩٥ على الترتيب. وكانت الطاقة الفعلية لصناعة الدواجن تقدر بنحو ١٩٥ ، ٢٢٤ مليون في عامي ١٩٩٤ ، ١٩٩٥ على التوالي. لذلك فقد كان هناك فائض في الإنتاج المحلي من الكتاكيت يقدر بنحو ٦,٢ مليون كتكوت (يعادل ٣٪ من إجمالي الإنتاج المحلي من الكتاكيت) في عامي ١٩٩٤. وعلى النقيض من ذلك ، فقد كان هناك عجز في الإنتاج المحلي من الكتاكيت يقدر بنحو ٦٥,٥ مليون كتكوت عام ١٩٩٥. ويرجع عدم التوازن بين العرض من والطلب على الكتاكيت في جزء منه الى نقص عمليات التكامل في سلسلة التسويق والصناعة.

٦- لا تزال السعات الانتاجية الصغيرة هي السائدة في صناعة الدواجن في مصر. ويمثل إنتاج المزارع الصغيرة نحو ٧٥٪ من إجمالي الإنتاج (٢٣٧.٦ مليون دجاجة) في عام ١٩٩٦. ٧- تعتبر كفاءة رأس المال المستثمر في مشروعات الدواجن مرتفعة نسبياً اذا تحققت مستويات عالية من المتغيرات الهامة مثل عدد الدورات (٥ دورات)، ونسبة نفوق (٥٪)، ووزن نهائي (١,٦٥ كجم). حيث وجد أن معدل العائد الداخلي حينئذ يبلغ ٢٩,٧٪ بينما يبلغ معدل العائد الداخلي المعدل ١٦,٩٪. ويحصل منتج الدواجن على ٠,١٩ جنيها لكل جنيهه مستثمر، ويستطيع استعادة رأس المال المستثمر كل ٣,٣٧ سنة.

وقد تم تقدير التغيرات الحادثة في معدل العائد الداخلي ، ومعدل العائد الداخلي المعدل، معدل العائد/التكلفة ، وصافي الثروة الحاضرة، ومعدل دوران رأس المال، الناشئة عن العوامل التالية:

أ- التحسن في معامل تحويل العلف.

ب- الزيادة في الوزن التسويقي النهائي للدواجن الحية .

ج- تحسن معدل النفوق.

د- الزيادة في عدد الدورات سنويا .

هـ- الزيادة في السعر المزرعي.

و- الزيادة في أسعار الأعلاف .

ز- الزيادة في أسعار الكتاكيت عمر يوم.

وقد أظهرت النتائج أن التغيرات فى الأسعار المزرعية للدواجن، وأسعار العلف، ومعامل تحويل العلف، والوزن التسويقي النهائي للدواجن الحية، تعتبر أكثر تأثيراً على كفاءة رأس المال من المتغيرات الأخرى. وتعتبر ربحية مشروعات الدواجن حساسة جدا للتغيرات فى هذه المتغيرات. كما يعتبر معدل العائد الداخلى، وصافى الثروة الحاضرة، ومعدل دوران رأس المال، أكثر حساسية من المقاييس الأخرى للتغيرات فى العوامل موضوع الدراسة. كما ان للتغيرات فى الأسعار المزرعية للدواجن، المشتقة من التغيرات فى أسعار المستهلكين، والتي ترتبط بدورها بالتغيرات فى معدلات التعرّيف على الدواجن، تأثير كبير على أداء الصناعة. يضاف إلى ذلك، أن التغيرات فى أسعار الأعلاف بسبب زيادة أسعار المكونات العلفية لها تأثير سلبي على أداء صناعة الدواجن .

