THE INTERNATIONAL COMPETITIVENESS OF THE TABLE EGG INDUSTRY OF TRINIDAD AND TOBAGO

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The research undertaken was four-fold. First, to investigate whether government policy provides protection and by extension, incentives for the local table egg farmers to remain in production. To do so, EPC's for all commercial farms in the industry were estimated to arrive at a weighted or industry EPC.

The study also investigated whether the local tables egg industry had a comparative advantage or was efficient in the production of table egg. The Domestic Resource Cost (DRC) coefficient was used as a proxy of efficiency and comparative advantage. DRC's were calculated for the twenty-three farms.

Having established that the industry was competitive, a sensitivity analysis was conducted to determine the extent to which feed costs, the major production cost can be increased in order to reverse the competitive position of the industry.

A regression model, utilizing the technique of Ordinary Least Squares (OLS), was constructed to determine weather the various components of production costs, including feed, labour, utilities, land, chick, egg boxes, medication were significant in determining efficiency and comparative advantage in the table egg industry.

Results of the study showed that table egg producers are protected from imports through various instruments of government policy. Producers also had a comparative advantage in producing table eggs. The level of comparative advantage was highest among small producers, followed by medium and large producers. The sensitivity analysis however showed that a small increase in feed cost could reverse the competitive position of the industry.

The analysis also concluded that feed cost, as opposed to domestic resources, had the greatest potential for maintaining competitiveness in the industry.

Keywords: Regression model, table egg industry, Domestic Resource Cost (DRC), sensitivity analysis.

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1. OBJECTIVES OF THE STUDY

The objectives of this study were to:

(i) Determine the extent of protection given to table egg producers by the state through its various policy instruments.
(ii) Determine whether the table egg industry has a comparative advantage in the production of table eggs
(iii) Determine whether farm size (based on the number of layers) presence of automatic feeding systems, and costs of feed, labour, utilities (transport, water and electricity) medication and egg boxes are significant in determining comparative advantage of table egg producers; and
(iv) Determine the extent to which feed and domestic resources are used in production.

2. HYPOTHESIS

(i) This research hypothesized that the local table egg industry does not have a comparative advantage in the production of table eggs;
(ii) Farm size (number of layers) feed costs, labour costs and the use of automatic feeding systems are significant factors in conferring.

3. EMPIRICAL MODEL

3.1 Effective Protection Coefficient

The Effective Protection Coefficient (EPC) was computed in order to determine the extent of protection given to table egg producers by the state through its various policy instruments. Tsakok (1993) defined the EPC as the ratio value-added in domestic prices (VAD) to value-added in border prices (VAB) i.e.,

$$EPC_i = VAD_i / VAB_i$$

Where:

$$VAD_i = P_i^{\,d} - \sum_{k}^{k} a_{ij} P_j^{\,d} \quad (i = 1,\ldots,23) \qquad j=1$$

$$VAB_i = P_i^{\,b} - \sum_{j=1} a_{ij} P_j^{b} \quad (i = 1,\ldots,23)$$

P_i^d = wholesale price of one dozen local medium size brown table eggs;
a_{ij} = units of input used in producing one dozen medium size brown table eggs;
P_j^d = domestic price of inputs used in producing one dozen brown table eggs;
P_i^b = border price of one dozen imported medium size brown table eggs;
P_i^b = border price of inputs for producing one dozen medium size brown eggs.

Specifically, value added in domestic prices, in this study, represents the difference between the wholesale price of medium size brown eggs produced and sold by table egg farmers and the total cost of traded and non-traded inputs used in producing that commodity.

The wholesale price as opposed to the farmgate price was used because very limited sales are done at the farm gate. Producers usually transport their eggs to their respective market outlets. It should be noted that farmers were asked to provide estimates of production costs in instances where records of costs were not properly kept. This was generally the approach adopted, particularly for some of the smaller and medium size producers who kept little or no records.

3.2 Data

A questionnaire was designed and a survey conducted of producers in the industry in order to obtain data required for estimation of EPC's and other analyses undertaken in this study. A total of twenty-three (23) out of a possible twenty-six (25) commercial table egg producers were visited and interviewed during the period July to September 1999.

The names of the producers in the industry were obtained from the two importers of layer hatching eggs who hatch those eggs and supply all farmers with layer chicks. Information sought included costs of producing one dozen eggs, average wholesale selling price of eggs as well as use of automated feeding and watering systems. Farmers were also asked about their method of collecting, grading and packaging of eggs.

