

Grievance and Opportunity: Food Prices, Political Regime, and Protest

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Abstract

Anecdotal evidence from the global food crisis of 2007-8 raises the more general question of whether international food prices have any bearing on patterns of contentious political mobilization. Contrary to the neo-Malthusian notion of a monotonic relationship between resource scarcity and conflict, we contend that the effects of world food prices and other economic shocks are contingent on regime type. Drawing on a sample of 55 major cities in 49 Asian and African countries for the period 1961-2006, we find that international food prices are a significant determinant of the incidence of protest and riots, even when controlling for aggregate economic performance and other economic shocks such as changes in the overall price level. However, this relationship is contingent on regime type, with hybrid regimes driving the relationship in the full sample.

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“We will take to the streets in demonstrations. Or else we will steal,” a 30-year-old woman said as she stood in line outside a bakery in Egypt in 2008. Political leaders in developing countries were not oblivious to these grievances. Responding to a domestic price shock that followed a worldwide doubling of wheat prices, President Hosni Mubarak even ordered Egypt's army to bake bread for the public.

The rapid inflation in global food prices since 2000, and the acceleration of that increase in 2007-8, has shown that price shocks can pose significant threats to political stability in the developing world. Demonstrations and riots related to food prices took place in over thirty countries in 2007-8. The region of the world most dependent on wheat imports, the Middle East witnessed food riots in Egypt, Jordan, Yemen, and Morocco. In the Ivory Coast, thousands marched on the home of President Laurent Gbagbo, chanting “we are hungry” and “life is too expensive, you are going to kill us.” Similar demonstrations took place in many other countries in Africa, including Ethiopia, Burkina Faso, Senegal, Mozambique, Mauritania, Cameroon, and Guinea. In Asia, people also took to the streets in Bangladesh, India, Philippines, Cambodia, and Thailand; even North Korea experienced an incident in which market women gathered to protest restrictions on their ability to trade in food. In Latin America, violent clashes over rising food prices occurred in Honduras, Guatemala, Nicaragua, Peru, Bolivia, Argentina, and Mexico, and the prime minister of Haiti was toppled following food riots.

These problems are not only cyclical; longer-run structural changes in world agricultural production, trade and even climate are also at work. In the period covered by our analysis—1961 to 2006—many developing nations went from being net food exporters to net food importers. In 1960, developing countries were net exporters of food, with an overall agricultural trade surplus of almost \$7 billion per year; by 2001, this surplus had been transformed into a deficit of more than \$11 billion (United Nations Development Fund for Women, 2008). The forces at work are multiple and complex. Ill-designed development policies favored industrialization—and urban constituencies—at the expense of agriculture and the rural areas. Urbanization and rising incomes increased the demand for food. More recently, trade liberalization has displaced small-scale

agricultural producers at the same time as protectionist policies in the advanced industrial states have dampened agricultural export opportunities.

Over the longer run, global warming could fundamentally alter the distribution of world agricultural output and exacerbate volatility in prices. The 2007 Intergovernmental Panel on Climate Change Assessment Report identifies increased climatic variability as one of the main consequences of global warming, and forecast an increase in extreme weather events, including both tropical storms and droughts (IPCC, 2007). The implications for food prices are clear: decreased climatic stability will be associated with more frequent spikes in food costs, especially as the increase in extreme events coincides with a decrease in overall climate predictability (IPCC, 2007).²

All of these pressures are likely to be greatest in poor countries, where substantial shares of the population already face insecurity with respect to food. Risk is further compounded by the increasing integration of markets, through which international price shocks are quickly transmitted to the domestic market. Import-dependent low-income countries, particularly those with current account deficits, limited foreign exchange reserves and limited capacity to borrow, are particularly vulnerable (United States Department of Agriculture, 2008 for an overview). However, even net exporters are at risk; higher prices might benefit producers, but translate into higher living costs for consumers.

Political elites and the development policy community are amply aware of these challenges. An influential report by the Asian Development Bank (2008, 1) noted “food price inflation severely stresses the most vulnerable groups” and threatened to “reverse the gains in poverty reduction in the Asia and Pacific region.” More bluntly, African finance ministers warned that the rise in international food prices posed “significant threats to Africa’s growth, peace and security.” Jean Ziegler, the United Nations Special Rapporteur on the Right to Food, offered a depressing prognosis: “We are heading for a

² Ironically, attempts to mitigate climate change, particularly through the increased use of biofuels, have contributed to the volatility of prices. As energy prices rose after 2003, biofuels programs became attractive both in advanced industrial states—including the US—and in several large cereal-exporting developing countries. But biofuel production has also caused increases in food prices, both by shunting food grains into biofuel production (as with ethanol) and thus restricting supply, and by competing with traditional agricultural production for inputs such as land, water, and fertilizer.

very long period of rioting, conflicts (and) waves of uncontrollable regional instability marked by the despair of the most vulnerable populations.”

In this exploratory paper, we assess whether this apparent relationship between food prices and protest holds across the world and for a longer time-span. In doing so, however, we need to consider the cross-cutting effects of changes in prices on both consumers and producers. In the recent run-up in food prices, attention has naturally focused on the adverse effects on households that are net purchasers of food. However, high international food prices benefit farmers, particularly exporters of commodities such as wheat, corn, rice, soy, or coffee. We might therefore expect disaffection and even protests from producers when prices are falling.

These conflicting sectoral effects are not merely theoretical; they are clearly visible in recent events in both Mexico and Argentina. In February of 2008, hundreds of thousands of farmers drove their tractors into Mexico City, protesting the entry of cheap imported corn from the United States and Canada. “Corn is too cheap,” a farmer said. “For me to make a profit, it has to bring in 15 pesos (\$1.40) a kilo, and I can barely get 10.” A year earlier, however, tens of thousands of workers and peasants had filled Mexico City's central square protesting the high costs of tortillas.

Sectoral conflict was even more directly evident in Argentina in 2008. In the face of rapidly rising global demand for Argentine soybeans, the Kirchner government sought to impose an export tax; the tax would both moderate domestic price increases and raise revenue to help finance food subsidies. Farmers and urban opponents of the Kirchner government quickly mobilized large-scale protests. In response, however, the president mobilized substantial counter-demonstrations by drawing on the ruling party's urban working class base of support.

In modeling the political response to food prices, we also necessarily enter into the long-standing debate within the contentious politics literature over the extent to which “grievance” and/or “political opportunity” fuels protest and riots. Food price increases clearly constitute a grievance for consumers. But we would not expect these grievances to have uniform effect across countries; the response to such shocks will also be contingent on political opportunity. The measurement of the political opportunity structure has been

an ongoing challenge for the literature on contentious politics. In this paper, we model it by considering the effect of regime type.

It might be expected that the relationship between regime type and collective action is linear: protest should be more common in democracies where aggrieved citizens are legally allowed to engage in collective action. However, many autocratic regimes also tolerate acts of dissent. We argue that such “hybrid regimes” will be *more* prone to protest than both democracies, which have other means of holding political elites accountable, and highly repressive autocratic regimes that are willing and able to squelch contentious politics.

Our core findings are easily summarized. Drawing on a sample of 55 major cities in 49 Asian and African countries for the period 1961-2006, we find that international food prices are a significant determinant of the incidence of protest and riots, even when controlling for aggregate economic performance and other economic shocks such as changes in the overall price level. However, the relationship is non-linear. Protests and riots are more numerous at the extremes of the distribution of price changes. Moreover, the effect is asymmetric: price declines are associated with a greater incidence of protest than equivalent price increases.

Similarly, we find important non-linearities in the effect of regime on the incidence of protest. Democracies do indeed have more protest than the most oppressive autocracies. But hybrid regimes have more protest than democracies, and the relationship between food prices and protest in the whole sample appears to be driven precisely by these hybrid regimes. Put differently, the political response to food price increases appears conditional on regime type.

