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Changes in Livestock Production Support Policies in Turkey and Effects on Production

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Abstract: In this study, it has been examined the relationship between developments of Turkish livestock production for the last ten years and supports given to livestock production. The relationship of the change experienced latterly with respect to animal production value, red meat and milk production and animal quantities with the supports given to livestock production has been explained with Simple Regression Model. Although, there is decrease of 19% in the number of bovine and ovine animals during the last ten years in Turkey, there is only decrease of 6.6% in total meat production and there is an increase of 21% in milk production. Changing which is started from 2000 in Turkish agriculture policies has taken back livestock production sector. But there are important increases in animal production values with the increased supports in livestock production scope after 2004. Thus, the animal production value which was $7.9 billion in 1997 reached up to $19.5 billion in 2008 with an increase of 147%. According to the results of the regression analysis made, 1 unit increase to be made in livestock production supports results in an increase of 14 units in animal production value and 3206 units in milk production.

Key words: Support policies, livestock production, effects of supports, milk, animal production

INTRODUCTION

In Turkey, agricultural production activities still maintain their significance, when their share both within national income and within employment is taken into consideration. According to the Agricultural Census Results 2001, average land size of agricultural enterprises is 6 ha in Turkey. Plant and animal production activities are performed together in 67% of the agricultural areas and plant production only is carried out in 30% of agricultural areas.

The rate of the enterprises performing solely livestock production is 3%. According to the Agricultural Enterprise Structure Survey conducted by the Turkish Statistical Institute in 2006, the rate of enterprises performing plant and animal production together has reduced to 62% and the rate of the enterprises performing solely livestock production has reduced to 0.5%. On the other hand, the share of livestock production supports within agricultural supports has increased during the period 2001-2008.

The fact that livestock production enterprises liquidate, while livestock production supports increase by amount and rate brings forward the challenges towards the effectiveness of policy means implemented for the purpose of developing animal production. In Turkey, the livestock production sector has undertaken many important socio-economic functions such as increasing export besides national nutrition, supplying raw materials for the industry, achieving balanced development among regions sectors with stability, preventing hidden unemployment in rural areas and creating new employment opportunities in industrials and service sectors.

During the first ages of humanity, especially during nomadic periods, the most significant economic activity was livestock production. Issues with a focus on human, like hunger-repletion, good-bad nutrition, affect the current world politics. At the same time, it is expressed that the products obtained from animal production are the basis of human welfare (Sacli, 2007).

Support policies, which have been implemented during the last ten years in Turkey and the process of change experienced constitute the scope of this study. About 90% of the value of animal production is provided from meat and milk production in Turkey.

For this reason, the scope of this study has been limited with bovine and ovine animals and meat and milk production obtained from such animals. In the study, it is aimed to reveal the developments experienced in Turkish livestock production during the last ten years and to examine the relationship between the red meat and milk production amounts and the supports given to livestock production.

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MATERIALS AND METHODS

This study is based on literature and research done in relation to the subject and legal arrangements in relation to livestock production were used. The way followed as a research method was to interpret the research analyzed, to evaluate the resources from various angles and to make synthesis of those resources. By this way, it was aimed to set forth the support policies of Turkey in the area of livestock production. Besides, the relationship of the change experienced during the last 10 years with respect to animal production value, red meat and milk production and animal quantities with the supports given to livestock production has been explained with Simple Regression Model. Model analysis was done using SPSS 15.0 Package Program.

Regression analysis is one of the mostly used tools in econometric studies. Regression analysis is related to defining the relationship between the dependent or explained variable Y and the independent or the explaining variable X (or X's) and calculating the degree of such relationship (Tari, 2006). In this study, red meat and milk production, animal quantity and animal production value are evaluated as dependent variables, whereas supports given to livestock production as independent variable.

Structure of livestock production enterprises and animal quantities: According to the results of the General Agricultural Census Agricultural Enterprises Survey conducted by the Turkish Statistical Institute in 2001, the total number of enterprises in Turkey is 3,076,650, the number of enterprises performing plant production and livestock production (poly-culture) is 2,074,479, the number of enterprises performing solely plant production is 929,582 and the number of enterprises performing solely livestock production is 72,629 (Turkstat, 2009).

In the sector, a significant part of the dairy cattle breeding enterprises that is 71.83% possess 1-4 heads. Similarly, 87% of the active enterprises performing cattle fattening have animals <10 heads (Pesmen and Yardimci, 2008).

Although, Turkey has a significant place in within Europe and in the world with regard to bovine and ovine animal quantities (6th in the world and 2nd in Europe), its animal quantities reduce gradually. While the population of Turkey has increased by 25% since 1990, its animal quantity (excluding poultry animals) has decreased by 37%. During this process of reduction in animal quantities, a reduction of 41% in sheep quantities and a reduction of 49% in goat quantities have had impact on the diminishing of the sector. With the affect of the macro economic policies implemented, the share of the population living in rural areas within the total population has reduced from 41-29% since 1990 up to date. The reduction in rural population also caused animal quantities to decrease.

