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INTERNAL ECONOMICS OF FARM ENTERPRISES: CASE STUDY OF ERZURUM, TURKEY

A. BIRINCI

*Department of Agricultural Economics, Ataturk University College of Agriculture,
25 240 Erzurum, Turkey*

Abstract

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Specialization in farm enterprises has been increasing in Turkey due to European Union Grants in last decade. Farmers used to raise animal and produce crops together as mixed farms. This research was carried out to determine internal economics of animal husbandry and plant production farms. The survey has been conducted with 112 farms in Erzurum center district. The factor affecting profitability of animal husbandry farms, and plant production farms were estimated as internal economics. It has been concluded that, the structures of profitable animal husbandry farms were to have a higher percentage of meadow land in farm, farm capital per decare (\$), and land per tractor (da). Also, the percentage of fodder crops cultivation area, labor used off-farm, and farm capital in active (%) were significant indicators in animal husbandry farms at the level of $P = 0.05$.

Key words: farm enterprises, internal economics

Introduction

The amount of farm enterprises is about 3.1 million, and 67.4% of them are mixed farms in Turkey. The percentage of animal husbandry farms and plant production farms are 2.4%, and 30.2% respectively (Anonymous, 2008). Gross production value of animal husbandry farms has been increasing as a result of European Union Grants, even though 70% of total agricultural production value is plant production in Turkey. The low percentage of gross animal production in Turkey creates scarcity of animal products, and increase its prices. For instance, annual animal products consumption in EU average is three times higher

than in Turkey. At the same time the percentage of animal production in total agricultural production value is 75% in USA.

South Eastern Region is mainly animal raising area with taken into consideration as a animal raising agricultural region in Turkey. So this region has a significant potential for increasing animal husbandry in order to increase the percentage of animal production up to 70% in agricultural production value. Some researches (Aras, 1954; Aksoz, 1973; Karagolge, 1973; Zoral, 1975; Bozdag, 1976; Isyar, 1981; Peker, 1996) indicated big potential of animal husbandry in South East Region. Even though 25% of Turkey's animal has been raised in South East Region, the use

of potential has not been significant yet.

Generally, the profitability of animal husbandry is required productivity of breed living condition, feeding, and marketing experiences. The profitability of farms mainly depends on consistency of decisions taken by farmers as managers too. In addition to technical issues, the objectives of this study are to determine factors affecting profitability of farm enterprises as internal economics. Internal economics also indicate the farm structure for profitability. Scale, productivity, economics, and financial criteria were determined as internal economics. Especially the comparative structural assessments of animal husbandry were focused for the economic efficiency.

Material and Method

The data were collected by application of questionnaires on 112 farm enterprises (56 animal farms, and 56 plant production farms) in Erzurum. The center district was selected by taking into consideration amount of animal and plant production farm size. The

number of farms was determined with the following formula as simple fortuitous exemplifying technique (Yamane, 1967).

$$n = \frac{N \cdot \sigma^2}{(N-1)D + \sigma^2}$$

In formula; n: Sample size, N: Total amount of farms, σ^2 : variation of number of farms. D: (d^2 / z^2) value; d: error quantity allowed by average exemplifying, z: value of "Z" in table of Standard Normal Dispersion as to error ratio.

Results and Discussion

The interaction between input-output investigated in order to determinate profitable farms' structure. The farm assets were estimated for the average of farms (Table 1).

The percentage of land capital was 47.71% at animal husbandry farms, and farm capital was 52.29% of total active asset. The percentage of land capitoll was 66.28% at plant production farms (Table 1).

