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New Data Confirms Food Crisis Model: Warns of coming price spikes

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Today, researchers at the New England Complex Systems Institute (NECSI) released [new modeling results](#) they claim demonstrate the predictive validity of their food price model. Last September, they released a detailed report showing that US ethanol expansion explained the underlying secular rise in food prices, while financial speculation explained the two price spikes, in 2007-8 and 2010-11. (See my [post on the study](#).) The Institute, which performs mathematical modeling to reveal social and political trends, has now extended its model to January 2012. With no modifications, the model still fits food price trends, predicting to a high degree of accuracy the bursting of the food price bubble last year.

In our recent [report on the food crisis](#) and a recent article in [Economic and Political Weekly](#), Sophia Murphy and I argued that the international community has thus far failed to address the underlying causes of the food crisis. As the NECSI report highlights, those causes include biofuels expansion and price volatility stemming from excessive financial speculation and the lack of adequate food reserves.

One of the strengths of the model is its identification of two distinct trends that need explanation. One is generally rising prices, which need to be explained by underlying supply-and-demand fundamentals, what NECSI researchers call the “new equilibrium price.” The other is price volatility, which produced the two price spikes most commonly associated with new food crisis. Both are important, they have different causes, and these imply different policy conclusions.

See NECSI’s model results, and an excerpt from today’s press release, below.

NECSI’s updated model results:

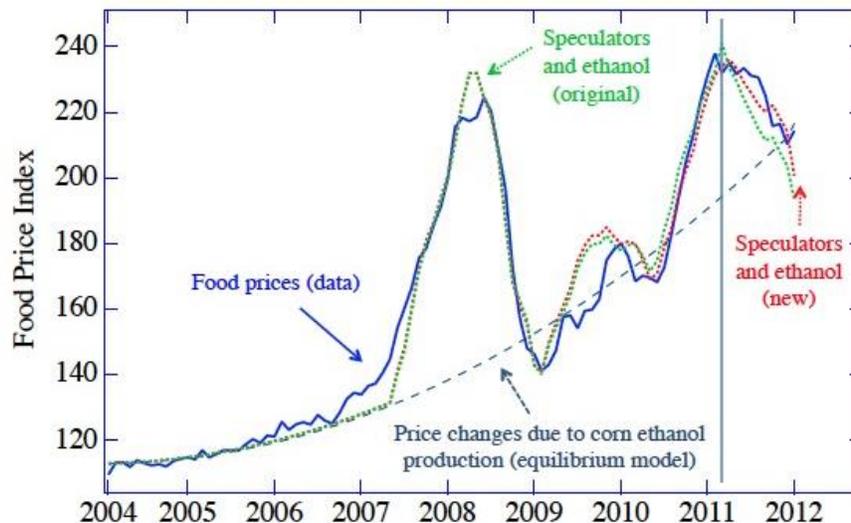


FIG. 1: Food prices and model simulations - The FAO Food Price Index (blue solid line) [2], the ethanol supply and demand model (blue dashed line), where dominant supply shocks are due to the conversion of corn to ethanol so that price changes are proportional to ethanol production (see [1], Appendix C) and the results of the speculator and ethanol model (green and red dotted lines), that adds speculator trend following and switching among investment markets, including commodities, equities and bonds (see [1], Appendices D and E). The green curve is the fit extended to the present with the original parameter values, the red curve is the fit with new optimized parameters. The vertical blue bar marks the end of the original fit in March 2011. Original parameters [1]: $k_{sd} = 0.098$, $k_{sp} = 1.29$, $\mu_{equity}\gamma_0 = -0.095$, $\mu_{bonds}\gamma_0 = -67.9$. New optimized parameters: $k_{sd} = 0.093$, $k_{sp} = 1.27$, $\mu_{equity}\gamma_0 = -0.085$, $\mu_{bonds}\gamma_0 = -48.2$.

From NECSI's press release:

NECSI president, Yaneer Bar-Yam, who co-authored last year's food-price study as well as the latest study update, said that the fit with the FAO Food Price Index is still "strikingly quantitatively accurate, validating both the descriptive and predictive abilities of the model."

To extend NECSI's earlier model ten months out and to still witness a fit is important, he added.

"This means we have validated it for data points that were not around when we first made the model. It predicted the burst of the 2011 food bubble at the exact time it happened, when many were saying that high food prices were there to stay. Success in predictive validation is remarkable. The conclusions are reinforced greatly that high food prices are due to ethanol and speculators—with all the relevant policy implications."

For further information on the study, UPDATE 2012 — The Food Crises: Predictive validation of a quantitative model of food prices including speculators and ethanol conversion, visit <http://necsi.edu/research/social/foodprices/update/>