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BROILER INDUSTRY PERFORMANCE AND ECONOMIC LIBERALIZATION IN EIGHTIES

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ABSTRACT

Technical changes and production performance are a central issue of the economic policy at micro or macro level all over the world. The broiler industry has suffered from persistent increases in input and output prices. The technical changes which have occurred in the broiler industry and policy implications on the industry derived from the continued movement towards liberalization are investigated. Cross sectional data obtained from three surveys were used to achieve the previous objectives. The technical changes are tested using two weighted index of production efficiency but changes in production costs and in input and output prices are compared using t-test.

INTRODUCTION

Technical changes and production performance are a central issue of the economic policy at micro or macro level all over the world. Technical change is usually referred to as the component of growth in output that is not accounted for by the contribution of growth in labour and capital services. It also includes productivity benefits occurring from increased education and attainment in skills, improved health, design and product innovations attributable to research, economies of scale, and improvements in the market organization such as the removal of restrictions on resource mobility, to strengthen the economic effectiveness of resources use, and raising managerial efficiency(1). Technical changes occur through time for two reasons: (1) improving technical knowledge and/or the discovery of new inputs, and (2) changing factor prices. Currently, liberalization and privatization of the Egyptian economy may have positive or even negative impacts on technical changes.

Problems: the broiler industry has suffered from persistent increases in input and output prices. The reasons behind

this continuous increases are the increase in international feed component prices, associated with an internal inflationary period due to the devaluation of Egyptian currency and the elimination of production subsidy, excess capacity in production units of industry. Unfortunately, such the impacts of these factors are accentuated due to structural inefficiencies in the industry. Thus, the production costs are relatively high compared to a state of full-capacity utilization.

Objectives : the changes in the broiler industry costs will be examined through: (1) investigation of technical changes which have occurred in the broiler industry and (2) the discussion of changes in input and output prices during 1980s. Therefore, the study has the two following objectives: (1) investigation of the technical changes which have occurred in the broiler industry in 1980s using two weighted index of production efficiency and the criteria affecting those index are also investigated and (2) testing the policy implications on the broiler industry derived from the continued movement towards liberalization and privatization of the Egyptian economy such impacts are reflected in terms of free exchange rate and elimination of the considerable subsidy of inputs, as well as, the inflation in inputs and output prices, particularly, over the period 1986-89.

Date Base and Methodology

Cross sectional data were used to investigate the previous objectives. These data obtained from surveys (conducted by A.A.Ibrahim) comprised of three components: (1) broiler parent stock farms sample survey, (2) hatcheries sample survey, and (3) two broiler production farms sample surveys in 1981/82 and 1986/87. Firstly, in the short-run, the total costs of fertile egg or 1-kg of live-weight are the sum of variable costs and fixed costs. The variable costs are divided into feed cost and other variable costs (drugs, veterinary services, water, electricity, and mortality). Fixed costs are divided into baby chick cost and the other fixed costs (fuel, taxation, fees, salaries and wages, depreciation of buildings, equipment and tools, rent, maintenance, bedding, and travel cash).

Total costs of day-old chick are the sum of the fertile egg cost and hatching cost. The fertile egg cost is modified by the hatchability rate. Hatching costs comprise wages and salaries, water, electricity, packing materials, maintenance, taxation, fees, and depreciation of building and equipment.

Secondly, the production performance specifications of commercial broiler strains under Egyptian conditions in 1986/87 and in 1981/82 are compared using t-test. The two weighted index are the European Production Efficiency Factor (EPEF) and the Production Efficiency Rate (PER). The first one, (EPEF), is standard measurement of broiler performance which takes into account all technical performance factors, i.e. live-weight, feed conversion efficiency, age and mortality [2]. The EPEF is calculated as follows:

$$\text{EPEF} = \frac{(\text{TLW})^2}{\text{NCS} \times \text{A} \times \text{TFC}} \times 10,000$$

Where : TLW, NCS, A, and TFC are, respectively, the total live-weight of broiler (kg), the number of chicks started (unit), the age (days), and the total feed consumed (kg). The world commercial broiler strains under breeders' conditions according to this efficiency factor record a score of almost 230-240 [2].

The second one, PER, is a relative standard measurement of broiler production performance and takes into account directly the previous technical performance specifications. Also, it has an advantage over the EPEF in being a relative measurement formulated to give 100 per cent for the world commercial broiler strains instead of a scoring system. The PER is calculated as follows :

$$\text{PER} = \frac{\text{ALW}}{\text{AFCR} \times \text{AA} \times \text{AMR}} \times 100$$

where : ALW, AFCR, AA, and AMR are the average of broiler's live-weight at sale (kg), the average of feed broiler's conversion rate (kg), the average broiler's age (days), and the average of broiler's mortality rate (decimal). Thirdly, the changes that occurred in the prices of broiler feed/ton, broiler baby chick and kg of live-weight broiler over the eighties are compared using t-test. Each comparison can be viewed from four different angles: (1) 1981/82 prices (as whole) compared with 1986/87 prices (as whole); (2) 1981/82 prices (as whole) compared with private sector prices in 1986/87; (3) 1981/82 prices (as whole) compared with public sector prices in 1986/87; and (4) private sector prices in 1986/87 compared with public sector prices in 1986/87.

