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An Assessment of Beef Market in Türkiye

Türkiye Sığır Eti Piyasasının Değerlendirilmesi

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Abstract

Although beef production had substantially increased in the last two decades in Türkiye, market balance could not be realized and beef price had perpetually increased. Besides, self-sufficiency of the country could not be achieved yet in spite of domestic supports and import protection on cattle sector. The objective of this review was to assess the developments in Turkish beef market in terms of production, prices, import and support policies since 2000. The material of this study is related literature, official documents and time series data for beef market. The results of this review indicated that beef production had increased in Türkiye in the last two decades and the share of beef in total read meat production had increased from 63% to 78.3%. Although the government had granted some supports in order to lessen high production costs such as breeding material and feed, the increases in production costs and meat prices couldn't be prevented. Beef-milk parity highlighted that profitability of dairy farming had lessened with respect to beef breeding and the producers would confront breeding material problem in the long run. Livestock supports should be revised to encourage mixed type of production and unionization should be improved to alleviate costs and enhance marketing channels.

Keywords: Beef, Production, Parity, Foreign trade, Türkiye

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Öz

Türkiye'de sığır eti üretimi son yirmi yıl içinde ciddi miktarda artmakla birlikte piyasa dengesi sağlanamamakta ve fiyatlar sürekli olarak artmaktadır. Sektöre sağlanan destekler ve ithalat ise, ülkenin üretimde kendine yeterliğini sağlamada yeterince etkili olamamıştır. Bu çalışmanın amacı, 2000 yılı sonrası Türkiye'nin sığır eti piyasasının üretim, fiyat, ithalat ve politikalar açısından değerlendirilmesidir. Derleme olan bu çalışmada ilgili literatür, resmi dokümanlar ve zaman serilerinden faydalanılmıştır. Çalışma sonuçlarına göre Türkiye'de son yirmi yılda sığır eti üretimi artmış ve sığır etinin toplam kırmızı et üretimi içindeki payı %63'ten %78.3'e yükselmiştir. Üretim maliyetlerini azaltmak amacıyla verilen besi materyali ve yem desteklerine rağmen, yüksek üretim maliyetleri ve fiyat artışı önlenememiştir. Ayrıca, sığır eti-süt paritesi süt sığırcılığındaki karlılığın besi sığırcılığına göre azaldığını ve üreticilerin uzun dönemde besi materyali sıkıntısı yaşayacağını göstermektedir. Hayvancılık desteklerinin karma üretimi teşvik edecek şekilde revize edilmesi ve kooperatifleşmenin maliyetleri azaltıcı ve pazarlama kanallarını iyileştirecek biçimde geliştirilmesi önerilmektedir.

Anahtar kelimeler: Sığır Eti, Üretim, Parite, Dış Ticaret, Türkiye

1. INTRODUCTION

Meat is the most valuable livestock product which composed of protein and amino acids, minerals, fats and fatty acids, vitamins and other bioactive components (FAO, 2021a). Therefore, it is an essential source of nutrition for humans. By the way, production and consumption of meat have been encouraged by international institutions through some programs. Food and Agricultural Organization (FAO) reported that global total meat production increased by 0.47%, from 338.8 million tons to 337.2 million tons over the period 2019-2020. The main reason of this trivial change was caused by increased poultry and ovine meat outputs compensated for pig and bovine meat production contractions. On the other hand, world meat production was forecasted to reach 352.7 million tons in 2021, up 4.2 percent from 2020, representing the highest growth rate since 1997. International meat prices, measured by Meat Price Index, averaged 95.5 in 2020, a decrease of 4.5 points (4.5 percent) from 2019, reflecting price declines across all meat types. Nevertheless, index had risen to 110 by November, 2021 (FAO, 2020; 2021b; 2022).

Beef (cattle meat) is one of the most important components of total meat production. Total beef production of the world increased by 18.6% in the last two decades, whereas the share of Türkiye had increased from 0.64% to 1.42% (FAO, 2021c)[1]. During this period, Türkiye's both red meat and beef production increased. Nevertheless, quantity of beef had increased more than total red meat, therefore the share of beef production had increased (TurkStat, 2021a). Although production is most essential indicator of this sector, other indicators should also be taken into consideration to evaluate completely.

