AJAE Appendix for
"Rising Food Prices, Food Price Volatility, and Social Unrest"

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March 17, 2014

Note: The material contained herein is supplementary to the article named in the title and published in the American Journal of Agricultural Economics (AJAE).

Time Series Tests

Augmented Dickey-Fuller tests below indicate that one can reject the presence of a unit root for the dependent variable as well as for the instrumental variable, but not for food prices. In an investigation of alternative specifications for unit root tests, however, Wang and Tomek (2007) show that food prices do not exhibit unit roots once structural breaks are accounted for. Likewise, in one of the tests they consider, Enders and Holt (2012) reject the presence of a unit root for all the commodities they consider except coffee, cocoa, and sugar. In the other test they consider, they fail to reject the null of stationarity for all commodities except cotton, oil, logs and coal. In other words, Enders and Holt's findings indicate that the bulk of the commodity price series they consider (maize, soybeans, wheat, sorghum, rice, and beef) are stationary.

Perhaps more importantly, in what follows, both Augmented Dickey-Fuller and Phillips-Perron tests (accounting for a trend in food prices because every regression in this article indicates that there is a significant linear trend in food prices) reject the presence of a unit root in the *predicted* food and cereals price series used as variables of interest (i.e., food and cereal prices conditioned on natural disasters as an instrumental variable, as outlined below).[1] For this reason, all variables in equation 1 are expressed in levels. Moreover, because Durbin-Watson tests below show that the standard errors are not serially correlated, the usual standard errors are reported. Additionally, because the goal of this article is to estimate the causal impact of the food price level on social unrest rather than to forecast the extent of future social unrest, this article adopts a relatively simple empirical setup rather than more advanced time series techniques such as autoregressive integrated moving average (ARIMA) models, distributed lags model, error-

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[1] Similarly, DF-GLS tests with trend also allow rejecting the hypothesis that the predicted food price series exhibit a unit root.

correction models, and so on (Hamilton 1994). This is not merely a matter of author preferences. The use of fancier time series techniques would weaken the identification strategy used to tease out causation from correlation in this article, and the goal of this article is to identify a causal relationship rather than to forecast social unrest or food prices.

Durbin-Watson test results indicate that the error terms in the first two columns of table 2 are not serially correlated. For column 1, the test statistic was equal to 2.02. Given the lower and upper critical values of the test, which were respectively equal to 1.67 and 1.92, this constitutes evidence that the error term is not serially correlated. For column 2, the test statistic was equal to 2.01, which similarly constitutes evidence that the error term is not serially correlated. In addition, the residual ϵ_{1t} from equation 1 was obtained both for the food price index regression of column 1 and for the cereals price index regression of column 2 and regressed on ϵ_{1t-1}, and then on ϵ_{1t-1}, ϵ_{1t-2}, and ϵ_{1t-3}. None of the estimated coefficients were statistically significant. The results of the Durbin-Watson tests and of these regressions of the residuals on their lagged values both indicate that Newey-West standard errors are not necessary.

Moreover, Dickey-Fuller (DF) tests indicate that one can reject the null hypothesis of a unit root in the dependent variable (with a DF test statistic of -5.76, this is below the 1 percent critical value of -3.46), food and cereal price volatility (with DF test statistics of -7.08 and -8.23), and the instrumental variable (with a DF test statistic of -10.24), but one cannot reject the null for the food and cereal price levels (with DF test statistics of -1.82 and 2.14, since this is above the 1 percent critical value of -3.46). As was mentioned above, however, Wang and Tomek (2007) find that structural breaks in food prices account for their apparent nonstationarity. Because the

time trend and monthly dummies should account for such structural breaks, and because this article is interested in the impact of food price levels themselves on social unrest and not in the impact of the month-to-month changes in food price levels on social unrest, all the variables in this article are expressed in levels.

Heterogeneous vs. Homogeneous Treatment Effects

Wooldridge (2002, p. 85) notes that the only two requirements for an IV are that (i) it be exogenous to the dependent variable, and that (ii) it be partially correlated with the endogenous variable once the other covariates are taken into account. In other words, the first-stage instrumenting regression is a reduced-form regression, and it should not be given a structural interpretation.

