Food prices, social unrest and the Facebook generation

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1. Introduction

In 2008, food prices soared to a boiling point, triggering of riots from Haiti to Bangladesh to Egypt over the soaring cost of basic foods and causing mass social tensions even in high-growth countries like China and India and in wealthy nations like the USA and Italy. More recently, in 2011, several North African countries fell prey to riots and mass demonstrations, and again these protests occurred in a climate of rising food prices. Apart from these recent events, several historic events testify of the role of food prices in explaining social unrest, among many others the 1684 Moscow Salt Riot, the 1713 Boston bread riot, the 1837 New York City Flour Riot, and the 1918 Rice Riots in Japan.

Hence, both recent and historic events point to a close link between riots and food prices. But, what remains of this association if we subject it to a rigorous empirical test, controlling for unobservable cross-country heterogeneity? And, how exactly do price-induced grievances experienced by individuals sum up to mass demonstrations?

Answering these questions should lead to better insight in the impact of food prices on social unrest. Such insight is valuable, not only because it helps to understand real world events, but also because it allows policymakers to assess the real cost of rising food prices. When social unrest takes the form of peaceful demonstrations, it can be argued that it is a social good rather than a bad, since the public may receive utility from expressing their concerns and the demonstrations may lead to government actions that respond to the public's preferences[1]. This is in line with the argument of Acemoglu and Robinson (2001) that transitory economic shocks can give rise to a democratic window of opportunity. On the other hand, social unrest can take the form of riots, which can turn violent, leading to casualties, destroying private and public property, and opening a window of opportunity for criminals to loot. When riots persist, they may divert both domestic and foreign investment increasing economic hardship, and when riots occur in important food or oil producing countries, they may in turn lead to increases in commodity prices. This being said, there has been no empirical assessment so far of the cost and benefits of demonstrations and riots.

Sidestepping this issue for the moment, this article aims at providing a credible estimate on the impact of food prices on social unrest manifested in the form of demonstrations or, when turning violent, riots. The empirical analysis consists of two main parts. In the first part, we analyze monthly data on riots and international food prices for the period 1990-2010. The event data are taken from the PRIO Social Disturbance dataset, while food prices are captured by an international food price index that is calculated as an export share weighted average of international prices for five commodity group indices - cereals, meat, dairy products, sugar and oil &fat.
In the second part, we compare results for the period 1990-2010 with results for a longer time period, 1960-1910. Due to data limitations, this analysis uses US wheat prices instead of the more general and appropriate international food price index. The findings of the post-1990 analysis indicate that a one percent increase in the deviation of prices from the long-run trend increases the relative probability (odds) of occurrence of a disturbance manifold, ranging from twice to 12 times depending on the specification.

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[1] Note that countries seeking to reduce the political cost from rising food prices by altering trade restrictions at their national border (e.g. the imposition of export restrictions) may initially succeed in dampening increases in domestic food prices, but the more countries revert to such actions, the more these actions become collectively self-defeating, reducing the role that global trade can play in dampening fluctuations in international prices (Anderson and Nelgen, 2010).

Comparing the results across 1960-2010 and the sub period 1990-2010, we find that the association between food prices and social unrest became stronger over time, in particular for the reaction of consumers upon price increases, whereas the reaction of producers to price decreases remained largely unchanged).

This paper's focus on monthly time series of the past two decades makes it distinct from two recent working papers, Hendrix et al. (2009) and Arzeki and Brückner (2011), that study the impact of food prices on social unrest analyzing annual data from respectively the periods 1961-2006 and 1970-2007. Hendrix et al. (2009) find that producers react more easily with riots upon a price decrease than consumers react upon a price increase. Arzeki and Brückner (2011) report that a one standard deviation increase in the food price index increases the number of anti-government demonstrations and riots by about 0.01 standard deviations.