Beef production and market is of vital importance and literature introduced essential studies on this issue. Most of these studies based on beef production but foreign trade, price, market conditions, production and feeding systems, beef policies were also discussed (Agus and Widi, 2018; Chung *et al.*, 2018; Li *et al.*, 2018; Smith *et al.*, 2018; Bunmee *et al.*, 2018; Hocquette *et al.*, 2018; Napasirth and Napasirth, 2018; Greenwood *et al.*, 2018; Drouillard, 2018; Gotoh *et al.*, 2018). Nevertheless, sectoral discussion of production and policy framework of meat were also introduced in Türkiye (Sarısoy and Akay, 2018; Akın *et al.*, 2018; Niyaz, 2018) but there are any previous reviews about the structure and developments in the Turkish beef market. Although Türkiye has great potential on livestock production, crop production has always been superior with respect to livestock production and therefore, livestock sector has always been controversial in terms of different indicators such as production, prices, foreign trade, etc. This review aimed to evaluate the structure and development of the Turkish beef market and it would contribute to current literature in two points. i) Beef market of Türkiye could be evaluated with respect to different indicators and dynamics of the market could be well understood. ii) The impacts of livestock policies on these indicators could be discussed and some inferences could be realized for decision makers in order to direct the market with more effective and sustainable livestock policies. By the way, the objective of this study was to evaluate beef market of Türkiye in terms of production, price and parities, foreign trade and livestock policies. Therefore, it will be possible to analyze current status and assess future prospects of the sector. The remainder of the paper is structured as follows: the materials and the methods were stated in the second section. The third section described current status and the last section introduced future prospects.

2. MATERIAL AND METHOD

Main material of this study was secondary data of Turkish beef market for 2001-2021 period. The data consisted production, foreign trade, price and parities and livestock policies and was obtained from databases of Turkish Statistical Institute

[1] TurkStat revised 2001-2019 data and published 2020-2021 data of red meat statistics by May 6, 2022 but this data has not been placed in FAOSTAT, yet. Therefore, rates were not up date.

(TurkStat), FAO, Ministry of Agriculture and Forestry (MoAF) and Turkish Feed Manufacturers Association (TFMA).

The statistics on slaughtered beef cattle and production have been collected from slaughterhouses and tanneries and quarterly published by TurkStat. The number of slaughtered cattle was measured as head whereas the quantity of beef meat was measured as tons. The number of imported cattle and beef import statistics were obtained from FAO;both official and FAO estimated data was used. The number of cattle included all cattle regardless of it was breeding or not, whereas beef meat included the sum of cattle meat and boneless (beef & veal) cattle meat. The number of imported cattle was measured as head, whereas the quantity of imported beef was measured as tons. Nominal prices were deflated by 2020 based Domestic Producer Price Index Parity of beef-feed and parity of beef-milk were obtained by proportion of the first indicator to second indicator, respectively. The authors were individually calculated 2015 based indices of beef meat, feed and milk in order to jointly assess beef price and cost of production.

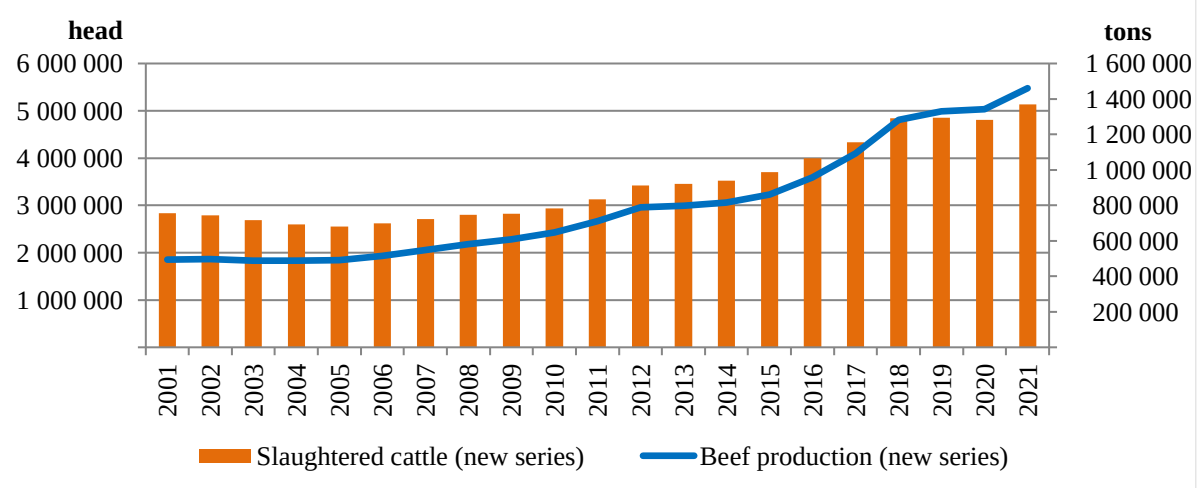
Literature, legislations, plans, programs and reports were used in order to examine livestock policy of Türkiye and therefore change in production, foreign trade, price and parities could be evaluated through change in livestock policies. Therefore, impact analysis of policies and future prospect of the sector was able to be evaluated.