Fourthly, the relative importance of each costs component in the total inflation rate in costs of production is examined. Such inflation has occurred due to Liberalization in the Egyptian economy has been strongly stressed since 1986. Therefore, the growth rate in broiler costs of production was recalculated (based upon Alpha Chaing [3]) to show the increase in the level of costs between 1986-1989, as follows :

$$C_0 = C_1 + C_2 + C_3 \quad (1)$$

$$r(C_0) = r(C_1) [C_1 / C_0] + r(C_2) [C_2 / C_0] + r(C_3) [C_3 / C_0] \quad (2)$$

$$C_1 = C_{11} + C_{12} \quad (3)$$

$$r(C_1) = r(C_{11}) [C_{11} / C_1] + r(C_{12}) [C_{12} / C_1] \quad (4)$$

$$C_{11} = C_{111} + C_{112} + C_{113} \quad (5)$$

$$r(C_{11}) = r(C_{111}) [C_{111} / C_{11}] + r(C_{112}) [C_{112} / C_{11}] + r(C_{113}) [C_{113} / C_{11}] \quad (6)$$

$$C_2 = P_2 Q_2 \quad (7)$$

$$r(C_2) = r(P_2) + r(Q_2) \quad (8)$$

where : C_0 is the total production costs per one kg live-weight (pt), C_1 is the day-old chick costs (pt), C_2 is the feed cost per one kg live-weight (pt), C_3 is the other costs items (pt), $r(C_i)$ is the annual rate of increase (growth) in cost item 'i', C_{11} is the costs of a fertile egg (pt), C_{12} is the hatching costs per day-old chick (pt), C_{111} is the feed cost per fertile egg (pt), C_{112} is the cost of parent stock day-old chick (pt), C_{113} is the other costs items per fertile egg (pt), P_2 is the price per one kg of feed (pt), and Q_2 is the quantity of feed per one kg live-weight (feed conversion rate) (kg).

RESULTS AND DISCUSSION

†. Changes in Costs of Production over the 1980s

2.1 Production Costs for Fertile Egg :

Comparisons between the average levels of production costs, particularly, feeds and baby chicks over the periods 1986 and 1989 per fertile egg are presented in Table 1. Egg production cost increased from pt. 23.1 in 1986 [4] to pt. 50.5 in 1989 which represents an increase of 40% simple average per annum. The relative importance of total of feed and day-old chick costs represented about three-quarters of the total production costs per fertile egg during the period from 1986 to 1989. Therefore, any effort towards decreasing production expenses for both items by horizontal integration between parent stock farms, and/or by forward or backward vertical integration between feed factories, parent stock farms and hatcheries will result in a reduction in the total costs per fertile egg because farms gain the benefits of large-scale production.

2.2 Production Costs for Day-old Chick :

Comparisons between the average levels of costs over the periods 1986, 1986/87 and 1989 are presented in the Table 2. The day-old chick cost increased from pt. 35.2 in

1986 [4] to pt. 62.4 in 1986/87, to pt. 72.4 in 1989, i.e., a simple average of 35% annually. Fertile egg costs ranged from pt. 32.6 in 1986 to pt. 64.5 in 1989 which represents about 93 and 89 per cent of production costs, respectively. Hatching costs ranged from pt. 2.6 in 1986 to pt. 7.9 in 1989, represent about 7 and 10 per cent, respectively.

1.3 Production Costs for One kg of Live-weight Broiler:

Comparisons between levels of production costs, particularly feeds and old-day chicks in each of the small and the large-scale farms during the periods 1981/82, 1986/87 and 1989 are shown in Table 3.

In small-scale farms, total production costs per one kg of live-weight broiler increased significantly from pt. 86.4 in 1981/82 to pt. 299.5 in 1989, i.e., a simple average of 31% per year. Feed costs greatly increased from pt. 45.6 in 1981/82 to pt. 194.1 in 1989, i.e., 41% an average annually. Also, day-old chick costs increased from pt. 19.6 to pt. 45.8, i.e., 17% an average annually. Generally, the total of feed and day-old chick costs together are responsible for about 201 per cent; representing 81 per cent of the increase in total production costs per one kg of live-weight broiler in small scale farms over the period 1981/82-89.

In large-scale farms, total costs per one kg of live-weight broiler increased from pt. 80.0 in 1981/82 to pt. 266 in 1989, i.e., 29% an average annually. Feed costs increased from pt. 40.7 in 1981/82 to pt. 176.5 in 1989, i.e., simple average of 42% annually. Also, day-old chick cost increased from pt. 17.5 in 1981/82 to 54.1 in 1989, i.e., 20% per annually. In general, the total feed and baby chick costs together increased by 205 per cent; representing 88% of the increase in the total production costs per one kg of live-weight broiler in large-scale farms. Therefore, recommending forward or backward vertical integration and/or the horizontal integration between production units will result in the relative stabilization of broiler production costs and consequently, selling price of broilers due to the economies of scale which can be realized.