٨- كما تم تقدير نصيب الفرد من استهلاك الدواجن بحسب تصنيفها الى دجاج بلدي، ودجاج مزارع، ودجاج مستورد. وقد انخفض نصيب الفرد من استهلاك الدواجن خلال الفترة ١٩٨٦-١٩٩٠. وقطاع إنتاج الدواجن من القطاعات التي تستجيب بشكل كبير للتغيرات الحادثة فى الاقتصاد، ويتأثر بشكل خاص بعدد من التغيرات المصاحبة لعمليات التحرير الاقتصادي. إن التغيرات فى السياسات والنظام الاقتصادي منذ عام ١٩٨٦ كانت سريعة، وتتطلب قيام قطاع الدواجن بعمليات موازنة كبيرة. فعلى جانب العرض فإنه تأثر بانخفاض الدعم المقدم الى المدخلات، وخاصة العلف والكتاكت، وتأثر الطلب بالتغيرات فى دخل المستهلك، وأسعار المنتجات البديلة، والأذواق والتفضيلات المصاحبة للتحضر. إن انخفاض أسعار منتجات الدواجن بالمقارنة بأسعار منتجات اللحوم الحمراء، أدى إلى زيادة الاستهلاك، بافتراض توافر لحوم الدواجن. كما وجد أن استهلاك الدواجن كان حساساً، بصفة خاصة، للتغيرات فى دخل المستهلك. فالاستهلاك يزيد مع زيادة دخل المستهلك، والتنمية الاقتصادية، لأن منتجات الدواجن يعتبرها المستهلكون بصفة عامة، من السلع المتميزة (ذات مرونة طلب دخلية مرتفعة).

٩- قبل فرض الحظر على استيراد الدواجن فى عام ١٩٨٦، بلغت الواردات ما يقرب من ١٠-١٥٪ من إجمالي الاستهلاك. وبلغ استهلاك الدجاج البلدى نحو ٢٠٪ من الإجمالي، أما استهلاك دجاج المزارع فقد بلغ حوالى ٧٠٪ من جملة الاستهلاك. وهناك حاجة لإجراء المزيد من البحث لتحديد درجة الإحلال بين هذه الأنواع الثلاثة من الدواجن، ومن ثم لتحديد الأثر السعري الناجم عن تخفيض التعرّيف الجمركية على الدواجن. وسوف يكون

للتأثير مضامينها بالنسبة لآثار الرفاهة على مستهلكي الريف إزاء مستهلكي الحضر، وعلى المستهلكين بفئاتهم الدخلية المختلفة.

ومن المفترض مبدئياً، أن دجاج المزارع سوف يكون بديلاً قريباً للدجاج المستورد أكثر منه بالنسبة للدجاج البلدي. وعلى ذلك يعتقد أن آثار الرفاهة الناتجة عن تخفيض التعريفات الجمركية سوف تكون أقوى بالنسبة للمناطق الحضرية منها في المناطق الريفية الفقيرة . ومع ذلك ، فإن الدجاج البلدي يعتبر بديلاً قريباً نسبياً للدواجن المنتجة في المزارع المحلية ، لذلك فالآثار الموجبة للرفاهة تكون متوقعة في المناطق الريفية .

١٠- تواجه الوحدات الإنتاجية (المزارع) ذات السعة الكبيرة ، مشاكل أكثر في تسويق الدواجن الحية بالقياس الى المزارع ذات السعة الأصغر ، لأن عمليات التسويق تسيطر عليها مجموعة من تجار الجملة . وحيث ينبغي تسويق الدواجن بدون إبطاء ، عند بلوغها عمر معين أو وزن محدد ، لأن عمليات الإنتاج ينبغي أن تكون اقتصادية. وتنحصر أسباب ذلك فيما يلي:

أ- تحتاج الدواجن بعد وصولها الى الوزن الحرج الى زيادة كميات العلف دون زيادة متناسبة في أوزانها، وذلك بسبب تدهور معامل تحويل الغذاء، ومعدل النمو اليومي المتناقص .

ب- تتعرض الدواجن للأمراض كلما طالت الفترة الزمنية ، الأمر الذي يترتب عليه زيادة معدل النفوق، وانخفاض الوزن التسويقي النهائي للدجاج الحي.

ج- يضرب برنامج التربية بسبب التأخير في عمليات التسويق .

د- ينخفض العدد السنوي للدورات. ولذلك تزيد نفقات الإنتاج ، وينخفض الدخل السنوي الصافي للمزرعة بسبب تأخير التسويق .