The use of monthly rather than annual time series is expected to add to the accuracy of the estimated coefficient of interest. First, monthly data has the advantage of capturing within-year fluctuations in prices, which, due to the impact of weather and pest related shocks may be high, even after taking into account the usual seasonal fluctuations (Petersen and Tomek, 2005). Second, when looking at the sequence of real world events, we note that the relationship between food price shocks and social unrest is rather instantaneous instead of characterized by important lags, justifying the use a high frequency time series. Thirdly, the use of monthly data multiplies the number of data points, allowing a sub period analysis for the past 20 years. In its turn, the focus on post-1990 data in the main analysis is useful for a number of reasons. First, a major difference between the historic riots in the 17th-19th century and the present-day riots is the global character of the latter. Rather than being triggered of by local harvest failures or local government decisions (e.g. tax increases), the causes of the fluctuations in food prices in modern times were global (e.g. increased global demand for raw materials). Moreover, globalization has continued to evolve in the past twenty years and hence has continued to shape the factors that influence the level and volatility of international food prices. Second, in the time span of the past two decades, a number of countries have transformed themselves from food exporting to food importing countries, and vice versa (Ng and Aksoy, 2008). Third, we will also argue that the internet revolution, which is by now a fact in many parts of the developing world, has altered the dynamics of protest movements, first by making them more contagious through the rapid spread of news events, and second, by providing activists with a powerful device, i.e. online social networking, to coordinate actions and overcome the collective action problem that often constraints demonstrations and protest movements. In sum, when aiming at quantifying the impact of food prices on protests in a globalized and connected world, the events in the '60s, '70s and '80s should arguably receive less weight than those in the past two decades.

The remainder of the paper starts with a discussion of the determinants of food prices and protests. Section 3 sets out the empirical framework. In section 4, we provide an overview of the data sources used. Section 5 discusses the statistical results. Section 6 concludes.

2. Concepts and literature[2]

2.1. Food price spikes: a review of causes and consequences

For the second time in a relatively short period, food prices have reached a historic high. The recent two spikes (May 2008 and January 2011) are only matched by the dramatic rise of commodity prices in the mid 1970s and early 1980s. Whichever combination of the alleged causal factors will win the bid – financial speculation, growing demand from booming economies, climate change, exchange rate fluctuations, or the demand for alternative energy sources – the fact remains that many of these factors have gained in importance over the past two decades and will persist for a number of years and even decades to come. As a consequence, the recent food price surges may be a prelude to further price spikes, rendering a study of the possible consequences for social unrest particularly relevant. Since macro- as well as micro- conditions determine the extent to which countries and households are affected by food price changes, we should take up the challenge to control for a number of factors when determining the impact of international food prices on domestic social unrest. The choice to use international prices (instead of domestic prices) is taken despite this challenge, mainly because of their exogenous character and data availability. To account for country characteristics, we revert to country fixed effects. We will elaborate further on this in sections 3 and 4.

2.2. Protests: how small (price) shocks can put in motion a revolutionary bandwagon

How and under which circumstances do price-induced grievances translate into protests? It is well documented that economic theory, assuming self-interested rational individuals, predicts an undersupply of collective action (Olson, 1965). At the same time, the frequent occurrence of mass demonstrations and protests contradicts this basic economic insight. This has led to two strands of literature that try to reconcile this apparent contradiction. A first strand argues that mass political movements cannot be explained by models based on rational preferences and, instead, puts forward expressive theories of participation whereby a person places value on the act of political expression itself (e.g. Opp, 1988; Klosko et al., 1987; Muller and Opp, 1986; Verba et al., 2000). Kuran (1989)'s model provides us with a useful framework to think about the way price shocks can lead to mass protests. The factors that matter are threefold: (1) the size of the shock; (2) the initial distribution of discontent in society; and (3) the impact of the shock on this distribution. The latter depends on the nature of the shock, with shocks such as price changes being more powerful because they do not only affect discontent of extremists but also of moderates.

2.3. Protests: the collective action problem and the Facebook generation

The dynamic informational cascade theory of Lohmann (1993, 1994, 2000) belongs to a second strand of literature that has developed several theories on how collective action can emerge from rational behaviour at the level of the individual. It is particularly relevant in our case, since it highlights the role of information streams and signalling, allowing us to formulate hypotheses on the role of online communication in present-day mass mobilization. The most important distinctive feature of Lohmann's theory is that an individual's action not only contributes to overturning the status quo in a given period

[2] Note that this section is reduced from an initial 7 pages to merely 2 pages for the sake of reducing the length of the paper to the required 12 pages. The full discussion can be obtained on request from the authors.

