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## Abstract

This research examines how independent media networks influenced political mobilization during the Arab Spring in the Middle East and North Africa (MENA) region. The study zeroes in on two prominent media networks in the Arab world: Al Jazeera and Al Arabiya. Measurement of political mobilization mainly revolves around protest activities. Data for both political mobilization indicators and media networks are sourced from Arab Barometer surveys. Initially, the primary analysis is conducted at the regional level, focusing on Jordan, Lebanon, and Palestine due to data quality constraints. Subsequently, the scope expands to encompass nine countries within the MENA region. To account for potential endogeneity, the study employs the frequency of lightning strikes and submarine cable seaquake shocks as instrumental variables, highlighting non-random utilisation of independent media. The results reveal a positive and statistically significant influence of independent media on political mobilization. On average, a one-standard deviation increase in access to independent media corresponds to an approximately 4 percentage point increase in the likelihood of participating in protests. At the mean of protests, it corresponds to a rise of about 24%. Supplementary analyses suggest that these estimates predominantly capture the effects of Internet access rather than television. Furthermore, the findings also suggest that the driving force behind mobilization is mainly rooted in the informational aspect of the media rather than the ideological content of the news.

**Keywords:** Independent Media, Al Jazeera, Al Arabiya, Arab World, Media, Political mobilization, Unrest, Arab Spring, Middle East and North Africa, Submarine Cables, Seaquake Incidences, Lightning Frequencies

**JEL-Classification:** D72, D83, D85, H56, 017, P26, Z13

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# 1 Introduction

The Arab world has grappled with persistent issues of political transparency and accountability, as noted by various scholars (Sakr, 2003; Kazemi and Norton, 2006; Makdisi, 2017). This environment inevitably led to a wave of anti government protests, uprisings, and rebellions in the early 2010s, collectively known as the "Arab Spring". The term "Arab Spring" encompasses a series of anti-government protests and armed confrontations that swept through the Arab world, originating on December 17, 2010, when a "Tunisian vendor, Mohammed Bouazizi, sets himself on fire to protest the arbitrary seizure of his vegetable stand by police over the failure to obtain a permit" (History.Com, 2020).

Scholarly discourse extensively delves into the underlying causes of the Arab Spring (Campante and Chor, 2012, 2014; Chaney et al., 2012; Malik and Awadallah, 2013). Anecdotal evidence emerges from this discourse suggesting that the emergence of independent media networks, notably the Al-Jazeera network, played a pivotal role in facilitating political mobilization during the Arab Spring (El-Nawawy and Iskandar, 2002, 2003; Zayani, 2005; Manacorda and Tesei, 2020). Conversely, media control is also believed to account for the limited traction of similar protests in March 2019 (The Economist, 2019). In contrast to the Arab Spring, the influence of independent media such as Al-Jazeera appears less pronounced in constructing a region-wide narrative in 2019. Autocratic regimes are reported to have gleaned insights from the Arab Spring, leading to increased repression of independent media (The Economist, 2019, 2023). However, beyond these qualitative observations, the quantitative impact of the media on promoting political mobilization in the Middle East remains largely unexplored terrain.

This paper attempts to fill this gap in the literature by quantifying the impact of the rise of independent media networks within the Arab World on the dynamics of the Arab Spring protests. We designate two media outlets – Al-Jazeera and Al-Arabia – as "Independent Media" as opposed to channels under the control of local or national governments.[1] Leveraging data hailing from the Arab Barometer surveys, we undertake a comprehensive examination of how the presence of independent media networks influences engagement in protests, both prior to and in the aftermath of the Arab Spring. This exploration takes root in the Middle East and North Africa (MENA) region. Given the available data, our initial focus centres on Jordan, Lebanon, and Palestine. Subsequently, we expand the scope of our analysis by including Algeria, Egypt, Iraq, Sudan, Tunisia, and Yemen. Our findings distinctly unveil a positive relationship between the use of independent media and active participation in protest activities.

To mitigate potential concerns related to endogeneity, we adopt an instrumental variables strategy. We employ two factors that exert an impact on the accessibility of wireless communication for both television and

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[1]We acknowledge that none of the channels are independent in the strictest sense. Indeed, Al Jazeera, which is supported by the Qatari government, has always had a soft spot for it, as does Al Arabiya for Saudi Arabia. Nonetheless, they are not subject to the authority of our sample's national governments.

the Internet: the frequency of lightning strikes and seaquake shocks along submarine cables. Our findings indicate that an increase of one standard deviation in the proportion of users accessing independent media networks corresponds to an approximate 4 percentage points increase in the likelihood of participating in protest activities. At the mean, it corresponds to a rise of 24 % in protests. The causal interpretation of these results is further reinforced by our observations that state media yields differing effects on political mobilization and that the influence of independent media is primarily propelled by individuals not employed in the public sector.

Our contribution is twofold. First, we contribute to the understanding of the political economy of media (DellaVigna and Kaplan, 2007; DellaVigna and La Ferrara, 2015; Enikolopov and Petrova, 2015; Durante et al., 2019). For instance, DellaVigna and Kaplan (2007), study the impact of Fox News on voting behavior in the U.S. and find that viewing Fox News increased Republican voters suggesting a learning effect and persuasion. In our study, we focus on the emergence of independent media networks in captured environments (Enikolopov and Petrova, 2015). Studies so far focused on the effect of independent TV channel on voting in Russia (Enikolopov et al., 2011), in Italy (Barone et al., 2011) and in East Germany (Kern and Hainmueller, 2009). With the exception of the strategic use of military forces in the Israeli-Palestinian conflict (Durante and Zhuravskaya, 2015), little is known about the impact of media in the Middle East.[2] That is surprising given the recent structural changes in media exposure that occur in that region (Fandy, 2000; Ghareeb, 2000; Khondker, 2011; Wiest and Eltantawy, 2015). In particular, the emergence of independent media with the creation of the Al Jazeera network in 1996 in Qatar and later that of the Al Arabiya network in 2003 in Saudi Arabia were major developments in the Arab world opening up the way for freedom of expression in these regions (El-Nawawy and Iskandar, 2002, 2003; Zayani, 2005; Al-Saggaf, 2008; Sultan, 2013; Behravesh, 2014). To the best of our knowledge, we are the first ones to quantify the role of Al Jazeera and Al Arabiya media networks. We also investigate the role of Al Jazeera and Al Arabiya on protests distinctively. Interestingly, we find that Al Arabiya had no distinct effect compared to the one of Al Jazeera although Al Jazeera emerged earlier than Al Arabiya in the Arab World and occupies the first place as the most frequently used media network. The ideological difference between the two media channels does not seem to matter.

Secondly, we make a distinct contribution to the literature on conflict and mass mobilization. While the economics of conflicts has been primarily centered around factors such as economic shocks, ethnic diversity, and natural resources (Blattman and Miguel, 2010; Berman et al., 2017), the role of media has remained largely overlooked. In addition to the notable study by Durante and Zhuravskaya (2015), exceptions include works by Yanagizawa-Drott (2014), Manacorda and Tesei (2020), andArmand et al. (2020). The former examines the influence of radio on violence during the 1994 Rwandan genocide, while the latter delves into

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[2]A notable exception is Hatte et al. (2021) who show ho.w user-generated internet content changes news about the Israeli-Palestinian conflict on US TV.

the role of defection messages via radio in curbing violence in Central Africa. Notably, our study diverges from Yanagizawa-Drott (2014) and Armand et al. (2020), which explore the impact of a media controlled by conflicting parties on violence dynamics. Manacorda and Tesei (2020) contribute to an emerging literature exploring the influence of social media on protests (Enikolopov et al., 2020; Fergusson and Molina, 2020; Guriev et al., 2019; Zhuravskaya et al., 2020). They show that the spread of mobile phones in Africa has contributed to mass mobilization, but only during economic downturns. In our case, we investigate the role of independent media within countries where state entities predominantly manage media outlets.[3]. According to Besley and Prat (2005), the influence of the media is likely to be pronounced within such an environment. In parallel, another body of literature sheds light on the determinants of political and social mobilization (Campante and Chor, 2012; Putnam, 1995; Benabou, 2000; Dee, 2004; Sondheimer and Green, 2010). The Arab Spring has provided a particularly illuminating backdrop in this regard. These studies explore the disparity between considerable advances in education and the lack of economic opportunities, coupled with demographic factors such as youth, as primary drivers of political mobilization (Campante and Chor, 2012, 2014). Our study, however, does not encompass the exploration of fundamental economic development aspects, such as culture, geography, or institutions. Such tasks are addressed by researchers such as Chaney et al. (2012), who underscore the role of the historical institutional legacy in explaining the Pre-Arab Spring democratic deficit in the region, as opposed to alternative explanations grounded in culture or oil abundance. Additionally, Malik and Awadallah (2013) highlight the economic fragmentation across the region, hindering the private sector's capacity to evolve and act as an agent for change. However, none of these studies has focused on the role of the media in conflicts. The overlooked significance of the media's role in the emergence of the Arab Spring is intriguing for two reasons. Firstly, there is anecdotal evidence that the media played a pivotal role in mobilization during the Arab Spring (Pew Research Center, 2012; Ghannouchi, Yusra, 2013). Second, the considerable influence of independent media has also been demonstrated in other contexts (Putnam, 2000; Olken, 2009). Recent theoretical frameworks posit that new media can indeed facilitate collective action, either by disseminating pertinent information or by streamlining coordination (Edmond, 2013; Little, 2016; Barbera and Jackson, 2017).

In our research, we analyze the influence of independent media, focusing on the informational avenue. However, we enrich our findings by delineating between accessing independent media networks via conventional television (a traditional channel of information) and through the Internet (which serves as both an informational and a coordination tool), thus investigating their distinct impacts on protest dynamics. Unlike the role of social networks, the coordination aspect here does not revolve around logistical synchronization.

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[3]Another strand of literature delves into the historical significance of radio, such as its role in bolstering Nazi popularity in 1930s Germany Adena et al. (2015) or aiding resistance coordination during World War II (Gagliarducci et al., 2020). In a different context, Alfano and Görlach (2022) uncovers that the access to the media amplifies the adverse impact of terrorist attacks on education in Kenya

Instead, coordination is facilitated when the media more accurately mirrors the scale of protest participation, thereby increasing the incentives for political activism and decreasing participation costs (Barbera and Jackson, 2017; Passarelli and Tabellini, 2017). Our results reveal a more pronounced influence when individuals access independent media through the Internet, compared to traditional information platforms like television.[4]

The remainder of this paper is structured as follows. Section 2 sets the groundwork by providing the contextual context for the study. In Section 3, we outline our research design. This section is divided into two parts: first, we present our data along with descriptive statistics that offer a clearer understanding of our study sample (Section 3.1), and second, we present our identification strategy (Section 3.2). Moving ahead, Section 4 unveils our key findings (Section 4.1) and discusses some potential validation threats (Section 4.2). In Section 5 we propose a discussion on some additional interesting results. Finally, Section 6 encapsulates our conclusions.

## 2    The Emergence of Independent Media in the Arab World

The genesis of the information revolution in the Arab World can be traced back to the Arab newspaper and further advanced with the introduction of satellite networks (Dunn, 2000). This transformative shift is extensively discussed in a literature review by Dunn (2000) focusing on the emergence of the information revolution in the Middle East. As highlighted by Arab Media Outlook (2012), satellite networks have firmly established their dominance as the primary television platform in the Arab world, with only a few markets still relying on cable TV. Notable examples of these cable TV markets include Bahrain, Kuwait, Lebanon, Qatar, and the United Arab Emirates. Nevertheless, even in these countries, cable TV penetration experienced a decline in the early 2010s. In the context of Lebanon, two prominent television platforms are evident: analogue terrestrial television, accessible to 14% of households, and free satellite television, which is accessed by 83% of households. It is noteworthy that satellite television is available to more than 90% of households in Lebanon. Similar trends are observed in the Palestinian territories and Jordan, reflecting the widespread influence of satellite television in the region.

The establishment of Al Jazeera in 1996 marked a significant milestone in the Arab world's media landscape. Al Jazeera, an autonomous Arabic news channel, is partially funded by the Qatari government and operates under the banner of the media conglomerate Al Jazeera Media Network. Known as the largest independent news channel in the Arab world, it is dedicated to providing comprehensive news coverage and

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[4]Studies investigating the influence of social media on protests differentiate between the channels of information and collective action (Enikolopov et al., 2020; Fergusson and Molina, 2020; Guriev et al., 2019; Manacorda and Tesei, 2020; Zhuravskaya et al., 2020). The former imparts insights into government performance, exerting a significant impact in countries where media is primarily state-controlled. The latter enables information exchange, thus lowering coordination costs and facilitating protest activities.

facilitating live debates (Al-Jazeera, 2020). Although Al Jazeera has faced Western criticism for providing a platform to groups such as Al-Qaida and the Taliban, thus being accused of propagating religious extremism, it has also adhered to its motto "The opinion... and the other opinion". Under this principle, Al Jazeera has exposed its audience to viewpoints that challenge incumbent leaders (El-Nawawy and Iskandar, 2002, 2003; Zayani, 2005).

The impact of the network has reverberated across Arab regimes, frequently inciting complaints about its destabilizing influence on their authorities, although without directly criticizing its founder, Qatar. The network's perceived role in facilitating the Arab Spring was even condemned, with claims that it supplied the "gunpowder" that fuelled people's anger and desire to join massive demonstrations demanding regime change (Sultan, 2013). This complaint bore significance, as the demand for Al Jazeera's closure was one of the factors perpetuating the trade embargo imposed on Qatar by Egypt, Saudi Arabia, the UAE, and Bahrain in June 2017 (Al-Malk et al., 2022). Governments such as those of Egypt and Jordan contended that Al Jazeera's coverage "threatened the stability of their regimes and exposed them to criticism by their own people." (El-Nawawy and Iskandar, 2003). "Even in Palestine, the Ramallah office of Al Jazeera was closed after Al Jazeera broadcast an unflattering image of chairman Yasser Aarafat in a promotional trailer for a documentary on the 1975-90 Lebanese Civil war" (El-Nawawy and Iskandar, 2002). Beyond filling a media void, Al Jazeera also occupies a political void. Amid the scarcity of political will and political pluralism in the Arab world, Al Jazeera functions as a de facto pan-Arab opposition and a platform for expressions of resistance (Zayani, 2005).

In the wake of Al Jazeera's establishment, other independent media networks surfaced within the Arab world. Notably, as a reaction to Al Jazeera's critical coverage of the Saudi royal family during the 1990s, Al Arabiya emerged in 2001. Founded by relatives of the Saudi royal family, Al Arabiya found its base in Dubai and was often referred to as the "Saudi voice" of the Arab world (Behravesh, 2014). Operating out of Riyadh, Saudi Arabia, Al Arabiya stands as an international free-to-air news channel, managed by the media conglomerate Middle East Broadcasting Centre, epitomising what is commonly known as "Arab modernism" (Allied Media Corp., 2020). It is reputed as the second most widely watched channel after Al Jazeera, driven by its motto "Know More" (Watkins, 2019). In parallel with Al Jazeera, Al Arabiya seeks to offer an impartial understanding to Arab citizens, while "keeping with the greater political agenda pursued by the Saudi government in the external and domestic spheres" (Behravesh, 2014).

Al Arabiya, much like its counterpart, has also faced criticism from authorities within various Arab countries. On March 11, 2010, Yemeni authorities conducted raids on the offices of both Al Jazeera and Al Arabiya, confiscating their broadcast materials on the grounds that the equipment "should not serve to provoke trouble and amplify events in such a way as to harm public order" (Herd, 2011).

In the rest of our study, we focus our attention on these two prominent independent media networks and proceed to quantify their influence on political mobilization within the Arab World.

## 3   Research Design

In this section, we present our data (Section 3.1) and outline our identification strategy (Section 3.2).

### 3.1   Data and Descriptive Statistics

This section describes the data used and provides some descriptive statistics in Table 1.[5]

**Media Networks.**   The main variable of interest in this study is the most reliable source of information reported by an individual. This variable comes from the Arab Barometer surveys, which are reliable and non-partisan public opinion surveys that provide information on the social, political and economic attitudes and values of ordinary citizens in the Middle East and North Africa since 2006 (Arab Barometer, 2020). First, respondents are asked about the most trustworthy source of information (television, radio, ...). Second, the respondent identifies the source (e.g. name of the television channel or website, ...).

This second inquiry provides information on the media source in which an individual places the most trust. This information is used to construct the primary explanatory variable concerning independent media access in our analysis. However, a challenge arises as the data from the second questionis exclusively accessible in wave 2 of the Arab Barometer, conducted during 2010-2011. Consequently, we meticulously curate our sample to ensure that this information predates the pivotal date of December 17, 2010, when the self-immolation of a Tunisian vendor acted as a catalyst for the Arab Spring. Among the countries covered in wave 2 of the Afrobarometer - namely Algeria, Egypt, Iraq, Jordan, Lebanon, Saudi Arabia, Sudan, Tunisia, Palestine and Yemen - only Jordan, Lebanon, and Palestine had conducted the survey before December 17, 2010. Consequently, our primary analysis is based on these three countries and covers 34 regions (and 65 clusters), with repeated cross-sectional data extracted from waves 2 (2010-2011) and 4 (2016-2017) of the Arab Barometer Surveys. When dealing with the endogenous access to independent media, we also extend our analysis to Algeria, Egypt, Iraq, Sudan, Tunisia and Yemen. The sample covers 167 regions (and 309 clusters).[6]

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[5]Variables are weighted using Arab Barometer surveys' *weight* variable to produce nationally representative results.

[6]These six countries have indeed information about media usage in wave 2 but missing information on political mobilisation in wave 4. For a more comprehensive overview of the entire range of countries in the sample, please consult the summary table in the Appendix. The unavailability of data on an individual's region in wave 1 of Arab Barometer surveys precludes its use. Furthermore, wave 3, which spans the period 2012-2014, is excluded since our outcome variables regarding political mobilization need to be related to a time frame after the Arab Spring. However, Arab Barometer surveys inquire about an individual's participation in protests or attendance at meetings where petitions were signed over the past three years. Thus, data from wave 3 might encompass a period predating the Arab Spring.

By aggregating responses from individuals who indicated Al Jazeera or Al Arabiya as their most reliable sources of information, we construct a variable *Independent Media Network*, which serves as the main focus of this paper. Given that the Arab Barometer surveys are cross-sectional in nature and do not track individuals over time, this measure is generated at the sub-national level (using the Database of Global Administrative Boundaries, GADM 1) where the data remains representative. Comprising information from 6,092 individuals, and 18,626 individuals for the extended sample, this variable quantifies the regional proportion of individuals who identify independent media (Al Jazeera or Al Arabiya) as their most credible source of information. We also explore the impact of 1) Al Jazeera versus Al Arabiya individually and 2) independent media through TV versus the Internet on participation in protests. Using the identity of the most reliable source of information, we further construct a measure of state media networks, using that information to implement a Placebo exercise.[7]

Employing information on the most trustworthy source, we derive two additional regional-level variables: the regional share of individuals using the Internet as their primary source of information and the share of those relying on traditional media such as TV or press for information. This is quire relevant as an extensive body of literature examines the profiles and disparities between users of traditional media and users of the Internet (Yoon and Kim, 2001; La Ferle et al., 2000; Johnson and Kaye, 2004; Gaskins and Jerit, 2012; Dimmick et al., 2004). These variables are integrated as part of our regional control variables within the empirical analysis.

As can be seen from Table 1, on average, the regional share of independent media users amounts to roughly 5% (5.24%) while that of state media users amounts to roughly 6% (5.81%). As a reminder, the share of independent media networks is simply the sum of the share of Al Jazeera viewers (4.42%) and the share of Al Arabiya viewers (0.81%). The regional proportion of traditional media users is roughly 25% (25.18%), whereas Internet users constitute approximately 5% (5.28%).[8]

Figure 1 visualizes the distribution of independent media (Al Jazeera and Al Arabiya) and state media. Visual representation indicates that in Jordan, particularly in the north, with the exception of the Jerah region, the reliance on state media is more pronounced. However, in regions such as Amman and Madeba, usage of independent media remains higher than the national average. In Lebanon, apart from Beirut where independent media usage is substantial, state media seems to be well-regarded, especially in the greater South. In Palestine, the usage of independent media appears to be widespread compared to the other two countries, but state media also appears to have a significant viewership in several regions.

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[7]Referring to media outlets that are financially and editorially controlled by the corresponding country's government (Webster, David and Institute for Contemporary Studies, 1992).

[8]As can be seen in Appendix Table 1, similar descriptives are found when the sample is extended to Algeria, Egypt, Iraq, Sudan, Tunisia and Yemen.

Table 1: Descriptive Statistics.

| | (1) Mean | (2) Std. Dev. | (3) Min. | (4) Max. |
|---|---|---|---|---|
| | | N=6,092 | | |
| **Data on Media Networks.** | | | | |
| Independent Media Network | 0.0524 | 0.0370 | 0.0010 | 0.1374 |
| Al Jazeera Media Network | 0.0442 | 0.0303 | 0.0010 | 0.1033 |
| Al Arabiya Media Network | 0.0081 | 0.0090 | 0 | 0.0406 |
| State Media Network | 0.0581 | 0.0273 | 0.0017 | 0.1282 |
| Internet Users | 0.0528 | 0.0717 | 0 | 0.2836 |
| Traditional Media (TV and Press) Users | 0.2518 | 0.3144 | 0 | 1.0719 |
| **Data on Political Mobilization.** | | | | |
| Violent Protests (GDELT) | 0.0159 | 0.2644 | 0 | 43 |
| Participation in Protests | 0.1637 | 0.3700 | 0 | 1 |
| Trust towards governments | 0.4399 | 0.4964 | 0 | 1 |
| General Trust | 0.1957 | 0.3967 | 0 | 1 |
| Political Alignment | 0.4273 | 0.4947 | 0 | 1 |
| Signing Petitions | 0.1564 | 0.3633 | 0 | 1 |
| **Data on Individual Characteristics.** | | | | |
| Age | 38.7017 | 14.2001 | 18 | 93 |
| Gender: Female | 0.4714 | 0.4992 | 0 | 1 |
| Education: None | 0.0474 | 0.2126 | 0 | 1 |
| Education: Primary | 0.3380 | 0.4731 | 0 | 1 |
| Education: Secondary | 0.3109 | 0.4629 | 0 | 1 |
| Education: Tertiary | 0.3025 | 0.4594 | 0 | 1 |
| Employment: Employed | 0.4412 | 0.4966 | 0 | 1 |
| Employment Sector: Public | 0.0900 | 0.2861 | 0 | 1 |
| Marital Status: Married | 0.6911 | 0.4621 | 0 | 1 |
| Religion: Islam | 0.8964 | 0.3047 | 0 | 1 |
| Religion: Christianity | 0.1016 | 0.3022 | 0 | 1 |
| Settlement: Urban | 0.6889 | 0.4630 | 0 | 1 |
| **Data on Climatic Variables.** | | | | |
| Incidence Seaquakes (100 km buffer) | 91.0297 | 65.4939 | 0 | 181 |
| Frequency of Lightning Strikes | 35,249.6015 | 37,892.8569 | 14,212.0439 | 235,963.2363 |
| Density of Lightning Strikes | 10.1278 | 1.9438 | 5.5641 | 13.3570 |
| Nightlight Density | 21.1499 | 12.8102 | 3.8796 | 62.8000 |
| Ruggedness | 0.4095 | 0.3535 | 0 | 1 |
| Temperature | 2.8209 | 0.2486 | 2.3949 | 3.1091 |
| Extreme Temperature | 0.5834 | 0.4930 | 0 | 1 |
| Precipitation | 5.5464 | 1.9313 | 0.6156 | 9.6034 |
| Extreme Precipitation | 0.4445 | 0.4970 | 0 | 1 |

**Notes:** Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%). Nb. of countries: 3 (Jordan, Lebanon, Palestine). Nb. of regions: 34. Number of periods: 2. Nb. of observations for GDELT: 236,700.

Figure 1: Protests and Regional Use of Media Networks in Jordan, Lebanon and Palestine.
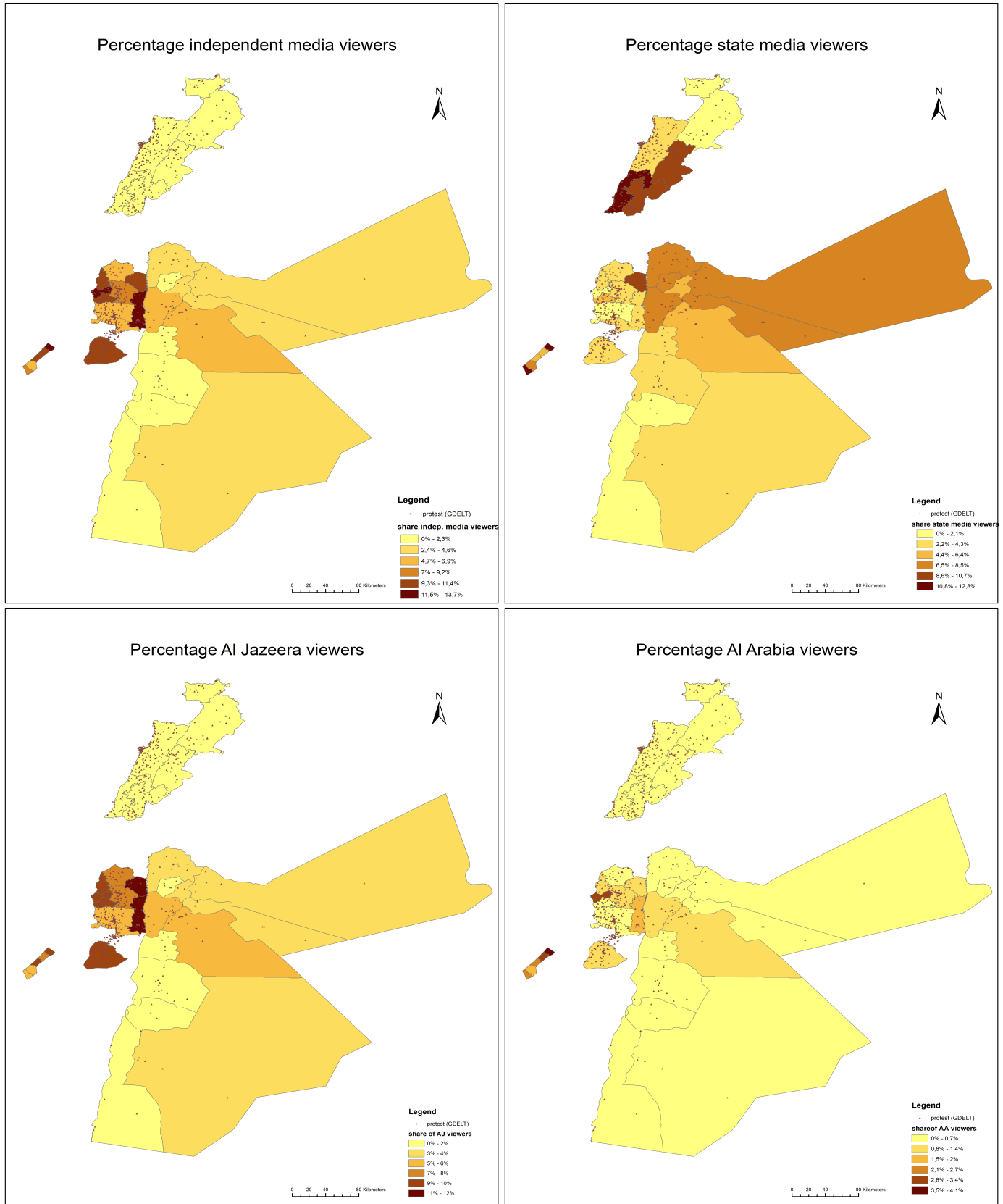
**Political Mobilization.** Our main outcome variable relates to an individual's Participation in Protests, which serves as a proxy for political mobilization in our main analysis. The data for this variable is drawn from the Arab Barometer surveys, asking whether the respondent has participated in a protest, a march or a sit-in in the past three years.

Our sample consists of 6,092 observations across two time periods (waves 2 and 4 of Arab Barometer surveys).[9] Table 1 shows that approximately 16% (16.37%) of individuals within our sample have reported their participation in protests.

As data on participation in protests is only available for two time periods using the Arab Barometer surveys, we turn to the Global Database of Events, Language, and Tone (GDELT) dataset as a next step. GDELT is a comprehensive global news media resource that spans over three decades and is accessible in more than 100 languages (Leetaru and Schrodt, 2013). This dataset encompasses over 250 million event records with geographical references, covering a range of over 300 different event categories and serves as an open resource for research and analysis. It uses the Conflict and Mediation Event Observations (CAMEO) system, which employs a three-tiered code system to categorise various event types. Each individual observation within the dataset is enriched with multiple layers of information, including details about location, participating entities, event impact, and the nature of the action, among other available attributes.

In our analysis, our focus is on events related to protests. Within the GDELT dataset, these events are categorised as instances where news reports describe actions of protest conducted forcefully and potentially resulting in destruction. These events are recorded on a daily basis. Our dataset comprises approximately 1.1 million (1,119,913) observations. As depicted in Table 1, the average daily count of violent events reported is around 25 (24.12), with the highest recorded count being 130 events in a single day.

For additional analyses, we also use the Arab Barometer surveys to examine alternative outcomes such as trust (general and/or towards governments) and political alignment. In Lebanon, Jordan and Palestine, slightly less than half of the population (43.99%) declared to trust the government, but only 19.57% think that most people are trustworthy. 42.73% of respondents claim that *citizens must support the government's decisions even if they disagree with them.*

**Individual Characteristics.** Our analysis accounts for a range of individual socio-demographic factors derived from the Arab Barometer surveys. These factors include gender, age (and its squared term), educational attainment, marital status, religious affiliation, employment status, whether an individual is engaged in public sector employment and whether they live in an urban area. Unless otherwise noted, descriptive statistics from both the restricted and extended sample of countries are quite similar. Within our sample, the distribution of gender leans slightly towards men. Regarding educational attainment, our sample displays a relatively equal distribution across basic, secondary, and tertiary education levels. In the restricted sample, the share of uneducated respondents is slightly higher (47.4%), while in the 9-country sample, individuals with no declared educational level represent only 11.04%. Employed individuals represent slightly less than half of the population (44.12%), with 9% of them working in the public sector. The married population constitutes the majority (69.11%), and about 90% of respondents in our sample identify as Muslim, while 68.89% of respondents report living in urban areas.

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[9]Further details regarding the availability of data related to political mobilization are presented in Table **??** of the Appendix.

**Submarine cables-based instrument.** Submarine fibre-optic cables data has been retrieved from Tele-geography and represents worldwide network cables as well as all landing stations, from 1989 to 2018. During the 2000s, there has been a vast expansion of the submarine cable network connecting low- and middle-income countries to fast Internet.[10] Nowadays most countries which are not landlocked have at least one landing station which is connected to one or several fibre optic submarine cables.

After establishing international connectivity through submarine cables, the next step entails the deploy-ment of terrestrial infrastructure, commonly referred to as the "national backbone", to facilitate the delivery of high-speed Internet services to telecom operators. Regrettably, with the exception of Jordan, we lack digitised data on the national backbone. Consequently, we devised a method to determine regional access to submarine cable landing stations as follows: initially, we identified the landing stations corresponding to each country with sea access (3 for Lebanon and 1 for Jordan; Palestine's West Bank is landlocked and Gaza lacks a landing station). Subsequently, we calculated the shortest distance between these landing stations and the centroid of every GADM 1 region within the respective country. In the case of Palestine, where no landing station is present, we first computed the distance between Israel's Tel Aviv landing station[11] and the nearest border point to Palestine (located around the city of Salfit). Then, we determined the distance between this border point and the centroids of the 17 GADM 2 regions within Palestine.[12]

Although this approach might introduce some measurement inaccuracies in the way we construct our variable, it is crucial to emphasise that the distance component primarily functions as a weight in our assessment of Internet access. The crux of our identification strategy revolves around gaining access to submarine cables and the potential impact of natural hazard shocks – occurring far in the ocean – that could disrupt this access. Additionally, much like studies that employ theoretical road networks to approximate real road networks, the national backbone infrastructure is not entirely exogenous. Using a shortest distance measure to proxy these networks may help alleviate the endogenous nature of the actual terrestrial cable network (Faber, 2014; Redding and Turner, 2015; Banerjee et al., 2020).

**Seaquakes.** Submarine cables, often owned by private companies, can be subject to construction influenced by political or commercial factors that could be endogenous to our variable of interest, such as protest. To introduce plausibly exogenous shocks to Internet accessibility, similar to the approach used in Cariolle (2019), we turn to seaquake activity. Seismic activity, particularly seaquakes, is a significant natural cause of submarine cable breakages, apart from human actions like trawling nets or anchors. While earthquakes might lead to broader damages, impacting the outcome variable through various channels, seaquakes primarily affect our outcome through cable breakages. We derive seaquake data from the US Geological Survey (USGS) Earthquake Hazards Program, which includes precise geographical coordinates of epicentres, dates, times of rupture, and event magnitudes.

**Nighttime Light.** Similar to the methodology employed by Manacorda and Tesei (2020), we compute the average density of light at night per administrative region as a proxy of economic activity in the absence of systematic income data at the regional level. This approach, using satellite data to approximate economic

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[10]https://www2.telegeography.com/

[11]Among Israel's 3 landing stations, we rely on Tel Aviv's landing station due to its proximity to the Palestinian territories. Palestine currently lacks the ability to directly connect its network to the global network and depends on Israel to transmit traffic (World Bank, 2016).

[12]For Palestine, GADM 2 regions are used as there are no GADM 1 regions available.

activity in areas lacking detailed systematic data, is a common practice in economics (Henderson et al., 2011, 2012). We source our data from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI). NOAA provides publicly accessible geographical data and information NOAA (2021). We download the "Average Visible, Stable Lights, and Cloud-Free Coverage" data spanning from 2000 to 2013 at yearly intervals. For 12 out of the 14 years of available data, two satellites contributed to the data set. In these cases, we calculate the average value of the two. The nightlight data are presented as light intensity, ranging from 0 to 63, and the files consist of cloud-free composites generated from all archived DMSP-OLS smooth resolution data for calendar years. The products are provided in 30 arc-second grids (NOAA, 2021).

**Climate Data.** Recognising the potential impact of climatic factors on an individual's inclination to participate in protests (Madestam et al., 2013; Zhang, 2016; Klein Teeselink and Melios, 2021), we incorporate controls for regional-level variables related to precipitation density and temperature. To capture potential non-linear effects, we also interact these variables with extreme precipitation and temperature. Our climate data is sourced from the Centre for Environmental Data Analysis (CEDA), which administers the UK's national data centre for atmospheric and earth observation research (Harris et al., 2020). The dataset offers *"month-by-month variations in climate over the period 1901-2019, provided on high-resolution (0.5 x 0.5 degrees) grids, produced by the Climatic Research Unit at the University of East Anglia and funded by the UK National Center for Atmospheric Science (NCAS)"* (Harris et al., 2020).

To align the monthly-level climate data with the Arab Barometer surveys, we use the survey periods to construct cumulative averages of monthly rainfall or temperature over the preceding 12, 24, or 36 months. This approach accounts for the lack of a variable specifying interview dates in wave 2, and the absence of complete date information in waves 3 and 4. As the Arab Barometer surveys inquire about protests and petition signing over the past three years, we compute climatic variables based on the average cumulative monthly rainfall or temperature over the previous 36 months. Precipitation density is then calculated by dividing the average cumulative monthly rainfall by the region's area.

Regarding proxies for political mobilization and other outcomes including trust towards governments, political alignment, and general trust, we consider variables over the preceding 12 months. To construct extreme precipitation and temperature variables, we analyze precipitation and temperature anomalies and generate a binary variable with a value of 1 when the standard deviation of anomalies exceeds 1 (Sardeshmukh et al., 2011; Pérez-Morga et al., 2013).[13]

**Ruggedness.** We quantify the degree of ruggedness within each region by determining the percentage of mountainous areas based on data from the World Conservation Monitoring Centre under the UN Environment Programme (UNEP-WCMC). According to Harris et al. (2021), "the mountains dataset shows the location of mountain land estimated from a digital elevation model using criteria based on elevation alone (the upper three classes: $\geq 2,500$ meters) and at lower elevation, on a combination of elevation, slope and local elevation range". The determination of mountainous areas is based on data from the USGS global digital elevation model, specifically the USGS EROS Data Center of 1996. This dataset provides information about slope and local elevation ranges across a grid. The derived information is then used to classify the regions into

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[13]Climate anomalies are computed as the deviations from the region's long-term mean, divided by its long-run standard deviation.

six distinct mountain classes based on specific elevation thresholds and slope characteristics.[14] To obtain ruggedness for each administrative region, we calculated the percentage of total area in each region, which is covered by mountains. The global mountain area thus covers 46% of the total area in our sample of 3 countries.

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[14]These categories are: (1)Elevation $\geq$ 4500 meters; (2) Elevation $<$ 4500 & elevation $\geq$ 3500; (3) Elevation $<$ 3500 & elevation $\geq$ 2500; (4) Elevation $<$ 2500 & elevation $\geq$ 1500 & slope $>$ 2 degree; (5) Elevation $<$ 1500 & elevation $\geq$ 1000 & slope $\geq$ 5 degree OR elevation $<$ 1500 & elevation $\geq$ 1000 & local (7 km radius) elevation range $>$ 300 meters; and (6) Elevation $<$ 1000 & elevation $\geq$ 300 & local (7 km radius) elevation range $>$ 300 meters.

Table 2: Determinants of Independent Media Use, prior to the Arab Spring (based on wave 2).

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Independent Media Network | | | |
| | 9 countries | | 3 countries | |
| Participation to Protests | | 0.5671*** | | -0.0267 |
| | | (0.1349) | | (0.0583) |
| Gender: Female | 0.0977** | 0.1228** | 0.0024 | 0.0017 |
| | (0.0476) | (0.0482) | (0.0164) | (0.0162) |
| Age | -0.2011 | -0.1779 | 0.2193 | 0.2184 |
| | (0.4862) | (0.4772) | (0.1647) | (0.1640) |
| Age Squared | 0.2400 | 0.2251 | -0.1936 | -0.1936 |
| | (0.4392) | (0.4292) | (0.1416) | (0.1419) |
| Education: None | -0.0682 | -0.0496 | -0.1118 | -0.1120 |
| | (0.1032) | (0.1043) | (0.0678) | (0.0679) |
| Education: Primary | 0.0608 | 0.0650 | -0.1506 | -0.1503 |
| | (0.1279) | (0.1303) | (0.0929) | (0.0929) |
| Education: Secondary | -0.0376 | -0.0293 | -0.1177 | -0.1172 |
| | (0.1072) | (0.1106) | (0.0811) | (0.0811) |
| Education: Tertiary | -0.0552 | -0.0543 | -0.1000 | -0.0992 |
| | (0.0953) | (0.0970) | (0.0860) | (0.0860) |
| Religion: Muslim | 0.0716 | 0.0962 | -0.0981 | -0.0965 |
| | (0.0885) | (0.0875) | (0.0608) | (0.0605) |
| Religion: Christian | -0.2747*** | -0.2455*** | -0.2253*** | -0.2237*** |
| | (0.0729) | (0.0747) | (0.0594) | (0.0587) |
| Marital Status: Married | -0.2430*** | -0.2342*** | 0.0491** | 0.0492** |
| | (0.0581) | (0.0555) | (0.0230) | (0.0229) |
| Employment: Employed | 0.0885** | 0.0888** | -0.0932*** | -0.0924*** |
| | (0.0400) | (0.0387) | (0.0298) | (0.0294) |
| Employment Sector: Public | -0.0122 | -0.0159 | 0.0048 | 0.0045 |
| | (0.0333) | (0.0346) | (0.0209) | (0.0207) |
| Settlement: Urban | 0.0600 | 0.0630 | -0.4587*** | -0.4598*** |
| | (0.2238) | (0.2186) | (0.1376) | (0.1372) |
| Observations | 11,169 | 11,169 | 3,554 | 3,554 |
| R-squared | 0.0654 | 0.0839 | 0.4564 | 0.4566 |
| Root MSE | 1.415 | 1.401 | 0.619 | 0.619 |

**Notes:** Determinants of independent media use. Country considered in Column 1, 2: Algeria, Egypt, Iraq, Jordan, Lebanon, Palestine, Sudan, Tunisia and Yemen before the Arab Spring. Column 3 and 4 are the same as Column 1 and 2, but for the restricted sample of countries: Lebanon, Jordan, Palestine. Independent Media Network: Sum of the Al Jazeera and Al Arabiya networks (%). Robust standard errors clustered at the region-settlement level (239) in parentheses. *** denotes statistical significance at the 1% level ($p < 0.01$), ** at the 5% level ($p < 0.05$), and * at the 10% level ($p < 0.10$), all for two-sided hypothesis tests.

## 3.2  Identification strategy

Our objective is to investigate the influence of independent media networks on political mobilization. To achieve this, we initially conduct Ordinary Least Squares (OLS) estimations to scrutinise the correlation between the utilisation of independent media networks and engagement in protests. Subsequently, recognising the potential confounding effect of other unobservable factors, we employ an instrumental variable approach to delve into the causal connection between independent media networks and protests.

Our benchmark estimation can be represented as follows:

$$P_{ijct} = Post_t + Region_j + \beta_1(IndepMedia_{jc} * Post_t) + \beta_2 X_{ijct} + \beta_3 Q_{jct} + \epsilon_{ijct} \tag{1}$$

where $P_{ijct}$ denotes the respondent's participation in protests, indexed by $i$, within region $j$ of country $c$ during survey year $t$.[15]

This analysis encompasses two distinct time frames: before and after the Arab Spring, designated as December 17, 2010, when *"Tunisian vendor Mohammed Bouazizi sets himself on fire to protest the arbitrary seizing of his vegetable stand by police over failure to obtain a permit"* (History.Com, 2020).[16]  In our examination, the variable $Post_t$ assumes the value 0 before the Arab Spring and 1 after its occurrence.

Our main variable of interest, $IndepMedia_{jc} * Post_t$, involves an interaction between the binary variable $Post_t$ and the proportion of respondents within a region who consider independent media networks (Al Jazeera or Al Arabiya) as their most dependable source of information. Throughout our analysis, we take advantage of distinctions between access to independent media via the Internet versus TV, as well as separate considerations for Al Jazeera and Al Arabiya. Consequently, to facilitate comparison and interpretation, we standardize our variables of interest. The variable $IndepMedia_{jc}$ is defined prior to the triggering event of the Arab Spring on December 17, 2010. Additionally, we account for regional fixed effects through $Region_j$.

The vector $X_{ijct}$ includes a range of individual-level controls, such as age and its quadratic term, gender, educational attainment, marital status, religious affiliation, employment status, whether an individual is engaged in public sector employment and whether they live in an urban area. Meanwhile, $Q_{jct}$ incorporates several region-level controls, including the proportions of Internet users and traditional media consumers (TV and press), along with climatic variables like average precipitation density, temperature, extreme precipitation, and extreme temperature. Notably, climatic conditions have been shown to impact not only the propensity for protest or participation in organised violence (Miguel et al., 2004; Hsiang et al., 2013; Mach et al., 2019), but also access to media—particularly satellite TV—owing to the phenomenon known as "rain fade."[17]

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[15]In Section 5, we explore the mechanisms behind our findings and introduce supplementary outcome variables, formulated in a similar manner as participation in protests, as expounded in Section 3.2.

[16]Although this date marks the onset of the Arab Spring uprisings, several countries in the MENA region only joined the movement later in 2011. Consequently, while Tunisian protesters took to the streets after this particular date, individuals in other nations had already been exposed to this news and were motivated to participate in response. To adequately address the potential variance in the impact this could have on an individual's likelihood to participate to protests, we refrain from imposing a uniform date across all countries. In Section 5, we account for this by introducing the actual initial day of protests in each respective country.

[17]Rain fade arises during conditions of rain, ice, or snow, when there is a high concentration of water in thunderstorms. This moisture in the atmosphere attenuates the signal between a satellite's ground station and an individual's TV receiver, leading to unreliable reception. The effect of rain fade on satellite transmission intensifies with heavier precipitation. Satellite TV uses significantly higher frequencies with shorter wavelengths within the Ku band (10.7-12.75GHz) compared to terrestrial TV (Garrett, 2019; Tom, 2021).

In our most comprehensive specification, we also introduce nightlight density as a proxy for regional income, though it is worth noting that this variable might carry limitations as a potentially 'bad' control (Angrist and Kugler, 2008). Adhering to the sampling strategy employed by the Arab Barometer, standard errors are clustered at the region-settlement level (Abadie et al., 2017). Indeed, the Arab Barometer surveys are stratified by sub-national regions and further sub-stratified by settlement type (urban vs. rural).[18] We incorporate sampling weights to ensure that our findings maintain national representativeness.

The interpretation of our differences-in-differences outcomes is based on two pivotal identifying assumptions (Roth et al., 2022). Firstly, it assumes that access to independent media networks does not exert any causal effect before the advent of the Arab Spring, implying the absence of anticipatory effects. This assumption is relaxed when analyzing the endogenous adoption of Al Jazeera and Al Arabiya networks. Second, it is assumed that conflict trajectories would have followed parallel trends in the absence of the Arab Spring. The latter assumption is elaborated upon in the subsequent discussion.

**Endogenous Adoption of Al Jazeera and Al Arabiya Networks.** An inherent challenge pertains to the endogenous nature of an individual's decision, denoted as $i$, to engage with the Al-Jazeera and/or Al Arabiya networks. This could potentially introduce bias into our estimated coefficients within the OLS estimates. Two econometric issues are particularly pertinent: simultaneity/reverse causality and omitted variable bias. It is plausible to dismiss concerns regarding reverse causality, since our dependent variable is defined at the individual level, while our media network variable is constructed at the regional level, preceding the onset of the Arab Spring. Nonetheless, the omitted variable bias could pose a more substantial concern in our analysis.

For example, urban areas are markedly more prone to protests due to lower coordination costs. This unobserved factor that remains constant over time can potentially be accounted for by the regional fixed effects. However, divergent protest trends between regions with and without access to independent media networks could encapsulate other latent variables. Consider, for instance, the propensity to protest and the utilisation of independent media networks, both likely stemming from unobserved individual characteristics encapsulated by the term "critical thinking." An individual who exhibits critical thinking is more predisposed to protest and engage with independent media. In our current context, individuals who seek alternative viewpoints—rather than relying on the state-controlled narrative—are more inclined to consume Al-Jazeera or Al Arabiya content. Given that there is no direct method to measure an individual's propensity for critical thinking, it emerges as an omitted variable within our regression, assimilated into the error term.

This conjecture is confirmed in Table 2. To make an educated guess on the endogeneity bias, we investigate the factors that influence the adoption of independent media prior to the Arab Spring. We employ information from the second wave of Arab Barometer surveys to scrutinize the correlation between different attributes of respondents and their engagement with independent media networks. In this case, we first refrain from confining our participant pool to Jordan, Lebanon, and Palestine, as our objective is simply to explore some potential influences on the use of independent media. Hence, our dataset encompasses Algeria, Egypt, Iraq, Jordan, Lebanon, Sudan, Tunisia, Palestine, and Yemen. Our results are reported in Columns (1) and (2) of Table 2. In Column (1) of Table 2, we evaluate how gender, age (including its quadratic

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[18]Leveraging 65 clusters, as three regions (Beirut, El Nabatieh and Mount Lebanon) in Lebanon exclusively include surveyed individuals in urban areas.

term), educational attainment, marital status, religious affiliation, employment status, involvement in the public sector, and residing in urban areas impact the use of independent media networks. On examination, we find that being a female is positively associated with the use of independent media networks. Conversely, being married and identifying as Christian display a negative correlation. Moving to the second column of Table 2, we expand our analysis to incorporate whether respondents participated in protests within the previous three years. Incorporating this information does not substantially alter the observed correlations between the usage of independent media networks and the aforementioned characteristics. As expected, there is a positive correlation between participation in protests and the use of independent media networks. This alignment with expectations suggests that individuals engaged in protests are more inclined to seek alternative and independent information sources. This behavior could stem from their desire to access a wider array of perspectives and information that might not be covered by media under state control. When restricting the analysis to Jordan, Lebanon and Palestine (columns 3 and 4), we find similar results for being a Christian but opposite signs for the marital or employment status. Contrary to our expectations, accessing independent media is more likely in rural areas, while there is no significant relationship between the likelihood to participate to a protest prior to the Arab Spring and the use of independent media networks (column 4).

**Dealing with the endogeneous adoption of independent media.** A first heuristic approach to address this identification challenge involves incorporating individual characteristics as control variables and assessing whether the coefficients remain robust or change as anticipated. As previously elucidated, we incorporate controls for both individual and regional attributes, $X_{ijct}$ and $Q_{jct}$. A secondary approach draws upon an instrumental variable methodology. The dissemination of Al Jazeera and Al Arabiya networks predominantly occurs through either satellite TV or the Internet. Using this observation, we formulate two potentially exogenous factors that enable us to establish the causal connection between media exposure and protest participation.

First, internet access in nations under scrutiny has been facilitated by the proliferation of sub-marine fibre-optic cables between the 1990s and 2010 (Carter et al., 2009). This approach has been lauded as highly efficient for delivering rapid Internet services.[19] While coastal countries possess a natural advantage in accessing fast Internet via submarine cables, landlocked countries have also benefited from cable deployment, often facilitated through terrestrial infrastructure. Nevertheless, although the impact of fast-Internet submarine cable access on the adoption of independent media is indisputable (Hjort and Poulsen, 2019), the placement of landing points along the coastline is unlikely to be random.[20] To address this, we use the occurrence of seaquakes in 2010 within 100-kilometre buffers around submarine cables as a conceivably exogenous shock influencing media access, owing to cable damage. It is well-established that seismic activity significantly contributes to cable wear or breaks (Cariolle, 2019).[21] To construct our first instrumental variable, we then interact the 2010 seaquake incidence with the $Post_t$ indicator.

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[19]We focus on signals transmitted via Ethernet or fibre cables. We exclude broadband Internet connection from this analysis due to its prohibitive costs, limiting accessibility for many individuals.

[20]Temporal variation cannot be effectively exploited as most cable deployments occurred prior to the period under investigation in this paper.

[21]In a distinct context, our findings corroborate the outcomes of Cariolle (2019), demonstrating the impact of such seaquake shocks on Internet access.

Second, we rely on another determinant of media exposure, specifically lightning strikes (Andersen et al., 2012; Alfano and Görlach, 2022; Manacorda and Tesei, 2020). Electrostatic discharges resulting from lightning strikes can damage information and communication infrastructure, such as antennas, potentially deterring the adoption of technology. To serve as an instrumental variable for media access prior to the Arab Spring, we compute the frequency of lightning strikes at the regional level that spanned 2000 to 2010. Subsequently, we compute the average frequency of lightning strikes prior to the onset of the Arab Spring on December 17, 2010. This value is then interacted with our time variable $Post_t$, given our analysis involves two distinct time periods. Lightning strikes possess the capacity to disrupt media access for individuals using satellite TV and broadband satellite Internet by impairing infrastructure. Moreover, these strikes can trigger power outages, power surges, and electromagnetic interference, all of which have the potential to disrupt satellite TV transmission, broadband Internet, and fibre optic Internet access.

The following equation corresponds to the first-stage regressions, wherein we predict access to independent media networks (Al-Jazeera and Al Arabiya):

$$
\begin{aligned}
IndepMedia_{jc} * Post_t \; = \;\; & Post_t + Region_j + \gamma_1(Seaquakes_{jc} * Post_t) + \gamma_2(Lightening_{jc} * Post_t) \quad (2) \\
+ \;\; & \gamma_3 X_{ijct} + \gamma_4 Q_{jct} + \mu_{jct}
\end{aligned}
$$

Despite the likely strength of our instrumental variables, a potential identification concern could arise if lightning strikes persist over time and directly influence the inclination to participate in protests. Should this scenario hold, we would anticipate pre-existing protest disparities between regions with and without lightning strikes, even prior to the Arab Spring. Another potential issue concerns the likelihood that regions close to the landing stations of submarine cables follow distinct trends due to the direct influence of Internet access on other outcomes (e.g., employment, as outlined in Hjort and Poulsen (2019)). To rule out this direct channel, we evaluate the sensitivity of our 2SLS outcomes by controlling for interactions between factors that could potentially correlate with proximity to a landing station and the time indicator ($Post_t$). An obvious candidate is urban-specific time trends, given the presence of significant cities along the coastline. Following Armand et al. (2020), we also incorporate controls for terrain ruggedness, interacted with $Post_t$.

Moreover, the use of two distinct instrumental variables empowers the application of an overidentification test. To bolster the robustness of our results, we discuss the potency of our results through precisely identified equations[22] or the implementation of placebo tests.

**Validity of the parallel trends assumptions.** A limitation of the data of the Afro Barometer on protests stems from the fact that we have only one observation before the Arab Spring. Consequently, gauging the credibility of the parallel trends assumption becomes challenging. To address this problem, we first replicate our fundamental analysis using an alternative high-frequency conflict dataset. We aim to evaluate the presence of preexisting dissimilarities in trends. For this purpose, we turn to the Global Database of Events, Language, and Tone (GDELT) project, elucidated further in Section 5. Second, albeit at the expense of relaxing the no-anticipation assumption, we employ a model featuring staggered adoption of treatments. To accomplish this, we again draw on data from the GDELT project. Using data from GDELT project, the

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[22]The employment of these two instruments is imperative in our analysis. This is due to the fact that TV users predominantly depend on satellite signals, making them susceptible to disruptions caused by potential lightning strikes. On the contrary, Internet users rely on submarine cables, leaving them vulnerable to the impact of seaquakes.

variable $Post_t$ is no longer restricted to two periods, but it is defined according to each country's date in joining the Arab Spring as reported in Table 7 (Section 4.2).

# 4   Empirical analysis

This section presents our findings. We present our benchmark results in Section 4.1 and introduce supplementary results under Section 4.2.

## 4.1   Main Results

Table 3 displays the outcomes of the linear probability model implemented through OLS, as depicted in Equation 1, aimed at investigating the potential relationship between the proportion of independent media users and engagement in protests. Each column in the table represents a different arrangement of control variables integrated into the analysis (starting from the most to the least plausibly exogenous).

In Column (1), we incorporate factors related to individual attributes: gender, age (including its squared term), as well as climatic variables like precipitation density, extreme precipitation, temperature, and extreme temperature. Moving on to Column (2), we introduce additional individual characteristics such as educational attainment, religious affiliation, marital status, employment status, public sector engagement, and urban residency. In Column (3), we further include the proportion of Internet users, and in Column (4), we bring in users of traditional media (television and press). Finally, Column (5) encompasses nightlight density as a proxy for regional-level income.

By incorporating these diverse sets of control variables, the objective of the analysis is to comprehend the connection between the use of independent media and engagement in protests, all while considering the influence of other potential factors. The outcomes from these models can provide insights into whether the use of independent media is autonomously linked to increased levels of participation in protests or if other variables play a substantial role in shaping this association. As can be seen from Table 3, the proportion of individuals using independent media networks is found to have a positive and statistically significant correlation with participation in protests. Moreover, being a male, religiosity and being employed also demonstrate positive and significant correlations with participation in protests. Interestingly, regional characteristics such as precipitation density and temperature exhibit a non-linear correlation.

As outlined in Section 3.2, there is a likelihood of omitted variable bias when examining the influence of independent media networks on political mobilization. An individual's capacity to exercise critical thinking regarding the information they receive and their probable openness to using media beyond state-controlled sources, such as independent media, introduces a potential challenge to the zero conditional mean assumption required for causal inference. To correct for endogeneity concerns, we employ a strategy in which we predict the proportion of independent media users based on the exogenous accessibility to these media prior to the Arab Spring. This accessibility is gauged by the occurrence of seaquakes near landing stations and the frequency of lightning strikes.

In Panel A of Table 4, we present our prior results obtained through OLS for the sake of comparison. Moving to Panel B, we present our results from the second-stage analysis using the 2SLS method. As anticipated, both instrumental variables exhibit substantial and statistically significant effects on our variable

of interest, underscored by a Kleibergen-Paap rk Wald F statistic surpassing 20. Finally, Panel C shows the first-stage outcomes.[23]

Columns (1) to (4) of Panel B shows results from our benchmark equation. As can be seen, a one-standard deviation increase in the share of independent media users corresponds to an approximate 4 percentage points increase in the likelihood of participating in protests. At the mean of protests (0.16), it corresponds to a rise by about 24%. The introduction of the potentially endogenous nightlight density in Column (5) does not lead to qualitative alterations in our findings.

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[23]When using one single IV, Table 5 indicates that weak instruments are also unlikely to be a major concern. Indeed, we follow Angrist and Kugler (2008) in providing a just-identified IV equation, known to be median unbiased (Angrist and Kolesár, 2021).

Table 3: Independent Media and Participation in Protests, OLS.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Participation in Protests | | | | |
| Independent Media Network | 0.0361*** | 0.0307** | 0.0300** | 0.0319** | 0.0296** |
| | (0.0130) | (0.0137) | (0.0148) | (0.0144) | (0.0146) |
| Gender: Female | -0.0384*** | -0.0278*** | -0.0278*** | -0.0277*** | -0.0277*** |
| | (0.0078) | (0.0083) | (0.0083) | (0.0083) | (0.0083) |
| Age | 0.0339 | 0.0159 | 0.0158 | 0.0161 | 0.0155 |
| | (0.0241) | (0.0277) | (0.0277) | (0.0278) | (0.0279) |
| Age Sq. | -0.0467** | -0.0229 | -0.0228 | -0.0231 | -0.0225 |
| | (0.0228) | (0.0253) | (0.0254) | (0.0254) | (0.0256) |
| Education: None | | -0.0071 | -0.0072 | -0.0074 | -0.0078 |
| | | (0.0247) | (0.0249) | (0.0248) | (0.0249) |
| Education: Primary | | -0.0076 | -0.0078 | -0.0082 | -0.0085 |
| | | (0.0387) | (0.0389) | (0.0388) | (0.0389) |
| Education: Secondary | | -0.0031 | -0.0033 | -0.0036 | -0.0039 |
| | | (0.0329) | (0.0330) | (0.0329) | (0.0330) |
| Education: Tertiary | | 0.0114 | 0.0112 | 0.0110 | 0.0107 |
| | | (0.0349) | (0.0351) | (0.0350) | (0.0351) |
| Religion: Islam | | 0.0506*** | 0.0508*** | 0.0509*** | 0.0509*** |
| | | (0.0113) | (0.0114) | (0.0114) | (0.0114) |
| Religion: Christianity | | 0.0398*** | 0.0399*** | 0.0401*** | 0.0401*** |
| | | (0.0117) | (0.0117) | (0.0117) | (0.0117) |
| Marital Status: Married | | -0.0004 | -0.0004 | -0.0004 | -0.0004 |
| | | (0.0057) | (0.0057) | (0.0057) | (0.0057) |
| Employment: Employed | | 0.0170** | 0.0170** | 0.0170** | 0.0171** |
| | | (0.0076) | (0.0076) | (0.0075) | (0.0076) |
| Employment Sector: Public | | 0.0046 | 0.0045 | 0.0046 | 0.0045 |
| | | (0.0074) | (0.0074) | (0.0074) | (0.0074) |
| Settlement: Urban | | -0.0009 | -0.0007 | -0.0002 | -0.0004 |
| | | (0.0058) | (0.0058) | (0.0059) | (0.0058) |
| Internet Users | | | 0.0040 | -0.0100 | -0.0129 |
| | | | (0.0176) | (0.0290) | (0.0300) |
| Traditional Media (TV & Press) Users | | | | 0.0306 | 0.0357 |
| | | | | (0.0436) | (0.0456) |
| Nightlight Density | | | | | 0.0863 |
| | | | | | (0.0798) |
| Precipitation | -0.3645 | -0.3282 | -0.3240 | -0.2907 | -0.3462 |
| | (0.3237) | (0.3167) | (0.3223) | (0.3111) | (0.3079) |
| Extreme Precipitation | 0.0494* | 0.0470* | 0.0480* | 0.0502** | 0.0560** |
| | (0.0264) | (0.0246) | (0.0252) | (0.0247) | (0.0245) |
| Temperature | 0.4329*** | 0.4106*** | 0.4025*** | 0.4044*** | 0.4391*** |
| | (0.0751) | (0.0731) | (0.0754) | (0.0741) | (0.0709) |
| Extreme Temperature | -0.2119*** | -0.2034*** | -0.1958*** | -0.1804*** | -0.2021*** |
| | (0.0476) | (0.0467) | (0.0523) | (0.0598) | (0.0568) |
| | | | | | |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| R-squared | 0.1657 | 0.1710 | 0.1710 | 0.1710 | 0.1711 |
| Time and Region FE | Y | Y | Y | Y | Y |

**Notes:** Estimated Equation: Equation (1) using OLS, presented in Column (5). Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%). Robust standard errors clustered at the region-settlement level (65) in parentheses. *** denotes statistical significance at the 1% level ($p < 0.01$), ** at the 5% level ($p < 0.05$), and * at the 10% level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

Table 4: Main Analysis: Independent Media and Participation in Protests, 2SLS.

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
|  | Participation in Protests | | | | |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | |
| Independent Media Network | 0.0361*** | 0.0307** | 0.0300** | 0.0319** | 0.0296** |
|  | (0.0130) | (0.0137) | (0.0148) | (0.0144) | (0.0146) |
| R-squared | 0.1657 | 0.1710 | 0.1710 | 0.1710 | 0.1711 |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | |
| Independent Media Network | 0.0475** | 0.0368* | 0.0398* | 0.0485** | 0.0458** |
|  | (0.0189) | (0.0207) | (0.0209) | (0.0192) | (0.0190) |
| R-squared | 0.0252 | 0.0306 | 0.0314 | 0.0306 | 0.0307 |
| Kleibergen-Paap rk Wald F | 44.15 | 41.89 | 37.92 | 34.85 | 34.96 |
| Root MSE | 0.320 | 0.319 | 0.319 | 0.319 | 0.319 |
| Hansen J p-value | 0.0255 | 0.0145 | 0.0155 | 0.0158 | 0.0259 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | |
| Incidence Seaquakes (100 km buffer) | -0.9204*** | -0.8805*** | -0.8925*** | -1.1272*** | -1.1924*** |
|  | (0.1158) | (0.1185) | (0.1063) | (0.1390) | (0.1462) |
| Lightning Frequency Strikes | -2.0964*** | -2.1494*** | -1.8556*** | -2.6656*** | -2.5786*** |
|  | (0.5607) | (0.5536) | (0.5606) | (0.6068) | (0.6054) |
| R-squared | 0.9370 | 0.9378 | 0.9427 | 0.9509 | 0.9518 |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B (see full Table **??** in the Appendix). Estimated Equation: Equation (2) using as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes in Panel C. Independent Media Network: Sum of the Al Jazeera and Al Arabiya networks (%). Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level (65) are in parentheses. *** denotes statistical significance at the 1 % level ($p < 0.01$), ** at the 5 % level ($p < 0.05$), and * at the 10 % level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

Table 5: **Just-identified equation: Independent Media and Participation in Protests, 2SLS.**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | | | Participation in Protests | | |
| **Panel A:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | |
| Independent Media Network | 0.0645*** | 0.0594*** | 0.0592*** | 0.0730*** | 0.0702*** |
| | (0.0200) | (0.0229) | (0.0224) | (0.0223) | (0.0237) |
| R-squared | 0.0245 | 0.0300 | 0.0308 | 0.0295 | 0.0296 |
| Kleibergen-Paap rk Wald F | 49.36 | 44.88 | 60.86 | 49.10 | 46.69 |
| Root MSE | 0.320 | 0.319 | 0.319 | 0.320 | 0.319 |
| **Panel B:** | **First-Stage: Predicted Independent Media Network** | | | | |
| Incidence Seaquakes (100 km buffer) | -1.4866*** | -1.4398*** | -1.4670*** | -1.7047*** | -1.8614*** |
| | (0.2116) | (0.2149) | (0.1880) | (0.2433) | (0.2724) |
| R-squared | 0.9296 | 0.9300 | 0.9371 | 0.9407 | 0.9423 |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B (see full Table **??** in the Appendix). Estimated Equation: Equation (2) using as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station. Independent Media Network: Sum of the Al Jazeera and Al Arabiya networks (%). Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level (65) are in parentheses. *** denotes statistical significance at the 1 % level ($p < 0.01$), ** at the 5 % level ($p < 0.05$), and * at the 10 % level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

## 4.2 Identification threats

In this section, we discuss a number of threats for the validity of our identification strategies and offer some ways to mitigate them.

**Exclusion restriction.** A key identification assumption for the validity of our IV is that our instrumental variable should only affect protests through media access. While the assignment of seaquakes can be reasonably assumed to be random, we acknowledge that the placement of landing stations along the coastline (and hence, the distance to landing stations) cannot. The exclusion restriction may also be threatened by the persistent effect of lightening strikes. To assess the plausibility of our assumptions, we augment column (5) of Table 4 with factors potentially affecting the proximity to landing stations or the persistence in the frequency of lightening strikes. Although at least one instrumental variable needs to be valid to be informative, the Hansen's overidentification test is also supporting the validity of our instrumental variables. Indeed, with a P-value of 0.0259 in column (4) of Table 4, we cannot reject the null hypothesis that both instrumental variables are valid.

**Assumption of Parallel Trends.** Another potential concern that warrants examination in our analysis is the violation of the parallel trends assumption. To address this concern, it would be necessary to assess the trajectory of protests in the years leading up to the Arab Spring. Unfortunately, this task cannot be accomplished using Arab Barometer surveys.

Although we lack an alternative data source to acquire details about individual media consumption before December 17, 2010, we can rely on GDELT to provide us with an extended timeline of protest data, e.g. from 2000 to 2017. In this case, we can extend the analysis to six other countries (Algeria, Egypt, Iraq, Sudan, Tunisia and Yemen) for which no data on wave 4 were available. This allows us to assess the external validity of our results, particularly in nations like Tunisia and Egypt where citizens played pivotal roles in political mobilization during the Arab Spring. Columns (5) to (8) of Table 6 replicates the 2SLS estimates using daily data from GEDLT.[24] Our results indicate a similar increase of about 4.5 percentage points following a one standard deviation rise in access to independent media. More importantly, the use of GEDLT data also allows us to implement an event study to assess the credibility of the common trends assumption. We can assess whether there were some pre-existing trends between our instrumental variables and the likelihood of protests. Figure 2 indicates that prior to the Arab Spring our instrumental variables could not explain the likelihood of protests. No pre-existing trends could be observed.

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[24]Recognizing that the Arab Spring uprisings constituted a sequence of political mobilizations spread across the Arab world, we impelment a staggered treatment. Table 7 reports each country's historical date for entering the Arab Spring. Doing so, we are able to include all nine countries and the multiple years leading up to the Arab Spring. Our results are reported in Table 6. We nonetheless remain cautious about interpreting these results, since a difference-in-difference estimation with a staggered treatment might be biased in case of heterogeneous treatment effect (de Chaisemartin and D'Haultfœuille, 2020; Goodman-Bacon, 2021). However, as far as we know, implementing these new methods in a 2SLS framework constitutes an unexplored territory.

Table 6: Independent Media Network and Participation in Protests

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **Panel A** | | | | **Panel B** | | | |
| | **Arab Barometer Surveys** | | | | **Global Database of Events, Language & Tone** | | | |
| | | | | Participation in Protests | | | | |
| Independent Media Network | 0.0470** | 0.0493*** | 0.0568*** | 0.0551*** | 0.0281** | 0.0398* | 0.0405* | 0.0450* |
| | (0.0188) | (0.0188) | (0.0177) | (0.0174) | (0.0109) | (0.0228) | (0.0228) | (0.0234) |
| Precipitation | -0.3033 | -0.2781 | -0.1979 | -0.2307 | 0.0021 | 0.0023 | 0.0023 | 0.0027* |
| | (0.3555) | (0.3630) | (0.3445) | (0.3427) | (0.0014) | (0.0016) | (0.0016) | (0.0015) |
| Extreme Precipitation | 0.0455 | 0.0443 | 0.0438 | 0.0471 | -0.0009** | -0.0010* | -0.0010* | -0.0010** |
| | (0.0296) | (0.0305) | (0.0308) | (0.0310) | (0.0005) | (0.0005) | (0.0005) | (0.0005) |
| Temperature | 0.4278*** | 0.4235*** | 0.4262*** | 0.4448*** | 0.0029*** | 0.0028*** | 0.0028*** | 0.0030*** |
| | (0.0745) | (0.0793) | (0.0787) | (0.0811) | (0.0010) | (0.0010) | (0.0010) | (0.0011) |
| Extreme Temperature | | | | | 0.0006 | 0.0006 | 0.0006 | 0.0002 |
| | | | | | (0.0013) | (0.0014) | (0.0014) | (0.0012) |
| Internet Users | | 0.0012 | -0.0165 | -0.0179 | | -0.0187 | -0.0182 | -0.0214 |
| | | (0.0174) | (0.0308) | (0.0311) | | (0.0132) | (0.0127) | (0.0132) |
| Traditional media (TV and Press) Users | | | 0.0362 | 0.0387 | | | -0.0019 | -0.0019 |
| | | | (0.0468) | (0.0478) | | | (0.0057) | (0.0063) |
| Nightlight Density | | | | 0.0465 | | | | 0.0067 |
| | | | | (0.0819) | | | | (0.0055) |
| | | | | | | | | |
| Observations | 6,123 | 6,123 | 6,123 | 6,123 | 1,199,913 | 1,199,913 | 1,199,913 | 1,197,232 |
| Kleibergen-Paap rk Wald F | 44.30 | 40.72 | 36.37 | 37.71 | 7.742 | 3.183 | 3.263 | 3.208 |
| Root MSE | 0.323 | 0.323 | 0.323 | 0.323 | 0.143 | 0.144 | 0.144 | 0.144 |
| | | | | | | | | |
| Time and Region FE | Y | Y | Y | Y | