

Rising Food Prices and Food Price Volatility

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Framing the Issue

In the 22 years since the Food and Agriculture Organization (FAO) of the United Nations has been recording food prices, the food price index has never been as high as it was in February 2011 (FAO, 2012).

In 2000, the index averaged 90. In 2010, it averaged 228.

The food price index currently stands at 216 – still too close to food price levels experienced during the food crisis of 2008.

Framing the Issue

The foregoing, however, was about food price inflation, or *rising food prices*.

One distinction I have been insisting upon in my own work (Bellemare and Barrett, 2011; Bellemare, 2012; Bellemare et al., 2012) and popular writing is that between rising food prices and *food price volatility*.

Framing the Issue

In statistical terms, “rising food prices” refer to increases in the mean of the food price series, and “food price volatility” refers to the standard deviation or variance of the price series.

In this presentation, I wish to insist further upon that distinction by showing you that the welfare impacts of rising food prices and food price volatility are very different.

Framing the Issue

In short, though rising food prices harm net buyers (i.e., urban households, resource-poor rural households) of food and benefit net sellers of food (resource-rich rural households), the presence of and increases in food price volatility tend to harm net sellers considerably more than it does net buyers, who can go so far as to benefit from it.

Let's get our hands dirty with data by starting with Bellemare (2012).

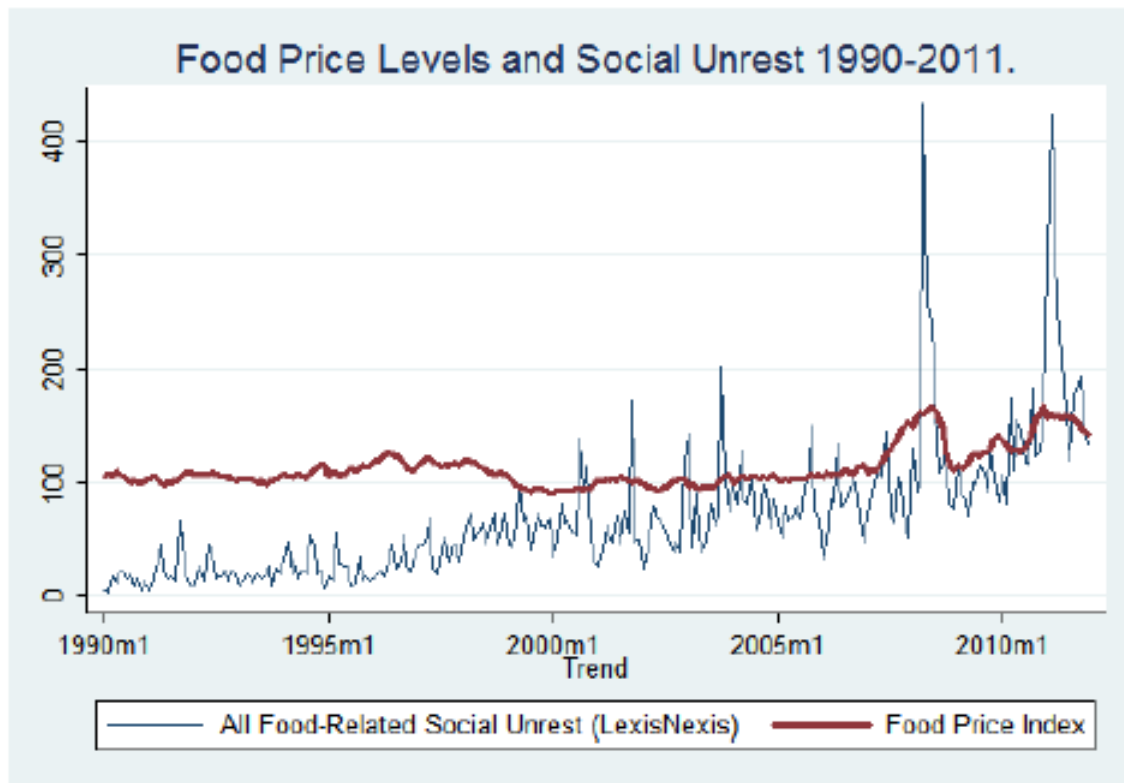


Figure 1. FAO Food Price Index and Social Unrest, January 1990 to December 2011.

