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The Great Recession, Inequality and Occupy Protests around the World

Established wisdom is sceptical of direct linkages between economic hardship and contentious mobilization. Occupy protests seem to constitute an anomaly in this regard by their very existence, but factors associated with these events have not been investigated yet. This study of 398 self-designated Occupy protests across 180 countries finds that the country's level of inequality was associated with a higher rate of protest. Equally important were the severity of the downturn in GDP growth in 2007–11 and the level of democracy. The results offer some evidence for the 'inverse J-curve' hypothesis whereby an economic boom period followed by a downturn is conducive to protest. Few studies have previously investigated the influence of inequality and economic growth on political protest across a diverse set of countries going beyond OECD democracies. The applicability of these findings to protest events more generally needs to be corroborated and discussed in future work.

Keywords: protest, inequality, economy, Occupy, conflict, democracy

AFTER HALF A DECADE OF BOOM, THE FINANCIAL CRISIS OF 2007–8 triggered the world economy's greatest contraction since the Second World War. In the following years, the world witnessed a surge in political protests, characterized by young people occupying public spaces in major cities. The most conspicuous were the regime-changing events of the 'Arab Spring'. Events with a more explicitly economy-oriented agenda soon broke out in Europe and the US, with the 'Occupy' protests against inequality and wealth's corrupting influence on politics. These protests were then replicated in countries as diverse as Namibia, Papua New Guinea and Yemen. Was there a causal relationship between economic hardship and the protests?

While political economists view economic crisis and income inequality as likely to generate popular challenges to political order

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(Acemoglu and Robinson 2006; Alesina and Rodrik 1994; Haggard and Kaufman 1995), established wisdom in comparative politics of violent strife and in the sociology of protest movements is sceptical that there are direct linkages between economic hardship and contentious political mobilization (for reviews see Brush 1996; Jenkins and Schock 1992). On the impact of inequality, the authoritative review on the subject concludes that 'in general, economic inequality is neither necessary, sufficient, nor clearly probabilistically related to dissent' (Lichbach 1989). Occupy protests seem to constitute an anomaly to these verdicts by their very existence, but factors associated with these events have not yet been systematically investigated. These protests made inequality their target, although they were most conspicuously associated with rich Western countries, which tend to display *less* unequal distribution of income than the rest of the world, in addition to other common qualities such as democratic polities, which may be the main enabler of protest. Without multivariate analysis it is difficult to form an informed view.

With maximum-likelihood estimations on 395 self-designated Occupy protests in 180 countries I find that the country's level of inequality was indeed associated with a higher Occupy protest rate in 2011–12. Equally important were the severity of the downturn in GDP growth during the financial crisis and the level of democracy. The results also offer some evidence for the 'inverse J-curve' hypothesis, whereby an economic boom period followed by a downturn is particularly conducive to protest. Surprisingly few previous studies have investigated the influence of inequality and economic growth on political protest across a diverse set of countries going beyond OECD democracies. The applicability of these findings to protest events at large therefore needs to be corroborated and discussed in future work.

OCCUPY PROTESTS: THE SIGNIFICANCE

While it is now recognized that Occupy protests had a limited short-term political impact (Gitlin 2013 for the US), these events were remarkable in their global range. Even though the movement emerged late in 2011, 'occupy' was found to be the 'most commonly used English word on the internet and in print' in that year (Global Language Monitor 2011). Occupy protests are significant as spontaneous events that display similarity in tactics and ascription to a

broadly defined agenda without leadership by a hierarchically organized social movement organization.

The immediate inspiration for the Occupy activists was the 15 May 2011 anti-austerity protests by the Spanish Indignados, with general assemblies and working groups that reached decisions through a consensus-based process (Writers for the 99% 2012: 13). The #Occupy hash tag can be traced to summer 2011 when the Canadian anti-consumerist magazine *Adbusters* issued on 13 July an online call to action in the following form:

> #OCCUPY WALL STREET
>
> Are you ready for a Tahrir moment?
>
> On Sept 17, flood into lower Manhattan set up tents, kitchens, peaceful barricades, and occupy Wall Street.

A senior editor of the magazine states, '[we] basically floated the idea in mid-July into our [email list] and it was spontaneously taken up by all the people of the world, it just kind of snowballed from there'.[1] The first response came on 30 July from Malaysia when a general assembly was held for #OccupyDataran in Kuala Lumpur's main public square, associated with demands for participatory politics. On 2 August a small group of New York activists took up the call and organized a general assembly to start discussing how an occupation of Wall Street could proceed. As one of them recalls, 'Adbusters gave Occupy Wall Street a name, assignment and due date – along with a nudge to model itself on the Egyptian and Spanish encampments. But subsequently, the magazine was hardly involved' (Writers for the 99% 2012: 17). By 23 August the slogan 'We are the 99 percent' had become the name for a Tumblr page created by one of the general assembly participants. In a month, the Occupy Wall Street event fully materialized as an encampment in Zuccotti Park and inspired similar protests in and outside the US. On 15 October 2011 – the five-month anniversary of the Spanish M15 protests and the date that the Spanish Indignados had envisaged back in May as a day of worldwide protests – hundreds of protests identified with the #Occupy banner were held around the world. In some countries the events continued well into 2012.

Hence North American activists were responsible for popularizing a simple antagonistic language that posits the multitude (the '99 percent') against an allegedly corrupt elite and an action repertoire of urban

occupations that is replicable in many settings, which made for an effective frame for expressing socioeconomic grievances. Once the frame was out in circulation, however, the protests were replicated in 'do-it-yourself' fashion by grassroots activists around the world. In the absence of a social movement organization that could coordinate protests according to a global plan, which settings had protests and which ones did not becomes a question relevant to the literature on the linkages between economic hardship and contentious mobilization. Did protests follow objective conditions of economic hardship, like higher income inequality and lower economic growth rates?

ECONOMIC HARDSHIP AND PROTEST: THE EXISTING LITERATURE

An old theoretical tradition links economic hardship to varying levels of contentious popular mobilization observed across different settings via grievances generated by 'relative deprivation' (Davies 1962; Gurr 1970; Huntington 1968). Relative deprivation refers to the gap between expectations and achievements perceived by people as they assess their current material situation against various reference groups or past or anticipated future situations (Buechler 2004). It may thus be generated by changes in absolute wellbeing in time (as in GDP growth rates), or by inequality.

Early formulations of this intuitive idea have been much criticized for their neglect of the resource mobilization processes critical for the organization of collective action, as well as their short treatment of the opportunity structures provided by the institutional environment in explaining popular mobilization (McAdam 1982; McCarthy and Zald 1977; Tilly 1978). As a result, scholars concerned with the sociology of non-violent protest distanced themselves from the study of deprivation-induced grievances, shifting their focus from explaining *why* people mobilize to *how* (Meyer 2004: 127; see Klandermans 2004 for an overview). The study of non-violent protest is mostly represented by processual and time-series studies of individual countries or small-N comparisons mostly within the OECD, which provides for a highly truncated country sample for variation on economic conditions (Imig and Tarrow 2001; Jennings et al. 1989; Kitschelt 1986; Koopmans 1996; Kriesi et al. 1995; Norris et al. 2005; Rucht et al. 1999; Tarrow 1989; Tilly 1995; Verba et al. 1995). Among notable cross-country studies, Nollert (1995) examines Western

democracies and finds a positive bivariate relationship between a country's level of income inequality and protest count without controlling for other country characteristics. Balme and Chabanet (2008) find no effect of inequality on the average number of protest acts that survey respondents in each country reported they had carried out, likewise as a bivariate relationship across EU countries only. Walton and Ragin (1990) study Third World protests in response to the 1980s debt crisis without including income inequality or GDP growth among explanatory variables. Recently, Su (2015) has examined anti-government protests during the period 1990–2004 in democracies alone, without considering inequality. Mueller's (2014) paper investigating the impact of inequality and economic growth on 'political disturbance events' in Africa remains unpublished. Literature on political protests lacks large-N studies that explore the influence of inequality and economic growth across a sufficiently diverse group of countries.

Studies of violent conflict maintain a wider comparative perspective and a greater interest in the role of economic fundamentals, although the focus is on explaining political violence rather than protest demonstrations. A rich literature exists on the effect of inequality, including studies that find a significant positive association between income inequality and conflict measured either as a count of non-routine political events or as deaths resulting from them (Muller 1985; Muller and Seligson 1987; Robinson and London 1991) as well as studies that indicate no such relationship (Hardy 1979; London and Robinson 1989; Weede 1987; for a comprehensive review see Lichbach 1989). More recently, the explanation of violent conflict has focused on inequality in an economic context dominated by immobile assets (Boix 2008) or on geographically expressed horizontal inequalities that differentiate group access to wealth (Cederman et al. 2011; Østby 2008; Stewart 2008). Regarding the effect of economic growth, rival theoretical predictions have been made: Olson (1963) expected measures of unrest to increase with the rate of economic growth due to the rapid social change that comes with it; Gurr (1968) saw economic decline as the precipitator of violence; and other studies (Davies 1962; Gurr 1970) tried to reconcile these views by proposing that economic stagnation following a period of boom (an inverse J-curve) was particularly conducive to political unrest and conflict due to frustrated expectations. Empirically, a negative relationship between short-term economic

growth and measures of political instability and violence seems to be the most well-established. Scholars have demonstrated such impact of growth rates on electoral outcomes in democracies (see Lewis-Beck and Stegmaier 2000), irregular executive changes (Auvinen 1997; Miljkovic and Rimal 2008), survival of regimes (Haggard and Kaufman 1995; Londregan and Poole 1996; Przeworski et al. 2000), deaths from political violence (Boswell and Dixon 1990; Muller and Weede 1990; see Zimmermann 1980: 179–80 for earlier studies) and outbreak of civil war (Collier and Hoeffler 2004). The impact on (peaceful) protest, however, appeared not robust or significant in influential studies (Auvinen 1997; Su 2015).

In short, while students of protest behaviour have devoted relatively little attention to the impact of economic fundamentals, the issue has been of concern to students of violent strife. Two limitations ensue from this situation. Firstly, many of these studies did not include measures of inequality and economic growth in the same models, which generates omitted variable bias because the two are often correlated (for good theoretical reason, see Galor 2009). Secondly, since large-scale political violence is typically generated by ethnic or religious group conflict, it is not clear how conclusions from that literature would apply to relatively ethnicity-blind processes of protest mobilization that revolve around more mundane political economy issues.

Examples of the latter kind are provided by the protest wave that coincided with the 2007–8 financial crisis. These events – whether the food riots in poor countries, most of the 'Arab Spring' events or the Occupy protests – were marked by complaints about the concentration of political and economic power in their respective settings by an elite that had little regard for the demands of the popular masses. Occupy protests especially made vertical inequality their *cri de coeur*, captured in the slogan 'we are the 99%'. If indicators of vertical inequality lack a systematic relationship with Occupy protests, it should be troubling for those who find plausibility in inequality- and grievance-based explanations of contentious political events. Positive findings, while being compatible with an acknowledgement of the limited predictive power of economic inequality at large (see Haggard and Kaufman 2012), would nonetheless enable a clarification of its influence on the smaller class of events that constitutes its proper domain. There is less controversy in the literature over the impacts of poor growth, but obviously it is of interest to understand how people reacted to capitalism's greatest crisis for many decades.