3. CURRENT STATUS

3.1. Production

In Türkiye, computation of beef production had changed in times. Until 2010, the amount of beef production was calculated as the sum of two components: i) Slaughtering at the slaughterhouses and ii) Slaughtering during Festival of Sacrifice which is taken from Turkish Aeronautical Association as hides collected by them. Nevertheless, the beef production had covered slaughters inside and outside of slaughterhouses starting from 2010 (TurkStat, 2021b). In this method, it was assumed that the amount of leather processed by the tannaries was equal to the number of animals slaughtered in the reference period. Nevertheless, there were some factors causing deviations in estimation of red meat production such as all hides of slaughtered animals have not been processed in tanneries, hides could be stored and effects of market demand in the amount of leather to be processed in tanneries. Also, high amount of unregistered slaughtering necessitated to estimate the number of slaughtered animals in order to compute the amount of red meat production. Therefore, TurkStat had changed computation methodology by 2022 and decided to use the Slaughtering Rate.

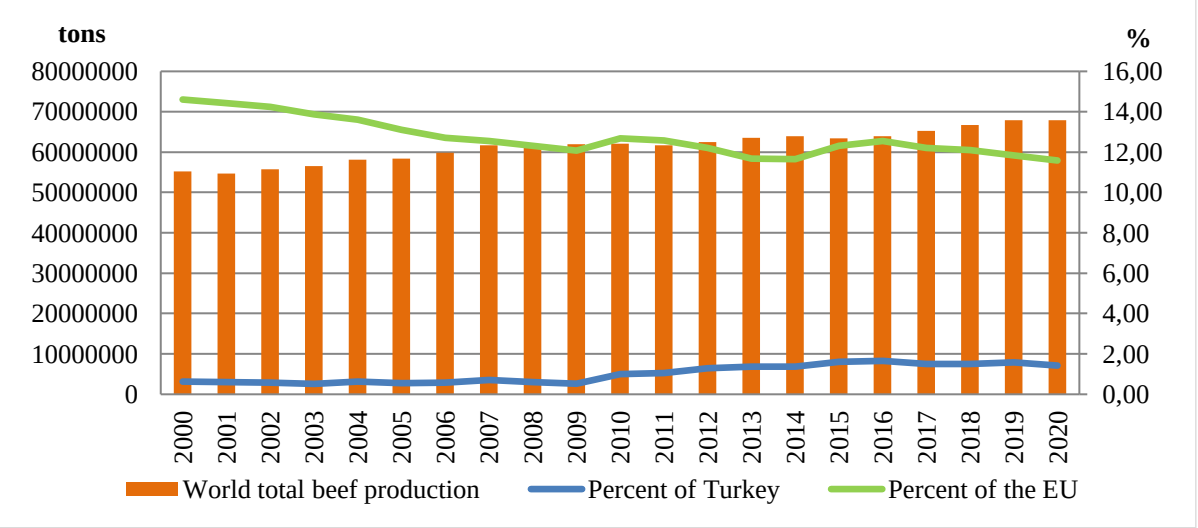
Graphic 1. The number of slaughtered cattle and the amount of beef production of new series in Türkiye



Slaughtering rate[2] is defined as the ratio of being slaughtered animals to the total number of animals in the beginning of the year. The demographic ratios such as the ratios of viviparous, live birth, vitality up to cutting age, death in old animals are compiled by Animal Production Survey in Agricultural Holdings by TurkStat since 2020. The number of animals in the beginning and the end of periods were based on the data of Statistical Information System of MoAF. Therefore, beef production was estimated by the multiplication of the number of slaughtered animals from domestic population, which is estimated by slaughtering rate, and the number of imported slaughtered animals with the average carcass weight (TurkStat, 2022a). Graphic 1 reported the number of slaughtered cattle and the amount of beef production in Türkiye for the period 2001-2021 (TurkStat, 2022b). It was indicated that the number of slaughtered cattle and beef production had an increasing trend in the last two decades.

The amount of beef production of the world was 55.2 million tons in 2000 but it had increased almost by 18.6% and reached 67.9 million tons in 2020. The share of Türkiye had risen from 0.64% to 1.42%, whereas the share of the European Union (EU) had decreased from 13.96% to 10.17% because the amount of beef production had risen by 2.7 times in Türkiye, whereas it had decreased by 10.5% in the EU (Graphic 2) (FAO, 2021c).

Graphic 2. The amount of beef production of the world and the share of Türkiye and the EU



Graphic 3 reported the amount of beef and red meat production of Türkiye and indicated that the amount of beef increased by almost 3 times, whereas the amount of red meat hadincreased by 2.5 times in 2001-2021 period. Therefore, the share of beef production in total red meat had increased from 63.03% to 74.83%. The Graphic revealed that beef production had significant proportional increase, whereas the other sources of red meat such as sheep and goat have sharply decreased; from 28.8% to 19.8% and from 7.3% to 4.8%, respectively (TurkStat, 2022b).