The aggregate (small- and large-scale) average annual increase in total costs of production was 64.7% between 1986/87-1989. This annual rate of increase was composed of 82.4% in feed costs and 10.4% in day-old chick costs.

1.4 Impacts of Integration on Production Costs :

Vertical integration occurs when some of the successive stages of production such as parent stock, hatcheries, feed factories and broiler production farms are linked

together. The usual result of integration is that of non-price linkage through direct ownership or by contract, i.e., successive stages of production are tied together in some formal way other than through the price system. Horizontal integration occurs when similar small production units such as broiler production farms are non-price linked together [5].

Integration may reduce production costs in these units, or stages, through economies of scale. Marketing costs may also decline because of the reduction in the number of marketing points. Both horizontal and vertical integration make the industry able to apply modern technology in both production and marketing which will reduce costs significantly. Moreover, integration makes price reduction possible because of the greater control over risk. Thus, these cost savings will be passed on to consumer as lower retail prices and/or to producers as higher margins (incentives) depending on the relative elasticities of supply and demand for meat broiler.

2. Changes in Technical Efficiency Over the 1980s

According to the EPEF, the average production performance of broiler in 1986/87 retrogressed by 39% of the average in 1981/82 (Table 4). This was due mainly to a decrease in the average of production performance in the private sector in 1986/87 by 49% of the 1981/82 average, in contrast to a decrease in the public sector by 5% of the 1981/82 average. Also, the average production performance in the private sector in 1986/87 was less than that of the public sector by 47% of the average in public farms. According to the PER, the average production performance rates of broiler during the period 1981/82 was extremely low, estimated by about 27.34% (Table 4.4). This was due to a high mortality rate, a decline in marketing weight and a long fattening period. Also, the average production performance rate in 1986/87 remained below the average in 1981/82 by 10.74 per cent (a decrease of about 40%) because of the decrease in average production performance rates for both private and public sectors in 1986/87, respectively, by 73 and 34% of the average in 1981/82. Between private and public sectors in 1986/87, the average production efficiency rate in the private sector was less than that of the public by 10.52 per cent representing 59 per cent of the average in public farms.

Finally, the foregoing sections of this paper showed that the broiler farms in 1981/82 performed more efficiently than in 1986/87. On the other hand, public sector farms in 1986/87 performed more efficiently than the private sector farms. Moreover, especially after removal of financial

support policies, the higher efficiency performed and lower costs realized by public sector farms are apparently due to their larger scale and more efficient management. However, the apparent differences in productive performance between the two sectors cannot be entirely attributed to farm management in the public sector, but also to relative feed quality, baby chick quality and marketing problems faced by private farms to sell the finished broilers at an optimal time. All these factors play significant roles in the apparent differences in production efficiency between the two sectors. The criteria beyond this decrease in both weighted index are high mortality rate, decreasing number of lots per farm per year, lengthening feeding period, deterioration of feed efficiency, low daily gain, and small marketing live-weight.

2.1 Mortality :

One of the important technical performance specifications in broiler industry which reflects sanitary care conditions, and management efficiency supporting the broiler flock is the mortality rate. An increase in mortality rate means: (a) a decrease in total live-weight of flock or average of marketing weight of bird, and (b) an increase in production costs, both of which represent an overall decline in production and economic efficiency.

Averages of mortality rates in 1986/87 compared with that in 1981/82 as shown in Table 5 indicate that: (a) averages of mortality rates are generally high in both years, ranged from 6.44-10.17 per cent, compared with the world standard which was less than 4 per cent [6] (b) the overall weighted average of mortality rate in 1986/87 increased by about 58 per cent above that in 1981/82; (c) both averages in private and public sector in 1986/87 increase, respectively, by 69 and 24 per cent above the average in 1981/82; and (d) average of mortality rate for private sector increased by 36 per cent above the average in public farms.

2.2 Number of Lots per Farm per Year :

In spite of suitable production capacities of the feed factories, fifty per cent of this capacity is idle because the requirements of yellow corn are not available. At the beginning of 1980s, the rapid growth in number of commercial broiler farms (increased from 2,338 in 1978 to 17,897 in 1987, i.e., about eight fold) and the increased growth in the domestic demand for broiler feed caused a dramatic increase in feed factories capacities greater than that of the increase in available quantities of yellow corn. The consequent lack of quantity and quality of feed, and increase in fixed costs has increased feed price per tonne

and, thus, decreased the number of lots produced annually by broiler producers [7].

