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Protests

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Abstract

Citizens have long taken to the streets to demand change, expressing political views that may otherwise be suppressed. Protests have produced change at local, national, and international scales, including spectacular moments of political and social transformation. We document five new empirical patterns describing 1.2 million protest events across 218 countries between 1980 and 2020. First, autocracies and weak democracies experienced a trend break in protests during the Arab Spring. Second, protest movements also rose in importance following the Arab Spring. Third, protest movements geographically diffuse over time, spiking to their peak before falling off. Fourth, a country's year-to-year economic performance is not strongly correlated with protests; individual values are predictive of protest participation. Fifth, the United States, China, and Russia are the most overrepresented countries in academic studies. We discuss each pattern's connections to the existing literature and anticipate paths for future work.

1. INTRODUCTION

Citizens have long taken to the streets to demand change. Such protests go beyond the formal political system, allowing the expression of political views that may otherwise be suppressed— whether minority views in democracies or dissenting views in autocracies. While some are merely expressive, protests have in many cases achieved meaningful changes at the local level (e.g., suspending plans for a polluting factory's construction), at the national level (e.g., delaying the rollout of nationalism curriculum in the schools), and even at the global level (e.g., fostering waves of regime change). Historically, protests have played a pivotal role in the political development of nations around the world, including the United States (e.g., the Boston Tea Party), Britain (e.g., the Chartist movement), India (e.g., the Salt March), and China (e.g., the May Fourth Movement). In their most spectacular forms in the contemporary period, protests continue to capture global attention, from Tiananmen Square to Tahrir Square, from the Prague Spring to the Arab Spring, and from the Velvet Revolution to Hong Kong's Umbrella Revolution.

Given their importance, protests have been studied across the social sciences, and increasingly so in economics in recent years.[1] Existing work has made substantial progress toward an understanding of protesters as individuals, of protest movements as dynamic processes, and of the role of technological change and state response in coordinating or suppressing protest participation. While this body of work has largely relied on a close study of individual contexts, we aim to provide a global perspective on protest activities that synthesizes existing findings and opens new avenues of inquiry.

In this article, we document four new empirical patterns describing protests, and we review the recent economics (and to a limited extent, political science) literature on protests. We discuss each pattern's connections to the existing literature and anticipate paths for future work.

We begin by conducting a brief survey of existing data sets covering protests around the world. For our analysis, we make use of data from the Global Database of Events, Language, and Tone (GDELT) Project, a global events-based database (see **https://www.gdeltproject.org/**). We include all events identified as protests, amounting to 1.2 million protest events across 218 countries between 1980 and 2020. Relying on the GDELT data, we document the following five patterns.

First, in the time series, we observe that protests occurred at a much higher frequency in mature democracies in the early 1980s. Protests in autocracies and weak democracies then dramatically increased in the years around the fall of the Berlin Wall. Protests in mature democracies occurred at a similar rate as protests in autocracies and weak democracies for over a decade, before another sharp increase in autocracies and weak democracies during the Arab Spring. This marked a trend break: Autocracies and weak democracies have protested at a higher frequency ever since. This pattern is robust as we normalize protests by the occurrence of other politically neutral events and validate this pattern with an alternative data set on global protests since the 1990s. We hypothesize that this qualitative change in protest mobilization—especially in regimes with lower levels of political rights and civil liberties—is at least in part induced by the proliferation of social

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[1]This review focuses on economics due to space constraints. Economists' approach to studying protests typically features (*a*) theoretical frameworks that highlight individual rational behaviors as well as the role of information and beliefs in shaping interactions among individuals; and (*b*) empirical analyses relying on quantitative measures of behaviors, relatively large number of observations, and attempts to identify causal relationships. It is important to acknowledge the advances of studies on protests in other disciplines, which complement the economics approach both methodologically and thematically. Readers are referred to Meyer (2004) and Chenoweth (2021), among others, for recent overviews on protests in sociology and political science, respectively.

media. More generally, the recent literature documents that technology plays a role in shaping protests: Information technology fosters the emergence of protests and helps overcome coordination barriers. As new information technology lowers the threshold for collective grievances to trigger protests, it also imposes new trade-offs between rapidly growing protests and sustained political change, which we discuss as a fruitful area for future research.[2]

Second, a considerable share of the protest events are part of movements. We categorize movements as either durable (protests that occur for more than 10 days in a row in the same country) or recurring (protests that occur repeatedly on a specific date annually). We find that durable movements in our data set last for 16 days on average; recurring movements last for 6 years on average. Autocracies and weak democracies are 50% more likely to have their protests take place within a movement when compared to mature democracies. We also see a rise in the importance of protest movements following the Arab Spring. While much of the literature focuses on protests as one-off events (or considers the first episode of a sustained movement), it is also vital to study protests in terms of sequences of events and sustained movements, which often are the hallmark of notable political, economic, and social change.

Third, protest movements spread geographically, with a long buildup to their peak and often a gradual decline. We find that following the peak day of protests (by number of cities protesting) within a protest movement, the proportion of protesting cities drops on average by 40% from the peak within a week. However, there remain a substantial number of persistent movements, in which even after a month, protests take place in 20% of cities relative to the peak. While the peak of a movement is usually anticipated by protests weeks beforehand, the rise to the peak itself is typically seen in a rapid spike. Interestingly, while we observe a persistence of protests even in weak democracies and autocracies, we do find that in the first week following the peak of the movement, the proportion of protesting cities drops more in autocracies and weak democracies as compared to mature democracies, consistent with regime crackdowns. These patterns reflect a growing literature on the state's response to protests, especially in autocracies and weak democracies. Preventative efforts are made to deter, detect, and detain individuals before protests grow to large movements. Suppression tactics are put in place to crack down on protests and lower the chance that protests will recur across localities and turn into sustained, widespread movements. Relative to the evidence on how protests start, we know much less about how and why protests end.

Fourth, we find that while a society's economic performance has limited association with the occurrence of protests at the country level, a range of attitudes, preferences, personality traits, and social factors are strongly associated with individual protest participation. We observe that the average level and growth of income, unemployment among youths, and the level of inequality can predict, albeit weakly, whether protests will occur in a given country during a specific year. Such relationships are muted in autocracies and weak democracies. This is contrasted with a large literature that highlights the role of economic grievances in triggering political protests. At the same time, we find that attitudes (e.g., highly valuing liberty and democracy, having a strong interest in politics), personality traits (e.g., a low valuation of obedience and high prosociality), and social factors (e.g., sharing political views with friends and family members) are strong, robust predictors of individual protest participation, and this is true across regime types. While these patterns do not establish causal effects, they are broadly consistent with the evidence documented in a variety of specific contexts. Our findings suggest the value of a more holistic investigation of the

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[2]The importance of social media in driving recent protests and the challenges facing political movements fueled by social media are discussed by Tufekci (2017).

factors explaining protest occurrence at the country level as well as participation at the individual level.

Taken together, the literature we review has accumulated a remarkably rich body of evidence on protests. We hope that the facts we present will spur exciting new work to further our understanding of protests.

Before we move further, we note that the United States, China, and Russia are among the most overrepresented countries in terms of studies published in top journals and relevant field journals in economics relative to the observed occurrence of protests (see **Supplemental Appendix A** for details). Israel/Palestine, the United Kingdom, and Iran are among the most underrepresented. Although they are subject to limitations, we hope that the availability of large, global data sets such as GDELT will allow researchers to study protest participation across a wider range of localities and regime types to extend the external validity of existing work.

The remainder of the article proceeds with a discussion of data on protests around the world. We then present the four empirical patterns and the related literature.

2. DATA ON PROTESTS AROUND THE WORLD

Over the years, many different organizations have curated data sets covering protests around the world. In **Table 1**, we present nine different publicly available data sets that record events covering at least 5 years of data and 25 countries.[3] Most of these data sets rely on international news sources to construct their lists of events. Half of them are constructed with human coders, while the other half primarily rely on machine learning and other automated methods. Most of these data sets focus on recent history.

For the remainder of this article, we focus our attention on the GDELT Project. GDELT has the longest-running coverage of events up to the modern day, while also maintaining global coverage of events. We believe this makes it the most comprehensive of the data sets surveyed.[4]

The GDELT Project records instances of events based on articles from a comprehensive global set of news feeds.[5] We restrict our analysis to events taking place between 1980 and 2020.[6] Each event is classified by GDELT based on a Conflict and Mediation Event Observations (CAMEO) code using machine learning. We restrict our analysis to CAMEO code "14: Protest," which includes a range of protest activities including demonstrations, rallies, strikes, and violent protests. In total, there are roughly 1.2 million protest events. Protests make up roughly 1% of all events.

