Is the TTIP a threat to EU beef production?

This contribution analyses competitiveness and likely perspectives of production and trade in case of a possible tariff liberalisation between the EU and the US. It concludes that the total impact of a free trade agreement on beef production in the EU is likely to be limited.

Feedlotting means finishing animals in a short period

Beef production in the US is characterised by three stages, namely a) the production of a weaner–calf from the cow-calf / suckler-cow herd which represents three quarters of the US cow herd, b) the 'backgrounding' of the weaner calves on pasture plus supplementation to produce 'feeder'/'stocker' cattle and c) the finishing of these cattle in so-called 'feedlots', large scale operations with thousands of animals where they are fed/finished for about 5 months on a high-energy ration. Nowadays, a typical ration is 67 percent corn, 20 percent distiller's grain (residual form the ethanol production), 8 percent alfalfa, and 5 percent supplements. In regions where sorghum is produced, sorghum is either substituted for, or mixed with, the corn in the ration. The beef resulting from this system is a marbled product preferred by US customers with intra-muscular fat which is widely used for cooking steaks. While beef from pasture-finished animals is rare in the US, the three stage system described nevertheless means that the animals spend more than 2/3 of their lives on pasture.

Trade of live cattle is not an option

The reduction or removal of the EU import-tariff could potentially trigger a) the export of live cattle (weaners or backgrounders) or b) the export of beef from the US to the EU. A significant export of EU-beef to the US appears unlikely due to the fact that beef prices are higher in the EU and beef types and consumer preferences are different.

An export of non-breeding cattle from the US to the EU cannot be expected, either, due to the fact that price levels for livestock on a per 100 g live weight basis are very similar and in some cases even higher in the US. Further, animal welfare concerns over shipping live cattle from the US to the EU are very likely to prevent such trade. As a consequence, the analysis will focus on the beef finishing in feedlots.

The use of growth promoters is common in the US

Animals in feedlots are mainly steers and heifers from the beef herd. Male animals in the US are typically castrated at an early age to minimize stress on the animal and also for management purposes once calves are weaned and enter into backgrounding/stocker and feedlot phases where calves typically will be comingled with calves from other herds. Further, consumers prefer 'non-bull' beef. To increase growth rates and improve feed efficiency of steers and heifers, it is common practice in the US to administer growth promoting substances to animals.

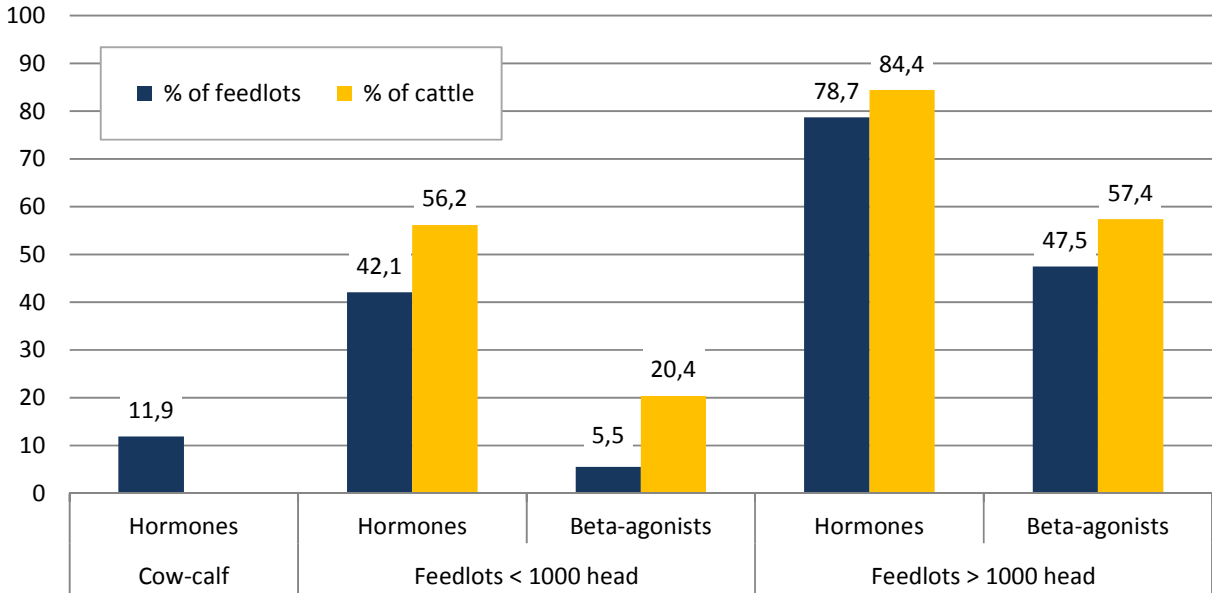
Growth hormones are typically applied as ear implants in both cow-calf and finishing operations. Research trials have typically found that these management practices

significantly improve key production measures such as average daily gain, feed intake and feed conversion.