ويلتزم منتجوا الدواجن ، بشكل عام، بجدول إنتاج سنوي محدد . ففي بداية كل موسم إنتاجي ، يطلب المنتجون كمية معينة من الكتاكيت من الشركات المنتجة. وعلى ذلك، يجب على منتجي الدواجن أن يقوموا ببيع دواجنهم في أوقات محددة حتى يقوموا باستلام الطلبية التالية للكتاكيت . ويفشل معظم المنتجين في تخطيط طرق الإنتاج الملائمة بحيث يؤخذ في الاعتبار التقلبات الموسمية في الطلب. ويتحقق ذلك بشكل خاص خلال مناسبات أو فترات معينة مثل الاعياد وشهر رمضان، التي يرتفع فيها الاستهلاك. ومن الواضح أن استجابة المنتجين لمثل هذه التحولات في الطلب غير مخططة بشكل سليم . ففي معظم الأوقات ، نجد أن العرض يفوق الطلب . لذلك فإن الإنتاج الفعلي يكون في حالة اختلال كبير بالنسبة للطلب ، كما أن طاقات المجازر لا تكون كافية ، في

اغلب الأحوال، لاستيعاب فائض الإنتاج. وبالرغم من ندرة وجود التنسيق الرأسي في عمليات الإنتاج، فإن المنتجين يولون اهتماماً كبيراً لتوقيت بداية ونهاية عمليات التسمين، وكذلك للتوسعات المتوقعة في طاقات الإنتاج في ضوء خطط المنتجين الآخرين في نفس المنطقة .

وتجار الجملة الذين يفهمون جيدا العوامل المختلفة التي تضطر المنتجين للبيع في أوقات محددة، ومن ثم يستغلون الموقف لصالحهم عن طريق عرض أسعار منخفضة نسبياً للدواجن تسليم المزارع، ثم البيع الى تجار التجزئة بأسعار مرتفعة نسبياً . وبذلك، يحصل تجار الجملة على هوامش ربحية عالية، ويعملون جدياً على الحفاظ على هوامش ثابتة مرتفعة، حتى لو كان هناك اتجاه لانخفاض الأسعار تسليم المزرعة . وقد أظهرت دراسة سابقة أن الهامش التسويقي الذي يحصل عليه تجار الجملة يأخذ شكل نسبة مئوية ثابتة من سعر الجملة، الأمر الذي يوضح إمكانية وجود قوة احتكارية على مستوى تجارة الجملة .

١١- تم تقدير الاتجاهات العامة، والتغيرات الموسمية، والتغيرات الدورية في أسعار المستهلكين للدواجن خلال الفترة ١٩٨٣-١٩٩٨ باستخدام أسلوب المتوسطات المتحركة لكل ٣ شهور . فقد زادت الأسعار بشكل سريع بين الفترة ١٩٨٥-١٩٨٩ والفترة ١٩٩٢-١٩٩٧ . كما توضح التغيرات الموسمية في أسعار الدواجن، والتي تم رصدها خلال الفترة ١٩٨٣-١٩٩٨ أن أسعار الدواجن تكون منخفضة خلال فصل الشتاء، وترتفع خلال فصل الصيف، ويرجع ذلك الى ما يلي :

أ- يكون إنتاج الدواجن مرتفعاً خلال شهور الشتاء .

ب- يكون المعروض من لحوم البتلو مرتفعاً خلال موسم البرسيم في فصل الشتاء .

١٢- كان معامل مرونة الإنتاج بالنسبة للأسعار المزرعية للدواجن غير مرن ومنخفضاً جداً (٠,٠٠١). ويعكس هذا الأمر، تأثير العوامل الأخرى المهيمنة، بافتراض استخدام البيانات المقطعية. وتؤثر التغيرات السعرية، عبر الزمن، على قرارات الإنتاج والعرض. وعرض الدواجن بالنسبة لأسعار المستهلك مرن ويقترّب من الوحدة (١,٠٣٧). وباستخدام بيانات السلاسل الزمنية، وجد أن الطلب بالنسبة لأسعار المستهلك مرن (١,٨٩)، على حين أن الطلب مع الأسعار العالمية للدواجن غير مرن (٠,٢٢٧) . ومرونة الطلب الداخلية مرتفعة (٠,٨) . وتتضمن نتائج المرونات التي تم الحصول عليها ما يلي :

أ- يكون إنتاج الدواجن حساساً للأسعار المحلية للمستهلكين، فالتغيرات في أسعار

المستهلك تحدث تغيراً تناسبياً في عرض الدواجن .