Reduction in animal quantities against the increase in population made the already insufficient animal protein consumption even further insufficient. In Turkey, 35.6 g of meat and 465 g of milk are consumed per day per capita. It is seen that these consumption amounts are rather insufficient, when they are compared to those of the developed countries (219 g of meat and 950 g of milk).

Since the study covers the last ten years, developments in livestock production shall be examined in Table 1. The number of bovine and ovine animals in Turkey is given for the period between the years 1997-2008. During the period, there was a reduction of 3% in cattle quantities, 55% in buffalo quantities, 21% in sheep quantities and 33% in goat quantities, the total reduction in bovine and ovine animal quantities being 19% in 2008 compared to 1997.

Animal production: Bovine and ovine animal meat and milk production amounts in Turkey for the period 1997-2008 is given in Table 2. During the period in question, it is observed that there is no dramatic fall in meat and milk production despite a 19% reduction in animal quantities. While there is not much change in cattle meat production within red meat production, fluctuations were observed in sheep and goat meat production. However, especially in buffalo meat production, large decreases have been experienced. The total red meat production has reduced by 6.6% during this period. The fact that meat production has decreased by only 6.6% despite the significant decrease in animal quantities is a result of the cattle rehabilitation works and the increase in cross-bred and culture races within the total animal quantities.

Although, there is decrease of 27% in the number of cattle milked during the period 1997-2008 in Turkey, there is an increase of 26% in milk production. However, reductions have been experienced during the same period

Table 1: Number of bovine and ovine animals by years in Turkey (heads)

Years	Cattle	Buffalo	Sheep	Goat	Total
1997	11,185,000	194,000	30,238,000	8,376,000	49,993,000
1998	11,031,000	176,000	29,435,000	8,057,000	48,699,000
1999	11,054,000	165,000	30,256,000	7,774,000	49,249,000
2000	10,761,000	146,000	28,492,000	7,201,000	46,600,000
2001	10,548,000	138,000	26,972,000	7,022,000	44,680,000
2002	9,803,498	121,077	25,173,706	6,780,094	41,878,375
2003	9,788,102	113,356	25,431,539	6,771,675	42,104,672
2004	10,069,346	103,900	25,201,155	6,609,937	41,984,338
2005	10,526,440	104,965	25,304,325	6,517,464	42,453,194
2006	10,871,364	100,516	25,616,912	6,643,294	43,232,086
2007	11,036,753	84,705	25,462,293	6,286,358	42,870,109
2008	10,859,942	86,297	23,974,591	5,593,561	40,514,391

Anonymous 2009 (collection), Data related to 2008 are temporary

Table 2: Red meat and milk production amounts and production values by years in Turkey

Years	Total red meat production (tones)	Total milk production (tones)	Animal production value ($)*
1997	516,879	10,076,527	7,869,085,018
1998	532,167	9,970,531	9,541,447,248
1999	511,046	10,082,010	8,667,162,405
2000	491,217	9,793,961	8,204,315,028
2001	435,683	9,495,550	4,970,381,784
2002	420,541	8,408,566	6,181,994,696
2003	366,656	10,611,011	9,012,888,435
2004	446,965	10,679,407	10,875,434,219
2005	409,391	11,107,896	12,226,682,927
2006	438,511	11,952,100	13,123,382,316
2007	575,611	12,329,789	17,631,941,540
2008	482,444	12,243,040	19,479,164,300

Anonymous 2009 (collection), *It has been calculated using yearly average exchange rates set by the Central Bank

for the number of sheep, goat and buffalo milked and milk produced. As a result, there has been an increase of 21% in the total milk production (Table 2). Although, there is a decrease in the number of animals milked, the increase in milk production has been possible with the inclusion of high-yield races into the herd. When increases in milk production are examined by years, it is observed that there is significant yield increase especially for cattle. This increase is a result of the fact that rehabilitation works aimed at cattle has been intense.

Supports given to animal production in Turkey: The contribution of livestock production to the Turkish economy can be summarized as the following: meeting the animal protein need of the increasing population, ensuring balanced development between regions and sectors, ensuring stability, decreasing the problem of unemployment in rural areas by creating employment opportunities in industrial and service sectors and preventing hidden unemployment, preventing migration, grounding the financing of development and industrialization on the country's own resources, transforming plant products and remainders, which cannot be evaluated directly as food for humans into food useful for animals, providing raw materials for the industry, increasing exports (Aydemir and Picak, 2007). Although, the enterprises performing animal production in Turkey are small and have low efficiency, the contribution of livestock production to GDP is 6% and its share within the total agricultural production is 33-36% (Aydemir and Picak, 2007).

