Global Food Challenge
Economics of Food Security
Beef. It’s What’s For Dinner.

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Introduction

“Beef. It’s What’s For Dinner.” This popular advertising slogan has been used by the Beef Council since 1992. The slogan was launched in hopes that it would promote the incorporation of beef into the diets of Americans. It seemed to work. As shown in Graph 1, beef has been one of the leading types of meat consumed by Americans throughout a significant portion of the country’s history, but started to decline for a period of time. However, when the campaign was released in 1992, the amount of beef consumed started to increase again.

Graph 1

All seemed to be going good until roughly the year 2000. At this point, beef sales started to decrease once again. There are several factors that have played into this decline. Perhaps the biggest issue being the hormones used to raise meat animals and their effects on the meat eaten by consumers. Consumers are concerned that the use of hormones will result in unsafe levels in
food that end up causing disease and affecting the development of children and will affect
product costs. This, in turn, causes problems for the beef producers and retailers as they have to
deal with added costs from food recalls, extra safety inspections, and a loss of customers.

**Background on the Use of Hormones**

Beef producers have been using hormones since the 1950s in meat animals. The FDA has approved the use of several different hormones. The six main hormones used are the
naturally occurring estrogen, progesterone, and testosterone, along with their synthetic versions,
zeranol, trenbolone acetate, and melengestrol. (*U.S. Food and Drug Administration*) These
hormones not only help with the normal growth and reproduction of animals, but they also allow
cattle to reach maturity and gain weight faster, become leaner, and increase the efficiency at
which they process what they eat.

Cattle are given the hormones through pellets inserted in the back side of their ears.
Producers pick the ear because it is not a part of the food system in cattle. So, it ultimately
eliminates the chance of a consumer ingesting a piece of meat with a highly concentrated pellet
in it and becoming sick. (*Alberta: Agricultural and Rural Development*) The hormones then
dissolve slowly under the skin and are released into the animals’ bloodstreams. This allows the
cattle to keep a low and constant concentration in their blood so that they keep both the animal
and the consumer safe while still optimizing results. (*American Meat Institute Fact Sheet*) Once
in the bloodstream, the hormones stimulate the cattle to grow. They also guide most of the
energy to devote itself to producing lean muscle and not producing fat. By not having as much
fat, the cattle are then able to use the feed that they have consumed much more efficiently.
The problems that then arose from consumers about this process were about health concerns. There have been several studies that have linked traces of hormones found in beef to several different types of cancer, including breast cancer. There have also been several studies that have linked traces of hormones found in beef to human development. This includes a link between the hormones and early puberty in girls and, in a study done by Dr. Shanna H Swan in 2007, a link between pregnant women consuming beef with hormones and male offspring with a low sperm count who were considered to be unfertile. *(The Organic Center)*

To help ensure consumer safety and reduce these risks, countries have taken several different measures. For example, in the United States, there is the American Federal Meat Inspection Act which sets several standards for any beef producer to meet. Under this act, both imported and domestic meat must be properly and clearly labeled with a label that displays that the meat contains hormones as well as stay within the tolerated levels of hormones in meat. The government closely monitors any meat that enters the United States, and if they do not meet the required standards, then they will ship it back at the importers expense. Also, businesses must have HACCP-procedures installed to ensure food quality. Any violation of any part of this act would result in a heavy fine for anyone who did not follow the guidelines. *(American Federal Meat Inspection Act)*

Some more examples of protective measures taken in beef production and consumption would be in the European Union. They take many precautions that are similar or identical to those used by the United States in the American Federal Meat Inspection Act in their General Food Law. However, they also have a section in their General Food Law that states that they will not accept any meat from the United States that contains any traces of hormones.
Economic Benefits of Hormones in Beef

Despite all the health concerns, some of which are true and others not, there are several economic benefits that arise from using hormones in cattle. Due to the fact that the hormones increase the growth rate of the cattle, they spend less time on the farm because they reach market weight a whole lot sooner. This means there are much less production costs which can include factors such as feed, land taken up, medicine, and many other types of maintenance. In fact, since farmers have started to use hormones with cattle, their weight has improved anywhere between 5 and 20%, feed efficiency between 5 and 12%, and lean meat growth between 15 and 25%. (Demand for Beef from Cattle Administered Growth Hormones or Fed Genetically Modified Corn) According to a study done at the University of Minnesota, the hormones increased US beef production to more than 700 million pounds a year while also saving over 6 million pounds of feed a year. As a result of all these improvements, companies have made millions. The hormones also allow producers to supply beef year round. It used to be a seasonal commodity and could make the prices rather high, but the increase in cow supply soon stopped this.

Not only have these improvements lowered production costs of meat, but they have made it possible to keep beef at an affordable price with our world’s ever-growing population. Since the age of industrialization in the twentieth century, people have moved from an agrarian society to one that is developed. Not only has this meant advances in technology, such as those used by farmers, but it also means an increase in population. As shown in Graph 2, population has more than tripled in the last 50 years and is projected to continue this trend in the future.
If the graph was zoomed out a couple thousand years more, it would show that the world's population has grown almost exponentially. A man named Thomas Malthus once predicted that the world was not going to be able to feed its growing population because, while the population is growing exponentially, food is only growing linearly. It seemed that this was going to include beef. To make it even harder, trying to produce more beef for the population became complicated by the fact that with the industrialization, farmers were losing land to urbanization and searching for fossil fuels. This made resources such as land scarcer and of lesser quality for farmers.