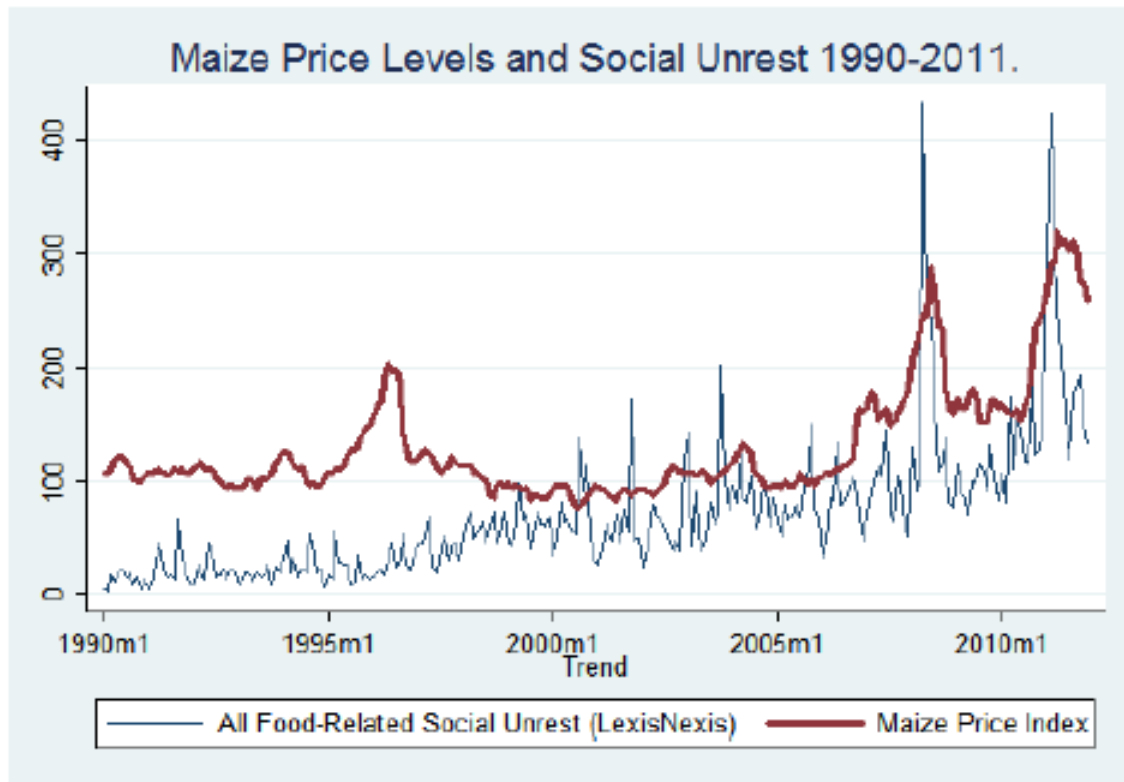


Figure 2. IMF Maize Price Index and Social Unrest, January 1990 to December 2011.