Between 1986/87 and 1981/82 the average of number of lots decreased from about five to four. This was due mainly to a decrease in the average of number of lots in the private sector farms in 1986/87 by 1.43 lot, in spite of an increase in the average in the public sector by 0.99 lot, because the private sector farms represent the bulk of the industry (Table 5). Also, the average number of lots in the private sector decreased by 2.42 lots compared with the average in the public sector in 1986/87.

2.3 Production or Feeding Period :

Theoretically, the production period plays a major role in determining the production costs. To lengthen feeding period above (more than) 50 days, for most world standard crossbred of broiler increases average production costs because the total increase in costs are greater than the increase in the value of marginal product as both the daily growth rate and feed conversion efficiency of broiler decrease after the first fifty days of age.

The averages of feeding period in both of private and public sector in 1986/87 compared with that in 1981/82 are presented in Table 6. The results in this table reveal that: (a) the average feeding period in both years (1986/87 and 1981/82) are greater than 50 days and the difference between them is 1.25 day, (b) the feeding period in the private sector in 1986/87 was the same as that in 1981/82, (c) the feeding period in public sector in 1986/87 decreased by about 6 days than that in 1981/82, and (d) the difference between feeding period in 1981/82 and that of public sector in 1986/87, and between feeding period of both private and public sector are statistically significant.

2.4 Feed Efficiency :

Broiler has a characteristically rapid growth during the first eight weeks because of the high ability to convert feed into meat during this period. It is well known that feed conversion efficiency of world commercial broiler strains are 0.5kg of live-weight per one kg of feed (1:2). As broiler lives and breeds in unsuitable or under bad sanitary conditions, nutrients, and environmental conditions and housing system this ratio will deteriorate because of: (1) increasing feed quantity consumed, (2) lengthening production period, (3) lessening number of lots annually per farm in year, (4) decreasing daily growth rate, (5) increasing mortality rate, and (6) the accumulative increase in other production cost items.

Comparing the feed conversion rate for broiler in 1986/87 with the corresponding rate in 1981/82 (Table 6)

exhibits the deterioration which has occurred in this industry, (a) Feed conversion efficiency during 1981/82-1986/87 deteriorated by 86 gram of live-weight/kg of feed which represented about 21% of average feed efficiency in 1981/82, (b) Feed conversion efficiency is less for private sector in 1986/87 than that in 1981/82 (in general) by 30% of the average in 1981/82, (c) Interestingly, the feed conversion rate was better in the public sector in 1986/87 than that in 1981/82 by 36 gram of live-weight/kg of feed, and (d) between the private and public sector, in 1986/87, this efficiency is better in public than private sector by 55% of the average in private farms.

2.5 Daily Gain :

The world commercial broiler strains under breeders conditions achieve a rapid average daily growth rate, reaching 53 gram, during the early age or the first nine weeks [2] if given balanced feed in (calorie:protein ratio) and raised in a good care conditions. So, commercial broiler strains under Egyptian conditions in both 1986/87 and 1981/82 achieved low average daily growth rates compared with the standards of world commercial broiler strains.

The average of daily growth rate in 1986/87 is less by 6 grams/day than that in 1981/82; a decrease of about 25% (Table 6). This is additional evidence that the Egyptian broiler industry suffered a remarkable deterioration in both quality of feed consumed and management during the 1981/82-1986/87 period. The average daily growth rate in both private and public sectors have declined, respectively, by about 30 and 10% in the average daily rate in 1981/82. Comparing the private and public sectors in 1986/87, the average daily growth rate is less in the private sector by 15% of the average in public farms. Recommendations should emphasize that broiler feed must be qualitatively balanced, and the management is aware of structure of feed and nutrient requirements for broiler meat production in order to achieve increased daily growth rates.

2.6 Marketing Live-weight :

In broiler production, the average finished weight of the bird is the outcome of a set of multiple correlated variables such as feed conversion rate, daily growth rate, length of feeding period, scale of production, and mortality rate which must be provided with full-time efficient management and integrated veterinary services. Increasing mortality rate, deteriorating feed conversion rate, decreasing daily growth rate or inadequate full-time and efficient management lead to smaller average marketing weight of broiler.

Between the broiler marketing weights in 1981/82 and

1986/87, the average in 1986/87 decreased by about 28 per cent. This is due mainly to decreases in averages of both private and public sectors, respectively, by 29 and 25 per cent (Table 7). However, in 1986/87 the public sector average marketing weight increased by about 5%, more than that of the private sector.

3. Changes in Input and Output Prices during The 1980s

3.1 Feed Price :

In private farms, the average feed price was L.E. 187 per tonne in 1981/82, which rose to L.E. 295 in 1986/87 (Table 8). Thus, the increase in average feed price during the period 1981/82-1986/87 amounted to L.E. 108 per tonne, which is an increase of 11.6% as annual average, i.e., the increase in feed price was responsible for 46% of the increase in broiler production costs which amounted 79.2 per cent (calculated from Table 8) in 1981/82-1986/87 period (i.e., a 15.8% annual average).