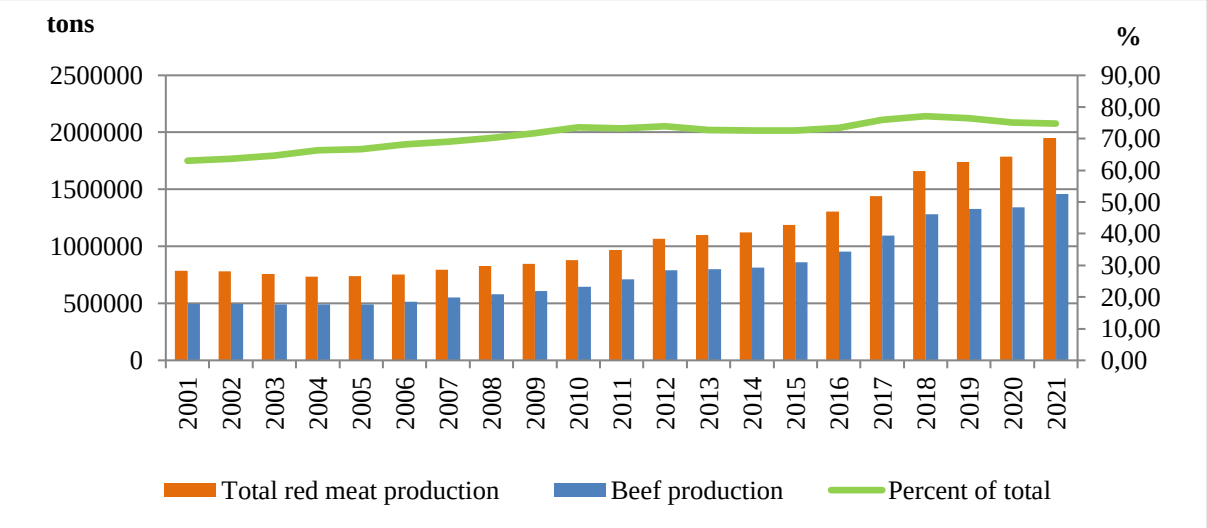
3.2. Foreign Trade

Graphic 4 reported cattle and beef import of Türkiye in 2001-2020 period. Until 2010, Türkiye had hardly imported cattle or beef (cattle meat), whereas 140,045 cattle and 50,658 tons meat had been imported in that year. Although cattle and meat import had decreased in 2011-2014 period,

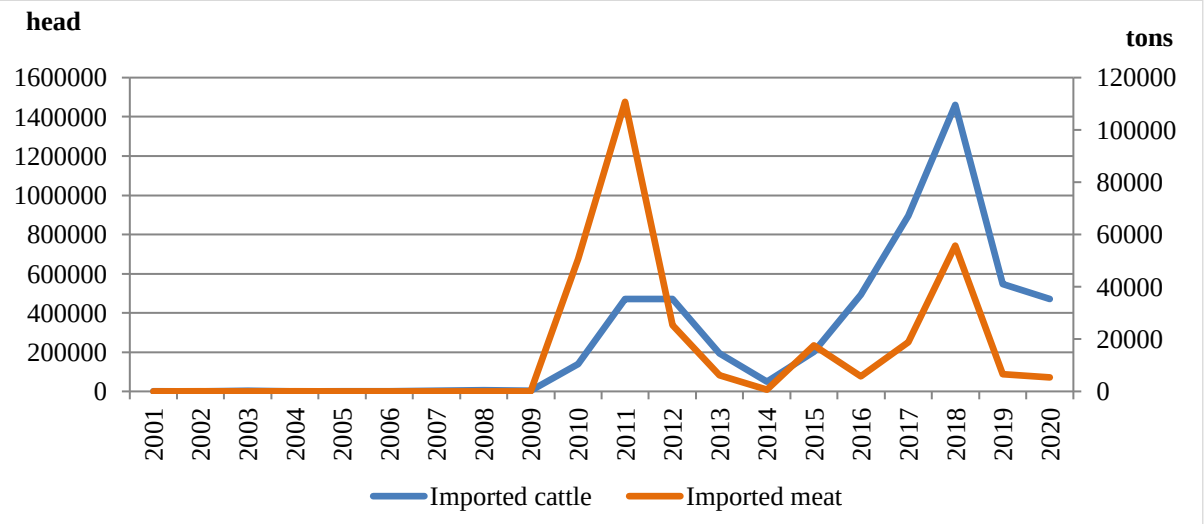
[2]Slaughtering rate = (the ratio of viviparous* live birth rate* the ratio of vitality up to cutting age) - death rate in old animals – stock change in the animal population

imported cattle had perpetually increased up to 2018 and reached 1,460,793 cattle which was thegreatest number of import during the last two decades. Also, imported meat had reached the greatest quantity (55,752 tons) since 2011. Therefore, the statistics revealed that breeding material and meat production was not at expected level and livestock policies such as breeding male cattle support could not have desired impact on production. Nevertheless, both imported cattle and meat had sharply decreased in 2019 and continued to lessen (FAO, 2021d).

Graphic 3. The share of beef in total red meat production of Türkiye



Graphic 4. Cattle and meat imports of Türkiye

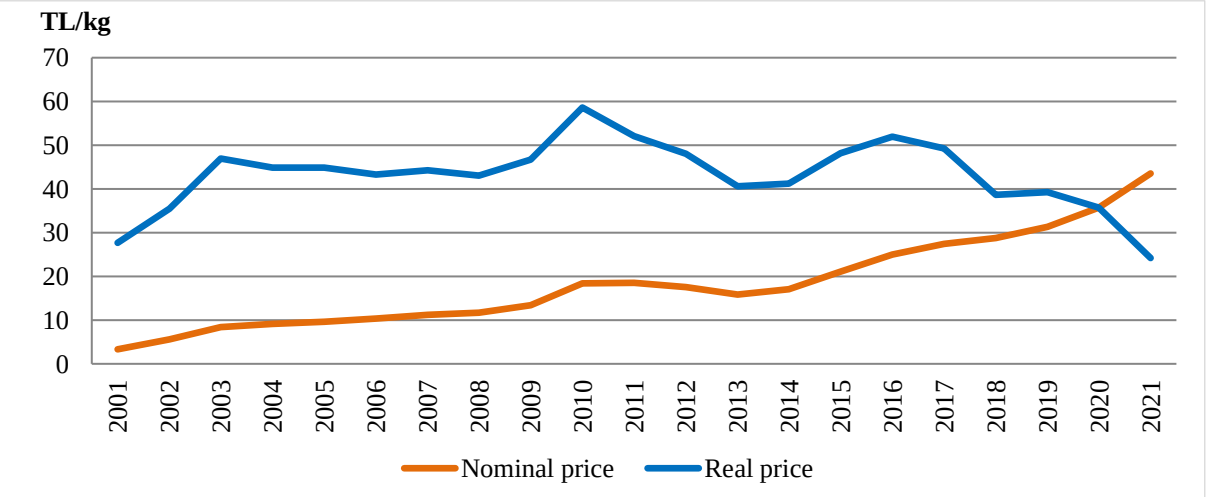


3.3. Price and Parities

Nominal and real producer prices of beef for Türkiye during the period of 2001-2021 were presented in Graphic 5. The Graphic stressed on two essential issues. i) Nominal price had an increasing trend as expected. ii) Real price had been fluctuating in time but there were sharp decreases and increases in some years. Price decrease especially after 2010 could be explained by the rise of import and expansion of supply. Nevertheless, since 2014, real price had increased as a result of decrease in beef and cattle import.

For this reason, producer price of beef mainly depends on import and Türkiye has not got self-sufficiency in beef cattle farming. Although beef and cattle import had increased in 2015 and 2016, beef price had continued to rise because drought and insufficiency of roughage led to roughage import. Therefore, feed price had risen and the cost of beef farming had increased. Beside, imported breeding animal could not bring the number of animals at an expected level; therefore, cost of breeding material and the share of breeding material in total costs have increased. Especially since 2016, neither rise of production nor cattle and beef import could have impact on price. On the other hand, real beef price considers two essential breaks in 2001 and 2010. The former break could be explained by the negative effect of economic depression on production costs, whereas the latter break could be explained by the contraction of production due to the economic depression. Beside, decrease of real beef meat price since 2010 except for the period of 2014-2016 indicated that beef producers have had excess burden of costs with imports and it had been an essential threat against the sustainability of production (TurkStat, 2022c). This burden had perpetually continued to rise in the last years up to 2020 and had deepened by 2021 as a result of high inflation.

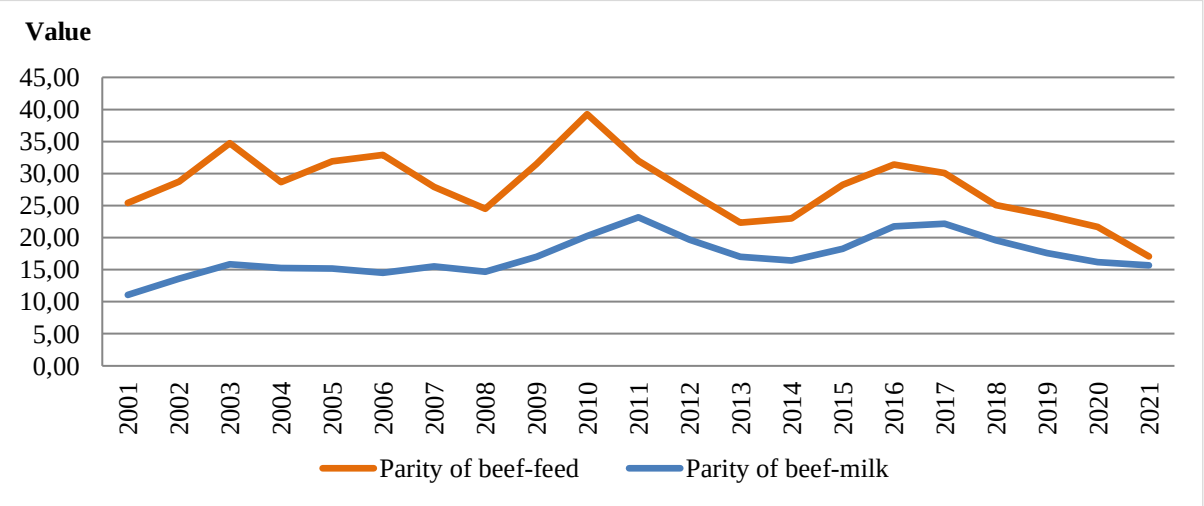
Graphic 5. Nominal and real beef prices in Türkiye