Moreover, Angrist and Pischke (2009, pp. 150-167) note that one can add that a third requirement, namely that (iii) the IV have a monotonic impact on the endogenous variable in case there are heterogeneous treatment effects. When assumptions (i), (ii), and (iii) are satisfied, one can estimate the local average treatment effect (LATE), the effect of the treatment (here, a change in the food price level) on compliers (here, those months in which food prices changed as a result of natural disasters). Without assumption (iii), IV estimates are not guaranteed to estimate a weighted average of individual causal effects, and the LATE theorem does not hold.

An alternative interpretation is to assume homogeneous treatment effects, which is what is assumed in this article. Indeed, Angrist and Pischke (2009) note that

[I]f the compliant subpopulation associated with two or more instruments are very different, yet the IV estimates they generate are similar, we might be prepared to adopt homogeneous effects as a working hypothesis. This revives the overidentification idea but puts it at the service of external validity (p. 167).

The plausibility of the heterogeneous treatment assumption was explored here by looking at all the components of the IV – drought, earthquakes, epidemics, episodes of extreme temperature, floods, insect infestations, mass movements (dry), mass movements (wet), storms, volcanic eruptions, and wildfires – piecewise. For each case where the IV had an F-statistic above 13 in the first stage (i.e., each case where the IV was not weak, as per Stock and Yogo 2002), a comparison was made with the estimated coefficients for the price of food and for the price of cereals in their respective regressions.

For the FAO food price index, the only two natural disasters for which the F-statistic was above 13 were epidemics and floods, with associated coefficients for the price of food in the second-stage regression of 0.995 and 1.54 (recall the estimated coefficient of 0.990 in the case where the sum of all natural disasters is used as an IV in table 3). For the FAO cereals price index, the only two IVs for which the F-statistic was above 13 were also epidemics and floods, with associated coefficients for the price of food in the second-stage regression of 0.899 and 1.04 (recall the estimated coefficient of 0.683 in the case where the sum of all natural disasters is used as an IV in table 3).

In both cases, the coefficients are close to one another. This becomes especially obvious once one interprets those as marginal effects of 0.995, 1.54, or 0.989 (for the price of food) or 0.899. 1.04, or 0.683 (for the price of cereals) additional LexisNexis news stories about food riots, from a mean number of such stories of about 70 over the period 1990-2011. Doing the same thing for all of the four IMF nominal commodity prices and comparing the natural disaster that has the highest F-statistic in a first-stage regression with the count of natural disasters yields similar results, which are not shown for brevity but are available upon request.

References

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Enders, W., and M.T. Holt. 2012. "Sharp Breaks or Smooth Shifts? An Investigation of the Evolution of Primary Commodity Prices." *American Journal of Agricultural Economics* 94: 659-673.

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Stock, J.H., and M. Yogo. 2002. "Testing for Weak Instruments in Linear IV Regression." Working Paper, National Bureau of Economic Research.

Wang, D., and W.G. Tomek. 2007. "Commodity Prices and Unit Root Tests." *American Journal of Agricultural Economics* 89: 873-889.