In Turkey, an important part of the animal production is carried out by small-scale traditional enterprises, which do not have sufficient economic facilities and whose scientific capacity is weak. In addition, these enterprises are those, which have deficits in production in scientific terms and which do not prioritize the preferences of the consumers in terms of quality (Cevger and Sakarya, 2006). In Turkey, the yield achieved per animal head in livestock production enterprises is low; fodder crop production is insufficient and the number of artificial insemination is below the international averages (Official Gazette, 2009). In addition, animal production cannot meet the demand also due to insufficient technology, insufficient research and extension supports, weak infrastructure and disadvantageous outer conditions. However, Turkey has shown a rapid development in poultry production in contrast to the red meat production during the last twenty years (Akbay and Boz, 2005).

The agricultural policies of 2000 in Turkey have been determined by the agreements made the International Money Fund and World Bank. In 2000, deep rooted changes were made in agricultural supports and the input supports were replaced largely by DIS (Direct Income Support) given on area basis. A crucial part of the criticisms made against this policy change was based on the argument that livestock production was outside the scope of DIS (since DIS only included plant production). The fact that livestock production could not receive a sufficient share from supports started the beginning of decline of the Turkish livestock production. In order to stop the decrease in the sector of livestock production, livestock production enterprises have been started to be supported in various ways in the recent years. Although, the supports given to livestock production have been significantly increased by amount during the recent years, the abundance and complexity of the tools used made it difficult to reach the goal. Thus despite the increase experienced during this period in milk production, which is 26%, red meat production has decreased by 6.6%.

The special supports given to livestock production under the scope of the reforms in agricultural policies are determined according to the decisions taken under the framework of Cabinet Decision (2005) on Supporting Livestock Production numbered 2000/467, which was issued for developing livestock production in Turkey. The implementation put into force with the Cabinet Decision in question was regulated as a five-year period covering the years 2000-2004. However, it was decided with the Cabinet Decision numbered 2005/8503 that supports given to livestock production shall be continued until 2010.

In Turkey, especially during the recent years, meat premiums, marketing supports, supports given for the modernization of livestock production enterprises and environmental measures have been and is being put into force in addition to the existing support tools for the purpose of race rehabilitation in livestock production activities, increasing roughage production, increasing efficiency, specialization of the enterprises, ensuring the hygiene conditions in the enterprises, animal health and

welfare, encouraging animal identity system, processing and marketing of animal products and improvement of control, follow-up and standards in relation to these (Aksoy and Yavuz, 2008; Cabinet Decision, 2005; Tektas, 2006).

The problems experienced in Turkish livestock production and liquidation of livestock production enterprises during the last years and has given the supports increasing to livestock production a must. Thus, it is seen that the share of the supports given to livestock production within the agricultural budget has gradually increased during 2000. In 2000, the share of supports given to livestock production within the total agricultural budget was 3.2%, whereas this share has reached up to 22.6% in 2008 (Table 3). Although, the share of supports given to livestock production within the agricultural budget increased, it is observed that the supports given to agriculture in Turkey are very low, when compared to developed countries. Thus although, it is specified in the agriculture strategy document that the supports to be given to agriculture shall not be <1% of GNP, this value has always remained below 1% during the recent years.

The most important item within the supports given to livestock production is constituted by the fodder crop support and milk incentive premium. The greatest share within the livestock production supports in 2008 belonged to supports given for fodder crop with a share of 50.8% and to milk incentive premium with a share of 23.3%.

Although, the supports given to livestock production have increased during the recent years, they are insufficient, when compared to developed countries (Serpen, 2009). However, increase in the supports given to livestock production has increased the interest of large companies in livestock production and during the last 5 years, important investments were made. Despite the decrease in animal quantities, efficiency has increased and milk production has increased with the impact of the investments made and supports given. With these changes, significant increases were also experienced in animal production value. Thus, the animal production value, which was 7.9 billion $ in 1997 (Table 2) reached up to 19.5 billion $ in 2008 with an increase of 147%.

Table 3: Agricultural support budget and livestock production supports in Turkey

Years	Agricultural support budget (Million TL)	Livestock production supports (Million TL)	The Share of livestock production supports within the agricultural budget (%)
2000	344	11	3.2
2001	592	44	7.4
2002	1,868	83	4.4
2003	2,670	106	4.0
2004	3,084	250	8.1
2005	3,708	352	9.5
2006	4,747	679	14.3
2007	5,555	723	13.0
2008	5,876	1,330	22.6

RESULTS AND DISCUSSION

The analysis of the supports given to livestock production in Turkey was estimated with regression models. During the analysis nine-year, data set belonging to 2000-2008 was used. Livestock production supports were taken as independent variable in every estimation model. The impact of livestock production supports upon animal production value, total number of animals, total meat production and total milk production has been revealed (Table 4).

