

Global Security and the RFS

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In response to the House Committee on Energy and Commerce request for response to the Renewable Fuel Standard (RFS) Assessment White Paper, we wish to bring to your attention that the RFS is having a substantial negative impact on global security. Dangerously elevated worldwide food prices currently sit at the threshold above which widespread global unrest is expected, and these prices are elevated primarily due to the increased demand for corn ethanol caused by the RFS.

Quantitative research demonstrates that no factors besides the biofuels mandate and financial speculation can account for the behavior of prices since 2005 [1], despite the often discussed proposal of several other major factors such as drought, increasing global meat consumption, exchange rates, and energy prices.

The amount of corn diverted to ethanol in the US accounts for 95 million metric tons (mmt), over 4% of the total global grain production, a much larger impact than any other factor. Drought in Australia, a frequently proposed explanation for the 2008 price spike, fails to explain the price increases because of Australia's small share in global grain production (less than 2% in total, and the impact of the drought was much smaller) and because the drought did not actually align with price increases. Rising demand for meat (particularly from China and India) has been met by local production, causing a difference of only 5 mmt on the world market from 2004 to 2010—an effect dwarfed by the 95 mmt decrease due to corn to ethanol conversion (or 73 mmt even after accounting for the DDGS feed byproduct). If USD-euro exchange rates were responsible, food prices in euros would have decreased rather than increased, and this was not the case, so currency exchange rates cannot be a key driver of a food price increases. Finally, in the 2008 price spike, the oil price peak followed the wheat price peak, and therefore could not have been the cause of food price increases.

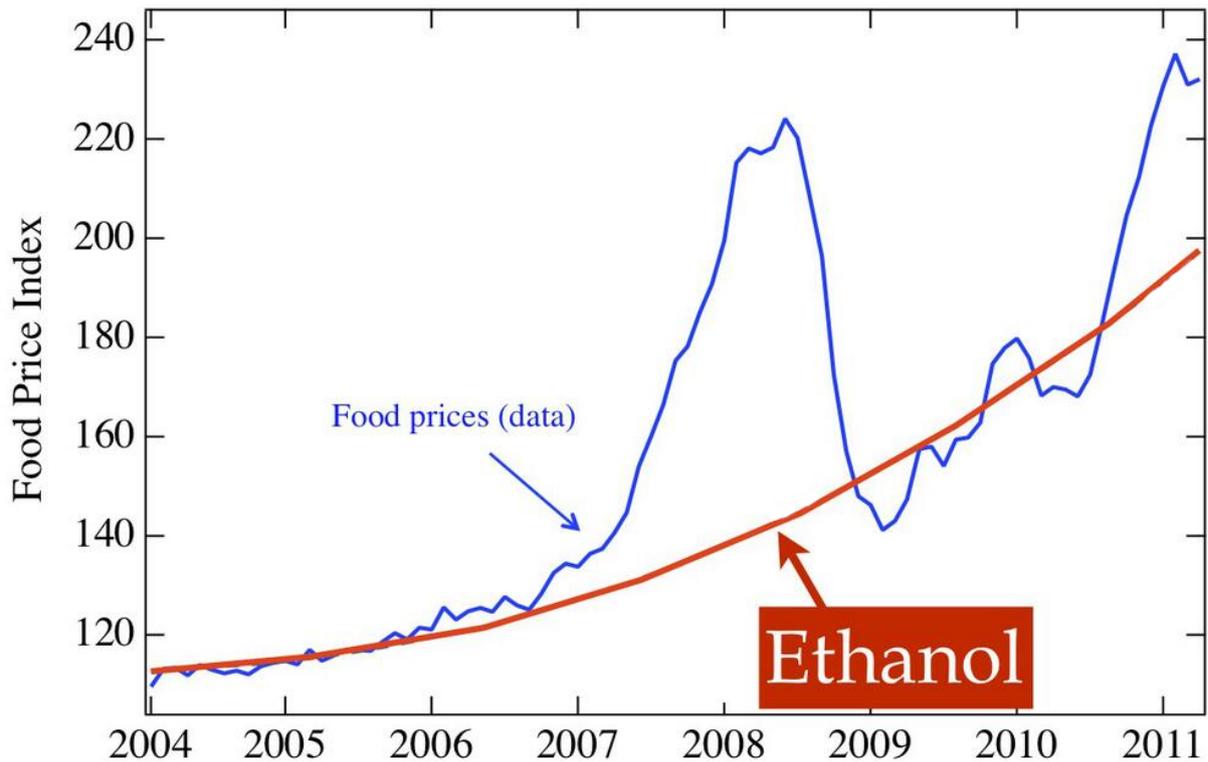


FIG. 1: The FAO Food Price Index (blue) compared to a supply and demand model of food prices (red) based on the conversion of corn to ethanol in which price changes are driven by increasing ethanol production. A more complete quantitative model that fits food prices is given in [1]. The price deviations from the ethanol curve in 2008 and 2011 were shown to be accurately described by the effects of financial speculation.