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Robustness Checks: Additional Figures and Tables
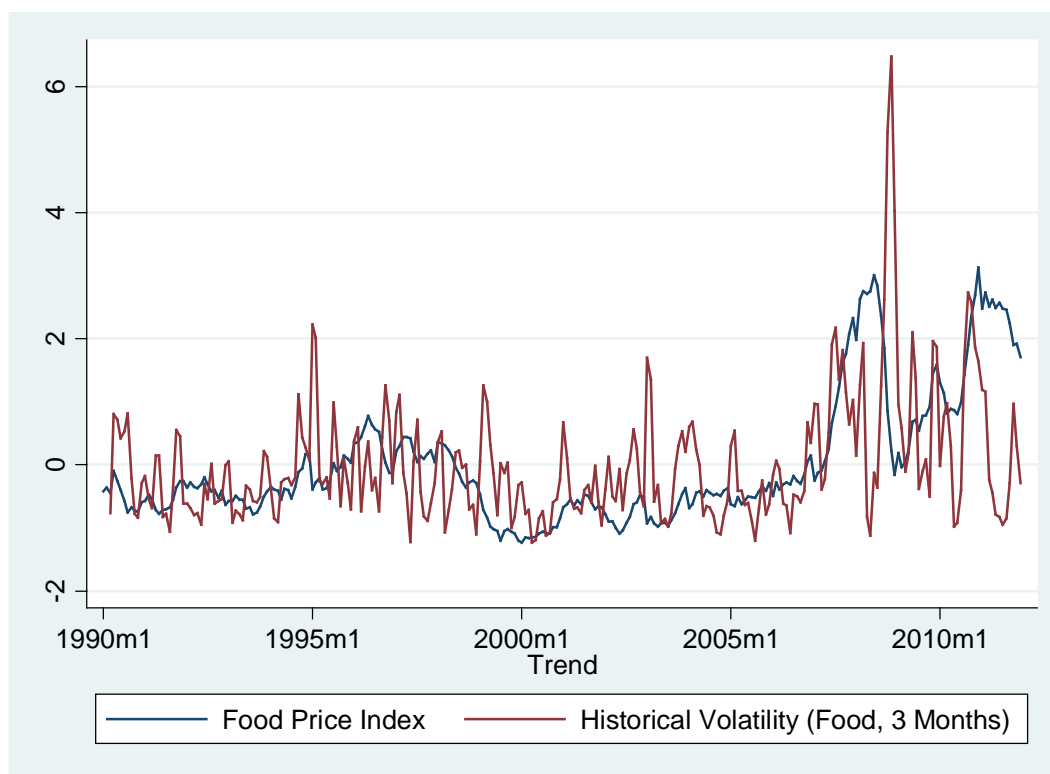
Figure A1. Standardized FAO Food Price Level vs. Volatility, January 1990 to December 2011
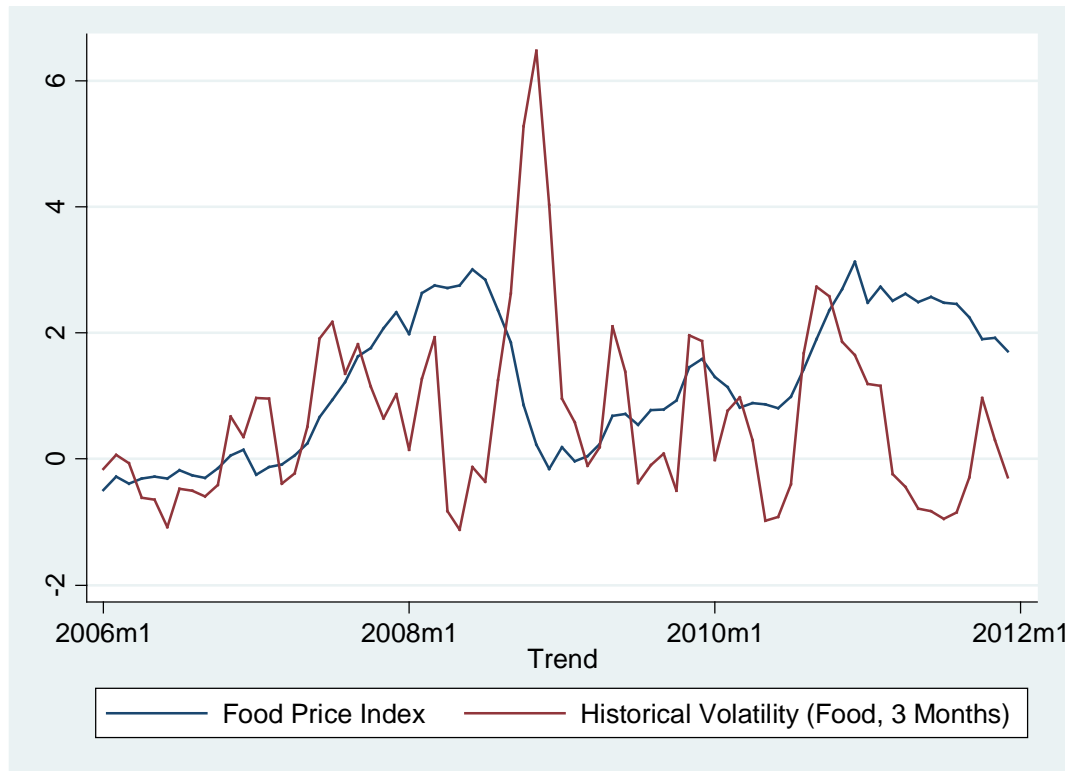
