

Effect of corn prices and corn production on ethanol production

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October 11, 2023

1 Introduction

Ethanol production is a good source of clean energy. Incorporating it into gasoline allows for cleaner vehicle fuel sources. Moreover, ethanol is produced domestically from domestically grown crops, reducing U.S. dependence on foreign oil and increasing the nation's energy independence. Therefore, derived from domestically cultivated crops, ethanol not only promotes environmental responsibility but also strengthens US nation's energy independence by reducing dependency on international sources.

Corn is also a major commodity in the United States. Its production levels and market prices have substantial influence, exerting direct impact on the ethanol industry. Fluctuations in corn prices and production can potentially affect ethanol production.

Therefore, understanding the relationship between a major US commodity like corn and ethanol production is interesting and essential, as it directly influences our economic prosperity, environmental sustainability, and energy security.

2 Research questions

The project aims to answer the following research questions:

- Does increase in corn prices reduce ethanol production? (Inference/Causal)
- Does increase in corn production lead to increase in ethanol production? (Causal)
- How is ethanol production distributed across the United States? (Descriptive)
- Did these relationships change following the onset of the COVID-19 pandemic? (Descriptive)
- Can corn prices be used as a predictor of ethanol production? (Predictive)

3 Data

In order to answer the research questions, we will use several data sources, summary on which is available in Table 1.

Data Name	Set	URL	Variables	Time Span	Geographical Coverage
Ethanol Production		Ethanol Production	Ethanol production in thousands of barrels per year	1960-2021	Nation-wide by state
Ethanol Production Capacity		Ethanol Production Capacity	Production capacity per year	2023	Nation-wide by facility
Gasoline Prices		Gasoline Prices	Gasoline price by year	1990-2022	Nation-wide by energy region
Corn Production Volume		Corn Volume	Corn production in bushels by year	1866-2023	Nation-wide by state
Corn Prices		Corn Prices	Corn price received in USD/bushel by year	1867-2023	Nation-wide by state

Table 1: Summary of data sets

Data sets will be merged together by year and state or region. It is important to mention that Ethanol Production Capacity data set is intended to be used to visualize the current locations of ethanol production facilities and might not be used for the analysis.

References