

Price elasticity of demand

[Literature](#)



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Ethanol production in the U. S. has grown tremendously in the last decade. Production was averaging one billion gallons per year in the early 1990s, grew to four billion gallons in 2005, and in 2007 exceeded six billion gallons (Renewable Fuels Association (RFA)). If current plans for new construction and expansion come to completion, production capacity will exceed eleven billion gallons by the end of 2010. Recent growth has been supported by the combination of favorable public policy and high nominal gasoline prices.

The purpose of this paper is to answer three important questions: [1] If the demand for corn increases due to its use as an alternative energy source, what will happen to the supply of corn's substitute such as soybean? [2] What will happen to the price of corn oil? [3] How does the price elasticity of demand for corn oil influence the quantity-demanded of corn oil and the Total Revenue earned by sellers of corn oil? Literature review There have been several studies focused on relating increased ethanol production to changes in corn markets.

Gustafson (2002) found that farmers in the northwest region of North Dakota were readily able to expand corn acreage for ethanol production, provided adequate market incentives were available. He estimated that 154, 000 additional North Dakota acres of corn could be obtained with market premium of \$0. 11 per bushel. As demand for corn goes up, so does price. As price goes up, demand goes down, forcing stability. However, another byproduct of the price increase is that some production will shift from other items (such as soy) to corn, decreasing relative demand and so price.

The decrease in production of other items decreases supply, and raises their price as well. Ferris and Joshi (2004) considered several scenarios in analyzing the impact of increased ethanol demand on other derivative products such as corn oil, high fructose corn syrup, and animal feed prices. Based on their high demand scenario of 4.67 billion gallons of ethanol production by 2010, they estimated an increase of eighteen percent in farm level corn prices for 2007. They further concluded that agricultural commodity prices would increase sharply in the short run followed by more moderate increases due to expanded corn acreage.

McNew and Griffith (2005) examined local grain price impacts associated with ethanol plants. They based their work on a sample of twelve ethanol plants that opened between 2001 and 2002. They found that the ethanol plants increased local grain prices (i. e. , the basis), but the impact was not uniform across plants nor around a specific plant. On average, corn prices increased by 12.5 cents per bushel at the plant site, and some positive price responses were felt up to 150 miles away.

However, price responses at the plant ranged from less than 5 cents per 3 bushel to just under 20 cents per bushel. Similarly, the range of price impacts up to 150 miles away was also quite large. Taylor, Mattson, Andino and Koo (2006) developed a simulation model to estimate the impact of changes in ethanol production on corn production, consumption, exports and price. They found that changes in ethanol production impact corn derivative production, feed use, and exports, as well as corn price under a variety of scenarios.

They estimated that the corn price for 2014 will average \$2.46 per bushel if ethanol production reaches the 7 billion gallon mark as outlined in the 2005 Energy Bill. If 14 billion gallons of ethanol are produced, they estimated the price of corn would average \$3.00 per bushel in 2014. Conclusion As corn prices rise, agricultural companies stand to benefit as their corn or corn seeds command a higher price in the market. Companies who buy corn or derivative products such as corn oil, and high fructose corn syrup can be hit with much larger costs when corn prices rise.