Not much comparative research has been published on the post-recession global protest episode. The Arab Spring protests have received attention mostly with regard to their interaction with regime responses and their outcomes (Bellin 2012; Hess 2015; Way 2011; Weyland 2012). More relevant to the discussion in this article is Brancati's (2014) analysis of pro-democracy protests between 2006 and 2011 in 158 countries, where the presence of protest (as a dummy variable observed in country-years) is explained by economic hardship. To account for economic hardship, both the ratio of population dissatisfied with economic conditions, and objective indicators of growth, employment and inflation are studied (but inequality is not). Brancati's empirical findings, however, are inconclusive. Subjective indicators of hardship prove significant predictors of protest, but causality remains unclear because country GDP per capita is omitted as a control variable despite richer countries reportedly being less likely to witness protests. Moreover, when either subjective or objective indicators of hardship interact with the political-institutional variables theorized, their effects become ambiguous, with unexpected signs for some interaction terms.[2] Therefore more research is needed to better understand the political outcomes of economic hardship following the global crisis.

ECONOMIC HARDSHIP AS A GENERATOR OF GRIEVANCES AND OPPORTUNITIES

Departing from early formulations of grievance-based theories, which saw protest closer to anaemic, deviant or criminal actions than to rationally oriented political behaviour, I recognize the continuity of an action repertoire that would extend from disruptive protest events to fully institutionalized forms of political participation, from which political actors choose based on a (culturally mediated) evaluation of the power sources and opportunities at their disposal (Goodin and Dryzek 1980; Lipsky 1968; Tilly 1978). Classic grievance-based theories focused on how economic conditions affect what people want: accordingly, hardship creates gaps between desired and actual levels of want satisfaction, generating motivations for protest. I emphasize that economic conditions not only influence what people want but also help determine the political action options feasible for them.

As far as efficacy of formal political participation goes, high inequality empowers the wealthy, who can disproportionately influence government direction at both pre- and post-election stage

through campaign contributions, media influence and lobbying. Pre-election influence by the wealthy elite limits the ideological range of feasible candidates standing for election to public office. Post-election influence makes office-holders less responsive to mass preferences expressed in electoral numbers. Inequality therefore decreases incentives for the popular classes to participate formally in politics through elections. Indeed, research has found that greater income inequality is associated with lower voter turnout, even when the country's type of electoral system is controlled for (or endogenized) (Anderson and Beramendi 2012; Solt 2008). However, inequality may increase incentives for other forms of political participation, such as protest, which require commitment of time and bodies but disproportionately small financial resources to have substantial impact. In such a context, the majority of the citizens will find that protest demonstrations are actions that are well suited to the resources and skills they possess.[3]

Economic recession likewise introduces openings in the political opportunity structure in addition to generating grievances. Not only the mass of citizens but business associations too hold governments responsible for maintaining a robust GDP growth rate, otherwise they would not extend support for long. For this reason, economic recession is followed by finger-pointing among the government cadres, legitimacy is put into question and elite allies become available for political activists. The political cost of violently suppressing protests increases, together with the incentives to participate.

I expect these considerations to apply similarly in countries with different levels of democracy. In less democratic countries, protest is suppressed more but the efficacy of formal channels of participation is likewise diminished; hence democracy would have no necessary influence on the relationship between economic hardship and resort to protest as an instrument for political change (even though the level of democracy itself should be an important enabler of non-violent protest). Thus, regime characteristics should be controlled for in a regression but need not enter into interaction with economic variables. Interaction terms are often used without a proper understanding of their function, especially regarding continuous variables and non-linear models. I therefore stress that my theoretical framework predicts no interaction effect (see Brambor et al. 2006 for a detailed discussion).

In short, motivations generated by economic hardship are central to the framework, but they should be seen as compatible with rational

action shaped by the political opportunity structure, rather than associated with impulsive acts. Still, the question remains as to how to jump from such individual motivations to action at the collective level. It is in good part because of the central role that social movement organizations play in solving collective action problems that grievance-based accounts of protest have come to be viewed with scepticism, since factors favouring the emergence of savvy social movement organizations may have little to do with economic hardship.

Perhaps this question has been made less relevant by evolving communication technologies, the use of which has been conspicuous in Occupy protests (see research by Anduiza et al. 2014; Caren and Gaby 2012; Conover et al. 2013b). Many of what Olson's (1965) classic work identified as obstacles to collective action by disorganized masses are receiving 'fixes' from new technology – hardware such as smartphones and software such as social networking sites. As Farrell (2012) discusses, online communication facilitates 'homophilous sorting' – the propensity of individuals who are similar on some meaningful dimension to form clusters with each other. New technology makes 'preference falsification' more difficult, which is particularly important in settings where falsification is commonly adopted to avoid punishment (Tufekci and Wilson 2012). The distinction between the private and public domains is blurred and a discrete choice between participation and free-riding no longer applies (Bimber et al. 2005). By providing a low-cost infrastructure for decentralized communication, new technology diminishes the information gaps and 'credence asymmetries' that lie at the heart of most collective action problems (Lupia and Sin 2003).

Discussing the Arab Spring protests, Bellin (2012: 127) argues that social media 'will no doubt be a game changer for the longevity of authoritarian regimes worldwide from now on'. Avoiding such a powerful claim (because technology equips regimes with new policing skills, too), I simply note that in an age of high digital connectivity, the importance of hierarchically organized social movement organizations may be in decline insofar as mobilization for protest is concerned. As Bimber et al. (2005: 376–7) state, online communication technologies 'permit ongoing, decentralized communication among participants in ways that facilitate a level of coordination rarely achievable by formal organizations even if they have considerable resources at hand'. In short, economic hardship

generates motivations to protest via both grievances and opportunities, and given a technology that facilitates communication and eases problems of collective action, one could observe connections from hardship to protest.

Empirical applications of economy-driven protest models have been criticized on the grounds that associations between macroeconomic conditions and collective political action do not demonstrate but assume motivations linking the two phenomena (Brush 1996; Jenkins and Schock 1992), leading scholars to seek indicators of economic hardship in rates of dissatisfaction expressed in individual-level surveys (Brancati 2014; Javeline 2003). As with all criticism of reductionism, this should be weighed in a trade-off: there is more explanatory leverage in a would-be relationship between objective economic conditions and political action because it is less obvious than one between express grievances and political action, and therefore more interesting theoretically. Also, those who are dissatisfied with the governing actors in their country for a variety of reasons – not all essentially economic in nature – may as a result come to think that the economy is faltering and find standards of living unsatisfactory. Survey respondents can express grievances to justify their political behaviour to themselves and to observers, whereas indicators of objective hardship cannot be ex post facto manipulated by aggrieved citizens. Therefore I am interested in the impact of objective indicators like GDP growth and income distribution on Occupy protests.