(because, as in Kuran's model, it makes the number of people taking costly action exceeding a critical threshold), but it also signals the actor's information about the status quo (the quality of a policy, regime, etc) and influences other people's decisions to act or abstain. This signalling function of an action makes an individual action non-negligible in overturning the status quo, which explains why rational individuals that care about overturning the status quo engage in costly collective action. An important note to make is that the strength of the signal, i.e. the value attached to the information, depends on the type of the sender. For example, moderates will attach less importance to signals send by extremists than to signals send by other moderates because moderates know that the preferences of extremists may not be in line with their own preferences. In the words of Lohmann (2000) "The participation of moderates (actors who generate reliable informational cues) is crucial for the success of a social movement, but the (uninformative) turnout of 'extremists' is discounted." Because of this feature, the impact of group heterogeneity is not monotonous. In fact: "Overall, the maximum degree of information revelation is associated with the degree of group heterogeneity that maximizes the number of activist moderates."

The role accorded to signalling has important implications for the possible impact of mass media and online (political) communities. Firstly, both mass media and online communities allow the public to take notice of the signals sent, whereas otherwise many signals may be blocked by those that benefit from a status quo. Second, both may be instrumental in coordinating action in the sense that the former reduces information asymmetries and the latter is a tool in enhancing the simultaneity of turnout, e.g. by agreeing on the timing and location of turnout. Such coordination is important because a mass demonstration does not necessarily take place when sufficient people lower their thresholds, but only when they do so simultaneously. Thirdly, online communities play an additional role by allowing individuals to signal their perception of the status quo at a very low cost. This new form of signalling is a double-edged sword. On the one hand, it lowers the value of the signal because receivers know that the risks of signalling are much lower. On the other hand, it increases the number of senders, and importantly, especially among the moderates, who otherwise might have found the cost of signalling too high.

In sum, this discussion highlights the role of online networking as a tool that can significantly contribute to the power of informational cascades. Let us conclude with anecdotal evidence from the Egypt revolution to stress this point further[3]. As a reaction to social unrest in Egypt in January 2011, the Egyptian Government instructed providers to shutdown services in parts of the country[4]. In addition, all mobile operators in Egypt were instructed to suspend services supporting cell phone text messages in selected areas[5]. These actions on the part of the Egyptian government were clearly motivated by the aim to prevent activists from communicating to agree on timing and locations of their actions and to post pictures, tweets and videos live from the action. There is ample evidence that, apart from helping protesters to coordinate actions and send out signals

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[3] Sources: BGPmon, a monitoring site that checks connectivity of countries. Internet intelligence authority Renesys: http://www.renesys.com/blog/2011/01/egypt-leaves-the-internet.shtml. BBC news: http://www.bbc.co.uk/news/technology-12306041. Huffington post: http://www.huffingtonpost.com/2011/02/03/vodafone-egypt-text-messages_n_817952.html

[4] Between January, 27 and January, 31, the number of reachable Egyptian networks decreased from 2903 to 134, a decrease of more than 95% .

[5] Moreover, the Egyptian government required Vodafone Egypt to send pro-government advertisement as text messages.

once the protest bandwagon was rolling, online communication was used to set the bandwagon in motion. Right after a businessman, Khaled Said, died in police custody in Alexandria in June 2010, Wael Ghonim, the Egyptian-born Google marketing executive, started the Facebook page 'We are all Khaled Said'. The page became a rallying point for a campaign against police brutality. For many Egyptians, it revealed details of the extent of torture in their country (resulting in updates of x^i), and the page increased its numbers of followers (S). However, until January 2011, most of the followers were youngsters who chose to hide their identity for fear of persecution. As argued above, it is no coincidence that at a time of food price increases the protest gained in momentum and started to appeal to "moderates". In the words of Wael Ghonim: "This is the revolution of the youth of the internet, which became the revolution of the youth of Egypt, then the revolution of Egypt itself". Clearly, without the new media a rather ordinary (read credible) person like Wael would not have been able to send signals to so many people.

2.4. Related studies

To the best of our knowledge, there are only two empirical studies on the relationship between international food prices and social unrest. First, a working paper by Hendrix et al. (2009) studies the link between food prices and social unrest for the period 1961-2006. Second, another working paper, Arzeki and Brückner (2011) examines the effects that variations in the international food prices have on democracy and intra-state conflict using panel data for over 120 countries during the period 1970-2007. The current article differs from these previous studies in four main ways, by (1) using the most recent data up to 2010, (2) analysing monthly rather than annual time series, (3) performing a sub period analysis for 1990-2010, and by (4) determine the price shocks with Hodrick-Prescott filtering which allows us to separate the "cyclical component" of prices from its trend[6]. The next section elaborates on our empirical approach.

3. <u>Empirical framework</u>

The general empirical specification can be written as follows:

$$g[\Pr(unrest_{im} = 1)] = \alpha_{0i} + \alpha_1 . \left| price\_fluctuation_{im} \right| + \varepsilon_{im} \qquad \text{(I)}$$

where g(p)=log[p/(1-p)] is the logit link function that maps the linear index with the response probability of an event taking place in a country i in a given month m; α_{0i} indicates the country-specific fixed effects; and $price\_fluctuation_{im}$ is the fluctuation in real (logged) food prices with respect to the long-run trend. The price fluctuation is obtained by first de-seasoning the logged real price series using Holt-Winters seasonal smoothing (Holt, 1957: Winters, 1960) and then decomposing the resulting series by Hodrick-Prescott filtering to identify a long-term trend and the shocks to the trend[7]. The latter correspond to the fluctuations in the real food price.

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[6] We owe thanks to Romain Houssa for suggesting the HP approach.

[7] We make use of the Hodrick-Prescott (1981,1997), or HP-filter, generally used in the macroeconomic literature to extract business cycles from long-run trend of economic activity. The basic underlying concept remaining the same, HP-filtering of (logged and de-seasoned) international food price series leads to one series reflecting the general trend in food prices and another revealing the shocks or fluctuations in price index around that trend. The logged food price index series is deseasoned using the Holt- Winters smoothing.

In order to distinguish between the incentives to protest for producers and consumers, we run a second empirical specification:

$$g[\Pr(unrest_{im}=1)] = \alpha_{0i} + \alpha_1 . \left| price\_fluctuation_{im}^{+} \right| + \alpha_2 . \left| price\_fluctuation_{im}^{-} \right| + \varepsilon_{im} \quad \text{(II)}$$

, where $price\_fluctuation_{im}^{+}$ ($price\_fluctuation_{im}^{-}$) takes the value zero for negative (positive) fluctuations from the trend.

Both equations I and II are estimated using monthly time series data. As argued in the introduction, this is likely to be appropriate because of (1) important within-year fluctuations in prices, (2) the instantaneous nature of the relationship between food prices and demonstrations, (3) the multiplication of data points which allows a sub period analysis for the two most recent decades. In addition, it can be argued that many forms of protests are short-lived. For example, the recent toppling of Tunisian and Egyptian governments last month took respectively 28 and 18 days from the first incident until the toppling of the government. Furthermore, from the FAO webpage on government responses to the 2008 food price spike, we observe that such responses take around four weeks on average to implement measures intended to appease the protesting populace.[8] Thus, a year seems to be too long a period to see the effect of something that changes too often on something that is spontaneous and quick-lasting.

Finally, whereas the use of country-fixed effects allows us to control for country-characteristics that remain fixed over time, the use of monthly data effectively rules out bias from variables that only change slowly over time. Therefore, in the main specification we do not control for country characteristics that vary over time, both because few accurate monthly level data exists on such characteristics and because it seems reasonable to assume that the most relevant characteristics – e.g. GDP/capita, unemployment level and urbanization level – do not exhibit much variation across the different months. Moreover, several of these characteristics may be thought as endogenous, and hence, whereas including them may reduce omitted variable bias (to the extent that their short term variation immediately instigates protests), it may lead to other forms of endogeneity bias. In a future version of this paper, we will add robustness checks that control for a number of relevant time-varying country characteristics.

Not only does it lesson the problem of reverse causality, as governments do take action in view of protests to mediate and affect the prices, but also record of incidence of onset as a binary variable seems to be less prone to misunderstanding related events of the same movement as distinct thereby introducing error in the count and lending itself even more to sample selection bias (selection of news reports from places already under spotlight or public attention) attributable to the news agency (Keesing's in our case).

In our main specification the dependent variable is the occurrence of an event characterized by any kind of social disturbance during the period 1990-2010. As a first robustness check, we restrict our sample to incidents of unrest marked by the participation of the general public as one of the actors involved (events coded as riots, demonstrations, pro- or anti- government terrorism). In addition, in order to check whether the events in 2008 and 2010 – by some tagged as exceptional - are driving our results we remove those two years from the sample.

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[8] See http://www.fao.org/docrep/010/ai470e/ai470e05.htm for policy response, and (Schneider (2008) for a comprehensive account of events in 2008.

In the main specification for the sub period analysis (1990-2010), we use the FAO (international) monthly food price index. In a robustness check, we use the more restricted price series of cereals as well as the US all-wheat cash price (deflated using US CPI). For the data analysis using time series since 1960, we rely only on the US all-wheat cash price, since it is the only one available for that time period.

4. Data

We make use of the updated Urban Social Disturbances in Asia and Africa (USDAA) dataset compiled by the International Peace Research Institute, Oslo, that tabulates event-related news reports sourced from Keesing's world news archive in 55 cities in 49 countries in Asia and Africa, from 1960 onwards through 2010 (Urdal, 2008). The events are classified and accordingly coded ranging from those related to civil war, armed/terrorist attacks to those involving government repression, riots and demonstrations. We aggregated the original city-level data at country level. So if any one city of a multiple-city country in the dataset experiences an event, the dependent variable assumes the value of one. Figure 1 tracks their evolution over time, with a distinction made between the occurrence of all events and those associated with riots and demonstrations.

The data on international food prices is obtained from the FAO Food Price Index database (Figure 2). In calculating the index, the FAO classifies 55 commodity quotations into 5 groups-meat, dairy, cereals, oil & fat and sugar and takes the average of these indices, weighting them by their average export shares over 2002-2004. These indices themselves are constructed by export-weighted average of the respective combination of commodity quotation included therein. One of these indices, the cereal price index, is used as a robustness check. Monthly series are available starting from January 1990. As a robustness check and for the analysis prior to 1990, we use monthly data from the United States Department of Agriculture's Economic Research Unit for cash prices of different varieties of wheat (Figure 3) to be deflated using the CPI data from World Development Indicators (the latter is available only till 2008).

5. Empirical findings

The estimation of equation I indicates a strong association between price shocks and the onset of social disturbance. More specifically, the coefficient α_1 associated with the first specification turns out to be significant at a 1% level and corresponds to a value of 12.32, which should be read as the change in the odds ratio of an event taking place in response to a 1% (absolute) change in deviation from the long-run price trend (or put simply, shock)[9].

When distinguishing between consumer and producer effects, we find coefficients of similar magnitudes for respectively the positive and negative price shocks (Table 1 column 2). This stands in contrast with Hendrix et al., who find larger responses among producers than consumers in their analysis of annual time series for 1960-2006. Below we demonstrate that this difference can be attributed to the shift in the period of focus.

The findings remain qualitatively the same when using the cereal price index or excluding the peak spike years, 2008 and 2010. However, in both of these robustness

[9] The associated marginal effect is about .10 (evaluated at the mean change), or in other words there is a probability of 10% associated with occurrence of an event.

checks, the quantitative impact is less pronounced, with an 80% decrease in the former case and a 40% decrease in the odds ratio in the latter (Table 1 columns 3, 4 and 5). The findings also remain similar when including only 'mass' events (Table 2).

For the years prior to 1990, the detailed FAO price indices are not available. Hence, to compare results between 1960-2010 and the post-1990 sub-period, we rely on a different monthly time series data, i.e. the US all-wheat data, which was also used in the analysis of Hendrix et al. (2009). The results are reported in Table 3. Whereas the estimated coefficient of the wheat price shock is insignificant for the period 1960-2008, it turns significant for the sub period 1990-2008. Moreover, distinguishing between price shocks that negatively affect consumers and producers, we find that this cross-period difference is entirely driven by a stronger reaction of consumer upon food price increases. This may be driven by the fact that the past two decades were characterized by dramatic price increases rather than decreases. On the other hand, this finding is also in line with our hypothesis on the role of improved communication in the 'new era', which may especially be helpful to overcome coordination problems for consumers, not only due to greater heterogeneity compared to producers, but also due to lack of alternative forms of organizing like the producer lobbies.

6. Conclusion

Recent events have led governments and international organisations to excogitate the implications of changing, in particular, increasing food prices. One of the plausible impacts, not least surmised from media ballyhoo, is to fan grievances and provide incentives to engage in collective action that challenges the status quo. This study attempts to understand the actualities of such a relationship at an international level, for major cities in Asia and Africa.

In a conceptual framework that builds on models of political mobilization, it is shown that food price increases can act as a coordination device and trigger of a powerful cascade in collective action precisely because food is such a basic necessity that it can mobilize 'the moderates' which otherwise would not engage in costly collective actions. We also discussed how mass media and online communities add to the power of this informational cascade and may have strengthened the relationship between food prices and protests over time.

In the empirical part, we subject the relationship between food price changes and protests to a rigorous test, controlling for country fixed effects. In contrast to previous studies, we do so using monthly data and including the most recent data available. It is argued that the use of monthly data is appropriate because of the occurrence of important within-year fluctuations in food prices, the short-lived character of many forms of protests, the instantaneous character of the relationship between price changes and protests, and the reduction of possible omitted variable bias stemming from time varying country characteristics.

Moreover, the use of monthly data allows us to work with a relatively long time series for the two most recent decades, which in its turn allows a detailed post-1990 analysis. The sub period analysis for 1990-2010 is useful, not only because better data is available for the post-1990 period, but also because, as argued in the conceptual framework, both the evolution in the global food system and in communication technology may have profoundly affected the impact of food price changes on social unrest.

Our sub period analysis indicates that a one percent increase in the deviation from the trend in food prices, significantly increases the odds ratio of an urban disturbance event. This is true both for a positive and a negative deviation from the trend, indicating that net-consumers of food as well as net-producers engage in collective action upon price changes. When comparing results across the entire time series (1960-2008) and the sub period (1990-2008), we find that the relationship between food price increase and social unrest has become stronger over time. No such change can be found for the relationship between food price decreases and social unrest. These results are robust to removing the exceptionally high price spikes in 2008 and 2010 from the time series.

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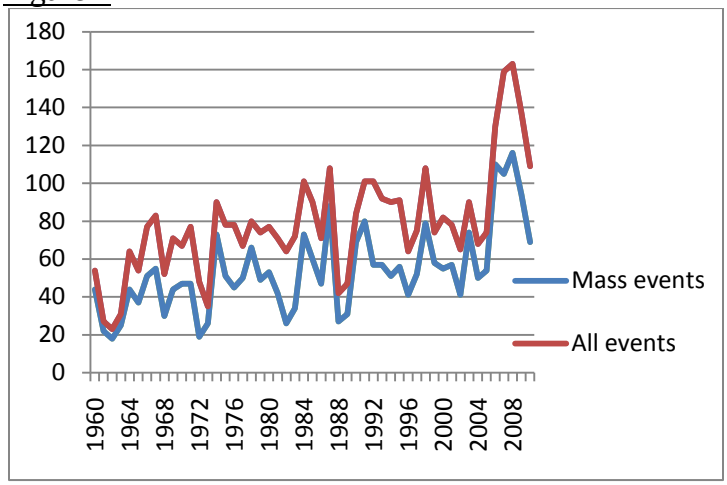
Figures & Tables

Figure 1



Number of incidents in major cities of Asia and Africa, 1960-2010
Source: USDAA, 2010 (PRIO)