Livestock sector could be extensively evaluated via comparative analysis of beef price with feed and milk price. Because, main cost of beef cattle farming is feed and breeding material (Aydin and Sakarya, 2012; Gozener and Sayili, 2015a,b; Celik and Sariozkan, 2017; Alhas-Eroglu and Bozoglu, 2019). The former directly affects price whereas the latter has indirect impact on beef price. Therefore, beef-feed parity and beef-milk parity were formed by means of beef, feed and milk price comprising 2001-2021 periods (Graphic 6). Beef-feed parity revealed that a producer could buy 25.39 kg feed by 1 kg beef in 2001, whereas he could afford 17,07 kg feed in 2021. Therefore, the cost had increased . On the other hand, two essential results could be concluded: i) The parity had been fluctuating in the last two decades and this implied that producers could not be managed cost-profit balance. ii) Since 2016, the parity had a decreasing trend and this implied that feed price had been increasing over beef price. Both results indicated that increasing costs had been the main problem of beef farming and problematic for economic sustainability of the farms. Beef-milk parity indicated that producers could buy 11.07 liter milk by 1 kg beef in 2001, whereas they could afford 15.71 liter milk in 2021. Therefore, the nominal price parity had increased by 42% during the reference period which could be regarded as benefit for beef cattle farming in the short term (TurkStat, 2022c; TFMA, 2022). Nevertheless, dairy farms could not gain enough

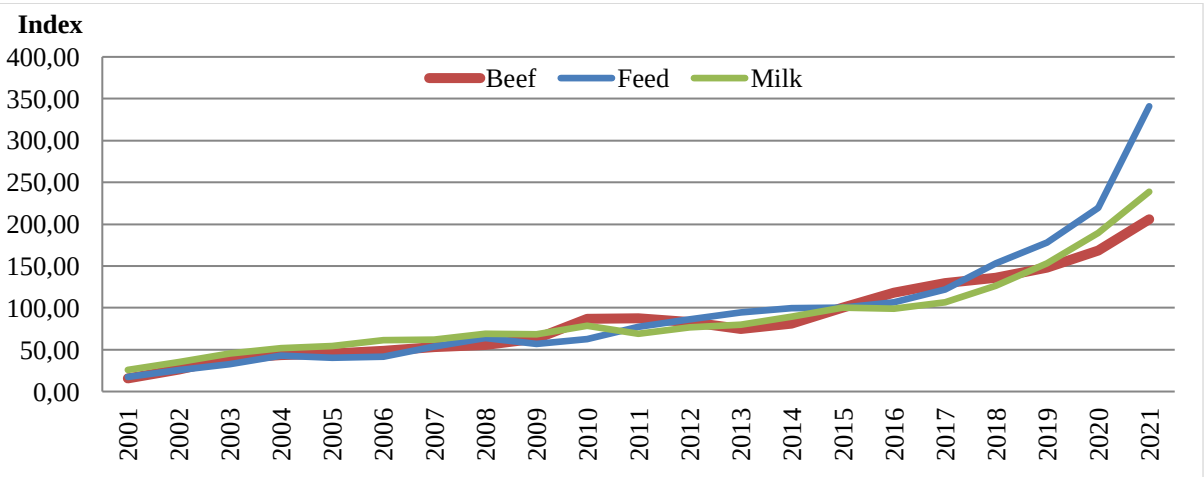
profit in milk selling and were obliged to slaughter their breeding animals. For this reason, supply of breeding material had decreased and this prices increased. Beef cattle farms could hardly get breeding material or should pay higher price for breeding material. Therefore, cost of production had increased and the parity turned to against beef cattle farms in the end. When beef-feed parity and beef-milk parity were evaluated together, high level of costs and the low level of profits led to beef cattle farms to cease the production in the long run. Therefore, supply of beef would be decrease, consumer price of beef would be rise and the beef cattle sector would be more problematic.

