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PRICE ANALYSIS OF POULTRY PRODUCTS IN TAMIL NADU

T.R. SHANMUGAM and D. SURESH KUMAR

ABSTRACT

The present study examined the supply-price response of poultry products. The objectives of the study are (i) to work out the economics of production of layer and broiler farming and (ii) to analyse the supply-price response of poultry products. In order to fulfil the objectives, 50 layer farms and 50 broiler farms in Salem district of Tamil Nadu were selected randomly and studied. Time-series data on supply of egg and poultry meat, price of egg and chicken were collected for the district from 1971-1990 and analysed. Cobb-Douglas type of function was employed to analyse the supply-price response of poultry products. It is evident from the study that the production of layer was economically profitable than the broiler production. Price of egg significantly influenced the egg supply. The egg supply was price elastic and supported the neo-classical theory of supply. Similarly, the broiler supply is also own-price elastic and significantly influenced by price of broiler. It is lucid from the study that the joint product elasticity of poultry products was positive and elastic. Enough efforts must be made to fix remunerative prices of poultry products as it will hasten the growth and development of poultry sector.

Poultry industry in India is being one of the most rapidly growing segments of agricultural sector. Due to technological advancements, India has achieved a spectacular increase in poultry production. Over the last two decades, there has been a phenomenal six-fold multiplication of broiler production and five-fold increase in egg production. Despite being the world's fifth largest producer of eggs, India's per capita annual consumption of eggs is hardly 28 as compared with the world average of 180 eggs. This is far below our requirement of half an egg per day as recommended by the Nutritional Advisory Committee of ICMR. Similarly, the per capita availability of poultry meat is about 350 gm per annum which is less than the world average of 11 kg.

Rising population, awareness towards egg and poultry meat as alternative sources of protein, wide acceptability and less cost cause burgeoning trend in egg and poultry demand. Until the early eighties, prices for eggs and poultry products were dictated by traders and were unremunerative. After the continuous efforts, the National Egg Coordination Committee (NECC) was started. Market forces allowed to fix price and are kept at levels that are remunerative to the producer and acceptable to the consumer. This assurance of viability has encouraged investment in poultry farming and played a sig-

Department of Agricultural Economics, CARDS, Tamil Nadu Agricultural University, Coimbatore - 641003.

nificant role in the growth of this sector. The price increase induces the investment in poultry sector and this is the one of the major reasons for the present boom in egg and poultry production. Hence, what is needed is a careful study of price changes and their effects on supply of poultry commodities. It is in this context, the present study aimed to analyse the supply-price response of poultry farms in Salem district of Tamil Nadu.

MATERIALS AND METHODS

The data for the economic analysis related to the year 1990. The sample covered fifty layer farms and fifty broiler farms, selected randomly in Salem district of Tamil Nadu. Salem district was purposively selected since it leads in poultry farming. All the farms maintained records containing details of factors used, costs of resources and production economics. The data were collected by personal interview, analysed and discussed. The data required for the price analysis were collected from different issues of Poultry Year Book, Reports of National Egg Coordination Committee and Reports of various firms involved in poultry industry. The time-series data on supply of egg and poultry meat, price of egg and chicken were collected for the district from 1971 to 1990 and analysed.

To evaluate the supply response in egg production the following Cobb-Douglas type of function was used.

$$Y_{1t} = A \; X_{1t}^{b_1} \; X_{2t}^{b_2} \; e^{U1} \quad \ldots\ldots\ldots \quad (1)$$

Where,

Y_{1t} = Quantity of egg supply in numbers at 't' the period.

X_{1t} = Price of egg in rupees in 't' th period.

X_{2t} = Time as trend variable to include the impact of technology (1971=1 to 1990=20)

b_1 and b_2 = Elasticities to be estimated and

U_1 = Random error term.

The second function was fitted for broiler meat supply and it is given as:

$$Y_{2t} = C \; X_{3t}^{b_3} \; X_{4t}^{b_4} \; U2 \quad \ldots\ldots\ldots (2)$$

Where,

Y_{2t} = Broiler meat production in kgs of live weight for the district in 't' the period.

X_{3t} = Price of one kg of live weight broiler meat in rupees in 't' th period,

X_{4t} = Time as trend variable to include the impact of technology (1971=1 to 1990=20),

b_3 and b_4 = Elasticities to be estimated and

U_2 = Random error term.