On public farms, the average feed price was L.E. 175 in 1981/82 [8] which rose to L.E. 180 in 1986/87 (Table 8) which is not a significant change. So, public farms continued producing six lots annually with no remarkable increase in broiler production costs.

These comparisons between average broiler feed price per tonne in the four cases are presented in Table 9. The data reveal that: (1) generally, for private and public broiler feed price in 1986/87, the average feed price in broiler private farms was 64% higher than that of public farms; (2) the overall weighted average of broiler feed price in 1986/87 increased by about 44% above the overall average in 1981/82 (8.8% annual average); (3) the average broiler feed price in private farms in 1986/87 increases by 58% above the average in 1981/82 (11.6% per annum); (4) surprisingly, the average price in public farms decreased by about 4% from the average in 1981/82 (0.8% annual average).

The average broiler feed price amounted to L.E. 710 per tonne (L.E. 720 for starting feed and L.E. 700 for finishing feed) in private farms and L.E. 652 per tonne (unified type) in public farms in April 1989 [9]. Thus, the broiler feed price for private farms increased by 70.5% as an annual average of period 1981/82-1986/87 and by 40% as an annual average of period 1981/82-1989. Also, the average feed price for public farms increased 262 per cent during the period 1986/87 up to April 1989 (131% annual average) and 273 per cent during 1981/82 up to April 1989 (39% annual average). It should be mentioned that the subsidized price of broiler feed at the General Poultry Company in 1981/82 was 175 L.E. per tonne.

The high increase in broiler feed price during the period of study, particularly in the private sector, is due to: (1) the fixed subsidized price of yellow corn (60 L.E. per tonne) was stopped since 1985; (2) the subsidized prices of the other imported feed components such as fish and meat powders, soybean meal and animal fats were also stopped; (3) private feed processing plants suffered from idle capacities because of lack of yellow corn imports; (4) inflation in domestic and imported feed component prices such as yellow corn, soybean and protein concentrations; and (5) the deterioration in the exchange rate for Egyptian pound.

3.2 Day-old Chick Prices :

The results of the comparison between day-old chick prices in years 1981/82 and 1986/87 (Table 8) indicates that: (1) generally, for private and public broiler baby chick prices in 1986/87, the average of price in private farms was 38% higher than the price for public farms; (2) the overall weighted average of broiler day-old chick price in 1986/87 increased by 72 per cent above the overall average in 1981/82 (14.4% annual average); (3) the average broiler of baby chick price in private sector farms in 1986/87 increased by about 84% above the average in 1981/82 (16.8% annual average); (4) the average baby chick price in public sector farms in 1986/87 increased by 33% above the average in 1981/82 (6.6% annual average). The average baby chick price was pt. 70 in April 1989 [9]. The increase in the average of baby chick price in 1989 was pt. 41.4 representing 145% above the average in 1981/82 (20.7% annually), which was pt. 28.6; this represents 43% above the average in 1986/87 (21.5% annual average).

The increase in baby chick price is mainly due to increases in the cost of the broiler fertile egg and partially to the hatching cost of baby chick and the marketing margin for hatcheries.

2.3 Farm-gate Price of One Kg of Live-weight :

The results of comparisons between broiler average farm-gate prices in years 1981/82 and 1986/87 (presented in Table 9) indicate that: (1) generally for private and public broiler farm-gate prices in 1986/87, the average of price in private farms was 108% higher than that of public farms; (2) the overall average (weighted average) broiler farm-gate price in 1986/87 increased by about 53% above the overall average in 1981/82 (10.6% annual average); (3) the average broiler farm-gate price in private sector farms in 1986/87 increased by 74% above the average in 1981/82 (14.8% annual average); (4) surprisingly, the average price in public farms decreased by 16% from the average in 1981/82 (3.2% annual average). The average broiler farm-gate price in the private

sector amounted for pt.306/kg of live-weight broiler in 1989. The increase in broiler farm-gate price in 1989 was 186% above the average of price in 81/82 (26.6% annual average), and 65% above the average price in private sector in 86/87 (32.6% annual average). The average of broiler farm-gate price in public sector farms amounted to pt. 279/1 kg live-weight in 1989 which means that the increase in farm-gate price in 1989 amounted to 161% above the average of price in 81/82 (23.0% annual average) and 211% above the average of price in public sector (105.5% annual average).

4. Analysis of Inflation Rate in Production Costs

Data in Table 10 show the following results:(1) in parent stock stage, the annual aggregate rate of increase in production costs per fertile egg from 1986 (economy liberalization started) to 1989 is 59.4% of the total costs per fertile egg in 1986; 20.6%, 8.3% and 51.5% were due, respectively, to feed parent stock day-old chick and other costs,(2) In the hatching stage, the annual aggregate rate of increase in production costs per day-old chick, 1986-89 was 53.1% of production costs in 1986; 45.3% and 7.8% were due, respectively, to production costs per fertile egg and hatching costs.(3) In broiler production stage, the annual aggregate rate of increase in production costs per one kg live-weight was, respectively, 46.8% and 60.6% in the small and large scale with weighted average 50.1%. In small-scale farms, 32.7%, 1.1% and 13.0% were, due, respectively, to feed, day-old chick and other costs, whereas 36.2%, 6.8% and 17.6% were due, respectively, to feed, day-old chick and other costs in the large-scale farms.