Figure A2. Standardized FAO Food Price Level vs. Volatility, January 2006 to December 2011
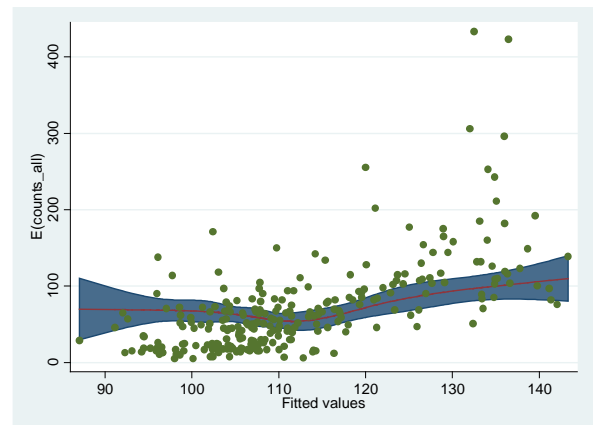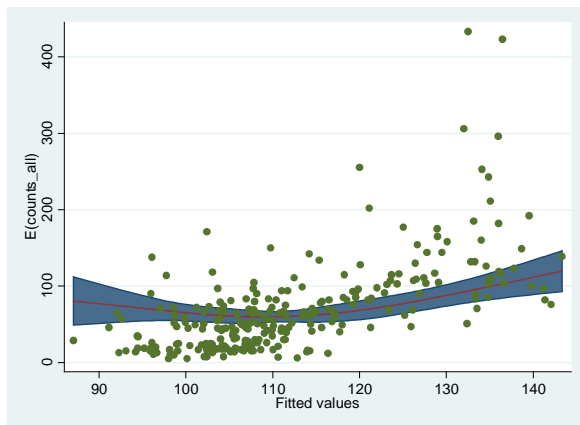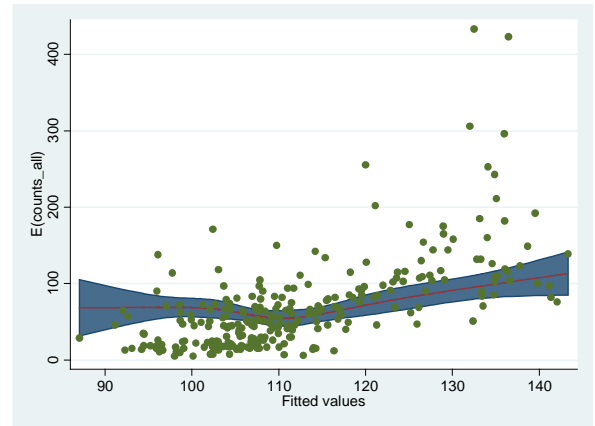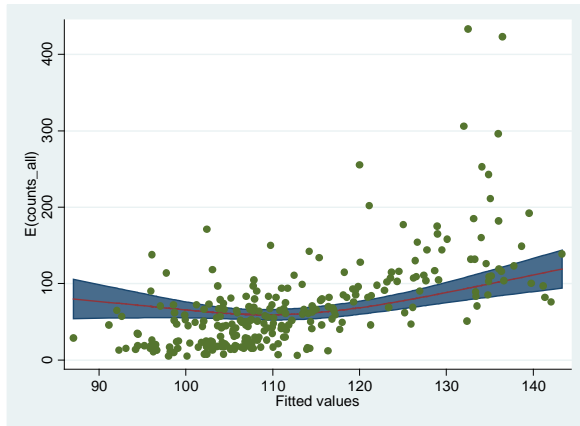
Figure A3. Semiparametric Regressions of Food Riots on Food Prices (Splines with 3 to 6 Knots)