In layer farming, eggs and spent birds are jointly produced. Hence, the joint product elasticity of supply is the exact measure of supply response rather than own price elasticity of egg (b1). In the broiler production, the own price

elasticity of meat supply (b3) is sufficient to measure supply response. Hence, elasticities of these two enterprises would differ.

For layer farming, the supply elasticity is the weighted harmonic average of the own price elasticities of egg and meat since both are jointly produced. It is estimated using the following formulae suggested by Tomek and Robinson.

$$E_s = \frac{P_1W_1 + P_2W_2}{1/b_1 (P_1W_1) + 1/b_3 (P_2W_2)} \quad \ldots\ldots (3)$$

where,

E_s = Joint elasticity of supply for the base commodity.

P_1 = Average price per egg.

P_2 = Average price per kg of live weight meat

W_1 = Share of eggs in gross return per bird,

W_2 = Share of one spent bird in gross return,

b_1 = Own price elasticity of egg and

b_3 = Own price elasticity of poultry meat.

RESULTS AND DISCUSSION

Economics

The economics of layer farming (for 1000 layers) was worked out and presented in Table.1. It is seen from the table that the gross return (including sale of eggs, poultry manure, spent birds and gunny bags) was worked out to Rs. 2, 32,830. The total operational cost was Rs. 1,80,931.50. Thus the profit was Rs. 51,898.50. The input-output ratio was worked out to 1: 1.29. This implied that the return per rupee of investment in layer farming was 1.29.

Table 1. Economics of Poultry Production (1000 Layers)

Sl No.		Particulars	Amount in Rs.
A.	Fixed Capital		
	(a)	Building	
	(i)	Chickens cage house for 1040 chicks floor space requires 0.50 sq.ft. per chick i.e. 520 sq. ft. @ Rs. 41.00 per sq. ft.	21320.00
	(ii)	Growers cage house for 1040 birds floor space requires 0.60 sq.ft. per bird i.e.624 sq.ft. @41.00 per sq.ft.	25584.00
	(iii)	Laying birds cage house for 1000 birds floor space requires 0.75 sq.ft. per bird i.e. 750 sq.ft. @ Rs. 41.00 per sq.ft.	30750.00
	(iv)	Office feed-cum-store room i.e. 300 sq. ft. @ Rs. 45.00 per sq. ft.	13500.00
	(b)	Equipments	
	(i)	Cost of chicks and growers cages with feeders and waterers etc. @ Rs.26 per bird	27040.00

Sl No.		Particulars	Amount in Rs.
	(ii)	Cost of laying birds cages with feeders and waters etc. @Rs. 31.00 per bird	31000.00
	(iii)	Cost of weighing machine and egg trays etc. on average the equipments cost @ Rs.3.20 per bird	3200.00
	(iv)	Cost of electric installation in poultry shed @ Rs.1.30 per sq.ft (total 2194 sq.ft)	2852.20
		Total fixed capital investment	155246.20
B.	Fixed cost per year		
	(a)	Depreciation on buildings @ 5%	4557.70
	(b)	Depreciation on equipments @ 15%	9613.80
		Total operating fixed cost per year	14171.50
C.	Working capital of Cost of rearing of chicks to point to lay pullets (5months)		
	(i)	Cost of 1080 day old chicks @ Rs. 8.20 per chick (8 per cent extra to cover mortality)	8856.00
	(ii)	Cost of feeding for 1040 birds upto point of lay 2.5 kg mash per chick (1 day to 8 weeks) and 6 kg mash per grower upto 5 months of age. Total quantity of feed @ 8.5kg per bird i.e.88.40 qts.@Rs. 290/qtl.	25636.00
	(iii)	Cost of electricity machines and transportation of chicks @ Rs. 3.20 per bird	3328.00
	(iv)	Cost of one labourer @ Rs. 520 per month for 5 months	2600.00
	(v)	Insurance charges of birds (D.O.C) @ Rs. 1.60 per bird	1600.00
		Total cost of rearing of chicks to point of lay pullet	42020.00
D.	Cost of laying period per year		
	(i)	Cost of feeding for 1000 layers @ 40 Kg per bird per year total feed i.e. 400 qtls @ Rs. 280 per quintal	112000.00
	(ii)	Cost of medicines electricity and transportation of eggs @Rs. 5.20 per bird	5200.00
	(iii)	Cost of one labourer @ Rs. 520 per month for one year	6240.00
	(iv)	Repairs and maintenance of house and equipments etc. @ Rs. 1.30 per bird	1300.00
		Total cost of laying period per year	124740.00