TABLE 1: Production cost per parent stock fertile egg in 1986 and 1989

Production costs	1986 ^a		April 1989 ^b	
	Value	%	Value	%
Variable cost	pt.		pt.	
Feed cost	14.5	62.7	24.0	47.5
Others	2.6	11.4	3.9	7.7
Total var. cost	17.1	74.1	27.9	55.2
Fixed cost				
Baby chick price	3.4	14.7	7.3	5.3
Others	2.6	11.2	15.3	39.5
Total fixed cost	6.0	25.9	22.6	44.8
Total cost	23.1	100	50.5	100

a.Private sector. b.Average of private and public sectors.

Sources: a. Y.A.Hamouda, "An Analytical Study of Productive Relations for Poultry in Egypt". Ph.D Thesis. Ain Shams University, 1988, pp. 51-54.

b. Livestock Council, Poultry Development Committee Documents (unpublished, Cairo:Ministry of Agriculture, April 1989).

TABLE 2: Production cost per old day chick in 1986, 1986/87 and 1989

Production costs	1986		1986/87		April 1989	
	Value	%	Value	%	Value	%
	pt.		pt.		pt.	
Fertile egg ^a	32.6	92.6	59.4	95.2	64.5	89.1
Hatching cost	2.6	7.4	3.0	4.8	7.9	10.1
Total costs	35.2	100.0	62.4	100.0	72.4	100.0

a. Fertile egg cost modified by hatchability rate.

Source: Ibid.

Table 3: Production costs per one kg of live-weight broiler for small- and large-scale in 1981/82, 1986/87 and April 1989

Production costs	1981/82		1986/87		April 1989							
	Small-scale		Large-scale		Small-scale		Large-scale					
	Value	%	Value	%	Value	%	Value	%				
Variable costs	pt.		pt.		pt.		pt.					
Feed cost	45.6	52.8	40.7	50.9	92.9	67.0	47.1	51.3	194.1	64.1	176.5	66.4
Others	7.6	8.8	9.2	11.5	13.3	8.6	6.2	6.8	27.2	9.1	21.9	8.2
Total var. costs	53.2	61.6	49.9	62.4	106.2	68.6	53.3	58.1	221.3	73.9	198.4	74.6
Fixed costs												
Baby chick	19.6	22.7	17.5	21.9	42.6	27.5	32.6	35.5	45.8	15.2	45.1	16.9
Others	13.6	15.7	12.6	15.8	6.0	3.9	5.9	6.4	32.4	10.8	22.5	8.5
Total fix. cost.	33.2	38.4	30.1	37.7	48.6	31.4	38.5	41.9	78.3	26.1	67.0	25.4
Total costs	86.4	100	80.0	100	154.8	100	91.8	100	299.5	100	266	100

Sources: Ibid.

TABLE 5: Comparison between averages of each mortality rate and number of lots annually in years 1986/87 and 1981/82

Observation on mortality rate	Comparison: 1981/82 - 1986/87				1986/87	
	Overall means		Private 86/87	Public 86/87	Private	Public
	1981/82	1986/87				
Mean	6.44	10.17	10.87	7.98	10.07	7.98
Std. dev.	3.95	5.02	5.22	3.69	4.37	4.04
No. of obs.	32.0	59.0	45.0	14.0	45.0	14.0
Difference	-3.73		-4.43	-1.54		2.89
Std. error of diff.		0.956		1.498		1.268
T-ratio		-3.9		-4.22		-1.28
d.f.		89.0		75.0		44.0
Prob.		0.00		0.00		0.21
----- annual lots -----						
Observation on No. of lots						
Mean	4.93	4.07	3.51	5.93	3.51	5.93
STD dev.	0.354	1.4	1.1	0.267	1.1	0.27
No. of obs	32	59	45	14	45	14
Difference		-0.86		1.43		-0.991
STD. error of diff.		0.186		0.202		0.106
T-ratio		-4.62		7.07		-9.36
d.f.		89		75		44
Prob.		0.000		0.000		0.000

Sources: (1) Field studies; 1981/82 and 1986/87 samples.
(2) Calculated by using minitab software computer package.