The remainder of the paper proceeds as follows. The following section addresses the literature linking economic grievances and the political opportunity structure to contentious collective action. Section 2 presents a two-sector model of food prices and incentives to protest that establishes the theoretical expectation of a curvilinear relationship, while section 3 presents our theoretical argument linking hybrid regimes to higher levels of protests. Section 4 presents our hypotheses, section 5 discusses data, estimation, and findings, and section 6 concludes.

1. Contentious Politics: Grievance and Opportunity Structure

In our review of the contentious politics literature, we focus primarily on strikes, protests and riots. However the underlying causal mechanisms and processes are quite similar to those that motivate the more extensive literatures on revolution and civil war (McAdam, Tarrow, and Tilly, 2001: 4). We define demonstrations and riots as acts of collective action, some peaceful and others violent, that publicly signal a grievance against the existing government. Riots and demonstrations should be distinguished from armed rebellion by irregular forces aimed at the overthrow of the government, and from revolutions, which entail the overthrow of the political regime and even the class structure. Revolutions necessarily require the mobilization of large numbers of people and are thus typically accompanied by protest and riots. However, the latter occur quite frequently in the absence of more severe challenges to incumbent rule, as protest in the advanced industrial states demonstrates clearly.⁴

To model the determinants of protest, we draw on two contending theoretical approaches: relative deprivation theory, which focuses on the effect of material grievances; and the political opportunity structure approach. The relative deprivation hypothesis combines economic and psychological factors and focuses on the *motives* that lead people to engage in contentious politics. According to this theory, people rebel as a result of a sense of “relative deprivation,” defined in terms of a perceived entitlement or expectation (Gurr, 1970). Relative deprivation can stem from *inter-personal*, *inter-group* or *temporal* comparisons. In all of these cases the underlying psychological theory is that unfulfilled material expectations cause anger, frustration and resentment that manifest themselves in protest and violence. This model of contentious politics bears a family resemblance to modernization theory as well. In Huntington (1968), for example, political instability is unleashed by rapid social change, unfulfilled expectations, and the resulting mobilization of disaffected groups into politics.

Inter-personal and inter-group deprivation stems from comparison of an individual’s or group’s economic circumstances with those of more advantaged

⁴ We follow Goodwin in defining revolutions as instances in which the state is *overthrown* by a popular movement in an irregular and/or violent fashion (Goodwin, 2001: 9).

individuals or groups. The testable implication of relative deprivation theory that has received the most substantial attention centers on the distribution of income. Societies with more unequal distributions of income, power and/or social status should experience more collective violence.⁵

However, a sense of relative deprivation might also arise as a result of temporal changes in income and other measures of well-being. Individuals do not only—or primarily—compare their circumstances to those of others. Indeed, it is not clear that it is even rational to do so. Rather, they also compare their circumstances either to the past or some set of expectations. An important cluster of testable implications follow: that individuals are more likely to engage in collective action and violence in the face of adverse shifts in absolute rather than relative well-being.

A common feature of the relative deprivation approach is its emphasis on the primacy of material circumstances or “grievances.” A second line of research on contentious politics shifts the emphasis to political opportunity structures and the organizational and geographical opportunities that groups have to engage in collective action. These theories begin with the observation that most people feel deprived most of the time; particularly in poor countries, the existence of both inequality and deprivation is a constant. Yet contentious politics is variable, and in some forms such as social revolutions, extremely rare.

Furthermore, the empirical literature has not been kind to grievance models. Writing at the end of the 1980s and focusing on the distribution of income, Lichbach (1989) noted that “two decades of empirical research—consisting of over two dozen studies of conflict using aggregate data at the city, regional and national levels—have challenged the conventionally accepted view that a strong positive relationship exists between economic inequality and political conflict” (1050). Similar skepticism about the effects of grievance is visible in the more recent civil war literature. In their influential study of civil war, Fearon and Laitin (2003) conclude that “the main factors determining both the secular trend and the cross-sectional variation in civil violence in this period are not ethnic or religious differences or broadly held grievances but, rather, conditions that

⁵ This is also the view that motivates two of the most influential studies of democracy, dictatorship and revolution (Acemoglu and Robinson, 2006 and Boix, 2003). In a dynamic framework, we might similarly expect changes in the income distribution should act as triggers for protest.

favor *insurgency*” (2003: 75). These conditions include weak central governments incapable of policing and sanctioning rebels and mountainous terrain and large populations that allow insurgents to hide.

Most broadly, the political opportunity structure approach focuses on “dimensions of the political environment that provide incentives for people to undertake collective action by affecting their expectations for success and failure” (Tarrow, 1994: 85). The most salient features of the political landscape are two: 1) those that influence societal actors’ ability to organize, and 2) those that influence the capacity of the state to manage opposition.

With respect to the first, groups are presumed to protest when individuals with grievances are able to mobilize sufficient resources (McCarthy and Zald, 1977). This approach is in line with the rational choice literature on collective action, which argues that individuals sharing common grievances often fail to act because of collective action problems (Olson, 1965). In the civil war literature, for example, variation in insurgents’ access to the resources to finance war (diamonds, oil, or other natural resources) helps explain why some groups are able to organize and recruit combatants while others are not (Collier, 2000).

The second set of political determinants of contentious politics are factors that influence the vulnerability of the existing political system to challenges. This vulnerability can stem from a variety of factors, including the emergence of divisions within the ruling elite, the declining utility of repression and the more general weakness of state institutions (McAdam, Tarrow, and Tilly, 2001). In her seminal study of revolution, for example, Skocpol (1979) argues that revolutions result from a particular combination of rural social structure that favors collective action among peasant communities *and* the incapacitation or weakening of the state due to its engagement in foreign war. This “state-centric” approach ultimately emphasizes the state's fiscal resources, military power, and organizational reach. Yet it can be extended by considering the effects of regime type itself. Before turning to that issue, however, we consider in more detail the ways grievance and protest might be related in developing countries.

2. Grievance: Food Prices and Protest

As we have seen, there are multiple ways of thinking about the material grievances that might motivate individuals to engage in collective action, from interpersonal or intergroup inequality, or changes in them, to temporal changes in welfare. We focus here on the latter. First, we might expect that economic growth, and the concomitant rise in incomes, would serve to dampen rather than heighten social tensions (as some modernization theorists seem to suggest).⁶ This expectation gains greater plausibility when we consider the fact that economic growth appears to be related not only to an increase in average incomes—by definition—but also to the income growth of those at the bottom of the income distribution; in the widely-cited if controversial formulation of Dollar and Kraay (2002), “growth is good for the poor.”

Conversely, we would expect that economic shocks should increase the incidence of collective action. These shocks are of several sorts. A long-standing literature on both retrospective voting and political business cycles in the advanced industrial states notes the influence of macroeconomic conditions (growth, inflation, or a combined “misery index” of the two) on support for incumbent parties and politicians. There is no obvious reason why these same factors might not influence the incidence of contentious politics as well. Recessions, and even slow growth, are associated with declines or weak expansion of both employment and household income. Increases in the overall price level might generate grievances too; inflation has particularly adverse effects on the poor and is typically associated with jarring shifts in relative prices and incomes.

Here, however, we consider a change in *relative* prices. Sudden increases in food prices should be particularly salient in developing countries. First, food prices have particular influence on the welfare of poor households that are net purchasers of food. In poor countries and among poor households, food constitutes a large share of total household expenditure. Hammond et al. (2007) have constructed data on the share of

⁶ Some modernization theorists argue, for example, that mass protests are especially likely in countries undergoing rapid economic and social transformation, including urbanization, industrialization, and rural out-migration (Deutsch, 1961; Huntington, 1968; Paige, 1975; Scott, 1979).

food in total household expenditure among poor households, defined as those households earning under \$3000 a year, in 36 countries. The range is quite wide, but in poor countries—including a number of low-income African states—and in larger countries with substantial numbers of households living in absolute poverty, this number can exceed 70 percent (for example, in Burundi, but also in India and Uzbekistan).