E.	Operational expenditure for 17 months period		
	(a)	Total operating fixed cost per year	14171.50
	(b)	Total cost of rearing of chicks to point of lay pullet	42020.00
	(c)	Total cost of laying period per year	124740.00
		Total operational cost for 17 months	180931.50
RECEIPTS			
	(i)	Egg production @ 260 eggs per bird per year total 2.60,000 eggs keeping allowance for breakage of eggs on storage and transportation @ 1 per cent marketable eggs 99 per cent sale of 2,57,400 eggs @ Rs.0.75 per egg.	193050.00
	(ii)	Sale of poultry manure. A bird produce 25 kg of manure for 17 months i.e. 250 qtls.@ Rs. 25 per qtl.	6250.00
	(iii)	Sale of 1000 spent birds @ Rs. 30 per bird	30000.00
	(iv)	Sale of 706 gunny bags @ Rs. 5 per bag	3530.00
		Gross receipts	232830.00

PROFIT FROM 1000 LAYERS

Particulars	Including deprn. on buildings & equipments (Rs.)
Gross returns	232830.00
Total operational cost	180931.50
Profit during 17 months period	51898.50
Profit per year	36634.20
Profit per year per bird	36.63
Profit per month per bird	3.05
Cost of production per egg	0.70
Inputs-output ratio	1:1.29

The economics of production of broilers (Table.2) revealed that the gross return received from 1000 broilers (including sale of broilers, poultry manure and gunny bags) was worked out to Rs. 1,96,440.00 and the total operational cost was Rs.

1,61,890.25. Thus, the profit was worked out to Rs. 34,549.75. The input output ratio was 1:1.21 and implied that the return per rupee of investment in broiler farming was 1.21.

It is evident from the study that the production of layer is economically profitable than the broiler production.

Table 2. Economics of Broiler Production (1000 Broilers)

Sl.No.	Particulars	Amount in Rs.
A.	Fixed capital	
(a)	Buildings	
(i)	Brooder house i.e.200 sq.ft.@ Rs. 41.00 per sq.ft	8200.00
(ii)	Broiler house for 1000 broilers @ 1.00 sq.ft. per broiler i.e.1000 sq.ft. @ Rs. 41.00 per sq.ft.	41000.00
(iii)	Office and feed cum broiler storage room i.e. 350 sq.ft @ 41.00 per sq.ft.	14350.00
(b)	Equipments	
(i)	Cost of equipments including brooders waters of chicks and broilers and weighing machines etc. @ Rs. 6.00 per broiler.	6000.00
(ii)	Cost of electric installation @ Rs. 0.70 per sq.ft (total area 1550 sq.ft)	1085.00
	Total fixed capital investment	70635.00
B.	Fixed cost per year	
(a)	Depreciation on buildings @ 5%	3177.50
(b)	Depreciation on equipments @ 15%	1062.00
	Total operating fixed cost per year	4240.25

Sl.No.		Particulars	Amount in Rs.
C.	Working capital (Cost of rearing of 1000 broilers for 8 weeks per cycle)		
	(i)	Cost of 1050 day old broiler chicks @ Rs. 7.50 per chick	7875.00
	(ii)	Cost of feed for 1000 broilers @ 4.2 kg per broiler per cycle i.e. total feed 42 quintals @ Rs. 320 per quintal	13860.00
	(iii)	Cost of electricity litter medicine transportation of broiler chicks etc. @ Rs. 3.20 per broiler	3200.00
	(iv)	Cost of one labourer @ Rs. 520 per month for 2 months	1040.00
	(v)	Repairs and maintance of house and equipments etc. @ Rs. 0.30 per broiler	300.00
		Total operational cost per year	171890.00
RECEIPTS PER YEAR OF 6 CYCLES OF BROILERS			
	(i)	Sale of broilers (1000x6) total 6000 broilers @ Rs. 20 per kg (average live weight of 1.6 kg per broiler)	192000.00
	(ii)	Sale of poultry manure. A broiler produces 2.2 kg manure per cycle. Total 132 qtls. per year manure @ Rs. 20 per quintal.	2640.00
	(iii)	Sale of 360 gunny bags @ Rs. 5 per bag	1800.00
Gross returns per year for 6 cycles of broilers			196440.00