We also make use of a number of other data sources in the analysis. These include the Polity IV data set for regime types; Wikipedia for a list of protest movements; the World Values Survey (WVS) for data on individual beliefs, attitudes, and protest participation; and the World Bank for country panel data on various socioeconomic variables.

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[3] We are also aware of EMM News, which takes a similar approach to GDELT and ICEWS to develop a list of events. However, their website appears to have been under maintenance since 2019 (see **http://emm.newsexplorer.eu/NewsExplorer/home/en/latest.html**).

[4] Other works using this data source include those by Manacorda & Tesei (2020), Armand et al. (2020), and Beraja et al. (2023a). The protest events we study here are identified based on automated coding within the GDELT database and are inherently subject to measurement error. The construction of more accurate data (e.g., data verified manually and/or with improved algorithms) is an important area for future work.

[5] Text analysis and machine learning methods are applied to the contents of these articles to identify salient characteristics, such as event location, date of the event, and the nature of the event (see **https://www.gdeltproject.org** for a detailed description of the GDELT Project and its methodology).

[6] When multiple news sources cover the same event, GDELT records only one event.
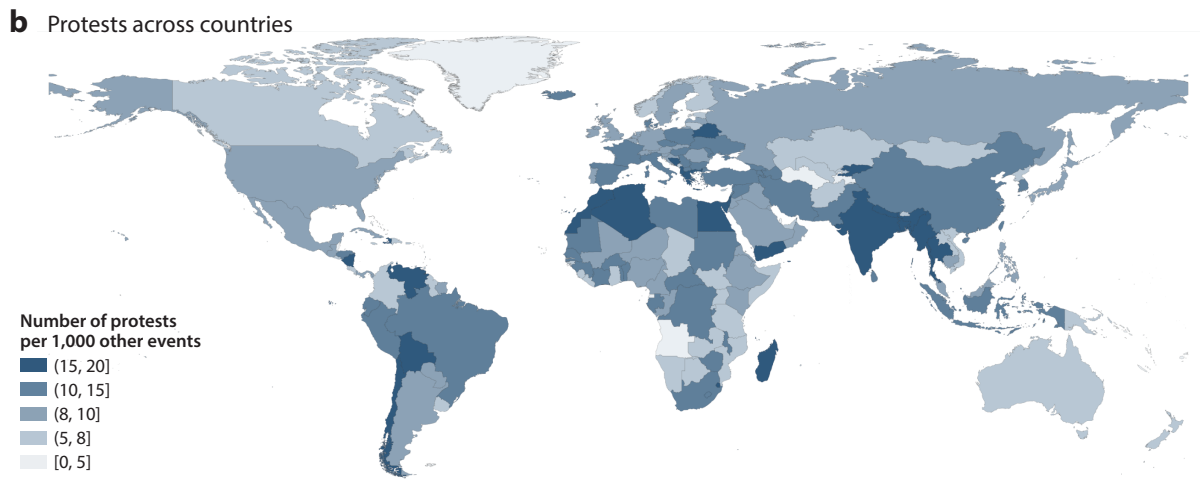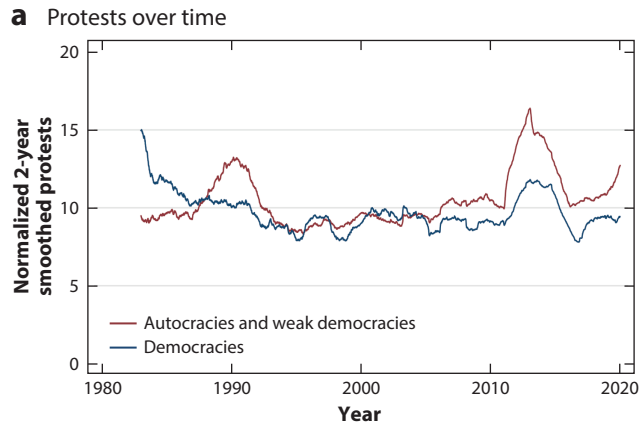
Table 1 Protest data sets

Data set	Years covered	Locations covered	Method	Events covered	Variables
GDELT	2015 to present (all variables), 1979–2014 (less complete)	Entire world, including subnational/lat-long	Scraping global media and machine learning to classify data	Many, classified in CAMEO codebook	Data on actors (name, country, affiliation), type of event, number of mentions, and tone
ACLED	Africa, 1997 to present; Middle East/ Southeast Asia, mid–2010s to present; Central Asia/East Europe/Latin America, 2018–2019 to present; rest of world, after 2020	Entire world, including subnational/lat-long	Media, with human review and intracoder reliability	Battles, remote violence, protests, riots, and strategic developments	Data on actors (name, country, affiliation), type of event, scale, and fatalities
Carnegie	2017 to present	Entire world, country level	Mainstream English-language news source only	Only anti-government protests	Duration, size (number of protesters), outcome (e.g., policy or leadership change), key participants, motivations, and triggers (text data)
The World Handbook of Political Indicators III	1948–1982	Almost entire world (155 countries)	Human coding of NYT and other international newspapers	Political events (38 types, including protest categories demonstration, riot, strike, etc.)	Size of event, source, target (5 categories) and actor (10 categories), issue (6 categories), injuries, damage, duration, location (include capital/ not/widespread), and deaths
The World Handbook of Political Indicators IV	1990–2004	Entire world, country level	Reuters newswires, automated	Contentious politics [protest (6 kinds), violence, sanction, and relaxation]	Type of actor

(Continued)

Table 1 *(Continued)*

Data set	Years covered	Locations covered	Method	Events covered	Variables
ICEWS	1995–2023 (POLECAT is the successor data set)	Worldwide except for US domestic, including subnational/lat-long	English, Spanish, Portuguese, and French news; then machine learning	Many, classified in CAMEO codebook	Type of actor, intensity/event
Cline Center Historical Phoenix Event Data	1945–2019	Entire world, including subnational/lat-long	NYT, WSJ, BBC, and CIA sources; then machine learning	Many, classified in CAMEO codebook	Type of actor, intensity/event
Mass Mobilization	1990–2014	Almost worldwide (162 countries), subnational	LexisNexis search, all news from major publications, hand coding	Protests (demonstrations, riots, mass mobilizations) with at least 50 participants	Duration, violence, size, type of protester, demand (7 types), and state response (7 types)
NAVCO	1900–2019 (campaign level); NAVCO 2 (annual level, 1945–2006); NAVCO 3 (1990–2011 for daily events)	NAVCO 1, 622 campaigns; NAVCO 2, 384+ campaigns; NAVCO 3, 26 countries, country level	Literature review, news, other protest databases, UCDP, etc.	Campaigns (mass tactics for political objective), but only maximalist ones (having regime change, succession, or self-determination as goal)	Target, violence, success in outcomes, and purpose/demands
Mass Mobilization in Autocracies Database	2003–2019	Only autocracies, subnational	Hand coding from AP, AFP, and BBC Monitoring	Protests (political) versus state, at least 25 participants	Actor type, size, issue, scope, and violence

This table presents different data sets on protests, along with several characteristics of each data set. Abbreviations: ACLED, Armed Conflict Location and Event Data Project; AFP, Agence France-Presse; AP, Associated Press; BBC, British Broadcasting Corporation; CAMEO, Conflict and Mediation Event Observations; CIA, Central Intelligence Agency; GDELT, Global Database of Events, Language, and Tone; ICEWS, Integrated Crisis Early Warning System; lat-long, latitude-longitude; NAVCO, Nonviolent and Violent Campaigns and Outcomes; NYT, *New York Times*; POLECAT, Political Event Classification, Attributes, and Types; UCDP, Uppsala Conflict Data Program; WSJ, *Wall Street Journal*.

a Protests over time

b Protests across countries

Figure 1

Protests across the world, from 1980 to 2020, as measured by the Global Database of Events, Language, and Tone (GDELT). Protest counts are per 1,000 other events in the GDELT data set. Panel *a* plots the time series of protests, split by mature democracies (polity score ≥ 7) and autocracies and weak democracies (polity score < 7). Panel *b* plots the average number of protests per 1,000 events by country.