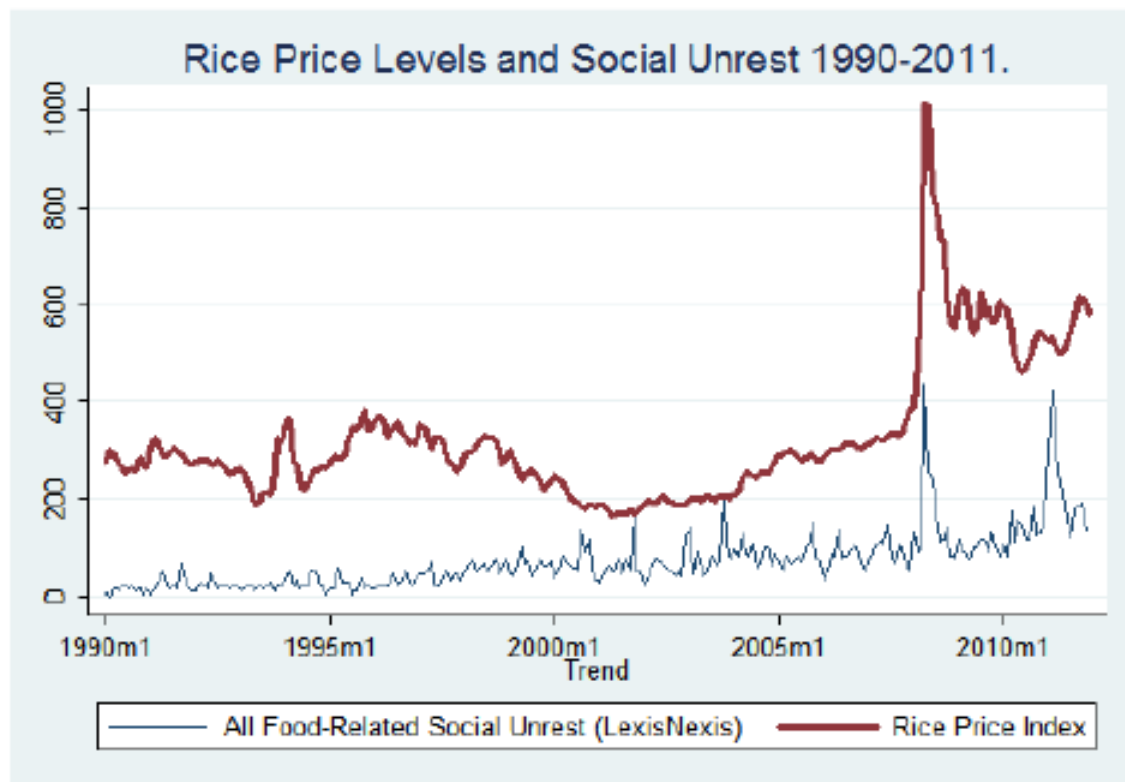


Figure 3. IMF Rice Price Index and Social Unrest, January 1990 to December 2011.