3.3 Estimating Value Added in Domestic Prices

The costs of traded inputs used by each table egg farmer for producing one dozen eggs viz., feed, medication, vitamins, egg boxes and replacement chicks were aggregated. Value added in domestic prices for each producer was then obtained by finding the difference between the wholesale price per dozen of eggs (medium brown) and aggregated costs per dozen of the identified inputs.

3.4 Estimating Value Added in Border Prices

The data presented in Table 1 show estimated border prices of traded inputs used in producing one dozen table eggs.

The assumptions used for converting the respective unit values of traded inputs into cost per dozen were based on the following assumptions:

(i) Total number of eggs produced per bird: 25 dozen
(ii) Total feed consumed per bird: 125 lb;
(iii) One dose of medication is administered per bird;
(iv) Two hundred and fifty gram pack of Polytoniane. (A pack can be administered to 1000 birds); and
(v) One gallon of hemoplex can be administered to 5000 birds.

The next phase in estimating the EPC was to determine the c.i.f value of landing one dozen medium size brown eggs from the United States to the port in Port of Spain, Trinidad. This information was supplied by one of the two importers of this commodity. The average cost of importing one dozen medium sized eggs from the US was estimated at $5.29 TT.

Value added in border prices was then obtained by finding the difference between the cost per dozen of medium size imported eggs and cost ($TT) of traded inputs in producing one dozen medium size local eggs. The Port of Spain docks was selected as the most suitable point to compare imported eggs with local eggs since the latter is not traded in a centralized market place. As a consequence, it was not necessary to adjust the c.i.f price of imported eggs. However, the wholesale price quoted by each farmer was adjusted by including transport and handling costs from the respective farms to the Port of Spain docks. In order to determine transport cost, the distance from each farm to the port in Port of Spain was determined on the basis of the following assumptions:

(i) Capacity of panel van used for transporting egg: 800 dozen eggs.
(ii) Mileage of panel van: 30 miles per gallon.
(iii) Cost of gas: $9.80 per gallon.
(iv) Labour cost (driver/loader): $80.00 per day.

3.5 Estimating the EPC

A spreadsheet (Excel) was used for estimating the EPC values for each of the twenty-three farms involved in this study. Tables 2 and 3 display how the spreadsheet was organized for estimating EPC values of the 23 farms. The data contained in those Tables represent actual production costs and prices respectively for estimating the EPC of the first farm. They are included here for illustration purposes.

Table 3 shows wholesale Price of Local Eggs and Cost of Imported Eggs.

The next stage in the estimation process involved two procedures: calculating value added in domestic prices (VAD) and value added in border prices (VAB).

VAD = (Adjusted wholesale price of eggs) – (total cost of traded inputs)
= (6.12 - 4.83)
VAB = (CIF price of eggs - Total cost of traded inputs in border prices)
= (5.29–4.44)
EPC = VAD/VAB
= (6.12–4.83)/(5.29–4.44)
= 1.5

The spreadsheet format used for estimating EPC for farm one (1) was also used for determining EPC's of the remaining twenty-two farms. This was done by substituting their respective costs of feed, medication, layer chick, egg boxes as well as wholesale prices into the spreadsheet. The EPC estimates calculated for all 23 farms can be seen in Table 6.

A weighted EPC was then computed to more accurately represent the table egg industry. This industry EPC was was calculated by multiplying the value of EPC computed for each of the twenty-three farms by their respective size (in terms of number of layers). Number of layers was used as the weight factor. The product of EPC and number of layers for the twenty-three farms was then summed and divided by the sum of the weights (number of layers) for the corresponding number of farms. The weighted EPC may be represented by the following mathematical expression:

Industry $EPC_i = \Sigma (W_i * EPC_i)/ \Sigma W_i$
Where W_i = weight factor (number of layers or pen size for farm, i.)

These results are also presented in Table 6.

3.6 Domestic Resource Cost (DRC)

The DRC can be used as a measure of comparative advantage and efficiency. Specifically, the model may be described as follows:

$$DRC_i = \sum_{j=k+1}^{n} aijVj / (P_i^b - \sum^{k} aijP_j^b)$$

Where:

aij, k+1 to n = coefficients for domestic resources and nontraded inputs (water, labour, transport and electricity) used in producing one dozen table eggs.

aij, 1+k = coefficients for traded inputs

V_j = shadow price of domestic resources (water, land, labour and transport) used in producing one dozen table eggs.

P_i^b = border price of traded output

P_j^b = border price of traded input

$(P_i^b - \sum aijP_j^b)$ = Value added in border prices (equivalent to the denominator of the EPC).

A spreadsheet was also used for estimating the DRC coefficients for each of the twenty-three table egg farms. The calculations for estimating DRC for farm one (1) will be used as an illustration. Details of this calculation are shown in Table 4.

DRC estimation is based on establishing a ratio (A/B) between domestic resources used in producing one dozen table eggs (valued at opportunity or valued in shadow prices) and net foreign exchange earned or saved by producing the goods domestically.

All prices were converted to shadow prices by using conversion factors, adopted from a trade study on Trinidad and Tobago by a consulting firm, Maxwell Stamp plc. in 1992. These conversion factors were adopted because it was difficult to find more recent and or relevant values in the literature reviewed. The conversion factors were derived from the ratio of official exchange rate (OER) to shadow exchange rate (SER).

The various costs of domestic resources (valued in social prices), for each table egg farmer, were summed to provide a total social value of domestic resources. This latter value was divided by the value-added in border prices (or demoninator of EPC), previously obtained from the EPC calculations, to obtain a DRC estimate for that particular farm. This process was repeated for the remaining twenty-two farms by substituting their respective costs per dozen eggs of labour, water, transport, electricity as well as VAB into the spreadsheet, illustrated at Table 4. The resulting DRC estimates for all table egg farms can also be seen in Table 6.

The calculation of the weighted DRC for the industry was done in a similar manner to that of the weighted EPC:

Industry $DRC_i = \Sigma (Wi * DRC_i)/ \Sigma W_I$

Where W_i = Number of layers (farm size) n farm i

DRC_i = Computed Domestic Resource of each farm i

The weighted DRC 's for the industry can also be seen in Table 6.

4. SIGNIFICANCE OF PRO-DUCTION INPUTS IN DETERMINING COMPARATIVE ADVANTAGE

The regression technique of Ordinary Least Squares was used to determine whether factors of production used in producing one dozen table eggs (namely feed, land, labour, layer chicks, medication, egg-boxes and utilities) were significant in determining efficiency of farm operations and comparative advantage of table egg farms. An attempt was also made to determine whether farm size (number of layers) and the presence of automatic feeding systems were significant factors in determining efficiency and comparative advantage.

DRC (indicator of efficiency and comparative advantage) was therefore used as the dependent variable while the various elements of production costs, together with farm size (number of layers) and presence of automatic feeding systems were identified as the independent variables.

A linear functional form was specified as follows:

$$DRC = \Phi_0 = +\Phi_1 \text{ FEED } + \Phi_2 \text{ LAB. } + \Phi_3 \text{ UTIL } - \Phi_4 \text{ DUMMY } +\Phi_5 \text{ CHICK } + \Phi_6 \text{ BOX } + \Phi_7 \text{ LAND } - \Phi_8 \text{ LAY } + \Phi_9 \text{ MED.} + U.$$

Where:

DRC = Domestic Resource Cost

Feed = Feed Cost

Lab. = Labour Cost

Util. = Utility Cost (water, electricity, transport) cost

Dum = Dummy (representing presence/ absence of automatic feeders).

Chick. = Chick cost

Box = Cost of Egg box

Land = Land tax

Lay. = Number of Layers (farm size)

Med. = Medication cost

4.1 *A Priori* Expectations

According to *a priori* criteria, Φ_{1}, Φ_{2}, Φ_{3}, Φ_{5}, Φ_{6}, Φ_{7} and Φ_{9}, coefficients of variables representing different aspects of production costs, are all expected to have positive signs. One would expect, for example, that if those elements of costs are reduced, there will be a corresponding reduction in the DRC. On the other hand, coeffficients, Φ_4 and Φ_8, representing dummy (automatic feeders) and number of layers (farm size) respectively, are expected to have negative signs. This is because as farm size increases, there is likely to be greater economies of scale, with attendant lower production costs and DRC values. It is also expected that with more investments in labour-saving systems, such as automatic feeders, grading and packaging machines, production costs, and consequently DRC values will be lower.