Corn to ethanol conversion is the only major change in actual supply or demand capable of causing the long term increase by a factor of 2 in world food prices. The only other important direct cause are market bubbles and crashes, which resulted in price spikes in 2008 and 2011. Corn to ethanol conversion is responsible for the long-term food price increase and is directly linked to the RFS.

Such drastic increases in basic food prices are severely impacting vulnerable populations worldwide, with major security ramifications across the globe. Despite the many possible contributing factors, the timing of violent protests throughout North Africa and the Middle East in 2011 as well as earlier riots in 2008 coincides with large peaks in global food prices, and there is evidence of a specific threshold above which unrest become likely [3].

These observations suggest the protests and violence reflect the sudden desperate straits

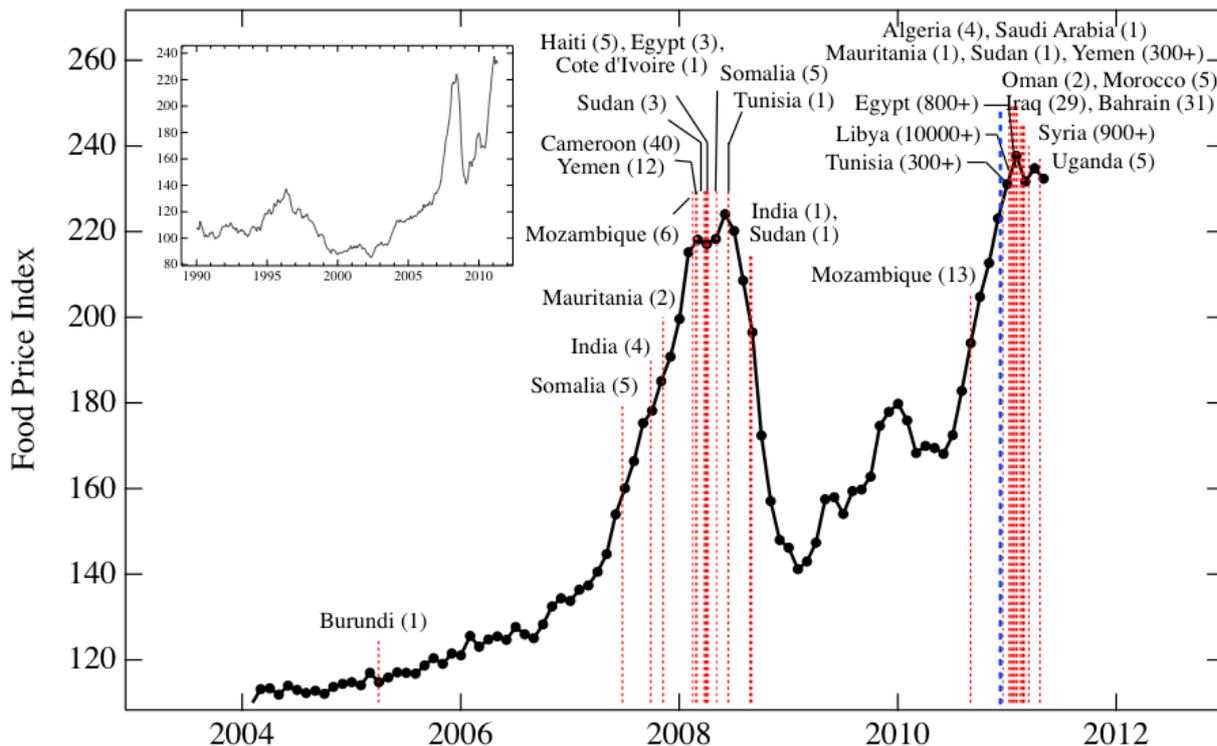


FIG. 2: Time dependence of FAO Food Price Index from January 2004 to May 2011. Red dashed vertical lines correspond to beginning dates of food riots and protests associated with the major recent unrest in North Africa and the Middle East. The overall death toll is reported in parentheses. Blue vertical line indicates the date, December 13, 2010, on which we submitted a report to the U.S. government, warning of the link between food prices, social unrest and political instability [2]. Inset shows FAO Food Price Index from 1990 to 2011.

of vulnerable populations. Current food prices are at the threshold. If food prices continue to increase because supply is reduced further in favor of biofuel production, we are at risk for increasing global social disruption. Reducing the RFS mandate should lead to decreasing prices, a reduction in global hunger and desperation, and an increase in global security. Countries where social disruption has been driven by food prices, such as Yemen, are breeding grounds for terrorist activities [4]. Reducing the level of social disruption around the world should improve security nationally and internationally.

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