3. A TREND BREAK SINCE 2011: THE ROLE OF INFORMATION TECHNOLOGY

3.1. Broad Trends in Protests over Time

We begin by visualizing broad trends in protests over time. In **Figure 1***a*, we plot the time series of protests in autocracies and weak democracies (in red) as well as mature democracies (in blue) on a daily level.[7]

Since GDELT draws its set of events from global news feeds, changes in the level of news coverage over time (or across locations) may bias the number of protests recorded by GDELT. Thus, we normalize the count of protests by dividing the number of protests by the number of

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[7]We define mature democracies as countries with polity scores greater than or equal to 7, and weak democracies and autocracies as countries with polity scores below 7. This follows Marshall et al. (2016).

all other events in a country per year.[8] We then smooth the data using a 2-year rolling average to plot the overall time trend in protests across regime types.[9]

One sees that the relative number of protests in mature democracies reached its peak in the early 1980s. In contrast, autocracies and weak democracies experienced a significant spike in the relative number of protests around 1990, coinciding with the dissolution of the USSR, and again in 2011, which marked the onset of the Arab Spring. In the last decade of the twentieth century and the first decade of the twenty-first, the number of protests (per 1,000 events) experienced by autocracies and democracies was extremely similar: 9.95 for autocracies and weak democracies and 9.96 for mature democracies, meaning that roughly 10 of every 1,000 events across the globe were protests during this time. However, a notable shift occurred after 2011, as autocracies and weak democracies consistently saw 30% more (relative) protest events than mature democracies (13 versus 10 per 1,000), marking a substantial trend break in protest patterns. In **Supplemental Figure A5**, we reproduce **Figure 1** using the ICEWS data set instead of GDELT. Although this data set only begins in 1995, we see the same trend break, with autocracies and weak democracies experiencing explosive growth in relative protests following 2011.

Take Tunisia as an example. Between 1980 and 2010, the country experienced a protest incidence of 9 per 1,000, close to the global average across the time period. However, during the Jasmine Revolution (December 17, 2010–January 14, 2011, part of the Arab Spring), the incidence rate jumped by nearly an order of magnitude to 89 per 1,000. Following the revolution, protest activity remained elevated, averaging 29 per 1,000 between 2011 and 2020. A similar story holds for other countries participating in the Arab Spring. Egypt had a protest incidence of 7 per 1,000 between 1980 and 2010, which leapt fivefold to 37 per 1,000 during the years 2011–2014, during the Egyptian crisis when the Mubarak and Morsi governments were overthrown. Yemen also had a protest incidence of 7 per 1,000 between 1980 and 2010, rising to 32 per 1,000 between 2011 and January 2015, during which the Saleh and Hadi governments were overthrown. The actual number of protests likely rose even more than implied by these figures, as periods of political turbulence see increases in political events of all kinds, not just protests.

In **Figure 1b**, we map the relative number of protests across the world. Excluding countries that recorded fewer than 10 total protests, the four countries with the largest number of relative protests were all Arab Spring countries. In order, they were Bahrain (31 per 1,000), Tunisia (30 per 1,000), Egypt (20 per 1,000), and Yemen (20 per 1,000). Other countries near the top of the list include Nepal (fifth, at 19 per 1,000), Nicaragua (seventh, at 19 per 1,000), Venezuela (eleventh, at 17 per 1,000), and India (twelfth, at 17 per 1,000). The bottom of the list contains many small countries such as Greenland, Cape Verde, Luxembourg, and Fiji, with island nations composing most of the bottom 20. **Supplemental Figure A5** confirms that a very similar set of countries experienced a high number of protests in the ICEWS data. Overall, protests occur widely throughout the world, though some regions and countries experience a much greater intensity of protests than others.

3.2. The Role of Information Technology

The trend break in 2011 among autocracies and weak democracies coincided with the Arab Spring and with the introduction of the community feature on Facebook and a revamped edition of

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[8]The spirit of this exercise is similar to one conducted by the creator of GDELT that uses a similar normalization; to our knowledge, Gentzkow et al. (2006) were the first to take this approach using big data.
[9]GDELT also changed its methodology in monitoring news sources across the world in 2014, greatly expanding its coverage and using more sophisticated methods to classify events. This creates a disruption in the data at the time they were transitioning across methods. We interpolate the number of protests between February 18, 2014 and February 18, 2015 to resolve this issue.

Twitter that, among other changes, streamlined the viewership of retweets and especially of multimedia content. Many scholars of the Arab Spring have emphasized the pivotal role that social media, in particular Facebook and Twitter, played in the organization, coordination, and spread of the protests (Tufekci 2017).

Information technology, especially technologies that foster horizontal communication (e.g., mobile phones and the Internet) as opposed to vertical communication (e.g., radio and TV), has been seen as possessing the potential to liberate unfree societies (Diamond 2015). Specifically, horizontal communication–enabling technology may stimulate protests because it helps resolve three challenges to protest mobilization (see, among others, Little 2016). First, technology may communicate information about the regime that changes individuals' demand for political and social change, and it may trigger emotions that push people over the participation threshold and into the street to express grievances. This could be differentially important in autocracies and weak democracies, where negative information about the state is routinely censored (e.g., Edmond 2013).

Second, information technology may inform citizens about each other's attitudes and support for the protests. As protests and collective action are often strategic decisions in nature, beliefs about others' support for the protests crucially shape one's own participation decision, whether in a game of strategic complements (e.g., a coordination game) or a game of strategic substitutes (e.g., a public goods provision game). Again, this could be differentially important in autocracies and weak democracies, where accurate information about others is lacking and misperception about others is more prevalent.

Third, information technology may facilitate logistical and tactical coordination by allowing protest organizers or spontaneous protest participants to communicate information about the location and time of protest gatherings. Such coordination could also involve specific information about barriers that protest participants may face so they are better prepared (e.g., those set up by the regime in order to suppress protest participation). To the extent that organizing protests is difficult and often actively prohibited on traditional communication technology platforms in weak democracies and autocracies, technologies such as social media could significantly ease the logistical and tactical coordination constraints.

The recent empirical literature has accumulated a range of evidence linking the introduction of new information technology to protests.[10] Manacorda & Tesei (2020) study the rollout of mobile phones in Africa and find that the mobilization of mass protests during economic downturns significantly increases with access to mobile phones. Enikolopov et al. (2020) show that the expansion of the social media platform VK in Russia increased the likelihood of protests. Wu & Strömberg (2021) study how the social media platform Weibo in China established information connections across city pairs and promoted the spread of protests across connected cities.

3.3. Open Questions

We see several areas for future research on the relationship between technology in general (and information technology in particular) and protests. First, the studies described above either use natural experimental designs that exploit spatial and temporal variation in access to technology or use careful network-based specifications that exploit variation in pairwise connections via the technology. Such variation helps estimate the reduced-form causal effect of media platforms on the occurrence of protests. While valuable, this variation is often limited in terms of credibly

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[10]There also exists a large literature on the role of technology in get-out-the-vote campaigns and formal political participation (see, e.g., Campante et al. 2017). This very much complements the literature on technology and protests, but it is beyond the scope of the literature surveyed in this article.

separating the specific mechanisms through which technology facilitates protests. We think that empirical designs (e.g., exploiting experimental variation) that aim to isolate mechanisms, and even quantitatively compare the magnitudes of distinct mechanisms, are an important area for future research.

Second, new technology, while facilitating protests against the regime in places with limited political rights and civil liberties, may also polarize society and promote protests and political mobilization more broadly in the pro-regime direction. For example, Enikolopov et al. (2020) show that pro-regime support rises alongside anti-regime protests due to social media in Russia, arguing that the coordination device function of social media (which facilitates both pro- and anti-regime protests) dominates the information provision potential (which would favor the pro-democratic, anti-corruption forces). A more systematic investigation of the polarizing forces of social media and the consequent effects on protests is key to our understanding of the holistic impact of technology on both the rate and the direction of political change.

Third, as new technology overcomes barriers that traditionally limited collective action, it also introduces new trade-offs between rapidly growing protests and sustained political change. On the one hand, leaderless protests that are coordinated on social media platforms without traditional (often charismatic) leaders make it more difficult for the regime to target its crackdown. On the other hand, the absence of a leader may prevent consensus formation among protesters themselves, hindering protesters from effectively negotiating policy concessions and thus achieving the desired changes.

Advances in information technology have affected (and will continue to affect) protest occurrence along multiple margins: Which grievances are expressed publicly as protests, the rate at which grievances develop into protests and then into movements, the organizational structure of these movements, and counter-mobilization are all changing. We think it is extremely important to understand, both theoretically and empirically, how these multifaceted changes induced by technological innovations will interact to shape protests and their outcomes in the years to come.