4.2 Data for Regression Model

Data used to run the initial regression model were obtained from the cost of production survey done for the twenty three (23) table egg farms. The DRC values previously calculated for each farm also form part of the data. A dummy variable was used to denote the presence or absence of automatic feeding systems: The numbers one (1) and zero (0) respectively represent its presence or absence. All data used for the model can be seen in Table 5.

The econometric software package, E-Views, was used to generate the results for the initial regression model. The results obtained from this model are shown in Table 8.

5. RESULTS AND ANALYSIS OF RESULTS

This section presents the results and interpretation of those findings from the analyses.

Table 6 displays, *inter alia,* computed EPC values for the twenty-three table egg farms involved in this study. These values range from 1.2 to a high of 3.2. All sizes of farms (large, medium and small) had EPC values above one (1). For the industry as a whole, a weighted EPC value of 1.54 was calculated. Since this value is greater than one (1), it suggests that local table egg producers are directly protected through the instruments of government's policy, such as the forty percent (40%) duty on imported table eggs.

This further implies that the returns on their resources are higher than they would be if border prices prevailed. As a consequence, producers of this commodity are provided with an incentive to continue in production.

The DRC values for the 23 table egg farms that participated in this study are also shown in Table 6. These values range from 0.2 to 1.2. The weighted DRC value calculated for the industry was 0.76. Since the DRC estimate for the industry is less than one (1), it indicates that the country saves foreign exchange by producing table egg as an import substitution good. This is because the opportunity cost of domestic resources and non-traded factors used in producing table eggs is less than the foreign exchange earned or saved.

On this basis, one may conclude that Trinidad has a comparative advantage in the production of table eggs and as a consequence, is internationally competitive. Singh *et al.* (1995), also obtained similar results for the broiler industry which parallels the table egg industry. The results of the analysis however, do not support the hypothesis that the country does not have a comparative advantage or is inefficient in the production of table eggs.

The data presented in Table 7 show the result of increasing cost of domestic resources (labour, electricity, water, transport and land) in producing one dozen table eggs on the comparative advantage position of the industry. Zero percent represents DRC estimate before the start of the sensitivity analysis. The results show that if the cost of domestic resources in producing one dozen table eggs were increased beyond 30 %, the table egg industry would no longer be efficient or have a comparative advantage. This is because the industry DRC will exceed one- the point where the table egg industry will be incurring cost in excess of the amount saved in foreign exchange from producing table eggs locally.

The data shown in Table 8 represent the outcome of regressing the DRC values, of the twenty three farms surveyed, on components of production cost i.e., feed, labour, utilities, chick, land and as well as on farm size (number of layers) and a dummy, representing the presence or absence of automatic feeding systems. This regression model, with estimated coefficients, can be expressed as follows:

$$DRC = -1.13 + 0.39\,FEED + 0.30\,LAB + 0.56\,UTIL + 0.46\,CHICK - 0.17\,DUMMY - 0.04\,MED - 1.02\,LAND - 0.29\,BOX + .006\,LAYERS.$$

R 2 = 80.9%, Adjusted R^2 = 67.68 , DW =1.5, F = 6.1

P-values, as indicated in the theoretical framework, indicate the lowest level of significance at which a given null hypothesis can be rejected. On this basis, feed, labour and utilities are significant at a 5% level of significance, while chicks and the dummy variable, representing presence or absence of automatic feeding systems are significant at a 10% level of significance. The other variables, medication (med), land and box are not significant.

An examination of the regression model also shows that positive relationships exist between DRC and explanatory variables feed, labour; utilities and chick costs. A negative relationship exists between DRC and the dummy variable. The relationship between DRC and identified variables therefore satisfy a priori criteria. The coefficient for layers, however, does not have the expected negative sign. This may be as a result of the small sample size (n < 30).

Further, since F- statistic (F *) = 6.12 is greater than the value of F read from the table at 5% level of significance, i.e,($F_{0.05}$, v_1, v_2) = 2.17), the slope coeffficients are not simultaneously equal to zero.

The value of the Durbin–Watson statistic (d*) of 1.5 of the model lies in the inconclusive region of the test (between d_L = 1.92 and d_U = 0.92). This suggests that autocorrelation may or may not be present. However, since autocorrelation is more of a problem with time-series data than cross-sectional data, and the latter type is used in this study, it is assumed that autocorrelation does not affect the reliability of the estimated coefficients of the model.

The results of the regression model show that 67.7% of total variation in DRC can be explained by costs of feed, labour, utilities (water, electricity and transport) layer chicks and by the dummy variable. The remaining 32.3% therefore cannot be explained by those variables. This result can perhaps be explained by the findings of Sharma (1992), who suggests that the concept of competitiveness is very complex because many of its determinants are not quantifiable.

5.4 Feed And Domestic Resources

The results of the analysis indicated that domestic resources and feeds account for 12% and 59% respectively of total cost of producing one dozen table eggs. This result therefore confirms the view that the locally table egg industry is highly dependent on foreign inputs, particularly feed grain from the United States. The fifty-nine percent (59%) share of feed in total production cost, however, contradicts the commonly held view by persons involved in the industry that feed accounts for over 75% of total production cost.

The results also showed that feed costs, as a percentage of total production costs, for large, medium and small table egg farmers were 0.61%, 0.54% and 0.55% respectively. Domestic resources, on the other hand, accounted for 14% each for large and medium size farms and 25% for small-size farms. There is therefore a tendency for smaller and medium size table egg farmers to rely more on domestic resources and to minimize feed cost than larger farmers.

6. SUMMARY AND CONCLUSIONS

This research effort essentially investigated and presented findings in four areas of the table egg industry. First, it established that the various policy instruments of the state protect the table egg industry and by extension, provides incentives for producers. Protection is highest for larger producers. Second, the study found that the local table egg industry has a comparative advantage and hence was internationally competitive in producing table eggs. Comparative advantage was highest for medium size producers followed by small and large size producers. It was, however, pointed out that the comparative advantage position can be reversed if cost of domestic resources in producing one dozen eggs were increased above 30%.

Third, the study identified that feed, labour, utilities, and layer chick costs were significant in determining comparative advantage in producing table eggs. These factors of production were satisfactory in that they explained 67.2% in the variation of DRC. Four, it established that feed costs account or fifty-nine percent (59%) of total production costs. This was found to be approximately three times the cost of domestic resources (water, electricity, labour and transport).

This latter result further suggests that reducing feed cost, as opposed to domestic resources, has the greater potential for maintaining competitiveness in the table egg industry. Additionally, high increases in imported feed grains can have serious consequences for the survival of the local table egg industry. The challenge for the industry therefore, would be to maintain comparative advantage through the introduction of improved technologies and more efficient and cost-effective use of domestic resources and feed.

8 RECOMMENDATIONS AND POLICY RELEVANCE

On the basis of the research findings highlighted of this paper, it is important that government maintain its existing level of support to producers of table eggs. Specifically, the forty percent (40%) Common External Tariff on imported hatching eggs should be maintained for at least another three years to give producers additional time for making the necessary adjustments for competing in a liberalized market. Local policy makers should therefore seek to have this matter put on the agenda at the level of the Council for Trade and Economic Development (COTED) of CARICOM where issues concerning the CET and Regional trade are discussed.

The need for this intervention is critical given the findings in sections 5.3 of this paper which suggest that the comparative advantage which the industry presently enjoys can be reversed if cost of domestic resources were increases above (30%).

Table egg producers therefore should not become complacent or be led to believe that the present comparative advantage status of the industry is permanent. Rather, they need to redouble efforts directed at maintaining and improving efficiencies to be able to compete and survive in the long term.

Table egg farmers, policy makers and other stakeholders of the table egg industry should therefore pay particular attention to those factors of production with a view to reducing costs. This suggestion is consistent with the view of ul Haque and Bell (1995), who advocate that no matter what a country produces, it must keep its production costs in line with other producers.

In keeping with this suggestion, table egg industry must renew efforts at reducing feed costs which was identified as one of the most significant factor of production. This may be accomplished, for example, by negotiating better prices and quality of feed from feed millers. Producers may also wish to improve their management systems including pen design and temperature control systems for maximizing output of eggs per unit feed consumed.

Another approach might be for producers to by-pass the feed millers and purchase feed ingredients directly from the National Flour Mill for mixing on-farm or at a centralized feed mixing facility. The latter facility can serve the need of all table egg farmers in a particular location. These options however, are only possible if farmers are able to pool resources and form a powerful lobby for negotiating better input prices and marketing arrangements.