Table A1. OLS Estimation Results for the Reduced Form Relationship between Natural Disasters and Social unrest, 1990-2011

Variable	(1)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.	
Count of Natural Disasters	0.787***
	(0.297)
Constant	45.297***
	(9.888)
Observations	264
R-squared	0.026

Standard errors in parentheses

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

Table A2. IV Estimation Results for Robustness Checks on the Determinants of Social unrest Using Alternative Definitions of the Instrumental Variable, 1990-2011

Variable	IV Includes Drought, Extreme Temperature, Floods, and Insect Infestations		IV Includes Drought, Extreme Temperature, and Floods	
	(1)	**(2)**	**(3)**	**(4)**
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.				
Food Price Index	1.156**		1.116*	
	(0.567)		(0.578)	
Historical Volatility (Food, 3 Months)	-538.209*		-523.827*	
	(283.888)		(286.261)	
Cereal Price Index		0.711**		0.703**
		(0.338)		(0.351)
Historical Volatility (Cereals, 3 Months)		-522.279**		-518.629**
		(208.527)		(213.502)
News Stories about Social Unrest, Previous Month	0.374***	0.402***	0.380***	0.404***
	(0.097)	(0.083)	(0.098)	(0.085)
Trend	0.233***	0.232***	0.234***	0.233***
	(0.047)	(0.046)	(0.047)	(0.046)

	(1)	(2)	(3)	(4)
Constant	-187.111***	-137.016***	-183.947***	-136.578***
	(49.299)	(27.884)	(50.039)	(28.419)
Observations	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument Test)	22.00	30.36	21.07	27.88
R-squared	0.692	0.704	0.694	0.704

Standard errors in parentheses

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

Table A3. OLS Estimation Results for a Test of Whether Social unrest Granger-Causes Food Prices, 1990-2011

Variable	(1)	(2)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.		
Food Price Index	-0.837	
	(1.072)	
Historical Volatility (Food, Three Months)	-444.011**	
	(215.478)	
Cereal Price Index		0.014
		(0.672)
Historical Volatility (Cereals, Three Months)		-412.364***
		(142.147)
Food Price Index in t + 1	-0.973	
	(1.083)	
Food Price Index in t + 2	0.897	
	(1.085)	
Food Price Index in t + 3	0.119	
	(0.710)	
Food Price Index in t - 1	0.764	
	(1.063)	
Food Price Index in t - 2	1.849*	

	(1.066)	
Food Price Index in t - 3	-1.040	
	(0.715)	
Cereals Price Index in t + 1		-0.705
		(0.658)
Cereals Price Index in t + 2		0.435
		(0.656)
Cereals Price Index in t + 3		0.227
		(0.424)
Cereals Price Index in t - 1		-0.103
		(0.656)
Cereals Price Index in t - 2		1.559**
		(0.666)
Cereals Price Index in t - 3		-0.877**
		(0.436)
News Stories about Social Unrest, Previous Month	0.437***	0.450***
	(0.060)	(0.058)
Trend	0.245***	0.231***
	(0.044)	(0.043)
Constant	-160.534***	-123.561***

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	(25.339)	(21.237)
Observations	258	258
Monthly Dummies	Yes	Yes
R-squared	0.705	0.711

Standard errors in parentheses

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

Table A4. OLS and IV Estimation Results for Robustness Checks on the Determinants of Social unrest Using Six-Month Price Volatility, 1990-2011

Variable	OLS	OLS	IV	IV
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.				
Food Price Index	0.659***		0.986**	
	(0.164)		(0.415)	
Historical Volatility (Food, Six Months)	-135.503		-214.590	
	(126.454)		(157.372)	
Cereal Price Index		0.486***		0.733**
		(0.124)		(0.317)
Historical Volatility (Cereals, Six Months)		-154.529		-257.844*
		(96.002)		(155.671)
News Stories about Social Unrest, Previous Month	0.449***	0.445***	0.402***	0.395***
	(0.057)	(0.058)	(0.079)	(0.083)
Trend	0.244***	0.238***	0.233***	0.226***
	(0.043)	(0.043)	(0.045)	(0.045)
Constant	-148.063***	-123.287***	-174.337***	-137.573***
	(23.989)	(21.229)	(39.044)	(27.245)
Observations	259	259	259	259

Month Dummies	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument)	-	-	45.56	44.62
R-squared	0.697	0.697	0.692	0.692