Graphic 6. Parity of beef/feed and beef/milk in Türkiye



Graphic 7 revealed the indices of 2015 based beef, feed and milk of Türkiye for 2001-2021 period. Beef index is below the feed index and implied that cost of beef production was high and producer price was under the costs. Therefore, beef production is not cost covering and economically sustainable. By 2021, feed index had severely increased with respect to beef index and production would be significantly affected near future if feed price had continued to rise. On the other hand, beef index was considerably above milk index and led to the price of breeding animal to rise until 2019. Nevertheless, milk price had been sharply increasing in the last two years and milk index had started to pass over beef index. Consequently, both of the indices indicated that there is high risk for sustainability of beef cattle farming.

Graphic 7. Indices of beef, feed and milk in Türkiye

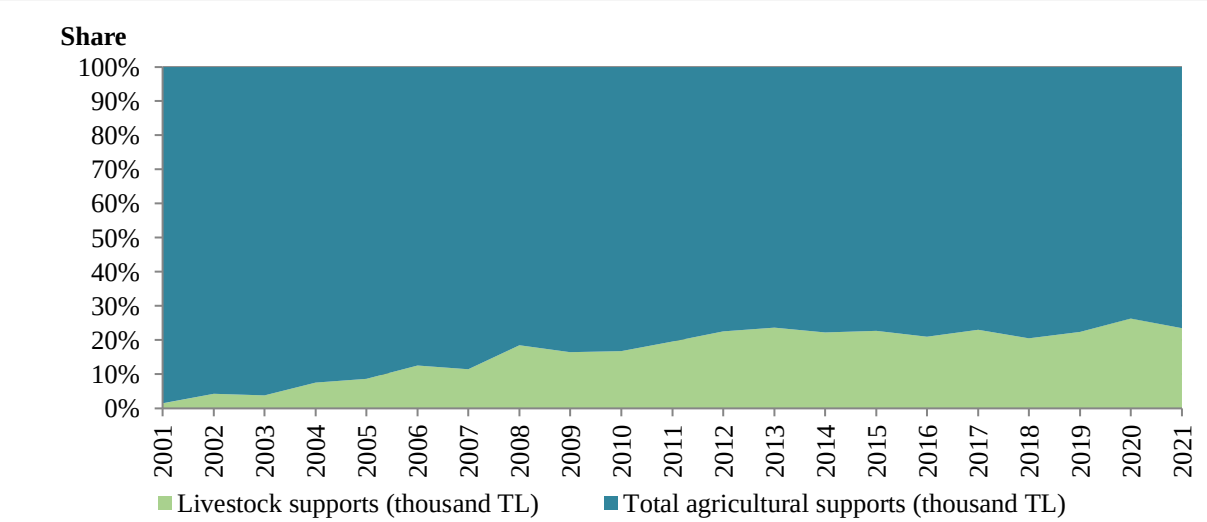


3.4. Policy

Türkiye had experienced essential changes with respect to both legislation and structure on livestock sector after 2000. Basic legislation such as Agricultural Strategy Paper and Agricultural Law, establishment of General Directorate of Livestock with restructuring of Ministry of Agriculture were essential steps of this process (Anonymous, 2018). Beside, different type of producer unions such as bee, sheep-goat and cattle had founded after enactment of Producer Union Law (Number 5200). Also, data networks on livestock, credits and supports were generated and improved in order to encourage the sector (MoAF, 2015). The decision makers took not only legislation into consideration but also budget of livestock sector had started to be regulated after 2000.

Graphic 8 introduced the share of livestock supports in total agricultural supports since 2001. Türkiye granted nominally 2.7 billion TL agricultural supports in 2001 but it increased by almost 9 times and reached nominally 23.3 billion TL in 2021. Livestock supports increased from nominally 41.4 million to 7.2 billion TL in the mentioned period (MoAF, 2018a; 2018b; 2019; 2020;2021; 2022). Therefore, the share of livestock supports had increased from 1.5% to 30.8% in 2001-2021 periods. Nevertheless, reel prices indicated that there was not notable increase in agricultural supports as a result of inflation.

Graphic 8. The share of livestock supports in total agricultural supports



Breeding male cattle and forage crop supports are major livestock supports for beef cattle farming and they directly affect farms. Breeding male cattle supports have been granted for the farms that slaughtered one-year-old and at least 200 kg carcass weighted male cattle and record it to the official system. Since 2011 producers utilized this support but amount of support had decreased in time. On the other hand, forage crop support had been granted for farms in order to decrease the feed cost. The farmers who have grown clover, corn, sainfoin, etc. at least 1 ha officially recorded land could provide with support. Contrary to breeding male support, the unit price of forage crop support had risen over the years.