Labour cost was also identified as an important element in determining efficiency levels and comparative advantage. In this regard, there is need for table egg farmers to invest in more labour-saving technology as a means of minimizing expenditures on labour. They may wish, for example, to consider investing more in automated systems for cleaning which were identified as significant factor for increasing efficiency. They may also wish to invest in machines for collecting, grading and packaging of eggs.

Since the cost of layer chicks was also identified as a significant factor in determining comparative advantage, it is also important for table egg farmers to attempt to reduce the cost of that input. The Table Egg Association, for example, should become involved in sourcing and importing better quality and more competitively priced layer chicks for its members.

Large table egg producers may also wish, in the long term, to forge partnerships and alliances with larger firms in more developed markets as a deliberate strategy for surviving in the business. In this way, the local industry will have greater access to the latest and most appropriate technology as well as access to capital and markets.

Another option which table egg producers can focus on is product differentiation. It describes the ability to provide unique and superior products in terms of product quality and special features. Attempts should therefore be made to develop and market a range of ready-to-use, processed products manufactured from table eggs for example powdered eggs for the baking industry. Special attention should also be placed on packaging and labelling of egg boxes to promote the quality and freshness of locally produced eggs as opposed to imported substitutes.

Public policy administrators can also play a critical role in assisting table egg producers to maintain competitive advantage. In this context, emphasis should be placed on the following areas:

(i) Research, training and development. In this area, there is need for the State to improve the delivery of extension, veterinary and diagnostic services to table egg producers. The involvement of the State should preferably be done in collaboration with the private sector. It should be noted that many of these services are currently available, albeit, on a limited scale.
(ii) Establishment of effective monitoring mechanisms to ensure that foreign table eggs are not dumped on the local market.
(iii) As a result of (ii), there is need for strengthening the capabilities of the Trade Monitoring Unit and data collection capability of the Livestock and Poultry Unit of the Ministry of Agriculture, Land and Marine Resources. The Food and Drugs Division of the Ministry of Health must also exercise vigilance in ensuring that foreign eggs of poor quality are not dumped on the local market.
(iv) Strengthening collaborative efforts among the Ministry of Agriculture, Land and Marine Resource, Customs Department, Ministry of Trade, Industry and Commerce, Food and Drugs Division and Table Egg Association in support of item (iii).
(v) Provide grants for students to pursue careers in veterinary medicine, specializing in poultry sciences; and
(vi) Tax concessions for investments in research, infrastructure, technology improvements, including adoption of Hazard Analysis Critical Control Point (HACCP) [1]

REFERENCES

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[1] HACCP is an internationally recognized procedure for ensuring that quality are attained standards

Table 1: Estimated Border Price Of Traded Inputs Per Dozen Eggs

TRADED INPUTS	CIF ($US)	OER*	$TT	$ TT Per Doz. Eggs
Feed (per lb.):				
Starter	0.12	6.3	0.8	
Grower	0.1.2	6.3	0.8	
Layer	0.13	6.3	0.8	
Average Feed	0.12	6.3	0.8	3.78
Chick (each)	0.86	6.3	5.4	0.22
Medication:				
Fowl Pox vaccine (per 1000 dose)	2.22	6.3	14	.00006
Newcastle vaccine (per 2000 dose)	2.44	6.3	15.4	.0003
Gumboro vaccine (per 1000 dose)	3.88	6.3	24.4	.024
Polytoniane A (per 250gm. Pk.)	1.75	6.3	11.0	.0004
Hemoplex (per gal.)	13.67	6.3	86.1	.0007
Average Medication				0.02
Egg box (per 210 doz.)	13.03	6.3	82.08	0.39
Total Cost Traded Inputs				4.44

* Official Exchange Rate
Sources: Seumed's Ltd., Ibrahim's Poultry Ltd., Malabar Farm's Ltd., Master Mix Ltd.