Standard errors in parentheses

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

Table A5. OLS Estimation Results for the Determinants of Social unrest Using IMF Commodity Prices, 1990-2011

Variable	(1)	(2)	(3)	(4)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.				
Maize Price Index	0.237***			
	(0.057)			
Historical Volatility (Maize, Three Months)	-40.312			
	(94.051)			
Rice Price Index		0.047**		
		(0.021)		
Historical Volatility (Rice, Three Months)		166.919**		
		(73.537)		
Soybeans Price Index			0.130***	
			(0.032)	
Historical Volatility (Soybeans, Three Months)			-23.414	
			(96.453)	
Wheat Price Index				0.127***
				(0.047)
Historical Volatility (Wheat, Three Months)				33.781
				(94.702)
News Stories about Social Unrest, Previous Month	0.435***	0.478***	0.449***	0.494***

	(0.058)	(0.055)	(0.058)	(0.055)
Trend	0.236***	0.255***	0.223***	0.224***
	(0.042)	(0.043)	(0.044)	(0.044)
Constant	-104.326***	-107.250***	-102.383***	-95.465***
	(19.760)	(19.975)	(20.190)	(19.936)
Observations	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes
R-squared	0.701	0.704	0.700	0.692

Standard errors in parentheses

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

Table A6. IV Estimation Results for the Determinants of Social unrest Using IMF Commodity Prices, 1990-2011

Variable	(1)	(2)	(3)	(4)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.				
Maize Price Index	0.286**			
	(0.122)			
Historical Volatility (Maize, Three Months)	-59.623			
	(103.448)			
Rice Price Index		0.093*		
		(0.053)		
Historical Volatility (Rice, Three Months)		86.382		
		(112.778)		
Soybeans Price Index			0.155**	
			(0.066)	
Historical Volatility (Soybeans, Three Months)			-34.845	
			(100.032)	
Wheat Price Index				0.270**
				(0.122)
Historical Volatility (Wheat, Three Months)				-74.886
				(128.958)
News Stories about Social Unrest, Previous Month	0.413***	0.442***	0.431***	0.453***

	(0.075)	(0.067)	(0.071)	(0.065)
Trend	0.231***	0.227***	0.216***	0.182***
	(0.043)	(0.052)	(0.047)	(0.056)
Constant	-106.376***	-104.041***	-104.147***	-94.670***
	(20.303)	(20.446)	(20.611)	(20.317)
Observations	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument Test)	68.56	48.44	79.03	44.49
R-squared	0.700	0.698	0.699	0.680

Standard errors in parentheses

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

Table A7. Poisson Estimation Results for the Determinants of Social unrest, 1990-2011

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.						
Food Price Index	0.002***					
	(0.001)					
Historical Volatility (Food, Three Months)	-3.746***					
	(0.649)					
Cereal Price Index		0.002***				
		(0.000)				
Historical Volatility (Cereals, Three Months)		-4.374***				
		(0.454)				
Maize Price Index			0.001***			
			(0.000)			
Historical Volatility (Maize, Three Months)			-0.377			
			(0.311)			
Rice Price Index				-0.000***		
				(0.000)		
Historical Volatility (Rice, Three Months)				2.456***		
				(0.233)		
Soybeans Price Index					0.001***	

						(0.000)
Historical Volatility (Soybeans, Three Months)						0.476
						(0.294)
Wheat Price Index						0.000**
						(0.000)
Historical Volatility (Wheat, Three Months)						0.060
						(0.285)
News Stories about Social Unrest, Previous Month	0.002***	0.002***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trend	0.007***	0.007***	0.008***	0.009***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.317***	0.385***	0.038	-0.393***	0.035	-0.066
	(0.080)	(0.075)	(0.071)	(0.077)	(0.071)	(0.070)
Observations	262	262	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

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

Table A8. OLS and IV Estimation Results for the Determinants of Food Riots, 1990-2011