PROFIT PER YEAR FOR 6 CYCLES OF BROILERS

Particulars	Including deprn. on buildings & equipments (Rs)
Gross return	196440.00
Total operational cost	161890.00
Profit per year	34549.75
Profit per broiler	5.76
Input-output ratio	1:1.21

Price Analysis

To evaluate the supply-price response, the specified functions were estimated by Ordinary Least Squares (OLS) technique. The results are given in double-log form.

Regression for egg supply.

In Y1t = 2.17 + 1.03** In X1t + 0.42* In X2t .....(4)

SE = (0.42) (0.15) (0.23)

t = (5.16) (6.86) (1.83)

R2 = 0.76

df = 17

F = 26.92

** = significance at one per cent level and

* = significance at five per cent level.

The price variable was significant at one per cent and technology variable was significant at five per cent level. The coefficient of determination (R2) was 0.76 indicating that the model explained the variation in egg supply extremely well. The own price elasticity was 1.03. Holding the technology constant. One per cent increase in the price of egg. would increase, on the average by 1.03 per cent in the egg supply. It implied the operation of law of supply that price and supply are directly related.

Likewise, 0.42 was the elasticity of supply with respect to technology, holding the price constant. It implied that the technology was also a supply shifter variable. Adding the elasticities, it was arrived at 1.45 showing increasing returns to scale in the poultry farming.

Regression for broiler meat supply:

In Y2t = 3.04 + 1.12** In X 3t + 0.37* In X4t ... (5)

SE = (0.96) (0.34) (0.21)

t = (3.17) (3.29) (1.76)

R2 = 0.69

df = 17

F = 18.92

** = significance at one per cent level and

* = significance at five per cent level.

The R2 value of 0.69 implied that about 69 per cent of the variation in the output was explained by the price and technology. The percentage increase in supply was 1.12 for a one per cent increase in price, holding technology constant. As it was evident, over the period of study, meat supply was price elastic. Though the technology influenced the supply positively, it was less elastic since partial elasticity of supply with respect of technology was 0.37 and it was less than one. The sum of elasticities was 1.49 revealing that the broiler industry was characterised by increasing returns to scale.

Joint Product Elasticity: Since eggs and spent birds are jointly produced, joint product elasticity would be the opt tool to measure the supply response in layer farming.

$$E_s = \frac{P_1W_1 + P_2W_2}{\frac{1}{b_1}(P_1W_1) + \frac{1}{b_3}(P_2W_2)}$$

$P_1 = 0.54$; $P_2 = 16.70$; $W_1 = 0.90$; $W_2 = 0.10$; $b_1 = 1.03$ and $b_3 = 1.12$.

The estimated joint supply elasticity is 1.09 explaining law of supply and price elastic nature of poultry joint products. This illustrated that one should consider the share bye-products also in estimating elasticity. As it was evident from the analysis, the joint product elasticity was higher than the own price elasticity of egg.

SUMMARY

Layer farming (eggs and spent birds) was more remunerative than broiler farming as evidenced from the present study. It was observed from the study that the supply of poultry products individually satisfied the supply law. It also proved apriori economic expectation that the price elasticity was greater than unity, implying that the supply was price elastic in poultry sector. It could be concluded that the poultry sub-sectors for the said period were characterised by increasing returns to scale.

The layer, as base commodity of production was induced by both prices of egg and meet as could be evidenced from the value of joint product supply elastic.

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CHEMICAL CONTROL OF SHEATH ROT OF RICE

R.VISWANATHAN and P. NARAYANASAMY

ABSTRACT

Efficacy of mancozeb, edifenphos and tricyclazole was tested on three rice varieties viz., IR 20, Co 43 and IR 50 against sheath rot of rice and their influence on yield parameters was also assessed. Spraying mancozeb + tricyclazole 2 times was superior to other treatments. Fungicide spraying significantly increased the number of productive tillers and grain yield when fungicides were applied for seed treatment as well as for spraying in the main field.

Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore-641 003.