HYPOTHESES, DATA AND METHODS

I will use maximum likelihood estimation (MLE) to analyse the correlates of the Occupy protest count across countries. An original data set of Occupy protests was extracted (and cleaned) by the author in June 2012 from the Occupation Directory, a listing of protests self-identified as 'Occupy#' events.[4] The directory is a subproject of the Federated General Assembly (FGA) of the Occupy Wall Street (OWS) movement, created as a result of the Decentralized Comprehensive Occupy Movement Data Project (DCOMDP), starting in December 2011. Setting out from a database compiled by the British newspaper *The Guardian*, the Occupation Directory has merged information from all online databases – compiled by activist groups Occupy Together, We All Occupy, Interoccupy, among others. As of

September 2012, 30 individuals were registered as curators with the directory, responsible for merging newspaper reports and other online information as well as engaging in direct (phone and email) conversations with event organizers around the world in order to ensure that the information was accurate and up to date. An initial list of more than 3,000 protest events was cut by half as a result. According to the Occupy Wall Street Directory Handbook, a manual prepared by the project curators, the criteria for including Occupy events in the database rests on three conditions. To qualify, the events must:

- have a physical presence (and not just occur in the virtual sphere);
- have ongoing working groups or other activities (and not be one-off events); and
- identify within a unique geography towards social change in line with the #ows principles of solidarity[5] (and not advocate for a particular political party).

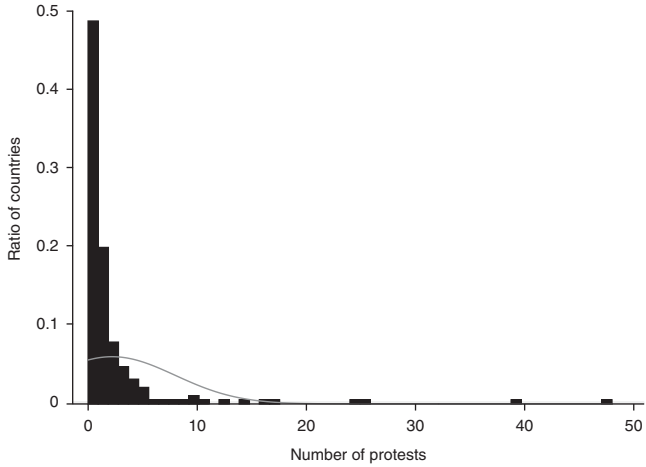
In the database, an entry for an occupation includes data on the date of the event; the particular location with geographical coordinates; approximate number of participants, short description; online (website, Facebook and Twitter) address; general contact info (email and phone); URL links to videos (accessible at YouTube or other channels) and photo images (stored in the Occupy Directory interface) associated with the event; and URL links to newspaper webpages (including those in English, Spanish and Hebrew) noting the event. The counted events include the encampments of the Spanish Indignados which gave the immediate inspiration for the initial *Adbuster* ad and which quickly included #Occupy among their identifications thereafter, but they exclude the 'Arab Spring', which had started much earlier. Among the included, the particular targets of protest and the ensuing level of escalation varied. For example, Occupy Nigeria events, starting soon after the Zuccotti Park example, morphed in a few months into an intense protest wave in reaction to the government's removal of subsidies on petroleum products, complete with civil resistance and strike action, and several people were killed by the police in the course of the action. In Turkey, the only self-identified #Occupy protest action, it seems, was the occupation of a Starbucks coffee shop within Bogazici University, in an attempt by discontented students to draw attention to campus food prices and the lack of affordable amenities; the episode ended peacefully. In other words, as the Occupy framework was adopted in

different settings, the particular way it resonated with local issues led to varying levels and forms of mobilization. The null hypothesis of this study at large would be the lack of a systematic relationship between measures of economic hardship and mobilization. For most of the events, though, some of the data are missing, preventing a systematic study of several dimensions of mobilization – such as the number of participants. Therefore the dependent variable will be confined to the event count: the number of Occupy protests recorded for each country from 2011 until June 2012. As a robustness check I replicate the estimations on data re-extracted in June 2013, by which time more events were present in the database, and the results (available online as Appendix B) remain substantially unchanged.

Activist-generated data may have shortcomings, but there is little reason to believe that reliability problems that may arise from the nature of data should be more worrisome than what is normally encountered in large-N cross-country research on contentious politics. Most extant research ultimately relies for its explanandum on media reports (through sources like the *New York Times* Index), which 'are often too general, arbitrary and inaccurate' (Nam 2006). Research shows that only a fraction of non-routine political events are reported by the media, and events in countries that are richer and geographically closer to the US will be reported in English-language media more often (Herkenrath and Knoll 2011; Myers and Caniglia 2004). While a similar reporting bias for closer, richer countries may exist in the current New York-based database, it is not likely to be greater than what is found in the commonly used sources mentioned above. (In any case, the level of wealth and regional dummies for country location are used as control variables in the estimations below.) It can even be argued that, by combining various sources and triangulating with activists on the ground, the Occupy Directory gives a more complete picture and decreases bias in reporting. Events compete with each other to make their way into the limited reporting space of the newspapers, whereas the project curators have strived to include all eligible events (assuming that they were not simply making them up). It should be remembered that the initial starting point for the directory was a database compiled by the British newspaper *The Guardian*.[6]

My universe of observations consists of UN member states with a population of at least 100,000, in addition to Taiwan and Kosovo, making up 181 units. The database lists 1,428 Occupy protest events, of which 1,033 occurred in the US alone. The remaining 395 events

Figure 1
Distribution of 395 Occupy Events in 180 Countries (US excluded)



were distributed across 87 countries while 93 countries witnessed no protests. (All descriptions and estimations tabulated below exclude the outlier case of the US although including the US substantially reproduces the observed relationships.) Figure 1 shows the distribution of events across the sample.