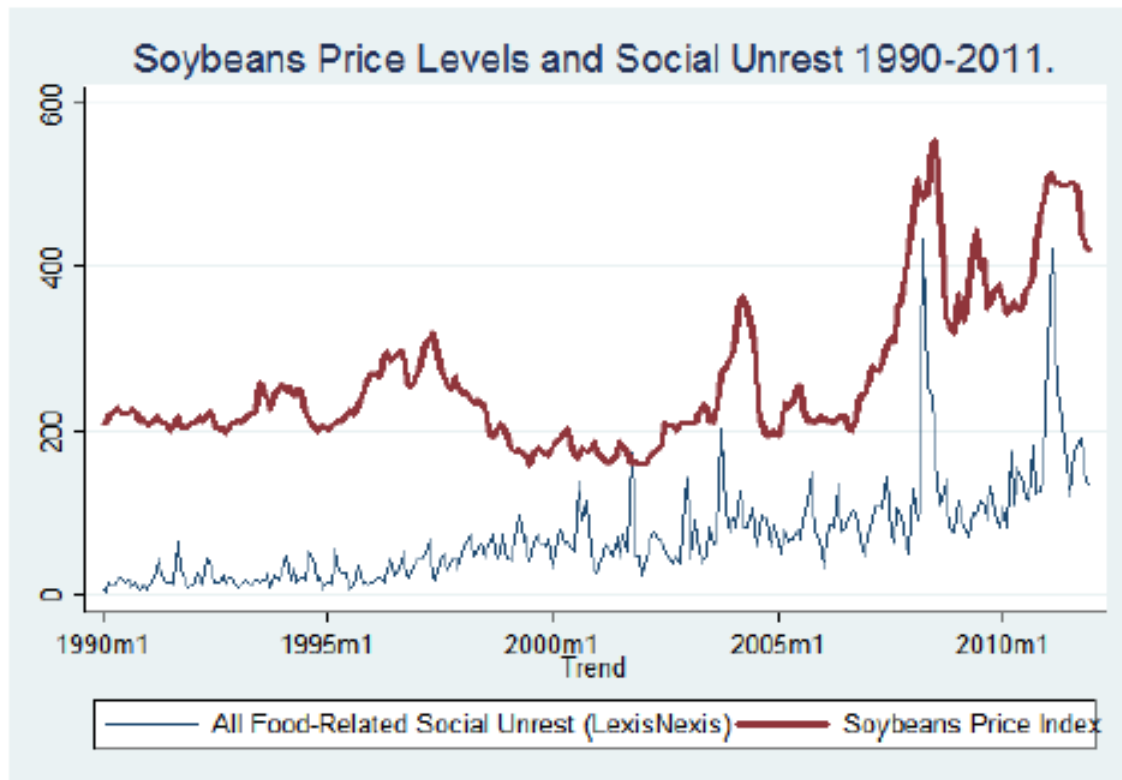


Figure 4. IMF Soybean Price Index and Related Social Unrest, January 1990 to December 2011.

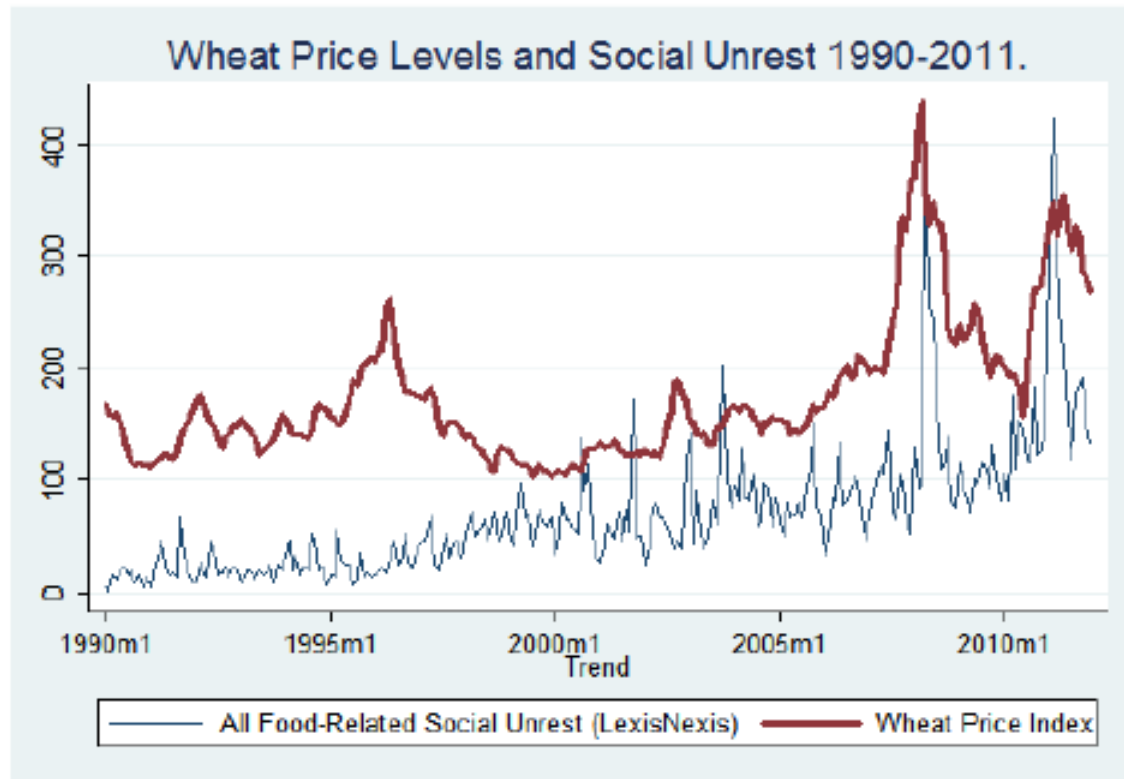


Figure 5. IMF Wheat Price Index and Social Unrest, January 1990 to December 2011.