In the first model, the impact of supports given to livestock production in Turkey upon animal production value was estimated.

The rate of explanation of the change in animal production value by the change in livestock production supports that is R^2 = 86%. Besides, t statistical value of the independent variable livestock production supports was found to be meaningful with a reliability of 1%. The fact that R^2 is rather high and that t-statistical value is meaningful shows that the model is usable.

In this case, if any support is not given in livestock production, the animal production value shall be around $7.3 billion. It is obviously seen in the model that animal production value increases with the supports given to livestock production in Turkey. It is seen that animal production value increases by approximately 14 units with 1 unit increase to be made in livestock production supports.

In the second model, the relationship between the supports given to livestock production in Turkey and the total number of animals was estimated. However, any econometrically meaningful relationship could not be found.

The rate of explanation of the change in total number of animals by the change in livestock production supports that is R^2 = 30%. Besides, t-statistical value of the independent variable livestock production supports is not meaningful with a reliability of 10%. The fact that R^2 is low and that t-statistical value is not meaningful shows that the model is not appropriate.

In the third model, the relationship between the supports given to livestock production in Turkey and the meat production was estimated. However, any econometrically meaningful relationship could not be found.

The rate of explanation of the change in total meat production by the change in livestock production supports that is R^2 = 22%. t-statistical value of the

Table 4: Model estimates

Dependent variables	Model estimate	R^2	Adjusted R^2	Independent variable (Livestock production supports) t-value	Significance
Animal production value	Y1 = 7288.6 +13.5X	0.86	0.84	6.547	0.000
Total number of animals	Y2 = 43.8-0.003X	0.30	0.20	-1.745	0.125
Total meat production	Y3 = 427520.3 +82.1X	0.22	0.10	1.387	0.208
Total milk production	Y4 = 9784535.8 + 3205.5X	0.65	0.60	3.610	0.009

independent variable livestock production supports is not meaningful with a reliability of 10%. The fact that R^2 is low and that t-statistical value is not meaningful shows that the model is not appropriate.

In the fourth model, the impact of supports given to livestock production in Turkey upon total milk production was estimated.

The rate of explanation of the change in total milk production by the change in livestock production supports that is R^2 = 65%. Besides, t-statistical value of the independent variable livestock production supports was found to be meaningful with a reliability of 1%. The fact that R^2 is rather high and that t statistical value is meaningful shows that the model is usable.

In this case, if any support is not given in livestock production, milk production shall be around 10 million tones. The supports given to livestock production in Turkey increases milk production as it increases meat production. It is seen that milk production increases by 3206 units with 1 unit increase to be made in livestock production supports.

CONCLUSION

Turkey is rather favorable for livestock production with its geographical and ecological conditions. However, the fact that agricultural enterprises performing livestock production are small and have low efficiency makes the development of the sector difficult. Thus, a significant part of the dairy cattle breeding enterprises that is 71.83% possess 1-4 heads. Similarly, 87% of the active enterprises performing cattle fattening have animals <10 heads.

In Turkey, an important part of the animal production is carried out by small-scale traditional enterprises, which do not have sufficient economic facilities and whose scientific capacity is weak. This fact increases the importance of supports to be given to livestock production. The changes experienced in agricultural policy of Turkey during 2000s and the fact that livestock production could not receive a sufficient share from supports started the beginning of decline of the Turkish livestock production. The problems experienced in Turkish livestock production and liquidation of livestock production enterprises during the last years has made the increasing the supports given to livestock production a must. Thus, it is seen that the share of the supports given to livestock production within the agricultural budget has gradually increased in 2004 and the following years. In 2000, the share of supports given to livestock production within the total agricultural budget was 3.2%, whereas this share has reached up to 22.6% in 2008.

Despite the decrease in animal quantities, meat and milk production amounts per head have increased with the impact of the investments made and supports given. With these changes, significant increases were also experienced in animal production value. Thus the animal production value, which was $7.9 billion in 1997 reached up to 19.5 billion $ in 2008 with an increase of 147%.

RECOMMENDATIONS

According to the results of the regression analysis made, 1 unit increase to be made in livestock production supports results in an increase of 14 units in animal production value and 3206 units in milk production.

In Turkey, livestock production is still supported under 20 different headings. In order to make the supports given more effective, it is necessary that the support items are decreased and the supports given are made more meaningful. In order to develop market-oriented, enterprises supports should be given and the genetic yield capacities of the country's livestock production should be increased with rehabilitation programs. Especially, support should be given for the purpose of decreasing the feed stuff costs, which have an important place within the production costs.

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