Table 2: EPC Estimation

TRADED INPUTS	COST PER DOZEN EGGS
Feed	4.0
Medication	0.08
Layer chick	0.50
Egg Boxes	0.25
Total	4.83

Table 3: EPC Estimation

MEDIUM BROWN EGGS	PRICE* ($TT PER DOZ.)
Local	6.12
Imported	5.29

* Includes cost of handling and transport to the Port- the point of comparison

Table 4: Estimation of Domestic Resource Cost

A Domestic Resources	Domestic Price/doz	Conversion Factor	Shadow Price
Labour	0.60	1	0.60
Water	0.11	0.69	0.08
Transport	0.08	1	0.08
Electricity	0.02	0.74	0.01
Land	0.04	1	0.04
Total Social Cost of Domestic Resources			0.8 = A
Social Value Added in Border Prices = Denominator of EPC =			0.9 = B
Domestic Resource Cost (DRC) = A / B			0.9

Table 5: DRC, And Cost Per Dozen: Feed, Labour, Land, Utilities, Chicks, Egg Boxes, Layers And Automatic Feeders For Twenty-Three Table Egg Farms.

Farm	DRC	Feed	Lab.	Util	Ckicks	Egg Boxes	Med	Number layers	Land	Dummy *
1	0.9	4	0.6	.28	.5	.25	.0.8	40000	.04	1
2	1.2	4	.25	.68	.58	.30	.05	40000	.03	1
3	0.7	3.7	.47	.34	.60	.45	.06	60000	.06	1
4	0.6	3.6	.3	.41	.60	.35	.10	12000	.01	1
5	1.2	4	.3	.82	.50	.75	.15	40000	.09	1
6	0.9	3	.6	.13	.50	.10	.04	11000	.03	1
7	1.1	3.2	0	1.08	.35	.45	.25	2500	.01	0
8	0.3	3.6	.44	0.1	.29	.43	.93	6000	.05	0
9	0.2	3.8	.29	0.11	.13	.42	.13	19000	.05	1
10	0.7	2.7	1.05	1.05	.50	.42	.42	12000	.03	1
11	0.3	2.9	.25	0.05	.60	.42	.11	9000	.06	1
12	0.7	3.4	1.69	0.25	.60	.25	.10	500	.02	0
13	0.3	2.9	.35	0.15	.80	.40	.10	6000	.03	0
14	0.6	3.4	1.04	0.59	.52	.23	.75	21000	.06	1
15	0.5	3.2	.12	0.59	.38	.12	.36	5000	.07	0
16	0.2	2.6	.47	0.7	.55	.53	.20	5000	.03	1
17	0.6	3.7	1.33	0.21	.55	.14	.04	600	.06	0
18	0.6	2.9	.97	0.58	.40	.45	.19	4000	.02	0
19	0.4	3.3	.57	0.63	.52	.10	.01	3600	.04	1
20	0.4	2.8	.71	0.23	.56	.25	.13	5000	.06	1
21	0.9	2.8	1.62	0.1	.94	.45	.10	500	.03	0
22	0.7	2.7	2.5	0.1	.45	.30	.11	400	.07	0
23	0.4	3.1	.2	0.53	.54	.50	.06	12000	.08	0

Source:Survey of Table Egg Farmers

Table 6: EPC's And DRC's Of Twenty Three Table Egg Farms and Weighted Or Industry EPC's And DRC's.

Farm	Number Layers	Epc	Weighted EPC	DRC	Weighted DRC
1	40000	1.5		0.9	
2	40000	1.4		1.2	
3	60000	1.5		0.7	
4	12000	1.5		0.6	
5	40000	1.3		1.2	
6	11000	1.2		0.9	
7	2500	1.2		1.1	
8	6000	1.7		0.3	
9	19000	1.6		0.2	
10	12000	2.4		0.7	
11	9000	1.4		0.3	
12	500	2.8		0.7	
13	6000	1.7		0.3	
14	21000	1.5		0.6	
15	5000	1.7		0.5	
16	5000	1.9		0.2	
17	600	2.2		0.6	
18	4000	2.6		0.6	
19	36000	3.2		0.4	
20	5000	2.1		0.4	
21	0500	2.1		0.9	
22	400	2.9		0.7	
23	12000	2.2		0.4	
	315100		1.54		0.76

Table 7 Sensitivity Analysis – DRC

% Increase Domestic Resources	Corresponding Industry DRC
0	0.76
10	0.80
15	0.89
20	0.94
25	0.94
30	1.0

Table 8: Results of Regression Model

Variable	Coefficient	Prob.
C	-1.1317	0.0340
Feed	0.3888	0.0015
Labour	0.2955	0.0041
Util	0.5594	0.0014
Chick	0.459	0.0994
Dummy	-0.174	0.0767
Med	-0.042	0.8153
Land	-1.023	0.6524
Box	-0.293	0.3498
Layers	0.006	0.0775