4. PROTESTS AS MOVEMENTS

4.1. Categorizing Movements

While dramatic one-shot events may capture the public's attention, often political and social change has historically arisen from long-running movements. Protest movements are linked sequences of protests in which sustained political engagement either spans many days in succession or occurs across years, with events linked by actions taken on specific dates. Historically significant protest movements include women's suffrage movements around the world, the US civil rights movement, anti-colonial movements, and the anti-apartheid movement in South Africa.

We categorize each protest event recorded by GDELT as either a one-shot event or part of a movement.[11] To do so, we develop definitions for two classes of movements: (*a*) durable protest movements, which occur for multiple consecutive days in the same country, and (*b*) recurring protest movements, which are protests that repeat on a particular date each year. Specifically, we define durable protest movements as events in a country where, for at least 10 consecutive days, the number of protests exceeds twice the national average, and the number of locations protesting is also at least twice the national average (skipping at most one day that does not fit these criteria). Any protest that occurs during this range of days in the country is considered part

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[11]We rely only on patterns of event occurrence. Ideally, this would be complemented by details on the causal institutional links that connect events into a movement; we unfortunately cannot do that here due to data limitations, but this would be an important avenue for future work.

Table 2 Summary statistics

	Protest share	Protest count	Duration (percentile)			
			Mean	10th	50th	90th
Durable protests	0.043	50,392	15.887	11	15	22
Recurring protests	0.002	1,938	5.934	5	5	7
One-shot protests	0.956	1,121,010	1	1	1	1

This table presents summary statistics for different kinds of protests. Protest movements are defined as follows. Durable protests are defined as protest movements in a country where, for at least 10 days in a row, the number of protests exceeds twice the national average and the number of locations protesting is also at least twice the national average, skipping at most one day that does not fit these criteria. Recurring protests are defined as protest movements in a country where, for at least 5 years in a row on the same date, the number of protests exceeds twice the national average and the number of locations protesting is also at least twice the national average. One-shot protests are protests that fit neither category above. The duration of protests for durable protests and one-shot protests is measured in days, while the duration of recurring protests is measured in years.

of the movement. We define recurring protest movements as events in a country where, for at least 5 years in a row, on the same date, the number of protests exceeds twice the national average and the number of locations protesting is also at least twice the national average. One-shot protests are the residual category. Our criteria of categorizing protests as movements is intentionally strict, as we hope to minimize the number of one-shot protests mistakenly assigned to a protest movement. Many movements are not characterized by continuous protests but rather by occasional protests linked through ideology, political organizations, and other forms of political behavior between protests [e.g., the long-running movement for women's rights described by Goldin (2023)]. Thus, we think of the number of identified movements as a lower bound on the total number of protest movements.[12]
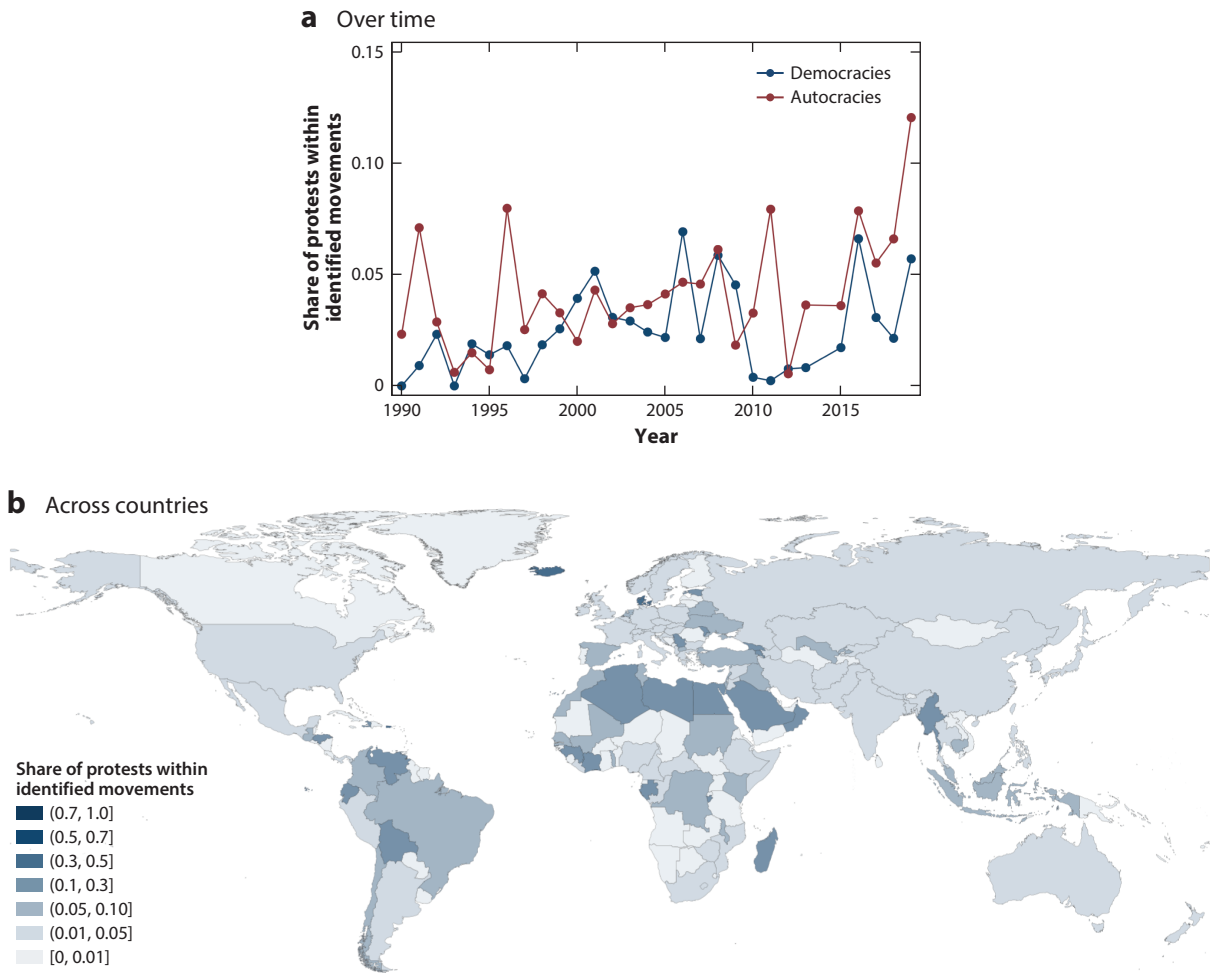
We present summary statistics using these definitions of protest movements in **Table 2**. While durable protest movements occupy a meaningful share of total protests, recurring protest movements are much rarer in comparison. In our data there are 6,014 distinct durable protest movements, 2,037 (33.9%) of which occurred in mature democracies and 3,977 (66.1%) of which occurred in autocracies and weak democracies, as well as 595 distinct recurring protest movements, 259 (43.5%) of which occurred in mature democracies and 336 (66.5%) of which occurred in autocracies and weak democracies.

The median durable protest movement in our data set and according to our definition lasts for 15 days. The longest running protest movements under this definition include the 1996–1997 protests in Serbia, when students and opposition parties protested against President Milošević (lasting 41 days from November 1996 to January 1997); the November 2016 Jakarta protests against Governor Purnama for blasphemy against the Quran (lasting 40 days); and the Chilean protests in 2019 against rising public transport fares (lasting 38 days in October–November 2019).[13] The median recurring protest in our data set and according to our definition lasts for 5 years in a row. The longest-running recurring movements include the June 4 protests in China (lasting 32 years), the May Day protests in Germany (lasting 10 years), and the December 28 protests in Russia against the invasion of Afghanistan (lasting 9 years).

In **Figure 2a**, we plot the time series for the share of protests belonging to movements. The share of protests that are part of movements appears to gradually rise from the beginning of the

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[12]In the following section, we confirm that these protest movements are unlikely to have been generated as a result of random variation in protest occurrence. In **Supplemental Appendix B**, we also consider a top-down categorization of protest movements based on a comprehensive list of 750 protest movements from Wikipedia.
[13]In the Chilean case, the protest movement we identify was a subset of a longer-running sequence of related protests, indicative of our relatively conservative definition of movements.