Second, food is the most basic of all necessities and as a result is the one commodity most likely to be seen as embodying an explicit or implicit political entitlement. If we think of grievance as arising out of an unfavorable comparison between the status quo ante or some expectation, then food prices increases, and the shortages they reflect, would seem a particularly appropriate indicator.

Yet even though the effects of food price increases on consumers is widespread and relatively rapid, these effects are by no means constant across households; to the contrary, changes in food prices have sharply different affects across the urban-rural and producer-consumer divides. High prices hurt urban consumers but help rural producers, or at least those producers not also dependent on market purchases. Conversely, price decreases help urban consumers but hurt rural producers. As a result, we would not expect the relationship between price changes and protest to be linear; rather it should be highest at the two ends of the distribution of price changes. Consumers should be motivated to protest when prices are rising rapidly, but producers should be motivated to protest when prices are falling rapidly as well. As we argue in our discussion of the empirical model below, these expectations are consistent with a quadratic specification.

It has been a staple of the analysis of collective action that peasants are difficult to organize and we might therefore expect the elasticity of protest to price declines to be weaker than to price increases. But there are a number of factors that might offset this expectation. Incomes in urban areas are typically higher—often much higher—than rural incomes. Concomitantly, absolute poverty is more prevalent in rural areas. Urban residents are better positioned than rural ones to eek out nominal increases in wages or other income in the face of adverse shifts in the price of food. Moreover, countryside and city are increasingly linked by the great migrations of the postwar decades, and peasants and farmers are acutely aware of the political gains that come from concentrating collective action in cities. As we noted in the introduction, farmers in both Argentina and

Mexico were able to mobilize large-scale demonstrations in capital cities despite the expectation that they are difficult to organize.

We motivated our discussion with examples of demonstrations and protests that are directly related to food. Consumers might engage in anti-government protest aimed at signaling discontent and urging government intervention in grain markets or in actions aimed directly at vendors and the always-vilified “middlemen.” Producers similarly may focus their protest on government targets, or seek to block competing sources of supply that are seen to hold prices down.

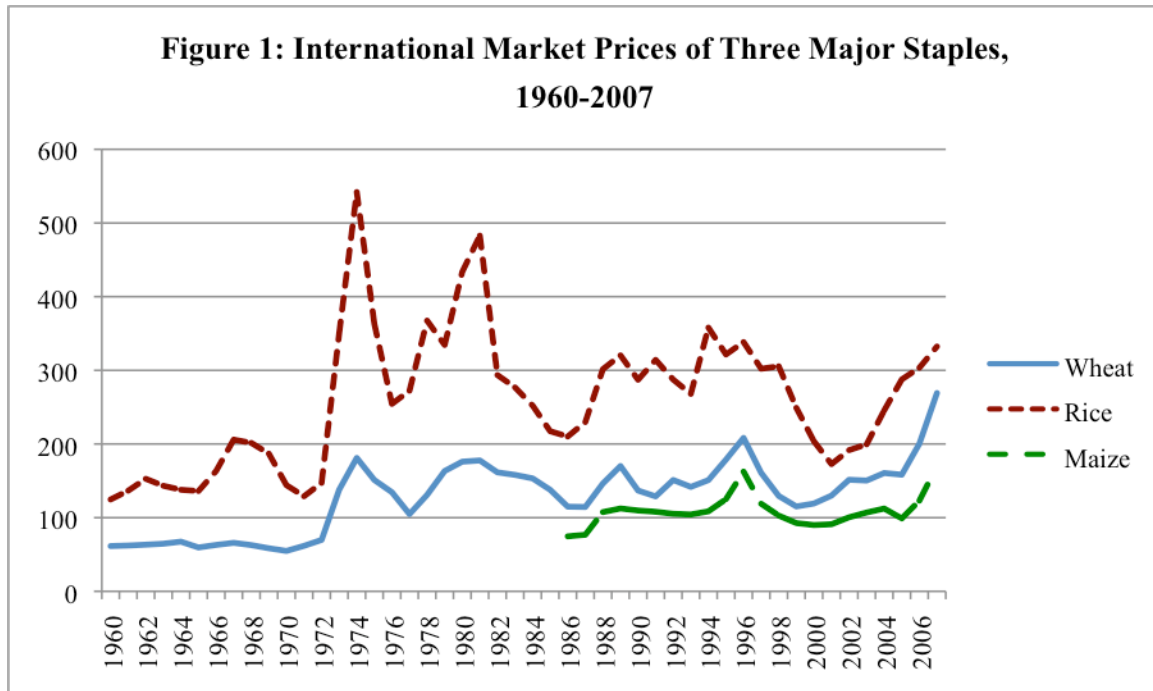
Yet there is nothing in the theory of relative deprivation that suggests grievances will manifest themselves against particular targets. Rising food prices and the associated decline in real living standards might manifest itself in food riots, but it might also provide a trigger to altogether different forms of collective action, perhaps directed at other ethnic or religious groups. Such shocks might be plausibly linked to altogether different forms of violence as well, such as increased crime (Miguel, Mehlum and Torvik, 2006) or domestic violence.

In testing for the effects of food prices on protest, we use international price data because of its availability. However, there are both advantages and drawbacks to using international prices. International price movements reflect the global demand-supply balance and have very marked effects at the country level as the food crisis of 2007-8 has shown. The transmission of international price shocks—in effect, the covariance between international and domestic price movements—is typically large even where the degree of dependence on imports, or the presence of net exports, might be relatively small.

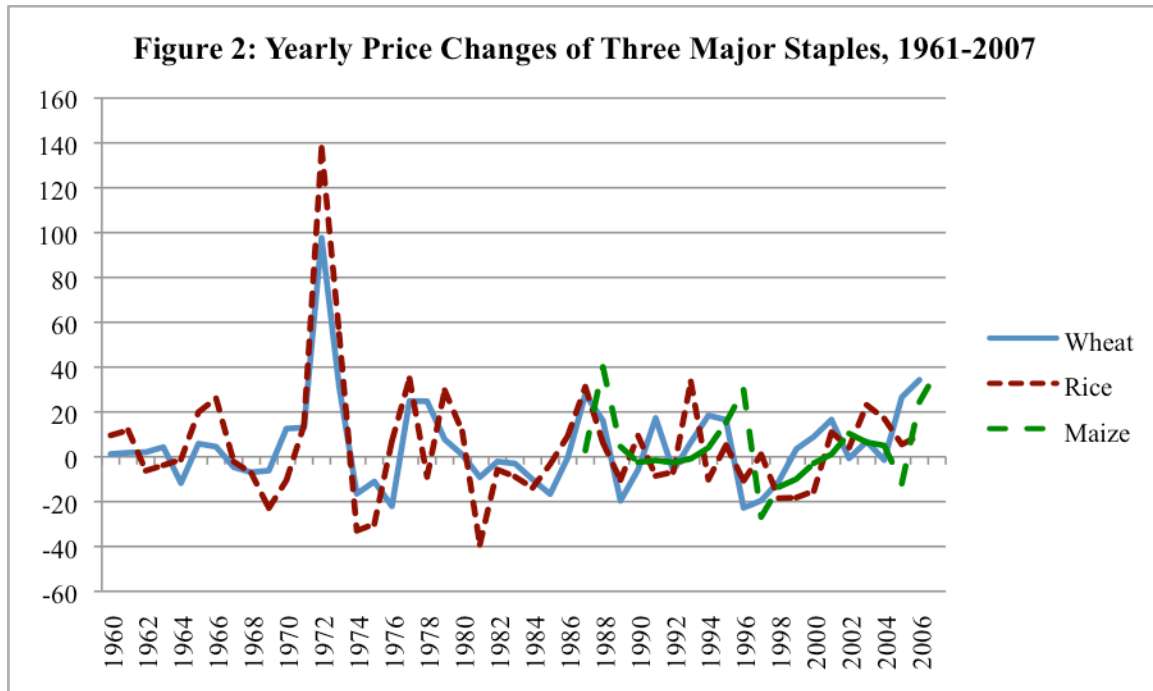
On the other hand, it is important to acknowledge that while international prices are transmitted to domestic ones, we do not yet have the data to model country-specific price shocks nor the particular actions that governments might take to mitigate such shocks. Two examples make this point. During periods of low and stable international prices, individual countries or regions within them might nonetheless face floods, drought, war or other events that generate localized food shortages and price increases. Although these could be mitigated at lower cost than when prices are high and/or rising, they nonetheless constitute a country-specific shock that we cannot model with international data.