Variable	OLS	OLS	IV	IV
Dependent Variable: LexisNexis Stories about Food Riots.				
Food Price Index	0.232***		0.276**	
	(0.050)		(0.117)	
Historical Volatility (Food, Three Months)	-86.942		-102.242	
	(63.894)		(73.803)	
Cereal Price Index		0.173***		0.189**
		(0.036)		(0.081)
Historical Volatility (Cereals, Three Months)		-74.108*		-81.937
		(43.818)		(56.267)
News Stories about Social Unrest, Previous Month	0.210***	0.201***	0.189**	0.190**
	(0.063)	(0.063)	(0.080)	(0.081)
Trend	0.005	0.002	0.001	-0.000
	(0.011)	(0.011)	(0.015)	(0.015)
Constant	-19.704***	-11.574**	-22.108***	-12.001**
	(5.759)	(5.126)	(8.163)	(5.477)
Observations	262	262	262	262

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Monthly Dummies	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument)	-	-	56.1	60.06
R-squared	0.252	0.257	0.249	0.257

Standard errors in parentheses

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

Table A9. OLS and IV Estimation Results for the Determinants of Food Riots, 1990-2011

Variable	OLS	OLS	IV	IV
Dependent Variable: Factiva Stories about Food Riots.				
Food Price Index	0.050***		0.072**	
	(0.015)		(0.035)	
Historical Volatility (Food, Three Months)	-11.025		-18.398	
	(19.097)		(22.026)	
Cereal Price Index		0.033***		0.049**
		(0.010)		(0.024)
Historical Volatility (Cereals, Three Months)		-4.645		-12.473
		(13.169)		(17.091)
News Stories about Social Unrest, Previous Month	0.161**	0.167***	0.134*	0.139*
	(0.063)	(0.064)	(0.075)	(0.075)
Trend	-0.004	-0.004	-0.006	-0.007
	(0.003)	(0.003)	(0.005)	(0.005)
Constant	-1.833	0.018	-2.864	-0.234
	(1.641)	(1.501)	(2.237)	(1.548)
Observations	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes

F-statistic (Weak Instrument Test)	-	-	51.70	54.46
R-squared	0.121	0.118	0.113	0.109

Standard errors in parentheses

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

Table A10. OLS and IV Estimation Results for the Determinants of the Proportion of Riots that Are Food Riots, 1990-2011

Variable	OLS	OLS	IV	IV
Dependent Variable: Proportion of Factiva Riot Stories about Food (0 to 100)				
Food Price Index	0.034***		0.050**	
	(0.009)		(0.021)	
Historical Volatility (Food, Three Months)	-4.383		-9.960	
	(11.511)		(13.341)	
Cereal Price Index		0.026***		0.035**
		(0.006)		(0.015)
Historical Volatility (Cereals, Three Months)		-8.701		-13.157
		(7.894)		(10.250)
Proportion of News Stories, Previous Month	6.131	4.886	2.725	1.969
	(6.417)	(6.444)	(7.618)	(7.744)
Trend	-0.005**	-0.005***	-0.007**	-0.007**
	(0.002)	(0.002)	(0.003)	(0.003)
Constant	-0.458	0.740	-1.157	0.653
	(0.977)	(0.898)	(1.286)	(0.911)
Observations	262	262	262	262
Monthly Dummies	Yes	Yes	Yes	Yes

F-statistic (Weak Instrument Test)	-	-	52.71	55.95
R-squared	0.091	0.099	0.078	0.092

Standard errors in parentheses

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

Table A11. IV Estimation Results for the Determinants of Social Unrest Using Implied Volatility, 1990-2011

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: LexisNexis Stories about Food-Related Social Unrest.						
Food Price Index	1.039**					
	(0.455)					
Implied Volatility (Food, Three Months)	-553.108**					
	(270.499)					
Cereal Price Index		0.673**				
		(0.301)				
Implied Volatility (Cereals, Three Months)		-355.598*				
		(183.131)				
Maize Price Index			0.298**			
			(0.140)			
Implied Volatility (Maize, Three Months)			-22.877			
			(109.846)			
Rice Price Index				0.119**		
				(0.056)		
Implied Volatility (Rice, Three Months)				-91.112		
				(89.289)		