Maximum likelihood estimation for event count can be modelled with Poisson or negative binomial distribution. In the current sample the mean event count is 2.2 per country, while the standard deviation is 5.78. Because of such extra-Poisson dispersion, negative binomial will be appropriate. (For all models presented below a likelihood ratio test of alpha evinces overdispersion, justifying the choice of negative binomial regression over the Poisson model, see online Appendix B.) This method allows meaningful estimation when event counts within a country are not statistically independent. The assumption is that protest events are more likely where protest has already occurred. In negative binomial regression the mean event count rate μ_i is an exponential function of observed x_k's and a parameter ε that reflects unobserved heterogeneity among observations.

$$\mu_i = \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ \ldots \ + \beta_k x_{ik} + \varepsilon_i)$$
$$= \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ \ldots \ + \beta_k x_{ik})\delta i$$

where $\delta \equiv \exp(\varepsilon)$, and δ is assumed to be drawn from a gamma distribution (see Hilbe 2011 for details). Population regression coefficients β_0, β_1, β_2, . . . β_k are to be estimated given the predictive variables x_{i1}, x_{i2}, . . . x_{ik}. Here the latter will consist of measures of economic recession, inequality and a number of control variables.

To capture the impact of economic recession, two hypotheses can be formulated, one focusing on country growth performance following the global financial crisis in an absolute sense, and the other on the reduction in the growth rate after the crisis compared to the boom period preceding it. The latter would be a test of the 'inverse J-curve' hypothesis, which states that hardship will be felt to be all the more explosive if it comes after a period of rising expectations. Hence:

Hypothesis 1.1: *The protest rate will be higher in a country with a lower rate of growth, referring to the cumulative growth rate of the GDP during 2007–11, calculated as:*

$$\sum = 100[(\mathrm{GDP}_{2011} - \mathrm{GDP}_{2007})/\mathrm{GDP}_{2007}]$$

Hypothesis 1.2: *The protest rate will increase with economic slowdown, referring to the difference between the compound annual growth rate (CAGR, multiplied by 100) of the GDP during 2002–7 and 2007–11, calculated as:*

$$\sum = 100[(\mathrm{GDP}_{2007}/\mathrm{GDP}_{2002})^{(1/5)} - (\mathrm{GDP}_{2011}/\mathrm{GDP}_{2007})^{(1/4)}]$$

Both measures use GDP values measured in constant national currency to track yearly changes in real terms. A greater shock of economic crisis is indicated by smaller *growth*, and greater *slowdown*. Because the latter is partly derived from the former, it would not make sense to use both variables in the same regression, so I will use them in alternation. Further indicators such as unemployment were not included, as they are unavailable for many cases and do not measure the same concept across countries with very different economic fundamentals. Other variables that are the staple of studies confined to the OECD – like union density – have been dropped for similar reasons.

Secondly, inequality was the *cri de coeur* of the Occupy protests. The most straightforward expectation in this regard would be:

Hypothesis 2.1: *The protest rate will increase with the Gini index (1–100) of income inequality in 2011.*

Gini is not the only measure of income distribution, but the one that is available for most countries. Income distribution is notoriously difficult to measure with precision; it changes slowly, survey instruments are not sensitive to small changes and they are not administered frequently everywhere. For these reasons it is not possible to test meaningfully whether the Occupy protest rate varies systematically with preceding short-term changes in income inequality, and I am only using the level of inequality recently observed.

It could be argued that the focus on inequality may be a strategic act by left-wing activists who are using Occupy protests to voice their partisan agenda, regardless of the actual level of inequality. This possibility would suggest that we should control for the government's partisan orientation, but two contrary scenarios may follow. It has been observed in the European context that protest events decline when the left is in power (Jung 2010; Kriesi et al. 1995), but a left-wing government could also be an 'elite ally' for the protestors and therefore an enabling opportunity (Jenkins et al. 2003; Soule et al. 1999), making protest more worthwhile and secure from police intervention.

Hypothesis 2.2: *The protest rate will be significantly different where the left is in power.*

For this hypothesis I use *left_govt* as a dummy variable indicating the control of the country's executive by a left-wing party on 1 January 2011. Coding for this variable was taken directly from the Database of Political Institutions (Beck et al. 2001) for most cases; and the rest were manually coded by relying on the *Political Handbook of the World* (Banks et al. 2012) and following the Database of Political Institutions methodology as closely as possible.

Probably more important than the ideological orientation of the government is how tolerant it is of dissent. In an authoritarian setting, citizens will not voice dissent for fear of retaliation. Therefore, protest can linearly increase with the level of political liberties enjoyed by the citizens. Or it can display a curvilinear relationship, whereby increasing liberties first enable protest, and then channel it to less disruptive politics (Eisinger 1973). In any case, a crucial methodological point is that, instead of being tested as rival models, inequality and democratic liberties should be included in the same regression model, otherwise the estimation of both would be biased since they are meaningfully (and in my sample significantly) correlated: more democratic countries tend to be less unequal.

Hypothesis 3.1: *The protest rate will increase with the level of liberties.*

Hypothesis 3.2: *The protest rate will first increase and then fall as the level of liberties increases.*

To operationalize these hypotheses I generate *liberties* as the level (1–7) of political and civil liberties observed during 2010 by the Freedom House. *Democracy* is a dummy variable that will be used as an alternative measure, indicating democratic regime type observed on 31 December 2010, taken from Authoritarian Regimes Data Set 5.0 (Hadenius and Teorell 2007; Wahman et al. 2013).

Furthermore, a context of rampant government corruption may provide greater reason for people to sympathize with the Occupy agenda, as suggested in protest literature (Bratton and Van de Walle 1992; Pilati 2011). But it may also lead to apathy and inaction: citizens will not bother to incur the transaction costs of protest action if they expect the government apparatus to remain unresponsive to criticism.