Supplemental Material ❯

a Over time

b Across countries

Share of protests within identified movements
- (0.7, 1.0]
- (0.5, 0.7]
- (0.3, 0.5]
- (0.1, 0.3]
- (0.05, 0.10]
- (0.01, 0.05]
- [0, 0.01]

Figure 2

The share of protests in the Global Database of Events, Language, and Tone (GDELT) that can be mapped to a protest movement. Protest movements are defined as periods of at least 10 consecutive days in which the number of protests is at least twice the national average and there are protests in twice the average number of locations, skipping at most one day in the interim. Panel *a* plots the time series of this share, split by mature democracies (polity score $\geq$ 7) and autocracies and weak democracies (polity score < 7), excluding the United States. Panel *b* plots the average share of protests that are part of a movement by country.

sample period to 2010. There are notable spikes in protest movements in autocracies and weak democracies, including at the time of the dissolution of the USSR and during, and ever since, the Arab Spring. Mature democracies, on the other hand, experienced fewer protest movements following 2010, suggesting potentially different protest dynamics at play. On the whole, compared to those in mature democracies, protests in autocracies and weak democracies are more likely to occur as part of a protest movement, with 5.1% of protests in autocracies and weak democracies being part of a movement versus a share of 3.4% in mature democracies.

In **Figure 2b**, we map the share of protests belonging to protest movements by country. We see that countries in the Middle East and North Africa have a consistently high share of protests that are part of protest movements: Algeria (26.3%), Oman (16.5%), and Egypt (15.4%) are all

in the top 10 countries. Latin America also sees a relatively large proportion of its protests being part of protest movements: 7.4% in Brazil, 13.1% in Venezuela, and 38.2% in the Puerto Rico territory, which tops the list. By contrast, the share of protests being part of protest movements is 2.6% in the United States as a whole, 4.3% in China, and 1.3% in Russia.

4.2. Studying Protests as Movements

It is important to study protests both as distinct events and (when relevant) as part of sequences of linked events and sustained movements. Theoretical work studying protests has highlighted a number of conceptual distinctions between one-off protests and movements. Models of one-shot events are fundamentally concerned with the conditions under which successful coordination occurs, where the counterfactual is coordination failure and the complete absence of protests (see, among others, Kuran 1997, Morris & Shin 2001). Such models can be applied to either one-shot protests themselves or the first event within a protest movement. Models of protest movements, on the other hand, often ask a different set of questions, such as how protests persist (that is, how subsequent episodes of protest movements occur), how protests grow in size and spread across locations, and how protest participation changes over time and evolves in its composition.

Mechanisms that facilitate the coordination of (explosive) one-shot events may be different from those that sustain protests as movements. Early waves of protests may change attitudes among the population, shift their beliefs about others' political attitudes and support of the movement, and thus affect the turnout at subsequent events within protest movements (e.g., Chwe 2000). Social ties among protest participants and the broader society could change during protest movements; such changes may take time and affect the outcomes of later waves of movements (e.g., Barbera & Jackson 2019).[14] Learning-by-doing and improvements to protesters' tactics may also be relevant only when we consider protests as movements.

Thresholds for individual protest participation may also differ between one-shot events and sequences of protest events. On the one hand, the costs of participating in multiple events could be substantially higher. On the other hand, early waves of protest movements could reveal information about the regime and about others in the population, which in turn could make participation in future movements more likely. As a result, the composition of protest participants may differ across different stages of protest movements (e.g., De Mesquita 2010, Shadmehr & Bernhardt 2019).

A small strand of recent empirical studies examines protests as movements, studying in particular whether and how protests persist and evolve into movements. Madestam et al. (2013) use the impact of regional shocks in weather conditions on contemporaneous protest participation to study the collective (county-level) persistence of protest participation. They find that, in the context of the Tea Party protests, a 1% increase in the strength of the initial protests led to a 0.79% increase in the size of subsequent protests in the same county. Bursztyn et al. (2021) use individual shocks to protest participation to study the individual-level persistence of protest participation. They find that, in the context of the anti-authoritarian protests in Hong Kong, having participated in the protest in 2017 led to a 46.7% increase in an individual's likelihood of participating in the next protest episode a year later. Both studies provide causal evidence of persistence at the aggregate and the individual level, supporting the premise that a distinct protest event can become a movement.

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[14]Earlier work has also argued for the importance of social structure and social organizations in shaping individuals' sustained engagement in social and political movements (see, among others, Hirschman 1984, McAdam 2010).

4.3. Open Questions

Studying protests as movements is an important and fruitful area for future research, as the existing evidence is scarce and many questions remain open.

First, as protest movements extend over days, months, and in many cases years, how does the persistent individual and societal engagement with movements interact with background shocks in society? For example, do temporal shocks such as worsened economic conditions and tightened political controls exacerbate participation in the movement or change the nature of the movement [see, e.g., the transition from peaceful protests to civil disobedience as described by Glaeser & Sunstein (2015)]?

Second, as protest movements evolve and grow, how does their organizational structure change over time? Organizational economics research has advanced remarkably in a range of private and public sector domains (Gibbons & Roberts 2013). Yet, both theoretical and empirical work on the organizational dimension of protest movements is lacking. For example, does the organization of a movement formalize as it handles increasingly complex personnel affairs, arranges logistics to accommodate larger fractions of the population, and manages finances to sustain its operations? Does it centralize? How have the spread of information technology and social media affected these processes?

Third, an ultimate question on protest movements is why and when one-shot protests turn into movements. As we argued in the previous section, although movements are a nontrivial fraction of protest events that take place around the world, a large share of protest events remain one-shot events and do not evolve into movements. Understanding the conditions under which movements arise from an initial episode of protest is key to many of the underlying inquiries about the dynamic patterns of protest movements.

5. THE DURATION AND GEOGRAPHIC SPREAD OF PROTEST MOVEMENTS, AND THE POTENTIAL ROLE OF STATE SUPPRESSION

5.1. The Persistence and Diffusion of Protest Movements

Once protest movements begin, how long do they last? In **Figure 3a**, we plot the duration of durable protest movements. We separately plot those that occur in mature democracies (measured prior to the start of the movement) in dark blue, and those taking place in autocracies and weak democracies in dark red. The length of these protest movements decays rapidly: Out of 6,014 distinct durable protest movements, 3,706 last for 10–15 days; only 1,114 last for 16–20 days; and only 188 last for 31–35 days. This difference is starker for autocracies and weak democracies, where there are 2,644 movements lasting 10–15 days and 672 movements (a reduction by three-fourths) lasting 16–20 days, compared to mature democracies that have 1,062 movements lasting 10–15 days and 442 movements (a reduction by almost a half) lasting 16–20 days. Only 33% of protest movements in autocracies and weak democracies last longer than 10–15 days, while 48% of protest movements in mature democracies last longer than 10–15 days. Overall, protest movements are much more persistent in mature democracies.

In **Figure 3b**, we plot the duration of recurring protest movements, once again separately for mature democracies (in dark blue) and for autocracies and weak democracies (in dark red). The length of these protest movements also decays rapidly: Among the 595 distinct movements, 385 (64.7%) last 5 years and only 108 movements last 6 years. Autocracies and weak democracies once again see a steeper drop in protest persistence, with 210 movements lasting 5 years and 48 movements (a reduction by three-fourths) lasting 6 years, whereas mature democracies have 175 movements lasting 5 years and 60 movements (a reduction by two-thirds) lasting 6 years.
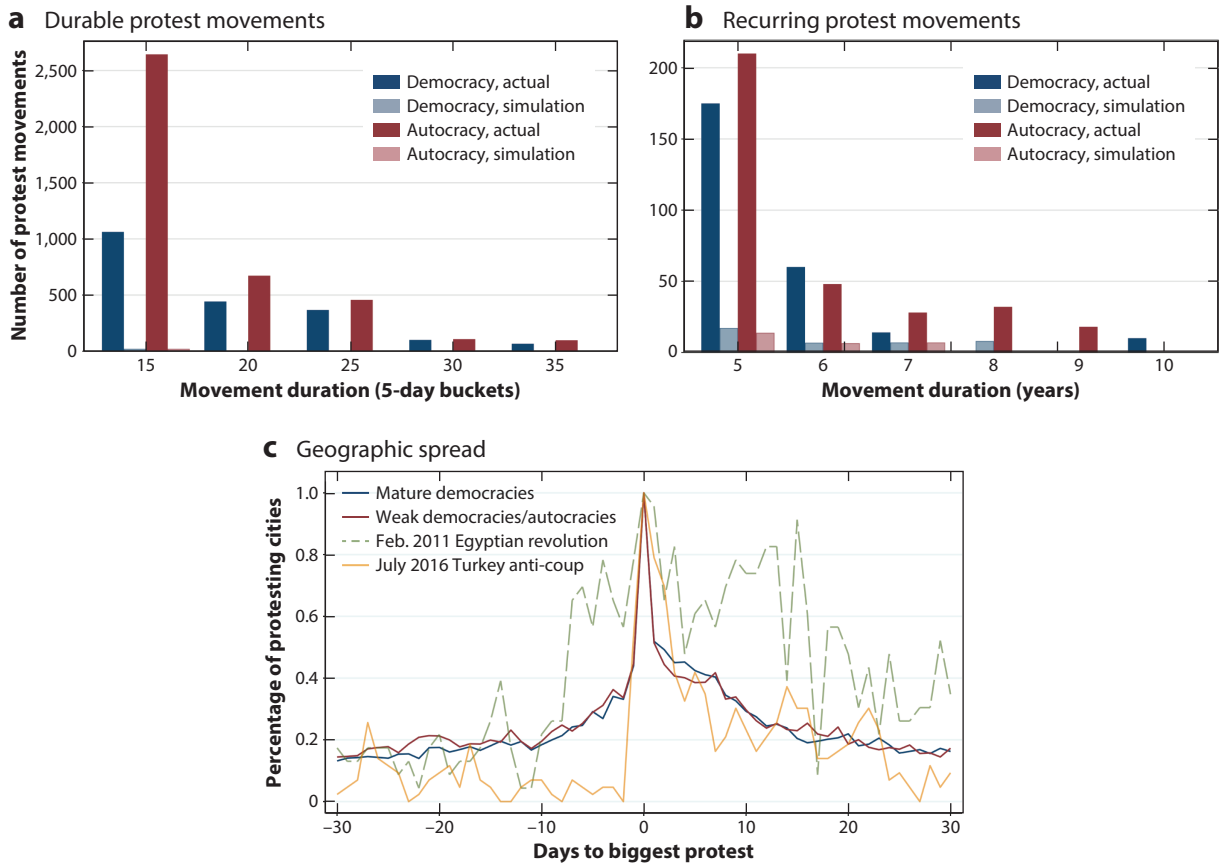
Figure 3