Table 2. OLS Estimation Results for the Determinants of Social unrest, 1990-2011.

Variable	(1)	(2)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.		
Food Price Index	0.686*** (0.160)	
Historical Volatility (Food, Three Months)	-368.382* (201.490)	
Cereal Price Index		0.516*** (0.111)
Historical Volatility (Cereals, Three Months)		-426.806*** (136.977)
News Stories in the Previous Month	0.442*** (0.057)	0.440*** (0.056)
Trend	0.248*** (0.042)	0.244*** (0.042)
Constant	-149.750*** (23.339)	-125.552*** (20.475)
Observations	262	262
Monthly Dummies	Yes	Yes
R-squared	0.702	0.708

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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Variable	(1)	(2)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.		
Food Price Index	0.990** (0.402)	-478.098* (242.834)
Historical Volatility (Food, Three Months)		
Cereal Price Index		0.683** (0.272)
Historical Volatility (Cereals, Three Months)		-508.680*** (183.567)
News Stories in the Previous Month	0.398*** (0.078)	0.408*** (0.074)
Trend	0.238*** (0.044)	0.234*** (0.044)
Constant	-173.887*** (37.589)	-135.383*** (25.217)
Observations	262	262
Monthly Dummies	Yes	Yes
F-statistic (Weak Instrument Test)	46.79	50.13
R-squared	0.698	0.705

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Bellemare (2012)

These results first suggest, then indicate that rising food prices cause food riots.

Perhaps more importantly, these result show that food price volatility is negatively associated with social unrest, though this cannot be argued to be causal.

Bellemare (2012)

On the basis of preliminary findings, a coauthor and I published the following popular-press piece during the summer of 2011:



**FOREIGN
AFFAIRS**

Published by the Council on Foreign Relations

July 12, 2011
SNAPSHOT

Why Food Price Volatility Doesn't Matter

Policymakers Should Focus on Bringing Costs Down

Christopher B. Barrett and Marc F. Bellemare

Bellemare et al. (2012)

Let's now look at micro-level evidence.

In my paper with Chris Barrett and David Just, we study the impacts of food price volatility in rural Ethiopia.

In order to do so, we use longitudinal data on rural households in order to quantify the welfare impacts of volatility among the prices of the top seven food commodities in the data: coffee, maize, wheat, barley, beans, teff, and sorghum.

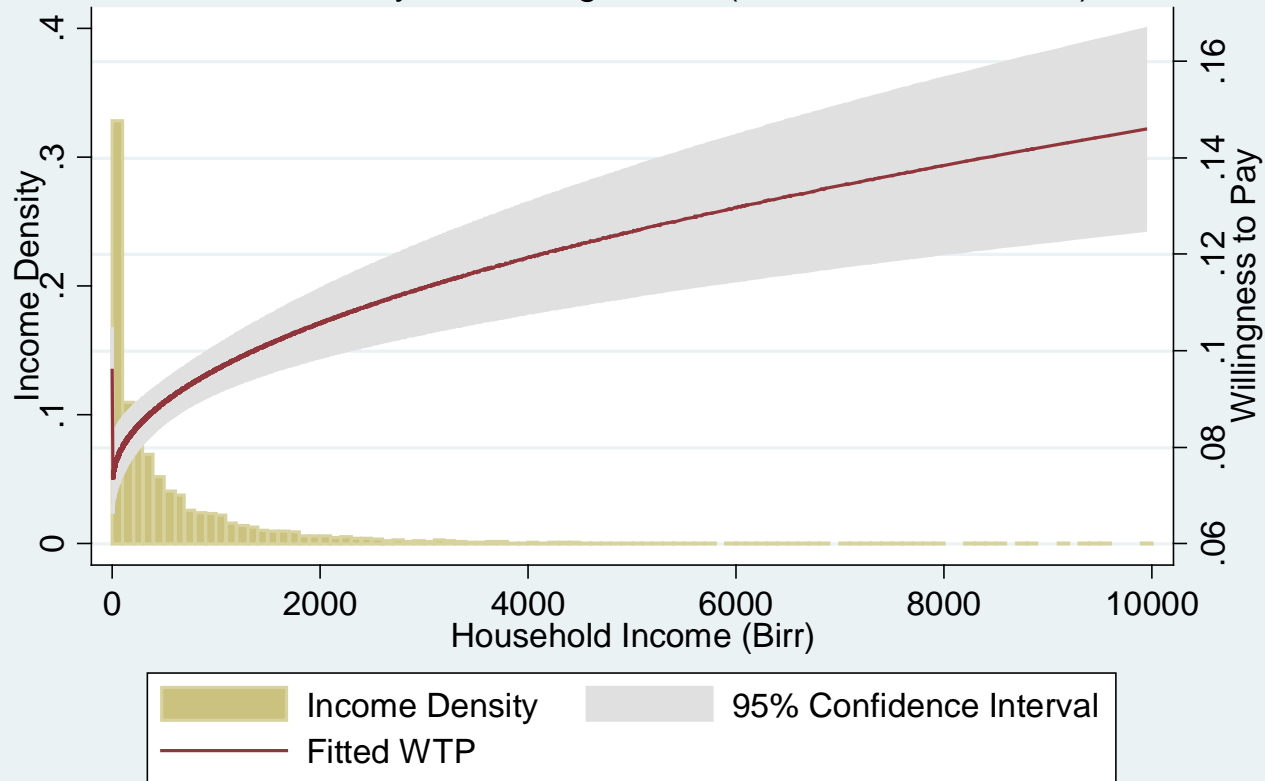
Bellemare et al. (2012)