TABLE 4 Comparison between averages of each European production efficiency factor and production efficiency rate in 1986/87 and 1981/82

Observation on European production factor	Comparison: 1981/82 - 1986/87				1986/87	
	Overall mean		Private 86/87	Public 86/87	Private	Public
	1981/82	1986/87				
Mean	113.7	69.5	57.5	108.1	57.5	108.1
Std. error	26.2	25.4	13.5	12.6	13.5	12.6
No of obs.	32	59	45	14	45	14
Difference	44.2		56.2	5.6		-50.6
Std. error of diff.		5.689		5.05		3.975
T-ratio		7.77		11.14		-12.73
d.f.		89		75		44
Prob.		0.000		0.000		0.066
----- EPEF (score) -----						
Observation on production efficiency rate						
Mean	27.34	16.6	7.44	17.96	7.44	17.96
Std. error	12.3	7.56	3.35	10.3	3.35	10.3
No of obs.	32	59	45	14	45	14
Difference	10.74		19.9	9.30		-10.52
Std. error of diff.		1.72		2.51		0.552
T-ratio		6.26		7.92		-4.15
d.f.		89		75		44
Prob.		0.000		0.000		0.005
----- PER (%) -----						

Sources: Ibid.

TABLE 7 : Comparison between averages of each daily growth rate and marketing weight in 1986/87 and 1981/82

Observation on daily gain	Comparison: 1981/82 - 1986/87				Overall mean	1986/87	
	1981/82		1986/87			Public	Private
	1981/82	1986/87	1986/87	1986/87		86/87	86/87
Mean	20.9	23.19	22.25	26.2	22.25	26.2	26.2
Std. error	2.09	2.04	2.51	1.36	2.51	2.51	1.36
No of obs.	32	59	45	14	45	45	14
Difference	5.71		6.65	2.7			-3.35
Std. error of diff.	0.630		0.633	0.626			0.522
T-ratio	9.06		10.51	4.3			-7.57
d.f.	89		75	44			57
Prob.	0.000		0.000	0.0001			0.000
----- grams -----							
Observation on marketing live-weight	----- kg -----						
Mean	1.570	1.231	1.216	1.276	1.216	1.276	1.276
Std.error	0.135	0.153	0.168	0.076	0.168	0.166	0.076
No of obs.	32	59	45	14	45	45	14
Difference	0.339		0.154	0.294			-0.080
Std. error of diff.	0.031		0.035	0.031			0.032
T-ratio	10.9		10.2	9.38			-1.84
d.f.	89		75	44			57
Prob.	0.000		0.000	0.000			0.07

Sources: Ibid.

TABLE 6 : Comparison between average of each feeding period and feed conversion rate in years 1986/87 and 1981/82

Observation on feeding period	Comparison: 1981/82 - 1986/87				Overall means	1986/87	
	1981/82		1986/87			Public	Private-Public
	1981/82	1986/87	1986/87	1986/87		86/87	86/87
Mean	57.62	56.37	57.8	51.79	57.8	51.79	51.79
Std. dev.	5.15	5.85	5.72	3.53	5.72	3.53	3.53
No. of obs.	32	59	45	14	45	14	14
Difference	1.25		-0.18	5.83			6.01
Std error of diff.	1.19		1.285	1.31			1.27
T-ratio	1.05		-0.14	4.45			4.73
d.f.	89		75	44			57
Prob.	0.30		0.89	0.000			0.000
----- days -----							
Observation on feed conversion efficiency	----- grams -----						
Mean	413	327	289	449	289	449	449
Std.dev.	67	82	47	36	47	36	36
No of obs.	32	59	45	14	45	14	14
Difference	86		124	-30			-160
Std. error of diff.	15.9		13.7	14.9			11.8
T-ratio	5.4		9.03	-2.42			-13.56
d.f.	89		75	44			57
Prob.	0.00		0.00	0.02			0.00

Sources: Ibid.

TABLE 8 Comparison of broiler feed price and baby chick price in years 1981/82 with 1986/87

Observation on broiler feed price	1986/87		Comparison: 1981/82 - 1986/87			
	Private	Public	Overall means		Private 1981/82	Public 1986/87
			81/82	86/87		
	----- L.E./tonne -----					
Mean	294.9	180.0	186.8	268	294.9	180
STD dev.	156.0	0.002	17.5	145	156	0.002
No of obs.	45	14	32	59	45	14
Difference	114.9			-81.2	-108.1	6.8
% of diff.	63.8			43.5	57.9	3.6
Std. error of diff.	42.0			19.15	27.8	4.7
T-ratio	2.74			-4.24	-3.897	1.4
d.f.	57			89	75	44
Prob.	0.0041			0.000	0.000	0.08
	----- pL -----					
Observation on baby chick price						
Mean	52.7	38.0	28.6	49.1	52.6	38.0
Std. dev.	23.94	0.0	23.9	21.8	23.9	0.0
No of obs.	45	14	32	59	45	14
Difference	14.6			-20.6	-24.04	-9.5
% diff.	38.4			72.1	84.1	33.2
STD.error of diff.	6.44			2.88	4.25	0.6
T-ratio	2.27			-7.2	-5.65	-15.8
d.f.	57			89	75	44
Prob.	0.014			0.00	0.00	0.00

Sources: (1) Field studies, 1981/82 and 1986/87 samples.
(2) Calculated by using microstat software package.