The Gross Production Values of farms (GPV) were

Table 1
Farm assets and distribution (average)

Farm assets	Animal husbandry farms		Plant production farms		Average	
	\$	%	\$	%	\$	%
<i>Land capital</i>						
Land Asset	486.00	36.00	545.10	52.78	515.60	43.45
Land Improvement Asset	1.86	0.14	7.70	0.74	4.78	0.40
Building Asset	109.00	8.06	74.40	7.20	91.70	7.73
Plant Asset	47.52	3.51	47.52	5.56	47.52	4.00
Total	644.38	47.71	674.72	66.28	659.52	55.58
<i>Farm capital</i>						
Fixed Farm Capital	648.80	48.05	298.30	28.89	473.50	39.90
Equipment-Machinery Asset	63.90	4.73	181.75	17.60	122.80	10.35
Livestock	584.90	43.32	116.55	11.29	350.70	29.55
Current Farm Capital	57.23	4.24	49.93	4.83	53.60	4.52
Current Stock	36.39	2.70	28.40	2.75	32.40	2.73
Cash and Loans	20.84	1.54	21.53	2.08	21.20	1.79
Total	706.03	52.29	348.23	33.72	527.10	44.42
<i>Total active (capital)</i>	1350.41	100.00	1022.95	100	1186.7	100.00

Table 2
Gross production values (GPV) of farms

The components composing production values	Animal husbandry farms		Plant production farms		Average	
	\$	%	\$	%	\$	%
1. Plant Production						
Cereal	19.39		34.14		26.77	
Industrial Crops and Oilseeds	8.34		74.80		41.57	
Leguminous Plants	0.25		1.40		0.32	
Fruit-Vegetable	1.14		1.96		1.55	
Fodder Crops (Dried Grass)			5.46		5.46	
2. Appreciation in Inventories and Plant Capital	0.74		2.90		1.82	
A. PLANT PRODUCTION VALUE	29.85	10.42	119.94	81.37	74.90	34.53
3. Animal Product						
Dairy Product	136.90		13.00		74.95	
Sold and Slaughtered Animals	54.32		4.54		29.43	
Sold Egg and Fowl	3.91		0.60		2.25	
Honey	10.33		2.61		6.47	
Wool, Leather, Animal Hair	3.21		0.24		1.72	
Dried Cow Dunged	5.73		1.46		3.59	
4. Appreciation in Inventories and Animal Capital	42.20		5.01		23.60	
B. ANIMAL PRODUCTION VALUE	256.60		27.46		142.03	65.47
C. GROSS PRODUC. VALUE (A+B)	286.45	89.58	147.40	18.63	216.90	100.00
GPV per unit of farm land (\$/da)	3.37	100.00	1.78		2.57	
GPV per unit of MWP (\$)	2.10		0.36		1.23	

higher in animal husbandry farms (Table 2) even though the farm assets and their distribution were similar in animal husbandry and plant production farms.

GPV of farms were reached with operating cost of farms (Table 3). Operating cost was higher in animal husbandry farms. Off-farm labor cost was high in plant production farms due to seasonal production especially during the harvesting time. Household labor wage was high in animal husbandry farms due to continuing animal breeding in winter time too.

The percentage of meadow land, and fodder crops were high in animal husbandry farms. The percentage of industrial plants cultivation area was high in plant production farms. Household labor force was similar

in both types of enterprises. Labor used off-farm (Man Works Power) was high in animal husbandry farms since labor forces migrate to western part of Turkey seasonally.

The percentage of farm capital and operation capital are significant indicators of profitability. The percentage of farm capital in active was high in animal husbandry farms even though the percentage of live-stock in farm capital was low in plant production farms. Land amount per tractor decreased the profitability of plant production farms since land per tractor was low. Labor is used efficiently in animal husbandry farms due to animal rising throughout the year instead of seasonal (Table 4).