Hypothesis 4: *The protest rate will be significantly different with higher levels of government corruption.*

To test this, I use *corruption* scores (1–10) referring to the prevalence of corruption among public officials and politicians as observed in Transparency International's Corruption Perceptions Index.

Tufekci and Wilson (2012) found that social media usage helps predict who participated in the Tahrir Square protests in Egypt as part of the 'Arab Spring' protests. I am sceptical of observing a similar impact in aggregate cross-country data because some access to the internet (rather than universal internet access) is enough for it to enable highly engaged individuals to take the first critical steps towards mobilization, and by this point most nations in the world have probably attained that level of internet access. In other words, the internet is an infrastructure rather than a divisible resource, and what becomes available with its presence is probably more important than marginal increases in its network size. But it may be worthwhile to test this. Lastly, one could expect the capacity for collective action to be higher where there are more university students, who have traditionally been at the forefront of protests demanding progressive change.

Hypothesis 5: *The protest rate will increase with the ratio of internet users and those enrolled in university education.*

The ratio of *internet* users in the population and the gross enrolment ratio in *university* education come from the World Bank. *Development* is a related variable I estimated in Stata on the basis of factor analysis of the correlation matrix between these two variables in addition to *GDP_percapita* and the inverse of *corruption*. The reasoning will be explained in the analysis section. *GDP_percapita* is the average income in 2011 at purchasing power parity (PPP), measured in $1,000 units of current international dollars. This variable is included because established wisdom in political science and economics as well as sample diagnostics suggest that omitting it would bias the estimations.[7] Lastly, as is common in the literature, I include control variables accounting for protest events observed in the country in an earlier period (1991–2003), based on data from the Cross-National Time-Series Data Archive (Banks 2005). High levels of previous protest may indicate a heritage conducive to mobilization for collective action. *Demos* is the annual mean of the peaceful demonstration count, *riots* adds to the count demonstrations involving the use of physical force, as well as general strikes. These are not population-adjusted, since all models include the natural logarithm of population as a separate control variable. Sizeable countries with many urban centres would be expected to have more Occupy protests regardless of their other qualities. (A more detailed description of all independent variables, and the bivariate correlation matrix can be found in the online Appendix A).

The choice of regressions instead of network analysis methods may warrant explanation since the latter has been deployed to study anti-austerity protestors in Spain as well as Occupy protestors in the US (Conover et al. 2013a; González-Bailón et al. 2011). These studies are interested in the micro-level contagion of online activism among social media users. However, to address the macro-level question of cross-country variation in off-line protest events, I rely on maximum likelihood estimation regression assuming that the units of observation (though not events observed in each unit) are independent from each other. Although technically problematic, well-established research programmes investigating cross-country variation in central issues of political science (like democratization, economic growth, welfare policies as well as protest and conflict events) have likewise relied on regression analysis, and by implication relegated any network effects to the error term. I follow the same convention for data availability and theoretical and methodological considerations.

First, it is not possible to construct an adjacency matrix wherein protest-related information or resources are exchanged between countries-as-nodes: data on Occupy protest dates is incomplete, and no systematic indicators are available in terms of how exactly protestors in one particular country were connected to and affecting the behaviour of those in another. Methodologically, it should be remembered that deciding on whether causal influence on actor behaviour can be attributed to network effects as opposed to intrinsic actor attributes is ultimately a theoretical judgement call and cannot be decided based on empirical findings alone (see Leenders 2002 for a detailed discussion). The informative but largely descriptive micro-level studies mentioned above have not generated theoretical predictions regarding how actual protest activity would diffuse across borders and display variation across countries.[8] In short, there is no a priori reason to expect that the error term in a cross-country regression would be correlated, *due to* network effects, with the variables I generate on the basis of country attributes, in a way that would substantially bias coefficient estimation.

ANALYSIS AND RESULTS

Table 1 lists the main findings, while full results can be seen in online Appendix B. I will first summarize each model, and then highlight what can be said in view of all the information.

Model 1 is the simplest. Higher *Gini* and lower *growth* are significantly associated with a higher protest rate, controlled for liberties and GDP per capita, which are also positively associated. Model 2 adds a control for previous levels of protest, which (whether measured as *riots* or *demos*) never substantially changes the results but decreases the fit of the models it is included in, so it is dropped in the next iterations presented here.

When all variables of interest are included as in Model 3, these relationships remain essentially unchanged (attesting to their robustness) but other variables behave strangely: *corruption* and *university* have counter-intuitive signs, and they turn GDP per capita's coefficient to negative and dramatically change its p values. Considering the expected centrality of GDP per capita, it a fortiori suggests a model specification error. Indeed, a factor analysis of the correlation matrix between these variables detects a strong degree of

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Table 1

Negative Binomial Regression Estimation of Cross-Country Protest Count (robust standard errors in parentheses)

Protest count	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*
log_pop	0.647***	0.622***	0.637***	0.625***	0.622***	0.625***	0.628***
	(–11.71)	(–9.09)	(–11.22)	(–11.66)	(–11.99)	(–11.66	– 10.39)
liberties	0.446***	0.444***	0.283***	0.311***	0.314***	0.311***	0.594***
	(–6.91)	(–6.81)	(–3.8)	(–4.62)	(–4.87)	(–4.62)	(–7.85)
GDPpercapita	0.029***	0.030***	0				0.028***
	(–5.32)	(–5.46)	(–0.01)				(–3.82)
growth	– 0.039***	– 0.040***	– 0.036***	– 0.030***	– 0.018**	– 0.030***	
	(–5.61)	(–5.76)	(–3.9)	(–4.09)	(–2.24)	(–4.09)	
Gini	0.014*	0.013*	0.018**	0.021**	0.039***	0.021**	(0.005
	(–1.88)	(–1.74)	(–2.19)	(–2.44)	(–3.02)	(–2.44)	(–0.54)
previous_riots		0.058					
		(–0.85)					
corruption			– 0.150*				
			(–1.93)				
university			– 0.003				
			(–0.62)				
internet			0.019**				
			(–2.44)				
left_govt			0.137				
			(–0.77)				
development				0.791***	0.454***	0.791***	
				(–5.74)	(–2.86)	(–5.74)	
slowdown							0.066**
							(–2.15)