Duration and geographic spread of actual (*darker color*) and simulated (*lighter color*) protest movements. Panel *a* presents durable movements, which are defined as a period of at least 10 consecutive days in which the number of protests is at least twice the national average and there are protests in twice the average number of locations, skipping at most one day in the interim. The x-axis groups protest movements by duration, rounded to the nearest 5 days. Panel *b* presents yearly protests, defined as protests recurring on the same date over the years that exceed twice the national average and occur in twice the average number of locations for at least 5 years in a row. Panel *c* presents the share of protesting cities relative to the peak within a durable movement. The average for mature democracies is plotted in dark blue, and the average for autocracies and weak democracies is plotted in dark red. Two case studies are also shown: the 2011 Egyptian revolution protests (*green dashes*) and the 2016 Turkey anti-coup protests (*gold line*).

We next conduct a simulation exercise to show that the apparent persistence of these protest movements is unlikely to be due to chance (i.e., to the random occurrence of high levels of protests on the same date year after year). We take the protest frequency data at the country-day level and randomly assign new dates for each observation. We then apply our definition of protest movements using the randomly assigned protest events.[15] After repeating this procedure 1,000 times, we plot the mean number of protest movements by movement duration in **Figure 3*a,b*** in light red and light blue. First, we observe an extremely small number of simulated durable protest movements: On average, there are only ≈42 simulated durable protest movements, evenly split between mature democracies on the one hand and autocracies and weak democracies on the other.

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[15] Specifically, we uniformly draw new dates between the first and last dates observed in the data.

Matching the empirical number of durable protest movements would require a simulated draw over 100 standard deviations away from the mean. Second, the observed level of persistence in durable protest movements is much higher than in the simulation: All of the simulated durable protest movements last between 10–15 days, with none persisting beyond this range. Third, a similar pattern holds for simulated recurring protests. On average, there are ≈66 simulated recurring protest movements, and 75% of all simulated movements last for only 5 years. Thus, the simulations indicate that we observe much more persistence of protest activity than chance alone would predict.

In **Figure 3c**, we plot the geographic spread of protests for each durable protest movement, showing the proportion of cities (within the country where the movement occurs) protesting on each day relative to the peak number of protesting cities. We plot the geographic diffusion for two large protest movements in light lines. In gold, we plot the July 2016 Turkey anti-coup protests. This was a protest movement that was suddenly instigated by an attempted coup d'état on July 15, 2016, with the lack of prior protest activity confirming the unexpected nature of the event; these protests slowly dissipated over the next few weeks, with the level of protests returning to baseline levels within the month. In dashed green, we plot the Egyptian revolution protests of January 2011. During this protest movement, we observe a spike in protests on January 25, one week before the largest protest by geographic spread, with the proportion of protesting cities remaining at a consistently high level for the subsequent month. Protest activity only began to wane after February 11, when President Mubarak resigned from power.

Returning to the broader trends captured in the figure, one sees that up to 10 days before the largest protest, the proportion of protesting cities remains relatively stable and compact, at roughly 15–20% of the peak. This proportion steadily climbs over the following days, approaching the 30% mark 5 days before the peak and reaching 44% the day before the peak. The day following the peak, the proportion of protesting cities is 51% of the maximum, which gradually declines to 40% 5 days after the peak and 30% 10 days after the peak. It is only 20 days out that the proportion of protesting cities falls below 20% of the peak. This highlights that the peak geographic diffusion of protest movements does not suddenly appear out of nowhere, nor does it generally mark the end of a movement; rather, there is often a buildup to the peak, followed by a long period of elevated protest activity. Strikingly, this pattern looks broadly similar across mature democracies and autocracies and weak democracies, although in the first week after the peak, autocracies and weak democracies consistently see a 5% smaller proportion of protesting cities compared to mature democracies.

5.2. The Regime's Response to Protests

While there are many angles from which to examine the diffusion of protests (some of which were discussed in the previous section), we draw from the diffusion pattern of protests the importance of examining the regime's response to protests. While autocratic crackdowns on protests are well known, it is striking to observe the gradual diffusion of protests up to their peak, as well as a degree of persistence in diffuse protests, even in autocracies. Whether and how autocratic regimes—which may control more resources and coercive capacity than their democratic counterparts—respond to the occurrence of protests are critical determinants of protests' equilibrium outcomes. Andirin et al. (2022) highlight the political economic logic to these decisions: Although crackdown may come with political benefits, it also typically comes at a cost. To shed light on the trade-off between squashing dissent and paying the costs of crackdown, the authors compare the distribution of predicted and observed protests under a regime. Relatively more observed protests suggest a higher tolerance for protest; relatively fewer observed protests compared to what is predicted suggest a willingness to suppress.

Suppression of protests can take many forms. Guriev & Treisman (2020) model the (modern) authoritarian regime's tool kit, distinguishing between ex-ante measures, including censorship, propaganda, and co-option, which are aimed at preventing protests from happening in the first place, and ex-post measures of repression that diminish or crush the protests after their occurrence.

Empirical studies have documented the presence of a range of ex-ante measures that the state deploys to prevent protests from taking place. In the domain of media censorship, King et al. (2013) find that Chinese Internet censors target social media posts that may induce collective actions and that those posts are deleted at a much higher rate by the censorship apparatus; Chen & Yang (2019) find that exposing Chinese students to uncensored content on the Internet indeed changes their political attitudes and propensity to support collective actions that demand social and political change. Moreover, in the domain of surveillance and preemptive detection of upcoming protests, Qin et al. (2017) describe how social media posts on Weibo, prior to their censorship, can be used to predict protests days before their occurrence, potentially allowing the state to prepare for them.

A growing number of papers study how states react after protests have occurred, aiming to stabilize the situation and to ensure that protests do not escalate or recur in the future. There are three broad categories of responses documented thus far. First, technology can be deployed in response to protest occurrence. In particular, as a technology that optimizes prediction, artificial intelligence (AI) has the potential to enhance surveillance and support regime stability. Beraja et al. (2023a) show that local governments in China procure facial recognition AI systems soon after the outbreak of protests in the region, and such technology tempers the likelihood of protest occurrence in the subsequent period. Beraja et al. (2023b) find that autocracies and weak democracies around the world are more likely to import surveillance AI technology from China, especially after the occurrence of political protests domestically.

Second, the state could change the incentives among potential protest participants, either aligning them with the regime or making protest participation more costly. Wen (2022) documents that male Uyghur citizens in China are significantly more likely to be employed by the state sector after the outbreak of ethnic conflicts and protests; such employment could act as both a carrot (as employment benefits reduce grievances) and a stick (as threats of losing employment may deter future protest participation).