TABLE 9 Comparison between broiler prices per kg live-weight in years 1981/82 and 1986/87

Observation on per kg broiler price	1986/87		Comparison: 1981/82 - 1986/87			
	Private	Public	Overall means		Private 1986/87	Public 1986/87
			1981/82	1986/87		
	----- pL -----					
Mean	186	89.82	107.1	163.4	186	89.8
Std. dev.	102	7.64	2.23	98	102	7.64
No of obs.	45	14	32	59	45	14
Difference	96.18			-56.3	-78.9	17.3
% of diff.	107.5			52.6	73.7	16.2
Std. error of diff.	15.29			12.79	15.17	2.079
T-ratio	6.29			-4.4	-5.2	8.31
Prob.	0.00			0.00	0.00	0.00

Source: Ibid.

TABLE 10 Annual rate of increase in costs items over the period 1986-89

Costs items	Fertile egg	Day-old chick	One kg live-weight of broiler	
			Small scale	Large scale
	----- per cent -----			
Feed cost	20.6	-	32.7	36.2
Day-old chick	8.3	-	1.1	6.8
Other costs	51.5	-	13.0	17.6
Fertile egg	-	45.3	-	-
Hatching costs	-	7.8	-	-
Aggregate rate	59.4	53.1	46.8	60.6

REFERENCES

1. Z.B. Abdel Rashed, "Technological Obsolescence, Market and Price Structure on the 1969, 1974 and 1979 British Vintage Technologies: An Input-output Approach", unpublished Ph.D. thesis. The University College of Wales, Department of Economics, Aberystwyth, 1989, pp. 131-6.
2. Cobb Breeding Company, Ltd, "Broiler Management Guide", (Chelmsford, Essex: The Cobb Breeding Company, Ltd, 1988), p. 24.
3. Alpha Chaing, Fundamental Methods of Mathematical Economics, (3rd ed.; Singapore: McGraw-Hill, Inc., 1984), p. 304.
4. Y.A. Hamouda, "An Analytical Study of Production Relation for Poultry in Egypt", unpublished Ph.D. thesis, Ain Shams University, Faculty of Agriculture, Department of Animal Production, 1988, pp. 51-4.
5. R. Kohle, Marketing of Agricultural Products, (5th ed.; London: Collier-Macmillan Publishers, 1980), pp. 260-8.
6. S. Shapouri and I Soliman, Egyptian Meat Market: Policy Issues Performance, USDA, ERS, p. 3, 1983.
7. Specialized National Council (SNC), Report about Production and Marketing Policy of Poultry and Egg (Cairo: National Council of Production and Economic Affairs, Jan. 1987), p. 3.
8. General Poultry Company, Chairman's office, unpublished data.
9. Livestock Council, Poultry Development Committee Documents (unpublished) (Cairo: Ministry of Agriculture, April, 1989).

أداء صناعة الدواجن والتحرر الاقتصادي في الثمانينات

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لقد تعرضت صناعة البدارى بمراحلها المختلفة الى العديد من المشاكل من أهمها الزيادة المستمرة في أسعار مدخلاتها بصفة عامة ، وأسعار العلف والكتكوت عمر يوم بصفة خاصة ، حيث ترجع هذه الزيادة الى ارتفاع أسعار مكونات العلف المستوردة بالإضافة الى رفع دعم المدخلات وتخفيض قيمة الجنيه المصرى ، علاوة على وجود معدلات إنتاجية معطلية داخل هياكل هذه الصناعة ، مما كان له أكبر الأثر على الكفاءة الانتاجية بوحدات هذه الصناعة في حلقاتها المختلفة .

وعلى هذا الأساس استهدفت هذه الدراسة مقارنة تكاليف انتاج الوحدة في مراحل الصناعة المختلفة ، ودراسة أثر التغير التكنولوجى الذى حدث في صناعة الدواجن خلال فترة الثمانينات . ولتحقيق الأهداف البحثية اعتمدت الدراسة على البيانات القطاعية للمدخلات والمخرجات الخاصة بحلقات هذه الصناعة من خلال ثلاث عينات ميدانية جمعت من مزارع الأمهات والمفرخات ومزارع انتاج البدارى في عام ١٩٨٧/٨٦ ، هذا بالإضافة الى بيانات قطاعية لمزارع انتاج البدارى في عام ١٩٨٢/٨١ حيث غطت البيانات فترة انتاجية كاملة في كل مرحلة انتاجية .

وأكدت نتائج التحليل الاقتصادي أن الزيادة المستمرة في تكاليف انتاج الكيلوجرام بدارى وزن حى ومن ثم سعر البيع ترجع أساسا الى التدهور التكنولوجى الذى حدث في صناعة البدارى في صورة ارتفاع معدل النفوق ، وانخفاض عدد الدورات المنتجة ، وطول فترة الانتاج ، وانخفاض الوزن التسويقي ، وانخفاض معدل النمو اليومى ، وانخفاض معامل تحويل الغذاء ، هذا فضلا عن الزيادة المضطردة في أسعار العلف والكتكوت عمر يوم خلال فترة الثمانينات .