ب- الطلب على الدواجن مرن جداً (١,٨٩) بالنسبة للسعر .

١٣- يمكن إن تكون خسائر الرفاهة كبيرة جدا في ظل المستوى الراهن للتعريفة الجمركية على الدواجن وهو ٨٠٪، بالمقارنة بصافي الرفاهة الاجتماعية التي يمكن إن تسود عند تطبيق الأسعار العالمية، إذا انخفضت الأسعار العالمية بنسبة تتراوح بين ٣٠٪، ٤٠٪ عن المستويات الراهنة في عام ١٩٩٧. وفي هذه الحالة تتراوح تقديرات الخسارة الاجتماعية عند مستوى تعريفة جمركية ٨٠٪، بين ١٠٠٠ مليون جنيه مصرى الى ١٤٠٣ مليون جنيه، اعتمادا على الأسعار المستخدمة في تقدير السعر العالمي ٠ إن تخفيض التعريفة الجمركية بمقدار ٣٠٪ أو ٤٠٪ يكون أمرا ممكن الحدوث بدون التأثير على رفاهة المنتج أو المستهلك، أي أن وجود تعريفة جمركية مقدارها ٤٠٪ قد يكون كافياً لاستبعاد الواردات من الدواجن، في ظل المستوى الراهن للأسعار العالمية ٠ ويمكن أن تبدأ الواردات في دخول السوق المصرى عند مستوى تعريفة جمركية في حدود ٤٠٪، وهو يعادل - عند المستويات الراهنة للأسعار العالمية - ٧٣٢٠ جنيها للطن. وبالطبع، إذا حدث مزيد من الانخفاض في الأسعار العالمية، يكون من الضروري وجود معدل تعريفة جمركية أعلى من ٤٠٪ حتى يتم وقف الاستيراد ٠ وعند مستوى أسعار عالمية في حدود ٣٠٠٠ جنيه للطن، يكون مستوى التعريفة الجمركية بكامل نسبتها - ٨٠٪ - ضروريا لمنع الواردات. وفي تلك الحالة، سوف ترتفع الخسارة الاجتماعية الصافية الى مايقرب من بليون جنيه مصرى سنويا ٠

### توصيات الدراسة :

يمكن تحسين الأداء الشامل لصناعة الدواجن، والرفاهة الاجتماعية الصافية من خلال تنفيذ التوصيات التالية :

١- المستوى الحالي للتعريفة الجمركية على الدواجن (٨٠٪) قد يؤدي إلى تقليل صافي الرفاهة الاجتماعية بمقدار كبير جدا، أي بمقدار يزيد على ١١٠٠ مليون جنيه مصرى إذا انخفضت الأسعار العالمية. أي أن المستوى الحالي للتعريفة يفوق المستوى المطلوب لحماية المنتجين المصريين من المنافسة الناتجة عن الواردات، بافتراض ثبات مستويات الأسعار العالمية الراهنة وهيكل العرض والطلب المصري. وتحديد التعريفة الجمركية المناسبة سوف يؤدي إلى تعظيم صافي الرفاهة الاجتماعية. ولذلك، توصى الدراسة بالآتي :

أ- إجراء تخفيض في التعريفة الجمركية الى مستوى يتراوح بين ٣٠٪ - ٤٠٪ حتى تضمن ألا تزيد أسعار المستهلك على مستوى الأسعار العالمية بأكثر مما هي عليه

الآن. وإذا انخفضت الأسعار العالمية ، فسوف يكسب المستهلكون أكثر مما يخسره المنتجون.