Conversely, during periods of high and/or rising world food prices, governments may choose to mitigate the effects of these shocks on the household by releasing stocks, imposing price controls, subsidizing food, or offsetting the loss in real income with transfers to the most-seriously affected. An important literature on famine—initiated by Amartya Sen—argues that the political responsiveness of governments is a crucial variable in determining the extent of hunger; in his famous formulation, democracies do not experience famine. An important line of future research will be to investigate both country-specific vulnerability and the institutions and social contracts that might intervene between price shocks and the propensity to protest. As we will argue, however, regime type appears to capture this relationship to some extent.

Figure 1 shows the international market prices of wheat, rice and maize, while Figure 2 tracks the first difference of these price trends, showing the annual percent change in prices, from 1960 to 2006. We highlight several interesting features of the data. First, the recent rise in international food prices is not unprecedented; the price history shows a number of shocks, both positive and negative. The determinants of these shocks go far beyond the scope of this paper, but typically included both short-run supply constraints—related to production decisions in major producers and weather—as well as demand-side pressures associated with the behavior of major buyers (the Soviet Union/Russia and China in earlier periods; panic buying across a number of importers in the most recent crisis). As we noted in the introduction, a host of factors have also contributed to a longer-run shift in the role of the developing countries in the world agricultural system from net exporters to net importers of food: violence and chronic political instability, particularly among the poorest countries in Africa; ill-designed policies that for many years favored industry and city over agriculture; and lack of investment in infrastructure, fertilizers, and irrigation systems. In addition, as developing countries liberalized their economies, small-scale agricultural producers were forced to compete against large-scale producers in the developed world, in some cases abetted by substantial government subsidies. Climate change and increasing variability in weather also probably played a role in the increasing volatility of prices.



As both figures show, wheat prices—although not rice prices—were quite stable over the course of the 1960s. Indeed, they had been stable since the Korean War boom of the early 1950s. The early 1970s witnessed the most dramatic increase in food prices, a shift that was by no means limited to food but encompassed oil and other commodities as well. The major food exporters—the US, Canada, Australia and Argentina—had gradually reduced production in response to the surpluses of the 1960s just as the Soviet Union entered world markets through massive purchases. The effects of these changes in supply and demand were sharply exacerbated—as they were during the crisis of 2007-8—by increasing speculation in commodity futures. We see subsequent price events in 1979-80 (again, partly a result of Soviet buying), in 1988-9 and 1996 (weak US crops), and finally in the gradual increase in prices during the worldwide economic boom of the first half of the 2000s, capped by the spiraling price increases and global food crisis of 2007-8.



Recent estimates by the FAO (2008) provide important insights about the distributive and geographic impact of the most recent food price spiral, and in doing so on the effects of price increases more generally. Household-level data reveal that the increases in food prices since 2000 have contributed to expanding the share of hungry people in the world from around 800 million to 900 million, reversing a long-term, albeit slow progress in the reduction of the world's hungry. The largest increases in the number of undernourished people took place in Asia and the Pacific and in sub-Saharan Africa; The FAO estimates that rising prices have plunged an additional 41 million people in Asia and the Pacific and 24 million in sub-Saharan Africa into hunger (FAO 2008, p. 7). While smaller, Latin America has also witnessed an increase in its number of hungry people during the last years as a result of soaring food prices.

However, a number of countries have achieved steep reductions in the percentage of undernourished during the same period, including Ghana, Congo, Nigeria, Mozambique, Malawi, and Viet Nam. These massive reductions in hunger were in part due to food price increases, but also spurred by policies that provided large returns to farmers and strong gains in agricultural value added, cereal production and cereal yields and thus allowed these countries to profit from recent increases in food prices.

The FAO report makes it clear that high food prices have affected countries in very different ways. The impact of soaring food prices is particularly negative in “countries with structural deficits in food production, where incomes are low, and most households spend a high percentage of their low budgets on food.” These countries fall in the category of low-income food deficit countries (LIFDCs) and are shown in Appendix 1.

A final point to underline is that what goes up has—at least to date—also come down. Producers should not, of course, expect short-run price shocks to persist. We know from an increasing body of evidence in behavioral economics, however, that the formation of expectations often exhibits significant myopia and resulting failure to insure against downside risks. Just as we expect price increases to have political implications, even where they reflect long-term trends that will require permanent adjustments, so we expect price declines to strand producers and generate grievance.

3. Opportunity Structures: Political Regime and Protest

Although we have argued to this point that the underlying factors that drive contentious politics bear certain similarities, the political and institutional conditions that are conducive to protests and riots are not necessarily the same as those that favor more clandestine forms of violence such as insurgency and revolution. The organizational and political technology of these different forms of contention are also likely to differ. Insurgency can have signaling functions but it typically aims to topple the government or seize effective control of territory. It therefore presupposes the capacity to hide from the state's military and police forces, to buy and distribute arms, and to recruit rebels (Fearon and Laitin, 2003).

Demonstrations and riots, by contrast, may seek to topple the government as well. But they are also signals: forms of collective action performed in *public* rather than underground. Indeed, protesters are highly strategic about where and when they hold demonstrations, seeking to place maximum pressure on the government, to impose costs, and to reach the largest possible audience, including through the media.⁹

⁹ For instance, in the winter of 2008, thousands of farmers descended on Mexico City to protest the lifting

Several testable implications of these differences follow. We expect demonstrations to be more prevalent in cities. The reasons are not only the greater likelihood of collective public action in such settings, but the fact that demonstrators are more likely to reach a broad audience, convince others to join the cause through the operation of “informational cascades” (Lohmann, 1994), and thus have maximum influence on state actors.

However, we also pay particular attention to how regime type might influence the potential for collective action. Put differently, we interpret regime type as a crucial feature of the political opportunity structure. The postulated effect of regime type is by no means straightforward. Expectations about the effects of regime have often taken the complete opposite sign. Goodwin (2001), for example, argues that revolutionary movements will have greater success in recruiting adherents where the state responds to political dissent with repression, typically of violent and indiscriminate nature, leaving people “no way out.” In Goodwin's (2001) view, revolutions are most likely in highly repressive, but infrastructurally weak authoritarian regimes and should seldom occur in democracies and in authoritarian regimes that have put in place institutional linkages with non-elite groups (Goodwin, 2001: 27).

Our view regarding the political opportunity structure with respect to protest is very different. Goodwin's approach suggests a linear and negative relationship between the repressiveness of the regime and the likelihood of insurgency and revolutionary activity: the more open the political system, the less protest. However, this relationship is not likely to hold for protests and demonstrations, which have a highly public character. Highly repressive authoritarian regimes may create incentives to clandestine collective action, such as insurgency or revolution, but such regimes are typically well positioned to deter and repress public protest and demonstrations.¹⁰ These particular forms of collective action should be more common where aggrieved citizens are either legally allowed to

of restrictions on corn imports from the USA; estimates of the crowd that stationed themselves in the city center (in front of the national palace) were anywhere from 25,000 to 50,000. It was obvious that peasants protested where the cameras were.