	(1)	(2)	(3)	(4)	(5)	(6)
Soybeans Price Index					0.165**	
					(0.072)	
Implied Volatility (Soybeans, Three Months)					-256.750**	
					(98.995)	
Wheat Price Index						0.302**
						(0.139)
Implied Volatility (Wheat, Three Months)						-244.044*
						(133.427)
News Stories about Social Unrest, Previous Month	0.398***	0.415***	0.410***	0.431***	0.416***	0.436***
	(0.082)	(0.077)	(0.080)	(0.074)	(0.073)	(0.072)
Trend	0.239***	0.226***	0.230***	0.209***	0.242***	0.189***
	(0.044)	(0.046)	(0.043)	(0.049)	(0.047)	(0.056)
Constant	-182.021***	-137.308***	-108.310***	-96.321***	-112.444***	-99.803***
	(42.589)	(27.295)	(20.808)	(20.155)	(20.282)	(20.356)
Observations	261	261	261	261	261	261
Monthly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument Test)	36.36	38.81	51.55	35.52	61.47	31.92
R-squared	0.697	0.694	0.699	0.691	0.710	0.681

Standard errors in parentheses

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

Table A12. OLS Estimation Results for the Determinants of Food Riots in Africa, 1990-2010

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: SCAD Data Count of Food Riots in Africa						
Food Price Index	0.003**					
	(0.001)					
Historical Volatility (Food, Three Months)	-0.110					
	(1.511)					
Cereal Price Index		0.002**				
		(0.001)				
Historical Volatility (Cereals, Three Months)		-0.722				
		(1.019)				
Maize Price Index			0.001**			
			(0.000)			
Historical Volatility (Maize, Three Months)			-0.174			
			(0.725)			
Rice Price Index				0.000***		
				(0.000)		
Historical Volatility (Rice, Three Months)				0.073		
				(0.539)		

Soybeans Price Index						0.000**
						(0.000)
Historical Volatility (Soybeans, Three Months)						0.535
						(0.739)
Wheat Price Index						0.000
						(0.000)
Historical Volatility (Wheat, Three Months)						1.095
						(0.691)
Food Riots in Africa, Previous Month	-0.013	-0.015	-0.019	-0.034	-0.020	-0.002
	(0.066)	(0.065)	(0.065)	(0.065)	(0.066)	(0.065)
Trend	-0.000	-0.000	-0.000	-0.001*	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.126	-0.029	0.041	0.096	0.091	0.058
	(0.139)	(0.121)	(0.119)	(0.121)	(0.120)	(0.119)
Observations	250	250	250	250	250	250
Monthly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.058	0.061	0.062	0.087	0.061	0.055

Standard errors in parentheses

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

Table A13. IV Estimation Results for the Determinants of Food Riots in Africa, 1990-2010

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: SCAD Data Count of Food Riots in Africa						
Food Price Index	0.006*					
	(0.003)					
Historical Volatility (Food, Three Months)	-1.549					
	(1.999)					
Cereal Price Index		0.004*				
		(0.002)				
Historical Volatility (Cereals, Three Months)		-1.826				
		(1.473)				
Maize Price Index			0.002*			
			(0.001)			
Historical Volatility (Maize, Three Months)			-0.686			
			(0.917)			
Rice Price Index				0.001		
				(0.000)		
Historical Volatility (Rice, Three Months)				-0.255		

	(1)	(2)	(3)	(4)	(5)	(6)
				(0.886)		
Soybeans Price Index					0.000*	
					(0.000)	
Historical Volatility (Soybeans, Three Months)					0.335	
					(0.774)	
Wheat Price Index						0.002*
						(0.001)
Historical Volatility (Wheat, Three Months)						-0.170
						(1.068)
Food Riots in Africa, Previous Month	-0.034	-0.038	-0.037	-0.048	-0.040	-0.026
	(0.069)	(0.070)	(0.069)	(0.071)	(0.069)	(0.069)
Trend	-0.001*	-0.001*	-0.001*	-0.001	-0.001*	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.345	-0.098	0.037	0.130	0.120	0.105
	(0.241)	(0.139)	(0.120)	(0.142)	(0.125)	(0.127)
Observations	250	250	250	250	250	250
Monthly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic (Weak Instrument)	34.69	40.32	53.44	40.83	57.76	34.69

R-squared		0.023	0.035	0.047	0.082	0.046	Dropped

Standard errors in parentheses

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