Figure 2

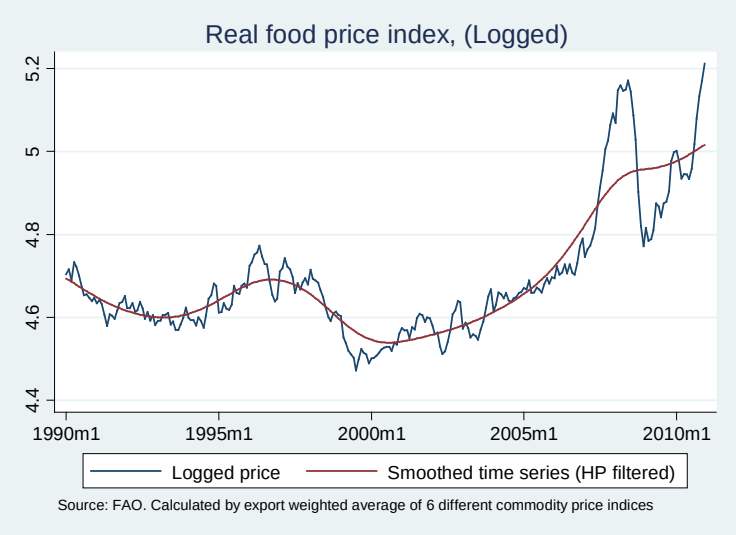


Figure 3

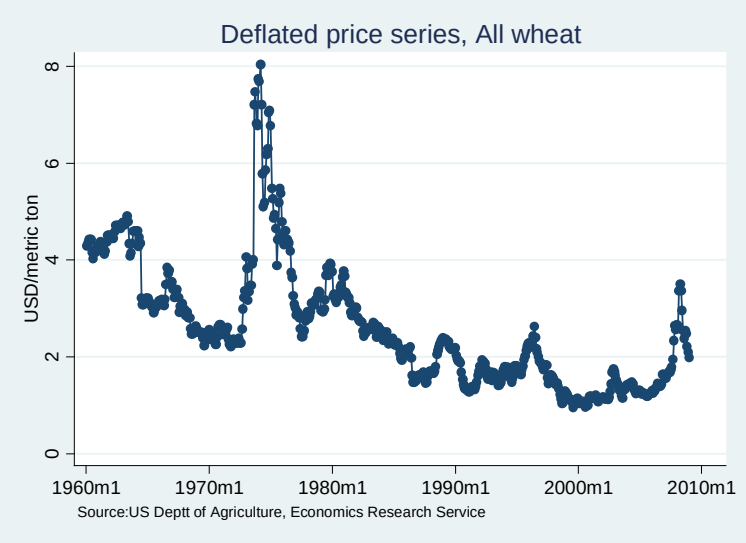


Table 1. Impact of food price changes on the incidence of social unrest, all events

Dep var, protest=yes/no

Monthly series

	(1)	(2)	(3)	(4)	(5)
1990-2010	All events	All events	All events	All events	All events(w/o '08,'10)
VARIABLES	Food price index	Food price index	Cereal price index	Cereal price index	Food price index
Absolute positive price shock		13.21***		2.100*	
(Zero for negative fluctuations)		(8.816)		(0.808)	
Absolute negative shock only		10.44***		1.230	
(Zero for positive fluctuations)		(9.311)		(0.783)	
Absolute price shock	12.32***		1.955*		7.514**
	(7.502)		(0.742)		(6.884)
Country fixed-effects	yes	yes	yes	yes	yes
Observations	12,348	12,348	12,348	12,348	11,172
Number of country_id	49	49	49	49	49

Odds ratio (se in parentheses)

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

Table 2. Impact of food price changes on the incidence of social unrest, riots and demonstrations

Dep var, protest=yes/no

Monthly series

	(1)	(2)
1990-2010	Riots and demonstrations	Riots and demonstrations
VARIABLES	Food price index	Food price index
Absolute positive price shock		12.42***
(Zero for negative fluctuations)		(9.344)
Absolute negative shock only		8.877**
(Zero for positive fluctuations)		(9.028)
Absolute price shock	11.26***	
	(7.766)	
Country fixed-effects	yes	yes
Observations	12,096	12,096
Number of country_id	48	48

Odds ratio (se in parentheses)

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

Table 3. Impact of food price increases on social unrest, all events: 1960-2008 and 1990-2008

Dep var, protest=yes/no

Monthly series

	(1)	(2)	(3)	(4)
	All events 1960-2008	All events 1960-2008	All events 1990-2008	All events 1990-2008
VARIABLES	US All Wheat	US All Wheat	US All Wheat	US All Wheat
Absolute positive price shock		1.002		2.738**
(Zero for negative fluctuations)		(0.288)		(1.190)
Absolute negative shock only		1.414		1.165
(Zero for positive fluctuations)		(0.481)		(0.621)
Absolute price shock	1.134		2.038*	
	(0.291)		(0.816)	
Country fixed-effects	yes	yes	yes	yes
Observations	28,812	28,812	11,172	11,172
Number of country_id	49	49	49	49

Odds ratio (se in parentheses)

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