Table 3
Operating costs of farms

Types of costs	Animal husbandry farms		Plant production farms		Average	
	\$	%	\$	%	\$	%
1. Labor cost	97.35	44.26	50.00	37.46	73.67	40.86
Off-Farm Labor Cost	5.55	2.52	7.50	5.62	6.52	3.69
Household Wage Equivalent	91.80	41.74	42.47	31.84	67.13	19.00
2. Current cost	97.00	44.07	61.70	46.24	79.35	45.00
Seed	2.82	1.28	5.20	3.89	4.01	2.27
Purchased Manure	3.00	1.36	8.76	6.57	5.88	3.33
Animal Costs ⁽¹⁾	56.03	25.48	1.27	0.95	28.65	16.21
Heating and Illuminating Costs	11.80	5.37	13.03	9.77	12.41	7.02
Maintenance and Repair Costs ⁽²⁾	12.76	5.80	10.58	14.68	16.17	9.15
Fuel Costs of Tractor	5.00	2.27	13.34	9.99	9.17	5.19
Rental Cost of Machine	3.34	1.52			3.34	1.90
Other Operating Costs ⁽³⁾	2.18	0.99	0.52	0.39	1.35	0.76
3. Depreciation	25.67	11.67	21.75	16.30	23.71	13.42
Animal Capital	15.12	6.88	3.88	2.90	9.50	5.38
Building Capital ⁽⁴⁾	5.04	2.29	3.23	2.42	4.13	2.34
Equipment-Machinery Capital	5.50	2.50	146.64	10.98	10.07	5.70
<i>Operating costs (1+2+3)</i>	220.00	100.00	133.42	100.00	176.71	100.00
Per Unit of Farm Land (\$/da)	2.60		1.62		2.11	

(1) Cost of animal and feed buy, veterinary cost, medicine cost. (2) The cost of farm building maintenance and repair (3) Collective cost for village administration and aids (4) It is only for farm buildings.

The following criteria were had a role in profitability of animal husbandry enterprises: Percentage of meadow land in farm size, farm capital per decare (\$), and land per tractor (da) must be high for increasing profitability of animal husbandry. The other size criteria, productivity criteria, and economics and financial criteria were not significantly different in animal husbandry farms and plant production enterprises. For instance farm size, household size, capital (\$), surface productivity, labor productivity, and yield (kg/da or lt/unit) were similar in animal husbandry farms and plant production enterprises. The percentage of fodder crops cultivation area, labor used off-farm (MWP), and farm capital in active (%) were significant indicators in animal husbandry farms at the level of $P = 0.05$.

Conclusion

Animal husbandry farms were more successful than plant production enterprises in the area. The net profit measured per enterprise was negative for animal husbandry and plant production farms. Also, when expressed in terms of the return on the capital invested in each enterprise, animal husbandry had similarity with plant production enterprises. Production structures of animal husbandry enterprises were influenced by various factors. The important ones of them are: percentage of meadow land in farm size, farm capital per decare (\$), and land per tractor (decare), household size, capital (\$), surface productivity, labor productivity, and yield (lt/unit), labor used off-farm, and farm capital in active (%) which considerably influence the