We derive and estimate a measure of household willingness to pay (WTP) to stabilize those seven prices and express it as a proportion of household income.

The following figure illustrates the relationship between WTP to stabilize prices – which measures the size of the welfare loss due to price volatility – as a function of household income.

Nonparametric Regression of WTP on Household Income

Fractional Polynomial Regression (n=8318 and Theta=1)



(Source: Bellemare et al. (2012).)

Key Findings

Though everyone appears to be significantly harmed by food price volatility, there is an unexpected (if you believe most commentators, that is) relationship between household income and the welfare loss due to food price volatility.

In other words, our estimates indicate that the wealthier one of the households in our sample, the more it is hurt by food price volatility.

Why might this be?

Key Findings

Wealthier households are more likely to be net sellers of food than net buyers of food. A well-known finding in microeconomic theory is that pure producers are hurt by output price volatility (Baron, 1970; Sandmo, 1971).

Net buyers of food need not be hurt by price volatility. In fact, it is perfectly possible for pure consumers to benefit from price volatility (Waugh, 1944; Turnovsky et al., 1980).

Policy Implications

In this presentation, I have tried to insist on the fundamental differences, both conceptual and in terms of welfare, between rising food prices and food price volatility.

I have shown you empirical results showing that it is rising food prices that cause social unrest, and not food price volatility.

Policy Implications

Likewise, I have shown you empirical results suggesting that the welfare loss due to food price volatility gets worse as rural households get wealthier, i.e., as they become more likely to be net sellers rather than net buyers of food.

Policy Implications

The first policy implication is that if we want to avoid food riots, we should work toward curbing food price increases. This is something we can be relatively confident in.

In addition, it appears that the focus on food price volatility is misguided.

Indeed, at best, food price volatility appears to *reduce* the incidence of food riots. At worst, it mostly harms wealthier rural households.

Policy Implications

Many in the policy world seem to be unaware of this:

“The crux of the food price challenge is about price volatility rather than high prices per se. It is the rapid and unpredictable changes in food prices that wreak havoc on markets, politics, and social stability.”

- Homi Kharas, Senior Fellow, Brookings.

Policy Implications

But knowing where to best spend each aid dollar – should we work to curb rising food prices, food price volatility, or both? – matters for policy.

This is especially important in this era of budget austerity.

Indeed, one of the only true areas of bipartisan agreement in Washington, DC is the necessity to cut foreign aid budgets.

Policy Implications

So to this session's theme question: Can high food prices and volatility be managed?

I answer "Yes, but high food prices and food price volatility are different problems which require different policy instruments."