4. FUTURE PROSPECTS

Agriculture is of vital importance for a country because it is the main source of nutrition and input of different sectors. Not only dependency of climate conditions but also instability of agricultural market necessitates this sector to be supported and take precautions for sustainability. In Türkiye, livestock production is undoubtedly the most fragile subsector of agriculture because livestock production is deeply affected by

structural problems of Turkish agriculture such as dependency on external sources (breeding material and feed) and cost of production, farm type and scale, inadequate number and quality of herd, the lack of producer unionization, etc.

Cost of production is main indicator that affects the prices in beef market and this problem is very related with other structural problems such as type of farms and livestock policies. Breeding material and feed are the main inputs of beef cattle production which constitutes the largest part of the costs (Gozener and Sayili, 2015b; Celik and Sariozkan, 2017; Alhas-Eroglu and Bozoglu, 2019). Breeding material is an essential structural problem of beef sector because beef producers are dependent on dairy producers for breeding material. Although some producers are specialized in beef production and buy breeding material outside the farm, the cost of production had inevitably increased. On the other hand, position of dairy producers is also controversial because they are dependent on demand-supply balance and price of raw milk for continuity. In 2007-2008 period, price of raw milk had sharply decreased and resulted in the slaughter of almost one million cow. Then, beef price had raised and caused great amount of import by 2010. Although price fluctuations and rises were curbed via imports after 2010, this policy worsened the position of producer who had struggle with high production costs. However, increase in quantity could not prevent price increase, beside dependence on external sources for cattle and meat had increased in time. Also, it revealed that imports should not be used to regulate market because it had negatively affected both producers and consumers and could result in producers not to cope with costs and withdraw from the production in the long run. Especially farms should be encouraged to produce feed and breeding material with their own sources in order to decrease costs, improve their cash flows and lessen their external input use. Therefore, mixed type of production (both dairy and breeding) is essential for beef farms.

One of the problems of livestock sector in Türkiye is inadequacy of supports with respect to quantity and efficiency. In 2000, only 0.5% of supports were granted for livestock sector and this rate indicated that livestock production was of secondary importance with respect to crop production. Although after 2000 the share of livestock sector increased up to 20% and more, especially after 2013 it had fluctuated year by year and led to instability of production and price. Although large amount of supports had been granted to farms, external input dependency of the sector resulted in less agricultural production value than expected as a result of inflation and exchange rates. Beside, instability and inadequacy of some supports led to inefficiency and could not solve price and quantity problems of the sector. For this reason, supports are essential to lessen the costs and encourage the production. Alhas-Eroglu *et al.* (2020) introduced that livestock supports had statistically significant effect on beef production whereas it had no statistically significant effect on gross profits. Therefore, farms could not have enough ability to transform the physical product to fiscal return. The main problem of the sector was determined as inadequacy of farms records and it was recommended that recorded farms and activities should have further supported. Thus, existing official record systems should have revised and regulated in order to reach manageable and sustainable livestock system.

As noted before, the share of beef production in total red meat had increased from 63.03% to 74.83% in 2001-2021 period. Therefore, beef meat had become unique source of meat and this result had caused lack of competition and price fluctuations. For this reason, livestock supports should comprise all red meat components and decision makers should provide efficient supports to increase other sources of red meat. By this way, sectoral price-quantity planning and balance could be achieved and beef prices could be regulated via subsidiarity of beef with other red meat sources.

Another structural problem of the sector is lack of unionization and it is very critical in order to attain expected level of production and productivity. Particularly in beef production process, not only input procurement (especially concentrate and roughage feed) at low cost but also marketing of products at premium price is of vital importance.

In developed countries, producer unions are quite effective in livestock production activity and process. On the other hand, in Türkiye, unionization is insufficient and unions are considerably not functional in livestock sector. Two different studies about Red Meat Producer Union of Samsun revealed that a large number of members were unsatisfied with services of the union (Alhas-Eroglu, 2017) and the level of satisfaction and confidence was the lowest in Red Meat Producer Union of Samsun between all unions of livestock (Kilic-Topuz, 2017).

Post forecasts of livestock sector revealed that 2.6 million tons read meat would be demanded by 2023 and only half of this demand could be met by production (Anonymous, 2018). On the other hand, Alhas-Eroglu *et al.* (2021) forecasted that beef production would reach 1,133,687 tons by 2023 about a 18% rise with respect to 2020. Therefore, import should be continued in order to satisfy national demand if necessary precautions did not have been taken.

To sum up, recent experiences of the world indicated that agriculture is one of the most important global power sources and this power will increase in the future. For this reason, ensuring self-sufficiency, improving agriculture based industry and attaining market leadership on essential products should be the main goals of decision makers in the sector and future studies should concentrate on these goals. Livestock sector and beef is of vital importance and Turkish beef industry should be taken into consideration for long-term sustainable development.

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