Table 4
Comparison of farms based on internal economies

Comparison criteria	Animal husbandry farms	Plant production farms	Average	Variance analysis (f)
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
A) Size Criteria				
1. Farm Size (da)	78.06	97.58	87.82	
Meadow Land (%)	15.48	7.78	11.63	***
Crop Land (%)	93.19	91.17	92.15	
Irrigated Crop Land (%)	30.85	38.1	34.47	
Cereal Cultivation Area (%)	45.71	62.93	54.32	
Industrial Plants Cultivation Area (%)	4.03	19.84	11.93	
Leguminous Plants Cultivation Area (%)	0.31	1.11	0.71	
Fodder Crops Cultivation Area (%)	11.97	5.01	8.49	**
Fowl (%)	6.94	6.29	6.61	
2. Household size (person)	7.41	7.4	7.4	
Household Labor Force (MWP)	3.74	6.37	3.7	
Literacy Rate (%)	77.4	79.59	78.5	
The Rate of Off-farm Labor Used (%)	1.67	2.56	2.11	
Labor used Off-farm (MWP)	0.23	0.14	0.18	**
3. Capital (\$)	1058.1	1197.7	1127.9	
Assets Per Decare (\$)	15.34	10.84	13.1	
Farm Capital Per Decare (\$)	7.67	3.04	5.35	***
Farm Capital in Active (%)	50	28.07	39.03	**
Land Asset in Farm Capital (%)	76.06	83.19	79.62	
Land Improve Asset in Farm Capital (%)	0.36	1.29	0.82	
Farm Capital in Fixed Capital (%)	90.88	81.73	172.01	
Machinery Asset in Farm Capital (%)	7.16	43.97	25.56	
Livestock in Farm Capital (%)	83.72	37.76	60.74	
Livestock (CAU)	23.94	4.52	14.23	
Draft Livestock (CAU)	0.43	0.25	0.34	
Tractor Asset (HP)	5.98	16.1	11.04	
Land Per Tractor (da)	600.46	278.8	879.23	***
B) Productivity Criteria				
1. Surface Productivity				
Gross Production Per Decare (\$)	3.41	1.72	2.56	
Net Product Per Decare (\$)	1.01	0.43	0.72	
2. Labor Productivity				
Net product per Labor (\$/MWP)	0.14	0.1	0.12	
Agr. Income per Labor (\$/MWP)	0.26	0.19	0.22	

Table 4 (continued)

	1	2	3	4	5
3.Productivity					
Wheat (dry) (kg/da)		118.88	121.7	120.3	
Potato (kg/da)		1261.77	1690.7	1476.2	
Alfalfa-Dried Grass (kg/da)		457.42	432.32	444.87	
Sunflower (kg/da)		11.09	144.53	127.8	
Milk production per Cow (lt)		840	898	869	
Milk production per Sheep (lt)		94.26	91.5	92.9	
C) Economics and Financial Criteria					
Agr. Income Per Farm Land (\$/da)		1.91	0.84	2.75	
Gross Product Per Farm Land (\$/da)		3.55	1.84	2.7	
Net Profit (\$)		-178.80	-185.65	-182.20	

***; Significant at P = 0.01. **; Significant at P = 0.05. *; Significant at P = 0.10.

profitability. The concept of farm structure was being discussed and the concept of farm structure was determined to affect profitability.

References

- Aksoz, I.**, 1973. Optimum crops pattern in Pasinler, Erzurum. The Research Planning Office. Ministry of Agriculture. Pub. No; 63, *Kirali Press*, Ankara.
- Aras, A.**, 1954. Economic structure of dairy farms in Kars. *Ataturk Univ. Pres.* Ankara.
- Bozdog, N.**, 1976. The impact of slaughter house in animal husbandry of South East Anatolia. *Ataturk Univ. Pres.* No: 437, Erzurum.
- Cakal, F.**, 1973. Optimum production pattern at Erzincan's plate. *Ataturk University Press* No: 145, Ankara.
- Isyar, Y.**, 1981. The simulation of animal husbandry farms at South East Anatolia Region. *Ataturk University Press* No: 213, Erzurum.
- Karagolge, C.**, 1973. Econometrics analyses of Erzurum farm enterprises. *Ataturk University Press* No: 153, Erzurum.
- Peker, K.**, 1996. The classification of farm enterprises, optimum production pattern, and economic analyses of the farms. *Ataturk University Ph.D. thesis.* Erzurum.
- Anonymous**, 2008. http://www.tuik.gov.tr/VeriBilgi.do?tb_id=44&ust_id=13
- Wolz, A., J. Fritzsche, and J. Pencakova**, 2006. The impact of structural social capital on farm income in the Czech Republic. *Agricultural Economic, CZECH* 52, pp. 281-288.
- Yamane, T.**, 1967. *Elementary Sampling Theory.* Printice-Hall. Engle Wood Cliffs, NT.
- Zoral, K. Y.**, 1975. The productivity of agricultural inputs and Aggregate production function in the agriculture of East Anatolia Region. *Ataturk University Press*, 432, Ankara.

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