STRUCTURAL CHANGES IN COMMODITY PRICES: 
THE ROLE OF POLICIES

Harry deGorter  
College of Agriculture and Life Sciences, Cornell University, United States

David Just  
College of Agriculture and Life Sciences, Cornell University, United States

Harriet Mugera  
College of Agriculture and Life Sciences, Cornell University, United States

Economics and Management, University of Trento, Italy.

Contact e-mail address: harriet.mugera@gmail.com

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**Introduction**

Food commodity prices have recently increased sharply and become more volatile, highlighting greater uncertainty in markets and serious implications among the poor globally.

Diversion of food crops to biofuel production stands out as an important and relatively new driver of high food prices in the recent decade.

Empirical studies have shown that the use of food crops in biofuel production has reduced availability for food use and hence raised food prices. This has raised living costs throughout the world and, in poor food-importing developing countries, has threatened food security and increased vulnerability. High food prices may have contributed to political unrest.

High fuel prices combined with legislative policies have increased biofuel production causing high food prices and establishing a link between fuel and agricultural prices.

Biofuel production may also have changed the nature of the relationship between energy and agricultural markets by creating a new demand side link between these two markets.

**Data and Methodology**

Weekly crude oil, gasoline, corn, and ethanol prices are mainly obtained from Chicago Board of Trade (CBOT), US Energy Information Administration (EIA) database and Chicago Mercantile Exchange (CME).

This research uses the time-varying autoregressive model (TV-AR) to test for the presence of structural breaks; examines the nature of these breaks and locates these breaks in the single price series and the bi-variate relationships of these prices from 2000-2012. Using an AR(p) specification:

\[ \dot{x}_t = \alpha + \beta \dot{z}_t + \gamma \dot{x}_{t-p} + \epsilon_t \]

Where, \( \dot{z}_t \) is the time-varying mean. This research tests for multiple breaks using the Bai and Perron (1998) test. With \( k \) breaks, the shifting mean is now defined by:

\[ \dot{x}_t = \alpha_k + \beta_k \dot{z}_t + \gamma_k \dot{x}_{t-p} + \epsilon_t \]

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**Results**

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>NUMBER OF BREAKS</th>
<th>BREAK DATES</th>
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</thead>
<tbody>
<tr>
<td>CRUDE-OIL</td>
<td>1</td>
<td>29/10/2010</td>
</tr>
<tr>
<td>GASOLINE</td>
<td>2</td>
<td>04/01/2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03/12/2010</td>
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<td>CORN</td>
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<td>03/10/2008</td>
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<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>ETHANOL</td>
<td>2</td>
<td>08/08/2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>08/10/2010</td>
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</tbody>
</table>

**Conclusions**

This research identifies the presence of multiple structural breaks in each of the prices as well as in the price relationships in all the commodities examined.

Structural changes in commodity prices and price relationships are an indication of true shifts in the mean implying changes in market fundamentals.

In the single price series, the most of the breaks occurred after 2005. This is the period when most of the public policies were implemented.

The structural breaks incurred in the price relationships not only depend on the public policy but also on the switch in the policy regime such as binding mandates. The switch in policy regime is a result of changes in market conditions as well as production and consumption constraints in these markets.

These results highlight the importance of public policies in determining permanent changes in prices trends as well as price relationships.

**Literature**