ب- أعداد جدول زمني لتخفيض التعريفات الجمركية، وبمعدل يتمشى مع تقليل التدخل في صناعة الدواجن المحلية الى الحد الأدنى ، وزيادة كفاءة استخدام الموارد القومية ، وتعظيم رفاة المستهلك لاسيما على المدى الطويل بحيث يتسق هذا المعدل مع المعدلات المطبقة على منتجات غذائية أخرى، ويولد في نفس الوقت حصيلة للحكومة المصرية. وأي معدلات للتعريفات الجمركية تزيد على ذلك ، سوف

تؤدي الى إعاقة الواردات ، وبالتالي لا تحصل الدولة على أي إيراد .

٢- تشجيع التكامل الرأسي بين مستويات الإنتاج المختلفة وسلسلة التسويق ( أي : مزارع إنتاج الأمهات ، مصانع الأعلاف ، مزارع تسمين الدواجن ، والمجازر ، والثلاجات الكبيرة) على النحو الذي يؤدي الى تخفيض الهوامش التسويقية بين هذه المستويات. ويترتب على ذلك تخفيض تكاليف إنتاج الدواجن، ومن ثم انخفاض الأسعار المزرعية ، الأمر الذي يسمح بزيادة الطلب على الدواجن. وعندما يزيد الطلب تتلشى طاقات الإنتاج الزائدة في كل المراحل الإنتاجية في مزارع الدواجن ، ومصانع الأعلاف ، ومعامل التفريخ.

٣- التشجيع على زيادة السعات الانتاجية من خلال وجود تكامل أفقي بين مزارع الدواجن صغيرة ومتوسطة الحجم. فاقتمادات السعة في المزارع الكبيرة ترجع أساساً الى مايلي:

أ- الاستخدام الفعال لوقت الإدارة الكفاء ، مع ارتباط ذلك بوجود خبرة إدارية وفنية عالية الكفاءة.

ب- تقديم خدمات رعاية بيطرية مستمرة، الأمر الذي يؤدي الى تحقيق حالة صحية جيدة للدواجن ومعدل نفوق منخفض.

ج- توفير مكونات عالية الجودة للأعلاف بتكلفة منخفضة داخل المزرعة لضمان معدل تحويل مرتفع للعلف ، ومعدل نمو يومي مرتفع ، والذي ينتج عنه وزن تسويقي نهائي مرتفع.

د- توفير تكنولوجيا عالية نسبياً في المزارع ذات السعات الكبيرة ، ينتج عنه قدر أكبر من الدواجن عن التسويق في نهاية فترة التسمين .

٤- يرجع الاختلال بين العرض المحلي من الكتاكيت والطلب المحلي عليها ، في جزء منه الى نقص التكامل الرأسي . والتخطيط بين مزارع إنتاج الأمهات ، ومزارع التفريخ الحديثة ، ومزارع إنتاج الدواجن . إن التنسيق بين هذه المزارع من خلال عقود طويلة

الأجل يمكن أن يؤدي إلى توازن مستقر بين العرض المحلي من الكتاكيت والطلب المحلي عليها ، وتقليل التقلبات في الأسعار والمعرض.

٥- أدى الاختلال بين العرض المحلي من الدواجن والطلب عليها ، إلى تقلبات حادة في الأسعار المزرعية للدواجن، ومن ثم تحقيق خسائر كبيرة لمنتجي الدواجن، خاصة خلال شهر أبريل عام ١٩٩٨ . وقد تم تضخيم هذا الاختلال بالرغبة في تحول الاستهلاك الى اللحوم الحمراء، وخاصة خلال عيد الاضحى. وإذا حدث توسع في طاقات المجازر والثلاجات بحيث تستطيع استيعاب فائض العرض ، فان منتجي الدواجن يستطيعون تسويق فائض إنتاجهم في شكل أجزاء مثلجة أو دواجن مجمدة. وعلى ذلك، فان التنسيق بين مزارع إنتاج الدواجن، والمجازر، سوف يقلل التقلبات في أسعار الدواجن، ومن ثم تقليل خسائر المنتجين.

٦- إن الطاقة الزائدة الحالية في مصانع الأعلاف تكون مصحوبة بنفقات إنتاج عالية لكل طن من العلف . ومن ثم ينبغي على مصانع الأعلاف إجراء تعديلات طبقا لظروف الاقتصاد الحر الجديد في صناعة الدواجن.