Beta agonists are not hormones and are administered orally via the feed, typically in the last 60 days of finishing, and mostly in combination with growth hormones. They are used to increase leanness of the animals in finishing operations and thus dressing percentages.

Figure 1 shows that a) the use of hormones can be considered as common practice for approximately three quarters of the cattle, b) slightly over half of the cattle on feed (53 percent) received beta-agonists in 2011 and c) almost 12 percent of the cow-calf operations implanted some of their calves with growth hormones in 2007-08. It further shows that cattle in smaller feedlots receive less growth promoters than those in larger feedlots.

Figure 1: Proportions of hormone and beta-agonist use in the US beef industry in 2007-2008 (cow-calf) and 2011 (feedlots)



Source: USDA (various years)

Figure 1 also reveals that at the same time there is a certain proportion of cattle which does **not** receive growth promoters. Reasons why hormones and/or beta-agonists are not used on more cattle are most likely a) an attempt of producers targeting markets to get a premium, i.e., hormone-free beef, b) the lack of appropriate handling facilities (for implanting hormones), and c) lack of knowledge of the benefits of these technologies.

Growth promoters increase productivity and profitability

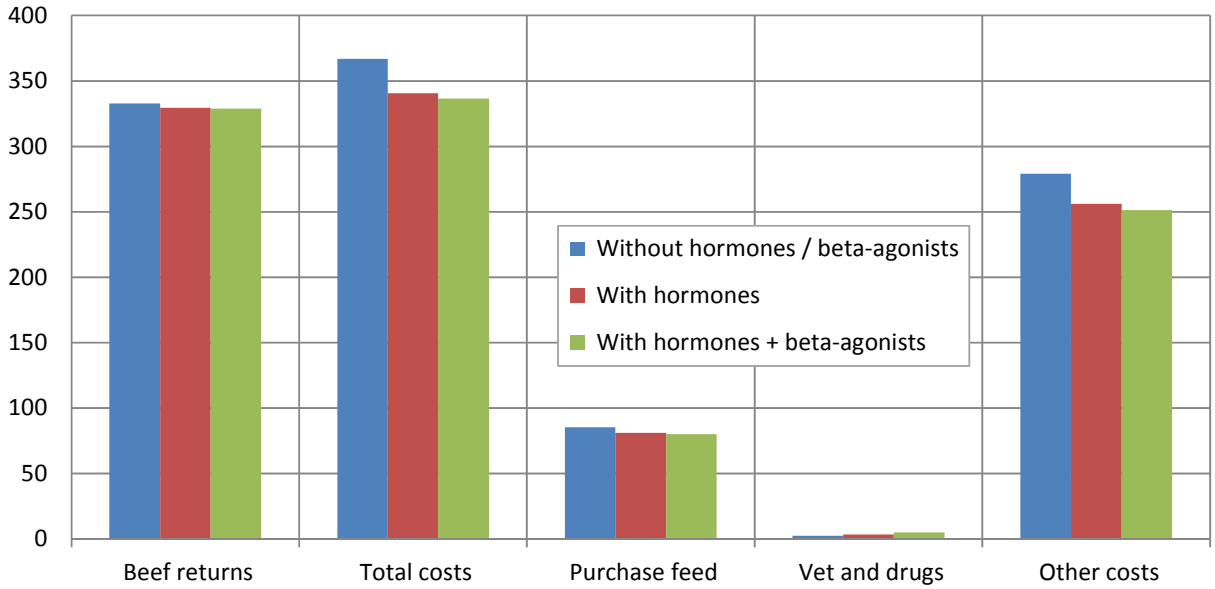
The use of growth promoters increase productivity such as a) lower/better feed conversion rates (5.9 vs. 6.9, equivalent to 15 percent difference), b) higher daily weight gain (1 650 g vs. 1 350 g, equivalent to 22 percent difference), c) higher final live weight (580 kg v. 540 kg, equivalent to 7 percent difference), d) higher dressing percentage (64.1 percent vs. 62.5 percent, equivalent to 3 percent difference), and higher dressed weight (370 kg vs. 335 kg,

equivalent to 9 percent difference). The productivity advantages transfer into an economic advantage. The results are shown in Figure 2.

For the analysis, calf age, finishing period and weight at start were kept constant. The slaughter weight which is used as a reference unit for the cost analysis increases and costs which are not directly affected by the use of hormones are decreasing by the equivalent percentage of the weight increase. Beef returns / prices vary slightly across the three scenarios reflecting carcass quality, composition and related classification. However, the benefit of the heavier carcass weights for the hormone and beta-agonist scenarios were greater than the impact on quality and thus gross revenue per head (not shown here) increased compared to the no implant/beta-agonist scenario.

The economic advantage and the fact that the US-market as well as many export destinations do not object to the use of hormones and beta-agonists are the reasons why both technologies are widely used in US beef production.