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Region dummy					5 used		
Constant	−13.24***	−12.86***	−11.59***	−12.20***	−13.69***	−12.20***	−13.95***
	(−12.19)	(−10.34)	(−10.31	(−12.06)	(−12.87)	(−12.06)	(−11.29)
Zero-inflate							
democracy						−29.98***	
						(−33.51)	
Constant						−15.39***	
						(−17.99)	
ln alpha	−1.251***	−1.242***	−1.519***	−1.443***	−1.997***	−1.443***	−1.009***
	(−4.14)	(−4.11)	(−3.9)	−3.99	(−4.81)	(−3.99)	(−3.92)
McFadden's Adj R^2	0.282	0.280	0.293	0.302	0.307	0.295	0.254
N	161	161	156	156	156	156	161

Note: *p < 0.1; **p < 0.05; ***p < 0.025.

multicollinearity: richer countries have a lower degree of corruption, and higher ratios of internet users and university students. There must be a latent variable that creates this relationship, which I call *development* and use the principle-factor method to predict its values (see online Appendices). When *development* is included among the predictors, as in Model 4, the impact of recession, Gini and liberties remain significant in the expected direction. *Left_govt* remains insignificant and decreases the fit of the models it is included in.

Model 5 adds regional dummies to distinguish between country location in the world's six major cultural geographies (West, Latin America, former Eastern Bloc, Middle East, Asia, with Africa as the baseline). The operation increases the model fit (even relying on McFadden's Adjusted R^2, which penalizes for additional variables) but it should be regarded with caution, because the wisdom of regional dummies is always methodologically debatable. Under this model, Gini, recession and liberties maintain their impact. Western countries was associated with more protests, as were those in the Eastern Bloc and the Middle East, though to a lesser extent.

Before taking stock, I address a further consideration. In view of the distribution of the events, which included many cases with a score of 0, it would be of interest to understand what made it likely that there would be no protests in a country. Regime type would be the most obvious candidate because some regimes do not tolerate expressions of dissent in any form. Indeed, bivariate tabulation reveals that 68 per cent of democracies experienced Occupy protests, while only 27 per cent of non-democracies did, as seen in Table 2.

To accommodate this finding I include a zero-inflated model. Zero-inflated count models, introduced by Lambert (1992), respond to the failure of the Poisson regression model to account for dispersion and excess zeros by increasing the conditional variance without changing the conditional mean and allow zeros to be generated by two distinct processes. In this case it will provide, first, an estimate (with logistic distribution) that bases the likelihood of having zero protests on having a democratic regime, and then an estimate (with negative binomial distribution) of the determinants of the larger-than-zero protest rate. The idea is that, in some countries with no protests, one could observe protests only if they had democratic regimes. Model 6 shows the results. Growth, liberties and Gini remain significant in the expected direction.

Table 2
Democratic Regime Type and Presence of Occupy Protest

	Non-democracy	*Democracy*	*Total*
0 protests	63	30	93
	73.3%	31.6%	51.4%
1 or more protests	23	65	88
	26.7%	68.4%	48.7%
Total	86	95	181
	100%	100%	100%

Note: Pearson $chi^2(1) = 31.385$, $p < 0.001$.

Lastly, if any of these six models is estimated by substituting *slowdown* for *growth* as a variable operationalizing the impact of recession, as shown in Model 7, the fit would decrease, and *slowdown*, while having the expected sign, is failing to attain significance in four of six models. More conclusively, when I add *liberties* squared to any model, no evidence for a curvilinear relationship between the level of liberties and the protest rate can be obtained because the coefficients have unexpected signs.

Overall, the results from country-level estimation lend strong support to hypotheses 1.1, 2.1 and 3.1. The impact of (negative) economic growth, (positive) inequality and (positive, linear) liberties remain significant in the expected direction, regardless of model specification.

Hypothesis 3.2 about a curvilinear relationship between liberties and protest cannot be supported, and Hypothesis 1.2 regarding the impact of an inverse J-curve-like slowdown in economic growth receives only partial support from the data. Regarding Hypothesis 2.2, the impact of left government does not seem robust. Considering that in many settings Occupy protests did not target a particular ruling party and instead expressed more global complaints, this is not very surprising. It may also be the case that the values in my database (government orientation as observed on 1 January 2011) do not accurately reflect the government by the time of the protests in some countries.

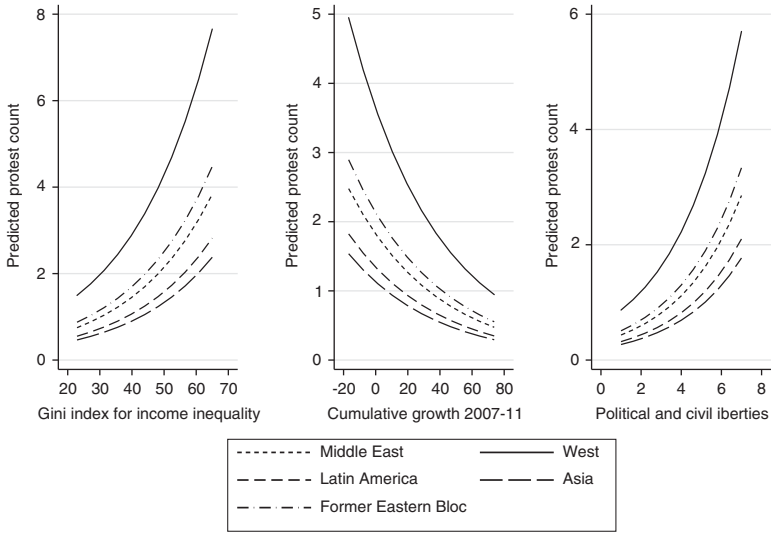
Given the strong degree of multicollinearity, I cannot estimate the impact of university enrolment, internet connectivity or corruption independently from the country's overall level of economic development as measured by GDP per capita. Hence, hypotheses 4 and 5 cannot be supported on the basis of these data. Lastly, there were