Third, the state could design its bureaucracy to incentivize local politicians to allocate resources in a manner that suppresses protests. Campante et al. (2023) find that in response to strikes and protests that resulted from an export slowdown, the Chinese central government replaced leaders from localities with levels of collective action above and beyond what could be explained by the export slowdown. This suggests that local leaders are rewarded (and punished) for their handling of local protests. Relatedly, Wang & Yang (2021) document that local protest occurrence significantly reduces local politicians' chance of promotion in China's political hierarchy and that the Chinese central government avoids localities that recently experienced protests when it introduces new policies and allocates experimentation opportunities.

5.3. Open Questions

As we accumulate more evidence on regimes' responses to protests, a number of questions emerge as important avenues for future research.

First, many of the existing investigations of a regime's response to protests study the regime's tools of protest suppression in isolation. Future studies that study the regime's toolbox holistically would allow for a more sophisticated mapping of the cost function faced by protest participants. For example, to what extent are ex-ante, preventative tools such as censorship and propaganda substitutable with ex-post repression? This question becomes empirically complicated as certain tools, such as the use (or threat) of state violence, may not be observed in equilibrium.

Second, a limitation of studying the regime's responses in isolation is that it is difficult to gauge the questions of when the regime decides to respond in the first place and under what conditions these responses are effective at tempering protests. It is important to note that authoritarian regimes—even if they are unconstrained by the institutional and constitutional protection of civil liberties—may not always be incentivized to suppress protests. Protests' occurrence can provide valuable information to the regime on grievances among the population, and the regime faces a fundamental trade-off between control and information (Lorentzen et al. 2013). Studying how regimes navigate such trade-offs and endogenizing states' responses accordingly would be an important step to improve our understanding of the political economy of protests.

Third, it may not be mere coincidence that an overwhelming fraction of the evidence of the regime's responses to protests comes from China, an authoritarian regime with exceptionally high state capacity. Many of the anti-protest tactics deployed by the state, such as targeted censorship and facial recognition AI, require a high level of technological sophistication. We currently lack systematic evidence on how lower-capacity autocracies and weak democracies respond to protests. If they indeed respond to protests differently than regimes with strong state capacity, do protesters internalize such differences, and do protests differ accordingly?

6. FACTORS ASSOCIATED WITH PROTEST OCCURRENCE AND PARTICIPATION

What factors are associated with protest occurrence at the country level and protest participation at the individual level? These are questions that a large body of existing literature on protests has focused on. In this section, we categorize several groups of such factors that are conceptually important.

We begin by examining the effects of country-year level characteristics, splitting the sample of countries by regime types. In **Figure 4a**, we regress various economic, political, and demographic measures on the normalized number of protests (i.e., number of protests per number of other events), including country and year fixed effects. We then turn to correlates of individuals' participation in protests.[16] In **Figure 4b**, we use data from the WVS, pooling data across all countries and survey waves, and we regress (self-reported) participation in protests on individual attitudes, beliefs, preferences, and social factors, controlling for country and wave fixed effects.[17] We again present the results splitting the sample of countries by regime type. Throughout the figure, all explanatory variables of interest and outcomes are standardized, allowing us to more easily compare estimated effect sizes.

6.1. Economic Conditions

We observe that economic conditions are modestly associated with the occurrence of protests in a given year. Unemployment, especially among the youth, correlates with higher protests occurrence, which is consistent with the observation that the youth (especially students) often form the backbone of protest participants. Relatedly, low levels of income are predictive of the occurrence

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[16]The country-level regressions exploit within-country over time variation, which has the virtue of isolating the effects of changes in particular variables from other country characteristics and from broader time trends. However, this variation may be underpowered to estimate the relationships between protest occurrence and certain slow-moving characteristics such as demographic patterns.

[17]There are seven waves of the WVS, spanning the time period 1981–2022. Not all questions are available in all waves. We harmonize questions across waves where possible and otherwise omit years in which the data are not available. We code an individual as participating in protests if they report ever participating in a protest, including lawful/peaceful demonstrations.
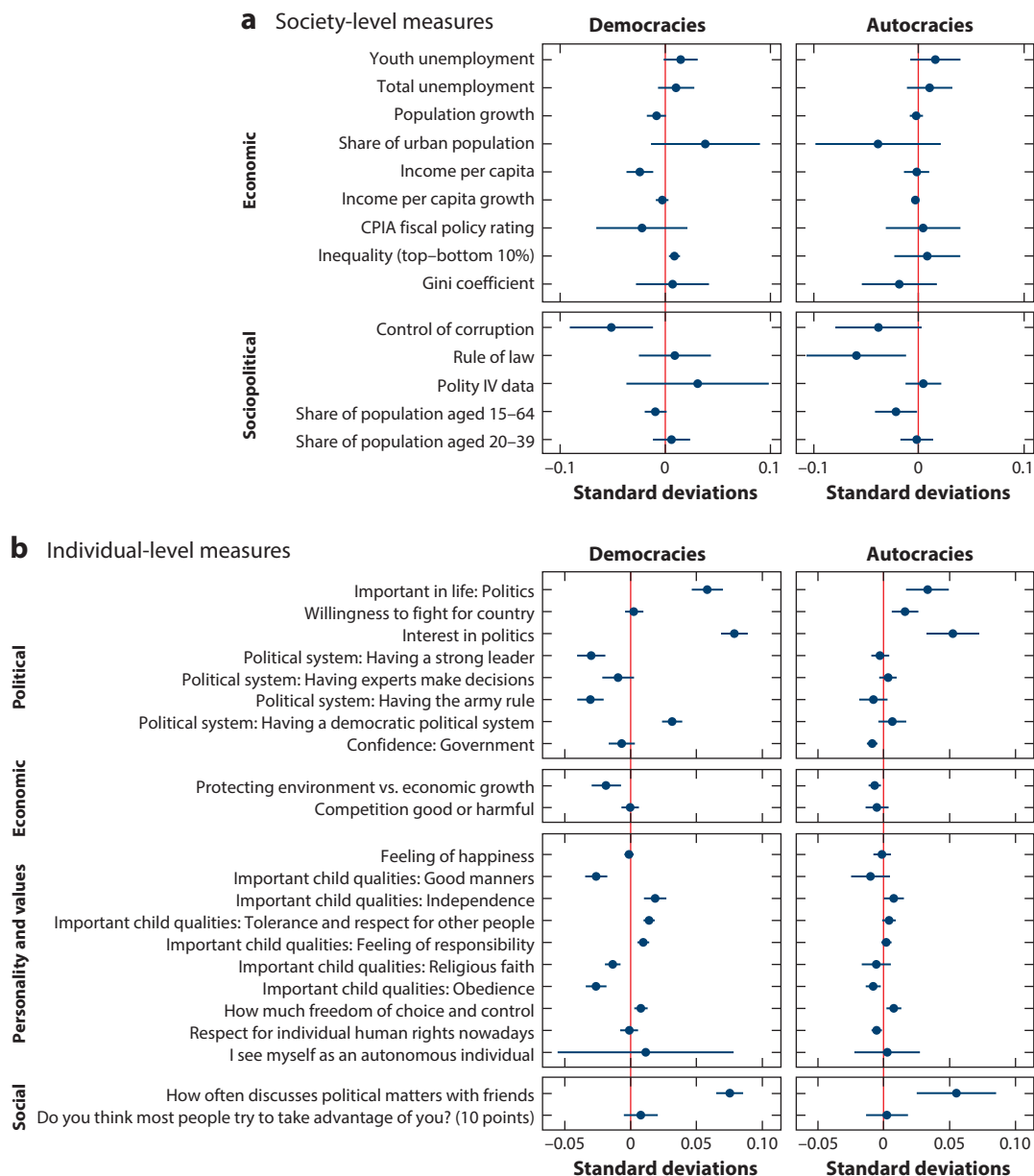
Figure 4

Coefficients and 95% confidence intervals for various correlates of protests. In panel *a*, an observation is a country-year, and the dependent variable is the normalized number of protests as measured by the Global Database of Events, Language, and Tone (GDELT). In panel *b*, an observation is an individual and the dependent variable is individual protest participation (as measured by the World Values Survey). All independent and dependent variables of interest are standardized to have mean = 0 and standard deviation = 1. Each row represents a separate regression that controls for country and time period fixed effects and is two-way clustered on country and time period. Abbreviation: CPIA, Country Policy and Institutional Assessment.

of protests. It is interesting to note that the rate of income growth is noticeably less predictive of the occurrence of protests. We also observe that heightened income inequality is associated with the occurrence of protests.

Many studies have documented the impact of negative income shocks on protest participation. For example, Smith (2004) studies 107 developing states and shows that societal wealth accumulated from oil significantly lowers protest occurrence; Campante et al. (2023) study the effect of unemployment pressure in the export sector in China due to the global trade slowdown; Dube & Vargas (2013) examine how oil price shocks affect domestic protests; Ponticelli & Voth (2020) show that austerity measures, especially spending cuts, in twentieth-century Europe have led to more strikes, demonstrations, and riots; Braggion et al. (2020) find that credit contraction and a resulting bank lending crisis led to protests in China during the 1930s.

The prospect of bleak future economic conditions could also shape protest occurrence and participation. Campante & Chor (2012) argue that an important driver of the Arab Spring was the mismatch between economic ambitions resulting from educational attainment and a lack of economic opportunities as well as weak labor market conditions in the Arab world. Bai & Jia (2016) document that the abolition of the Chinese imperial civil service exam in 1905 lowered expected upward mobility among the educated elites and led to widespread protests and uprisings. In the context of Britain during the Industrial Revolution, Caprettini & Voth (2020) show that the diffusion of new, labor-saving technologies led to mass riots.

It is interesting to note that while social scientists emphasize the role of class background in protests (Marx 1977, Acemoglu & Robinson 2006), and many have speculated that economic dissatisfaction is of first-order importance (see, among others, Carothers & Feldman 2022), such a relationship is relatively weak when we pool all countries together and examine protests throughout the past 40 years. This relationship is even more muted when we focus on autocracies and weak democracies, suggesting that an adverse economic situation, while perhaps an important contributing factor, may not be sufficient to trigger protests.

6.2. Attitudes and Preferences

We find that, among the questions consistently elicited by the WVS, a preference for democracy and an interest in politics are particularly strong predictors of individual participation in protests. These relationships are somewhat muted in autocracies and weak democracies.

A growing literature analyzes the role played by attitudes and preferences in shaping individuals' protest participation. For example, Besley & Persson (2019) study the complementarity between values and institutions, pointing to an important role that values could play in citizens' demand for political change and in society's ability to maintain a changed equilibrium; Kostelka & Rovny (2019) investigate political ideology and protest participation across a range of democratic regimes and find that culturally liberal individuals are more likely to participate in protests; Arikan & Bloom (2019) show that private religious beliefs reduce an individual's protest potential, while involvement in religious social networks fosters it; Claassen & Gibson (2019) document that cities with more politically tolerant individuals experience more protests; Bazzi et al. (2021) find that frontier culture and individualism reduce collective action; Hoffman & Jamal (2014) find that readers of the Quran (but not mosque attenders) were more likely to participate in the Arab Spring and more sensitive to inequity; and Goldin (2023) argues that political preferences and values played a driving role in the women's rights movement.

6.3. Personality and Other Individual Traits

Moving to personality and other preferences and traits that are more innate, we observe that protest participants are substantially more likely to value independence and freedom but not

obedience as well as to exhibit prosocial characteristics. Again, this suggests that what motivates protest participation may go beyond economic and political motives; protest participants potentially view protests as an important platform for self-expression and for contributing to the broader good of society.

Similar patterns are documented by Cantoni et al. (2022) among the Hong Kong population during this country's anti-authoritarian movements. This study finds that fundamental economic preferences, particularly risk tolerance and prosocial preferences, are the strongest predictors of protest participation. Intriguingly, these strongest predictors are the same for modest and massive protests, with larger effects for massive protests. The prominent role of fundamental economic preferences, especially prosociality, suggests that such behavior may be best thought of as the production of a political public good. Variation in turnout may reflect changes in the perceived benefits of the public good.

The role of personality traits in shaping political ideology and behavior has been the topic of a growing political science literature (e.g., Gerber et al. 2010), but less evidence exists on the link between personality traits and protest participation. Mondak et al. (2010) find a weak negative correlation between conscientiousness and participation in protests in Uruguay and Venezuela. Cantoni et al. (2022) examine the role of Big Five personality traits in shaping protest turnout in Hong Kong, finding a quantitatively small effect. Gallego & Oberski (2012) find an association between personality traits and protest participation, mediated by one's political attitudes.

6.4. Social Factors: Protests as Collective Action

Protests are by definition collective actions. Thus, an individual's participation in protests could be shaped not only by their own circumstances, attitudes, preferences, and traits but also by the people around them. Using the WVS, we observe that discussing politics with friends and family is indeed a very strong predictor of one's own participation in protests, and this is true for citizens across all regime types.

A number of recent studies document the role of social factors in shaping individuals' protest participation decisions. Several studies find evidence of an amplifying effect of protest participation through social networks. González (2020) provides evidence, using partially overlapping networks, that peers' participation in Chilean student protests increased one's own. Bursztyn et al. (2021) randomly vary incentives to participate in protests across social networks among Hong Kong university students, and they show that social networks play a key role in fostering sustained protest participation. In particular, the newly established or strengthened social ties among protest participants in an early episode of a protest significantly increase the likelihood of attendance in a subsequent episode. Enikolopov et al. (2023) find that, consistent with models of image concerns as a driver of prosocial behavior (Benabou & Tirole 2006), such concerns played an important role for participants in protests in Russia in 2010–2011, and social media amplified the signaling mechanism. On the other hand, Sonin et al. (2023) find that political isolation increased participation in the US Capitol January 6 protests.

Conceptually, social scientists have long viewed the social component of protest participation as strategic, with an individual's participation seen as a function of their beliefs about others' turnout. Importantly, evidence of social complementarity does not imply strategic complementarity: The former may arise from common information sets (and thus shared preferences or beliefs about the regime) or reduced coordination costs, among others. Cantoni et al. (2019) aim to isolate the strategic component and conduct a field experiment in the context of Hong Kong's anti-authoritarian movement to identify the causal effects of positively and negatively updated beliefs about others' protest participation on subjects' own turnout. This study finds evidence of

strategic substitutability: As beliefs about others' participation increase (decrease), subjects become significantly less (more) likely to participate in the protest themselves.

6.5. Open Questions

Studying the social and individual drivers of protest participation is one of the largest strands of literature on protests. Yet, each empirical advance has opened additional questions for future work; we highlight several potential paths for future research in this area.

First, we do not yet fully understand many reduced-form causal effects. Why do social ties matter so much for protest participation? Are social ties instrumental for information flows, for persuasion, for the joint utility from shared political expression such as collective emotion, or perhaps for social image concerns? If protests are (at least sometimes) games of strategic substitutes, what allows participants to overcome the temptation to free ride? Future empirical work should aim to shed light on these important questions.

In doing so, the growing empirical literature should contribute to a second aim for research: informing richer modeling of protest occurrence and participation. For example, can models incorporate the role of noneconomic factors and their potential interaction with (negative) economic shocks to generate more precise predictions on when protests will occur and who will choose to participate in them? Can models of strategic protest participation incorporate the possibility of strategic substitutability and consider protests as a public goods game, when the current workhorse models typically assume strategic complementarity? Does the strategic environment in protest participation switch from strategic substitutability to complementarity, precipitating large protests? We hope a tighter dialogue between the empirical and theoretical literatures can generate new insights.

Third, where other forms of political participation are available (e.g., online expression or action in the formal political arena), it would be interesting to study protest participation alongside other political behaviors and to consider protests as one component of a large bundle of options for citizens to demand political and social change. Are protests substitutes or complements with respect to formal political participation such as voting? Does protest participation share the same drivers of turnout as other forms of political expression?

Finally, we hope more studies can examine the causes of protest participation in real time, which would enable the elicitation of critically important variables, such as first- and second-order beliefs as well as emotions, that it would not be feasible to elicit ex-post.

7. CONCLUSION

Often at the root of far-reaching economic, social, and political change, protests have received a substantial amount of attention from across the social sciences.

In this article, we document four new patterns of protests around the world. First, 2011 marked a trend break wherein protests began to occur in autocracies and weak democracies at a higher rate than in mature democracies. Second, a meaningful share of protest events are part of movements. Third, protest movements spread geographically, with a gradual buildup to their peak and often a gradual decline. Fourth, while economic performance weakly predicts protest occurrence, individuals' attitudes, preferences, personalities, and social characteristics are strongly associated with their participation in protests.

We connect these patterns to the knowledge accumulated in the existing literature, and we point out promising avenues for future research. There are many areas of the literature that we omit in this review due to space constraints: For example, we regrettably do not systematically survey the literature studying the consequences of protests for political and economic outcomes. In

light of the ongoing evolution of protests and political movements, together with the emergence of new data sets and empirical tools, we anticipate an exciting next phase of theoretical and empirical economic research on protests.

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