¹⁰ Goodwin's analysis, in this sense, would be compatible with ours. The reason why repressive regimes seem to be more vulnerable to revolution is precisely because they do not tolerate other less violent forms of contestation.

engage in acts of collective action, as in democracies, or where authoritarian governments choose to tolerate such acts of dissent, as in hybrid regimes.

Indeed, hybrid regimes may be *more* prone to these forms of collective action than either democracies, which have other means of holding political elites accountable, or to closed dictatorships. To understand why requires a consideration of the political logic of hybrid regimes and the role of public protest in them. Autocrats are only likely to tolerate dissent as long as they believe they can keep public protests and demonstrations from cascading into revolutionary challenges. As Kuran (1989) argues in his well-known work on informational cascades, public sentiment can turn against apparently unshakable dictatorships with amazing velocity, as small oppositions cascade into overwhelming majorities. One way of preventing such revolutionary cascades, suggested in Magaloni and Wallace (2008), is precisely to allow protests to occur and even to make concessions in response to them as long as groups keep their demands to bread-and-butter issues that do not fundamentally challenge incumbent rule (tariffs, subsidies, wages, food, and the like).

To make the commitment to tolerate these groups credible, however, autocrats might need to also create certain institutions, e.g., a constitution that establishes the right to form and organize political oppositions; the right to public assembly to voice grievances; the right to due process; and so on. Autocrats often violate these principles selectively and retain the capacity to override them completely. However, once they are written in constitutions, groups will exploit them and feel entitled to organize and even protest as a means of seeking concessions; they may even abide by implicit rules not to fundamentally challenge the regime. Soft authoritarian rule that allows protest, in short, may be designed precisely to limit and contain its effect.

By contrast, hard autocratic regimes do not leave channels for groups to voice their demands. As a result, when protests occur in these regimes, they are likely to have much more dramatic consequences. On the one hand, they can trigger a wave of government terror and repression, as recent events in Myanmar attest. On the other hand, they can trigger massive anti-regime mobilizations that can only be contained by a massive escalation of violence that carries high costs. Not even the strongest form of dictatorship is invulnerable to these acts of opposition (Goodwin 2001), in part because

of the fact that rule that relies heavily on repression makes the political leadership highly vulnerable to challenges or defection from the security apparatus and the armed forces (Wintrobe, 1998).

Hybrid regimes are also more likely to experience protest than democracies. The latter possess institutions of accountability and a means of sanctioning incumbents in the form of competitive elections. Cognizant that their political survival is conditional on citizens' support, public officials in democracies are more likely to anticipate citizens' grievances and respond to them out of self-interest; protests are likely to happen only when these mechanisms go wrong; demonstrations and protests serve as corrective devices.

Most hybrid regimes also have formally democratic institutions including elections. However, autocratic elections play a very different function than democratic ones. They are for the most part non-competitive and hence ill-equipped to allow for peaceful alternation of political power. As a result, hybrid regimes lack mechanisms of accountability, which is likely to drive disaffected citizens to protest. The incidence of such protest is more likely in hybrid regimes not only because of weak accountability, but also because of the very institutional nature of these regimes just described: that governments signal their willingness not only to tolerate demonstrations and protest but even to make concessions in the face of them.

Hybrid regimes may also use controlled protest as a tool of monitoring the state itself and collecting information. Dictatorships face a profound informational dilemma: they can never truly know what their subjects think of them. The spread and intensity of opposition might be deliberately hidden from them even by their closest subordinates. Wintrobe (1998) calls this the paradox of the dictator: "The more threatened they are by the ruler, the more the subjects will be afraid to speak ill of or to do anything which might conceivably displease [the dictator]" (p.24). The dictator's problem is compounded by the fact that his relationships with the people are through subordinates: agents who be tempted to misrepresent the true state of public dissatisfaction, including discontent over their own behavior. An interesting explanation of why Chinese leaders have been tolerant of dissent highlights the central leadership's interest in policing and sanctioning abuses by subordinate party officials and state-level bureaucrats (Lorentzen, 2008). Protest—if it

can be contained—serves the purpose of revealing information on the extent and depth of grievances. Authoritarian elites can subsequently use this information to mold public policy in ways that will sustain their rule and to sanction their defiant subordinates; protest has information-gathering functions.

Our discussion thus suggests that increases in political openness will result in greater protest. We thus hypothesize that demonstrations should be *least* likely in highly repressive authoritarian states. However, we do not expect protest to be a strictly increasing function of political openness. Rather, we expect protest to be higher in semi-authoritarian states than in either autocracies or democracies. These hybrid regimes selectively *tolerate* acts of public dissent and possess certain institutions that allow for the formation of opposition, but lack the representative institutions that guarantee accountability.

4. A Theoretical Reprise: Some Hypotheses on the Determinants of Protest

The simplest way to summarize the foregoing theoretical discussion is to outline the hypotheses we seek to test in the remainder of the paper:

H₁: In line with the relative deprivation approach, our expectation is that food prices should affect the incidence of the kind of collective action we highlight here, namely, protests and demonstrations. However, because food prices affect both producers and consumers in opposite ways, we do not expect the relationship to be linear: rather, protest should be rising at both extremes of the range of price increases, i.e. during periods of both rapid increase or decrease in prices.

H₂: Economic growth should be negatively associated with protest.

H₃. We test the modernization hypothesis that the likelihood of protest is greater in middle-income countries undergoing rapid social change than in either less developed or more developed countries (i.e. that the relationship between GDP per capita and protest is non-linear).

H₄. Overall price inflation should be positively associated with protest.

H₅. The relationship between protest and regime type should also be non-linear. We expect protest to be least common in autocracies, but more prevalent in semi-authoritarian or hybrid regimes than in either autocracies or democracies.

H₆: Protest and riots should be increasing in the level of urbanization.

5. Data and Methods

The Dependent Variable

Our theoretical model relates measures of grievance, including international food prices, and the political opportunity structure, captured by regime type, to the incidence of political protest and rioting in developing countries. The first operationalization of the dependent variable, *protests and riots*, is derived from the PRIO Urban Social Disturbance in Africa and Asia (henceforth USDAA) database. The USDAA data were coded from Keesing's *Record of World Events* and cover different forms of both violent and non-violent politically motivated disorder, including violent riots, non-violent demonstrations, armed attacks by militant groups, acts of terrorism, and government repression. The data cover 55 major cities in 49 countries across Africa and Asia over the period 1960-2006. Our coding, *protests and riots*, uses the event narratives to parse the total country-year count to only include riots and non-violent demonstrations. The mean value is .7, while the modal value is zero (68.9 percent of country-year observations). More than one event occurs in 15.3 percent of observations, while more than ten events occur in less than one percent. The cities themselves display significant heterogeneity with respect to the prevalence of *protests and riots*: New Dehli saw an average of 2.4 protests per year, while Ashgabat, the capital of Turkmenistan, saw none over the 46 year period. Full descriptive statistics for all variables used in our analysis can be found in Appendix 2, while a complete list of major cities can be found in Appendix 3.

The Independent Variables

Our model of the relationship between grievance and protest places primary emphasis on temporal changes in welfare. Individuals are assumed to adjust to a given *level* of income or prices, but become disaffected when their economic circumstances deteriorate. To model economic grievances, we use data on economic growth, inflation

(the change in the consumer price index), and changes in the international market price of major traded grains. We also control for GDP per capita as a test of the proposition that grievances are in fact a function of the level of income as well as changes in it.

The GDP data (per capita and growth) are from the World Bank Development Indicators 2008, with missing data filled in from Fearon and Laitin (2003), who use the Penn World Tables. As mentioned previously, economic growth is highly correlated with growth in real incomes, even for those households in the lowest end of the income distribution (Dollar and Kraay, 2002). To capture the effect of inflation, we include the change in the consumer price index, using 2000 as the base year for within-country, inter-temporal comparisons. The data are highly skewed, with a mean value of 330 and a standard deviation of over 10000 (largely due to a maximum value of 415034 for Zimbabwe in 2006); as such we use the *log of CPI* in our estimations.