more protests in Western and richer countries, even when controlled for the impact of economic recession (which disproportionately hit advanced economies) and democratic liberties. It may be the case that the Occupy frame found easier acceptance in these places due to stronger communication links and sociocultural affinity. It may also be the case that my database was biased to disproportionately observe Occupy events from these places due to the very same reasons. (Perhaps Namibia experienced more self-identified Occupy protests, but only two were captured by primarily New York-based observers.) In any case, the methodologically relevant point is that controlling for country location and level of wealth does not do away with the observed impacts from the chief variables of interest. Not only lower economic growth but *higher* income inequality is associated with more Occupy protests, even though rich, Western countries tend to have *lower* inequality, and this is a striking finding. The results do not change whether I include the pioneer and outlier case of the US in the sample, use an Occupy event count that extends to 2013 (which increases variation but also moves temporally away from some of the explanatory variables), alter coding for debatable cases (on left government, regional dummies, etc.) or control for previous country levels of protest. Results are robust.

Having established the direction and significance of the chief variables of interest, we may now turn to the magnitude of their impact. Event count models generate coefficients such that, with a unit change in the independent variable x_k (holding all other variables constant), the expected count increases by a factor of $\exp(B_k)$, which is not easy to interpret. However, incidence rate ratios (IRR) (see online Appendix B for full results) would indicate that each percentage point increase in the Gini index for inequality is associated with a 2–4 per cent (depending on the particular model utilized) increase in the protest rate; the corresponding ratios for each percentage point decrease in cumulative 2007–11 GDP growth is about the same, whereas the increase in protest rate associated with each higher level (on a scale of 1 to 7) of liberties is 28–31 per cent. Because the variables are measured in different kinds of units, the magnitudes can be better understood by illustrating predicted rates of protest as predictors vary from minimum to maximum values found in the sample while everything else is held at mean. This is done in Figure 2, generated on the basis of Model 5 above, which displays the best fit.

Figure 2

Predicted Rates of Occupy Protest, Based on Model 5 (Table 1) Estimation



CONCLUSION

In 2007–8 the world economy went through its greatest crisis for many decades. Shortly afterwards 'Occupy' protests sprang up. This study examined whether protest incidence could be systematically associated to objective indicators of income inequality and economic growth in each country – a disputed idea in the literature on domestic conflict and protest (Brush 1996; Cederman et al. 2011; Jenkins and Schock 1992), and one which received mixed support from work on recent pro-democracy protests (Brancati 2014). While regime type, level of political and civil liberties, and level of economic development were found to be important predictors of protest – as would be expected from the extant literature – controlling for such factors, the protest rate was also significantly associated with higher level of income inequality and lower cumulative GDP growth in 2007–11. The results stood robust against various control variables, sampling decisions and alternative model specifications (of the zero-inflated and/or negative binomial type). Somewhat less conclusive evidence was also found for an 'inverse J-curve' hypothesis: the more the compound annual growth rate was reduced in 2007–11 compared with 2002–7 in a country, the more protests were observed.

Although the findings on this particular episode lend support to the idea of a systematic relationship between economic hardship and protest, the relationship had as its condition of existence the prior creation of the Occupy protest 'frame' by a particular group of North American activists. The frame consisted of a simple antagonistic language that posits the multitude (the '99 per cent') against an allegedly corrupt elite, and an action repertoire of urban occupations. Once the frame was in circulation, the protests were replicated in do-it-yourself fashion by grassroots activists around the world with no centralized coordination, reflecting the grievances and the opportunity structure of their particular settings. Recent work on Arab Spring protests (Bellin 2012) has distinguished between trigger events and the structural causal processes that they set into motion by decreasing the threshold of popular political participation. This article suggests that the Occupy protestors' rage seems to have a well-grounded relationship with economic conditions in their respective settings, even if an externally introduced frame served as the trigger. The applicability of these findings to protest events at large needs to be corroborated and discussed in future work.

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SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit http://dx.doi.org/10.1017/gov.2016.3

NOTES

[1] Micah White's statement reported by Fleming (2011).

[2] Some of Brancati's (2014) findings cannot be confidently interpreted because the text contradicts the tabulation at times.

[3] Based on this reasoning Goodin and Dryzek (1980: 286–7) (as well as McVeigh 2006) expect high inequality to generate more collective protest while decreasing voter turnout.

[4] A directory listing of events is available at http://directory.occupy.net/search. The complete database (and the explanatory documents such as the Occupy Wall Street Handbook) was obtained from project curators Andrew Mallis and Inga

Jensen (available at cyberinga@gmail.com), and cleaned by the author for duplicate entries.

[5] Which can be found at www.nycga.net/resources/documents/principles-of-solidarity.

[6] A publicly accessible version of this list appeared in *The Guardian*'s 'datablog' in November 2011, at www.theguardian.com/news/datablog/2011/oct/17/occupy-protests-world-list-map.

[7] Many studies have found that the country's level of wealth increases non-violent protest, and in the current database it is positively correlated with the Occupy protest rate. It is also positively correlated with *democracy* and *liberties* (as modernization theory would predict), as well as negatively with *growth* (thus obeying the 'convergence' law from Solowian growth models) and *Gini* (suggesting a quasi-Kuznetsian development trend, although the shape of the relationship is not very clear).

[8] Micro-level theoretical implications are not clear, either. González-Bailón et al. (2011) demonstrate network influence on activist online behaviour without considering any demographic characteristics and the effects of homophily on network formation. Conover et al. (2013b) find that the Occupy movement elicited Twitter participation by users who were already interested in politics and social movements. It is not clear from these findings if social media technology has substantially changed who participates and why.

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