Figure 2: Beef returns and costs with and without use of growth promoters 2012 (EUR per 100 kg CW)

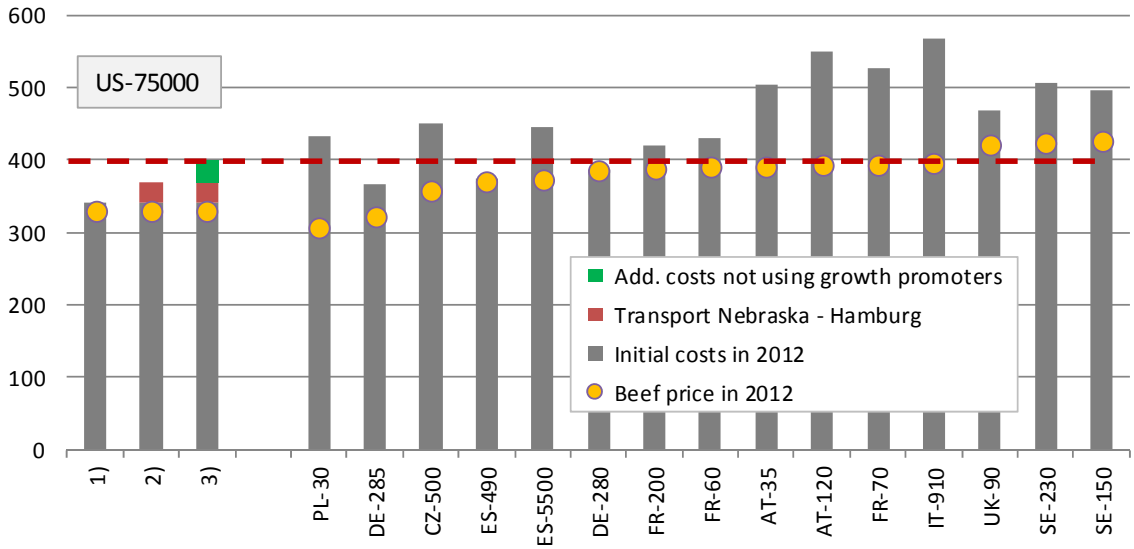


Source: Own calculations based on *agri benchmark* data

Expected impact rather limited

Three scenarios were calculated and are shown for a US-feedlot with an annual production of 75000 cattle. Scenario 1) is the reference with the use of growth promoters. Transport costs of beef from Nebraska to Hamburg were added in scenario 2). The additional costs for not using the growth promoters were added in scenario 3). The result was then compared with the EU-data and is shown in Figure 3.

Figure 3: Cost and price differentials between selected US and EU-farms 2012 (EUR per 100 kg carcass weight)



1) Total costs in 2012 with the use of growth promoters
2) = 1) + transport costs Nebraska-Hamburg
3) = 2) + additional costs for not using growth promoters

Source: Own calculations based on *agri benchmark* Beef and Sheep Result Data Base 2013
Explanation of the farms in the box on next page

The main conclusions are:

- The situation in the year 2012 illustrates that there were price and cost differences between the US feedlot and the EU farms.
- Scenario 3) shows that the US-costs are slightly higher than the prices received by most typical EU farms in 2012. At the same time, US-prices remain below EU-prices. This means that the US feedlot would have an economic incentive to export to the EU. The differences were slightly higher in 2011 and 2013 but do not change the conclusions.
- The recent decrease in grain prices (= feed costs) can constitute a short-term competitive advantage for the US-feedlots as they mainly depend on purchase feed. However, feed costs only represent approximately 25 percent of total feedlot costs (with animal purchase the highest proportion of around 60 percent) whereas feed costs in European beef production systems can go up to 50 percent. Further, from a medium- to long-term perspective, changes in grain prices do also affect producers with a high proportion of feed self-sufficiency via the opportunity costs of own produced feed.
- The above findings suggest that if there is any beef coming from the US it can be expected to be rather high quality grain-fed.

Concluding, the total impact of a free trade agreement on beef production in the EU appears rather limited. This view is supported in a recent study by Pelikan and Banse (2014) using GTAP modelling for the assessment of trade impacts of the FTA.

The source of data: the *agri benchmark* Beef and Sheep Network

The researchers use the data from the *agri benchmark* Beef and Sheep Network, a global network which comprises more than 30 countries worldwide, using internationally standardised methods to analyse production systems, their economics, drivers and perspectives. The focus of the study is on farm level.

Explanation of the charts: The farm results shown here are taken from the *agri benchmark* Beef and Sheep Report 2013 and reflect typical production systems in the countries considered for the calendar year 2012. Farm names are composed by the country-code and a number representing the total cattle sold per year.

The full version of a report with data from 2012 can be downloaded from the *agri benchmark* website http://www.agribenchmark.org/beef-and-sheep/publications-and-projects/working-paper-series.html

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