We considered several indicators of world food prices but settled on a standard benchmark for wheat: the annual change in the price of United States Number 2 Hard Red Winter (*world wheat price*). The average annual *wheat price change* is 4.14 percent, with values ranging from -22.78 percent, in 1997, to 97.64 percent in 1973. As with GDP, we also included the price level to test the proposition that individuals respond to high (and low) prices as well as changes in them. Finally, our theory posits a curvilinear relationship between food prices and protest as result of the adverse effects of large price decreases on producers as well as increases on consumers. In order to estimate this curvilinear relationship, we include the squared term of *wheat price change* as well.

We choose to focus on wheat prices for two reasons. First, wheat is one of the three main cereals, along with maize and rice, which make up much of the world's food supply, together accounting for 44 percent of total caloric intake; wheat itself accounted for 28.7 percent of total cereal production in 2007 (FAO 2006, 2008). Second, international market prices for wheat are highly correlated with those for both maize and rice from 1960 to the present ($\rho=0.78$ and 0.88 , respectively), and the time series for wheat is the most complete and offers the best temporal coverage.

To model the political opportunity structure, we rely primarily on the Polity IV dataset. We use the revised combined Polity score, commonly referred to as *Polity2*, in our specifications. *Polity2* differs from the POLITY by virtue of the way it treats regime

interruptions (such as foreign occupations), periods of anarchy, and periods of regime transition, replacing observations with standardized authority scores (-66, -77, -88) with conventional Polity scores, thus making the data suitable for time-series analysis. *Polity2* subtracts the Polity AUTOOC score from the DEMOC score, producing a 21-point scale ranging from 10 (strong democracies) to -10 (strong autocracies). Because our theoretical argument posits a curvilinear relationship between protest and democracy, we include the squared *Polity2* term as well.

Finally, we test the effect of two demographic factors we expected to be related to protest. Since larger, more heterogeneous countries might experience a greater number of protests, we control for population. Our theoretical argument suggests that more urbanized societies should be associated with more protest. To test this hypothesis, we include the percentage of the population living in urban areas.

Estimation and Results

Because the distribution of the dependent variable, *protests and riots*, is highly skewed, we rely on negative binomial regressions in our estimations. Negative binomial models are similar to other event count models, such as Poisson regression, but are more appropriate for over-dispersed data.

Table 1 reports coefficients for three models, all of which include a lagged dependent variable, in order to mitigate problems arising from serial autocorrelation. Model 1 is a pooled negative binomial model with clustered standard errors. Pooled estimates with clustered errors preserve more of the cross-sectional variation in the data.

Table 1: Negative Binomial Models, Protests and Riots, 1961-2006			
	Model 1: Pooled	Model 2: Random Effects	Model 3: Fixed Effects
Protests and Riots, Lagged	0.330*** (0.000)	0.084*** (0.000)	0.078*** (0.000)
(Log) Population	0.200*** (0.000)	0.139*** (0.002)	0.099* (0.064)
Percent Urban	-0.008 (0.211)	0.002 (0.702)	0.008 (0.154)
(Log) GDP per Capita	1.013* (0.067)	-0.048 (0.899)	-0.135 (0.733)
(Log) GDP per Capita ²	-0.069* (0.069)	-0.002 (0.955)	0.004 (0.888)
GDP Growth	-0.023*** (0.010)	-0.015*** (0.000)	-0.016*** (0.000)
World Wheat Price	0.002* (0.070)	0.001 (0.517)	0.000 (0.708)
Wheat Price Change	-0.009** (0.025)	-0.008*** (0.003)	-0.008*** (0.004)
Wheat Price Change ²	0.0001* (0.070)	0.0001* (0.064)	0.0001* (0.065)
Polity2	0.037*** (0.002)	0.030*** (0.000)	0.024*** (0.001)
Polity2 ²	-0.004** (0.03)	-0.007*** (0.000)	-0.008*** (0.000)
Constant	-7.635*** (0.001)	-2.308 (0.134)	-1.404 (0.394)
Observations	2361	2361	2271
Number of clusters	54	54	52
* significant at 10%; ** significant at 5%; *** significant at 1%			
P-values in parentheses			

Models 2 and 3 tackle more explicitly the issue of unit heterogeneity and change over time by introducing random effects and conditional fixed effects. The random effects model has properties that are useful for our purposes: rather than each unit having a systematic baseline, each intercept is the result of a random deviation from a unit-specific distribution. Estimates produced by the random effects model address unit heterogeneity well, especially as the number of observations in the panel increases and the random deviations regress to the mean value for the panel. Moreover, random effects models use information from the “between” estimator, which averages observations over a unit and regresses the average outcome on the average for the right-hand side variables, to look at differences across units.

Finally, the conditional fixed effects model converts observed values for the

dependent and independent variables into deviations from their mean values within each unit. In doing so, the fixed effects model eliminates entirely the cross-sectional elements from the data and the estimated coefficients report only longitudinal changes within units. Thus, any variable that does not vary within a country over time will necessarily be dropped from the analysis. For this reason, the N for the fixed effects model is slightly lower, as several cities experienced no protests in the sample period. By and large, missing data are not an issue: models 1-3 make use of over 90 percent of possible observations in the dataset, a large proportion considering that Asia and Africa are known for their volume of missing data (Ross 2006).

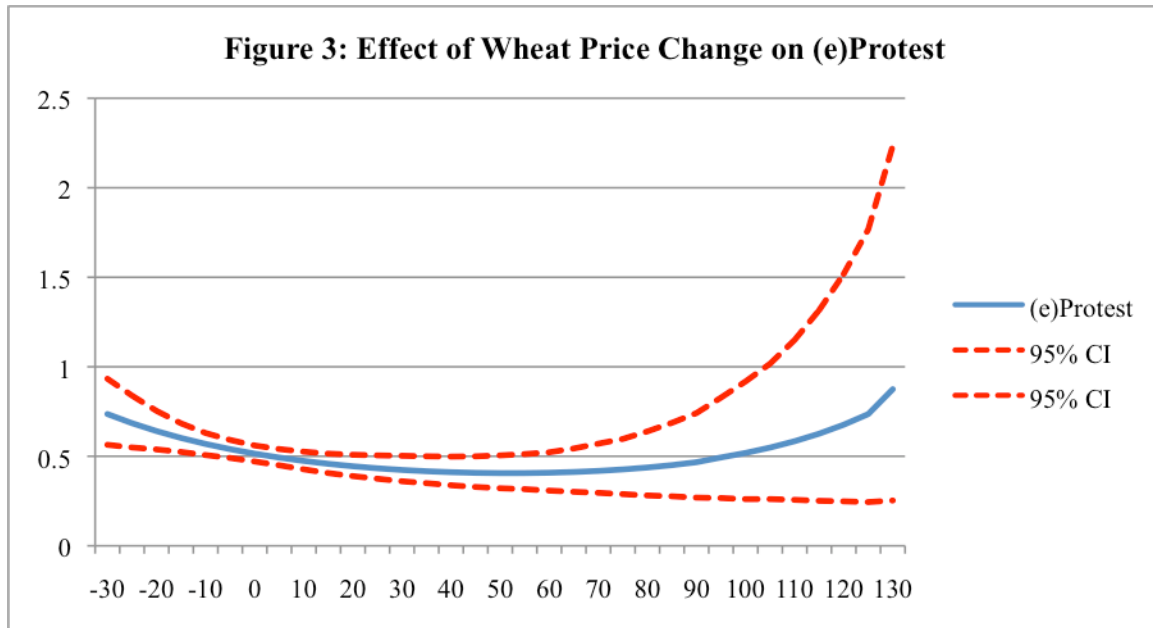
The interpretation of coefficient estimates for negative binomial models is not intuitive: for a one unit change in the independent variable, the difference in the logs of expected counts of the dependent variable is expected to change by the regression coefficient, given the other independent variables in the model are held constant. As in other maximum likelihood estimators, like logit, the magnitude of the marginal effect is contingent on the values of all independent variables of interest.