However, with the use of hormones in beef these problems were somewhat eliminated. As mentioned before, the cattle needed less feed and less land after being given hormones.
because they reached market weight faster and could leave the farm. In fact, beef production started to grow exponentially for a little while along with the population as shown in Graph 3: Beef Cow Numbers.

Graph 3

Figure 1: Beef Cow Numbers

Source: USDA Cattle

The number of cows did start to go down in the 1970s, but this did not create an economic downfall. In fact, it was because of the effectiveness of the hormones being used on the cattle. The weight of the cows had gone up so much that farmers no longer needed to raise as many cows. (As depicted in Graph 4: Average Carcass Weights Federally Inspected Slaughter)
Graph 4

Figure 3: Average Carcass Weights Federally Inspected Slaughter

Source: USDA Livestock Slaughter

One last economic benefit from the use of hormones in cattle actually comes from the preventative measures that companies are now forced to undertake. Although it does cost extra to thoroughly test beef and put it through many different inspections, this saves the beef producers’ money. If they did not do so, then the ex post repairs they would have to pay such as pulling food back of the market and fines from consumers suing them, would amount to much more than what they’re already paying. *(A legal-economic Analysis of International Diversity in Food Safety Legislation)* This is depicted below in Graph 5. As compliance costs, those which include all of the safety measures, increase to the right, mending costs, or ex post
repairs go down. The opposite happens on the left side of the graph. As compliance costs go down, there are many more problems with the beef and mending costs sky rocket.

*Graph 5*

![Graph Image](image)

*Source: A Legal-Economic Analysis of International Diversity in Food Safety Legislation*

In fact, because the cost of not following the rules is so great, and the fact that the majority of farmers are now using hormones, there is no benefit for farmers to not follow rules in ways such as exceeding permitted levels of hormones. This would only add additional costs in a practice that they only perform now to keep up with competition.

**Economic Drawbacks of Hormones in Beef**

Along with the multiple economic benefits of giving cattle hormones, there are also several economic drawbacks. As mentioned in the introduction, there are many health concerns
that come along with the addition of hormones, some of them legitimate and others a common misconception due to lack of knowledge on the rules and regulations set in place for hormone use. There have been times where there were unsafe levels of hormones in beef. These created medical costs for consumers and extra costs for producers as they had to pull products off of the shelves and perform investigations to find the source of contamination.

These are not the biggest economic drawbacks though. With these health concerns, beef sales have gone down in many areas. In fact, as seen in Graph 1, beef sales have gone down more locally as sales of meat such as chicken have gone up. People feel that it is much safer and much healthier. Beef sales have also gone down internationally as other countries do not want to take chances with the hormones American producers use in their cattle.

For example, the World Trade Organization has banned the use of hormones in meat and because the United States still uses them in their meat, they have to pay pensation payments to export their beef. Considering that 95% of the cattle grown in the United States are given hormones, this is a lot of pensation payments to make. On top of the added costs, some groups such as the European Union have decided to not import beef from the United States because of the hormone use. This could cost the United States up to $314 million. (Demand for Beef from Cattle Administered Growth Hormones of Fed Genetically Modified Corn)

Decision Alternatives in the Use of Hormones in Beef

The problem presented here is a hard one. People do not want to buy beef because of all of the added hormones and health scares that come with it. However, without giving hormones to the cattle, producers would not be able to supply enough beef to support the population. Also,
any beef that was out for sale, its price would shoot up. There are several solutions that could take place.

For consumers, they could switch to buying organic meat. Not only would this support a whole new type of business, but they would no longer have to worry about any of the hormones in meat. If enough people started buying organically grown beef, then sales for beef grown with hormones would go down. If they went down enough, then producers would not have to raise as much cattle and could possibly cut back on hormone use. Some drawbacks are that the consumers would have to be willing to pay more for their beef and prepare to pay the price as the producers producing the hormone-grown beef would be losing money. If it got to a point where they had to shut down, this would make a great impact on the community.

For producers, they could work to raise public awareness about the safety and reliability of hormone use in cattle. If they were able to educate the public more on the rules and regulations in place that they have to follow and how the safety of hormone use has been researched so much that it is no longer a concern, then they would most likely be able to boost sales. Also, if they were able to educate the public on the economic importance of using hormones in beef production with the world’s current growing population, then people would have a better understanding of why the hormones are used.

To appease customers, producers could cut back on what they use to raise their cattle. They could switch to using on the natural hormones in meat. The producers would still get some of the economic benefits of using hormones in meat, but it would also be more appealing to the public. By doing these things, it would hopefully boost sales and increases the producers’ profits.
For the government, they could do several things. One, they could be more strict on the amounts of hormones that can be put into the beef and have more severe punishments for anyone who violates those rules. Also, the government could offer incentives to the producers to not use hormones in their meat or to reduce the amount hormones in their meat. Not only would this boost beef sales, but it would also help to ensure customer health and safety, which would, in turn, cut down on costs for the government as well.

The use of hormones in meat is inevitable and will continue to cause conflict between consumers and producers as long as they are used. It is the job of both the consumers and the producers to work together to come up with a plan to appease both sides. This is important not only to protect peoples' health, but to protect the economy as well.
Works Cited


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