Our theoretical argument links two broad groupings of causal factors to protests and riots: material grievances and the political opportunity structure. Our analysis lends support to both branches of the literature, including our hypotheses regarding the effects of world food prices. We first assess the evidence with respect to indicators of material grievance, which suggests four main findings. The first is that our focus on temporal changes in well-being seems justified: growth and price changes have more significant effects on protest than the level of development (GDP per capita) or the level of prices. We find no consistent relationship between levels of economic development and protest. Model 1 returns weak support for the modernization hypothesis, which links intermediate levels of economic development (as modeled by the joint effect of the linear and squared (*log*) *GDP per capita* terms) to more contentious politics, but this finding does not hold once the heterogeneity across units is controlled for more explicitly. The same holds true for the level of *world wheat price*, which is weakly and positively associated with an increased incidence of protest in the pooled model, but which is not significant in the random and fixed effects models.

Second, we find significant relationships between *GDP growth* and *wheat price*

change and the incidence of protest and riots. GDP growth is strongly and negatively associated with the incidence of protests and riots; more robust growth is associated with fewer protests and riots, an effect that is consistent with the relationship between economic growth and other forms of contentious politics, most notably civil conflict (Collier and Hoeffler, 2002, Collier et al., 2003, Miguel et al., 2004).

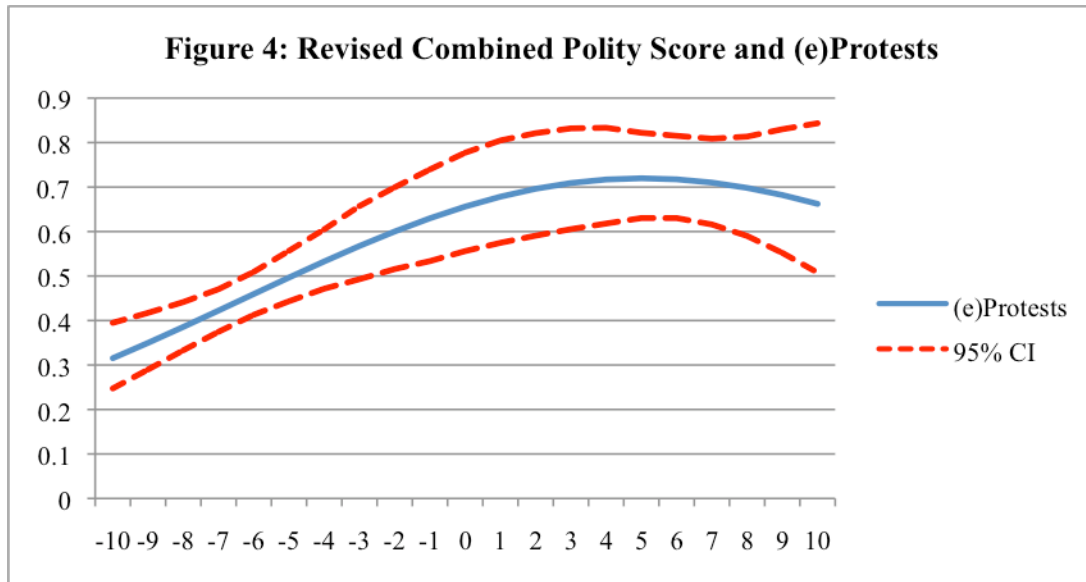
Third, the effect of *change* in world food prices is consistent both with our hypotheses and across the models. We find a curvilinear relationship between *wheat price change* and protests and riots, which is depicted in Figure 3. Large annual increases and decreases in wheat prices are associated with an increase in the incidence of protests and riots, although the statistical significance of the squared term is less than that of the linear term, which is strongly and negatively associated with the incidence of protests and riots. Somewhat contrary to our expectations, Figure 3 demonstrates that the effect of price changes is asymmetric, as the inflection point for the curve is at a 40 percent increase in prices. Put differently, the model generates the same expectation of increased protest at a five percent decrease in world prices as it does at an almost 95 percent increase. Although this finding is broadly consistent with our theoretical expectations, it suggests a different elasticity of protest to price changes among net producers and consumers; consumers appear willing or able to withstand higher price increases than producers can decreases. Nonetheless, the evidence of a curvilinear, positive effect of *changes* in world food prices is largely consistent across models.



Fourth, our theoretical argument also addresses the effect of changes in consumer prices, as measured by the *(log) consumer price index*. Unfortunately, data coverage for the CPI for the countries included in this analysis is very limited. Inclusion of *(log) CPI* results in the loss of roughly a third of our observations. Table 2 reports separate models, 4-6, which are identical to models 1-3 save for the inclusion of the *(log) CPI* term. The most striking result is that the measure of consumer price index is insignificant in all three specifications. Moreover, the sign on the coefficient is inconsistent across the pooled and random and fixed effects models. Thus, we cannot reject the null hypothesis with respect to the effect of consumer prices on protest—a surprising finding, given the theoretical effect that higher prices should have on the material wellbeing of the poor, *ceterus paribus*. The findings of the restricted sample including changes in consumer prices mirror those of the full sample with respect to the effects of economic growth and changes in the wheat prices.

Table 2: Negative Binomial Models, Protests and Riots, 1961-2006, including Consumer Price Indices			
	Model 6: Pooled	Model 7: Random Effects	Model 8: Fixed Effects
Protests and Riots, Lagged	0.253*** (0.000)	0.080*** (0.000)	0.075*** (0.000)
(Log) Population	0.278*** (0.000)	0.232*** (0.000)	0.167** (0.014)
Percent Urban	-0.005 (0.532)	-0.001 (0.918)	0.004 (0.602)
(Log) GDP per Capita	1.242** (0.019)	-0.156 (0.723)	-0.534 (0.278)
(Log) GDP per Capita ²	-0.074* (0.033)	0.016 (0.604)	0.042 (0.232)
GDP Growth	-0.045*** (0.006)	-0.021*** (0.000)	-0.020*** (0.001)
World Wheat Price	0.001 (0.660)	-0.001 (0.251)	-0.001 (0.319)
Wheat Price Change	-0.007* (0.057)	-0.007** (0.019)	-0.007** (0.020)
Wheat Price Change ²	0.0001 (0.134)	0.0001* (0.062)	0.0001* (0.065)
(Log) Consumer Price Index	-0.049 (0.277)	0.028 (0.442)	0.036 (0.342)
Polity2	0.013 (0.155)	0.018** (0.023)	0.014* (0.100)
Polity2 ²	-0.005** (0.027)	-0.007*** (0.000)	-0.008*** (0.000)
Constant	-9.643*** (0.000)	-3.654** (0.037)	-1.305 (0.517)
Observations	1652	1652	1587
Clusters	49	49	46
* significant at 10%; ** significant at 5%; *** significant at 1%			
P-values in parentheses			

Turning to the political opportunity structure, our primary finding concerns the curvilinear relationship between democracy and the incidence of protests and riots. The pooled model shows strong support for a positive, linear relationship between democracy and protests and riots: more democracy, more protest. But the random and fixed effects models indicate that this relationship is in fact curvilinear. Figure 4 reports the predicted log of protests and riots at different values on the *Polity2* scale, using the pooled model (model 1).



As can be seen, the incidence of protests and riots increases as the regime becomes more democratic, with the predicted incidence highest at a *Polity2* value of five; this inflection point corresponds with a democratic-leaning hybrid regime. Once *Polity2* increases beyond five, however, the slope of the line curves downward, suggesting that the most democratic states are characterized by fewer protests than hybrid regimes. Nonetheless, democracies still exhibit a higher baseline incidence of protest than either “strong” autocracies or more authoritarian-leaning hybrid regimes ($-6 < Polity2 < 0$). The finding in models 4-6, generated with a restricted sample, are consistent with those in the full sample, though the magnitude of the linear, positive effect of democracy is only half of that in the full sample, the relationships are not as statistically significant.

Models 1-6 show the independent effect of both food prices and regime type on the incidence of protest. However, they do not show whether the elasticity of protest to price increases, or economic growth, is *conditional* on regime type. In lieu of using interaction terms, we have opted for a more straightforward strategy of exploring these relationships through split samples. Table 3 reports the results of the fixed effects model, splitting the sample using Fearon and Laitin’s (2003) trichotomous classification of regime type: model 7, democratic ($Polity2 > 5$), model 8, hybrid ($-6 < Polity2 < 6$), and model nine, authoritarian ($Polity2 < -5$) regimes.

Table 3: Fixed Effects Negative Binomial Models, Protests and Riots, 1961-2006, Split Samples by Regime Type			
	Model 7: Democracies	Model 8: Hybrid Regimes	Model 9: Autocracies
Protests and Riots, Lagged	0.090*** (0.000)	0.065*** (0.000)	0.136*** (0.000)
(Log) Population	-0.139 (0.304)	0.083 (0.569)	0.165** (0.049)
Percent Urban	0.004 (0.769)	0.016 (0.218)	-0.008 (0.482)
(Log) GDP per Capita	0.584 (0.491)	3.086** (0.026)	1.774 (0.131)
(Log) GDP per Capita ²	-0.038 (0.498)	-0.235** (0.031)	-0.151 (0.115)
GDP Growth	-0.033** (0.011)	-0.016** (0.020)	-0.008 (0.241)
World Wheat Price	-0.001 (0.478)	0.004* (0.058)	0.002 (0.187)
Wheat Price Change	-0.004 (0.387)	-0.012** (0.015)	-0.007 (0.103)
Wheat Price Change ²	-0.000 (0.959)	0.0001*** (0.001)	0.000 (0.656)
Constant	0.892 (0.817)	-12.384** (0.022)	-9.018** (0.023)
Observations	526	561	1113
Number of clusters	30	38	43

* significant at 10%; ** significant at 5%; *** significant at 1%
P-values in parentheses

The results indicate three main findings. First, the effect of food price increases is contingent on regime type—specifically, the effect of food price changes is only significant in the hybrid regime split sample, and the evidence for a curvilinear effect is stronger, with *wheat price change*² much more statistically significant ($p < .01$). Hybrid regimes appear sensitive to the *level* of wheat prices as well, with higher prices associated with more protest in the hybrid regime split sample, though the coefficient is only weakly significant. This lends support to our contention that the effect of price changes is contingent on the political opportunity structure.

Second, the effect of GDP growth is contingent on regime type. Protest is elastic to economic growth in both democracies and hybrid regimes, but not in autocracies. The effect of *GDP growth* is consistent and negative across democracies and hybrid regimes, with higher rates of growth associated with lower incidence of protest, but disappears in the autocracy split sample.

Third, our findings indicate some support for the modernization hypothesis contingent on regime type. The relationship between *GDP per capita* and protest is significant, positive, and curvilinear only in the hybrid regime split sample, indicating that regimes in the middle of the income distribution are more experience more protest. This suggests that the political opportunity structure matters for whether the societal dislocations that attend the middle stages of economic development translate into popular expressions of grievance.

Conclusion

In recent years, the study of collective violence has focused heavily on civil war and insurgency. The reasons for this are not merely theoretical; the dramatic increase in extreme forms of civil violence has plagued a number of developing countries and contributed greatly to their continuing underdevelopment.

Yet given both the widespread transition to democratic rule as well as the persistence of stable authoritarian rule, particularly in the form of hybrid regimes, there is ample room for the reinvigoration of the comparative research program on other forms of contentious politics. We have sought to approach this problem through two ultimately complementary lenses: the grievance approach, which we believe has been prematurely dismissed in the civil war literature, and the political opportunity structure approach, which has also been weakly conceptualized and measured in recent models of civil war. Rather than reprising our findings, we point forward here to some lines for future research in this area.

First, there is much more to be done to fully model the economic conditions that are likely to give rise to protest. We have focused on global price shocks, which recent events have revealed to be potentially significant. However, we need better information on country-specific shocks that may or may not be correlated with international shocks and on other conditions that make countries food vulnerable. For example, although *GDP per capita* did not prove significant in our models, poor countries vary in their dependence on external sources of supply. Moreover, they vary on underlying ecological and climatic vulnerability. These extensions will be important in fully specifying a model of vulnerability to protest.

Second, there is much more to be done on the political opportunity structure, and also on other factors that affect the responsiveness of governments to short-term economic shocks. We took regime type as a proxy for the political opportunity structure, looking at how variation in broad characteristics of the political order might create incentives for protest. But the regime coefficients may also be capturing something more akin to partisanship and the *responsiveness* of governments to distress. To explore this hypothesis requires more nuanced understanding of why different regimes—and subtypes within them—may be more prone to develop social contracts that reduce the risk of hunger and famine.

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Appendix 1: List of Low-Income Food-Deficit Countries

In Food Crisis	At High Risk
Central African Republic	Cameroon
Democratic Republic of the Congo	Comoros
Cote d'Ivoire	Djibouti
Eritrea	Gambia
Ethiopia	Madagascar
Guinea	Mongolia
Guinea-Bissau	Mozambique
Haiti	Nicaragua
Kenya	Niger
Lesotho	Occupied Palestinian Territory
Liberia	Rwanda
Sierra Leone	Senegal
Somalia	Solomon islands
Swaziland	Togo
Tajikistan	Republic of Tanzania
Timor	Yemen
Zimbabwe	Zambia

Appendix 2: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Protests and Riots	2585	.7005803	1.649919	0	32
(Log) Population	2585	17.11289	1.614128	13.77365	20.99467
Percent Urban	2522	32.51665	19.68365	4	100
(Log) GDP per capita	2530	6.517838	1.199061	4.276666	10.59223
(Log) GDP per capita ²	2530	43.91939	17.272	18.28987	112.1952
GDP growth	2463	1.824409	9.033854	-85.42124	93.75
World Wheat Price	2585	125.5598	43.91249	54.84167	208.2583
Wheat Price Change	2530	4.140904	19.57415	-22.7762	97.63582
Wheat Price Change ²	2530	400.1428	1382.166	.1314654	9532.753
Polity2	2499	-2.088035	6.396639	-10	10
Polity2 ²	2499	45.2605	26.64224	0	100
Democracy dummy	2585	.2375242	.4256484	0	1
Anocracy dummy	2585	.2638298	.4407934	0	1
Autocracy dummy	2585	.498646	.5000949	0	1
(Log) Consumer Price Index	1686	3.190943	1.618447	0	12.93612

Appendix 3: List of Cities in USDAA Dataset

Abidjan	Khartoum
Accra	Kinshasa
Addis Ababa	Kuala Lumpur
Almaty	Lagos
Antananarivo	Lhasa
Ashgabad	Lomé
Astana	Luanda
Bamako	Lusaka
Bangkok	Manila
Beijing	Maputo
Bishkek	Mogadishu
Brazzaville	Mumbai
Calcutta	Nairobi
Colombo	New Dehli
Conakry	Niamey
Dakar	Phnom Penh
Dar es Salaam	Rangoon
Dhaka	Saigon
Dushanbe	Seoul
Hanoi	Singapore
Harare	Taipei
Islamabad	Tashkent
Jakarta	Teheran
Johannesburg	Tokyo
Kabul	Ulan Bator
Kampala	Vientiane
Karachi	Yaoundé
Kathmandu	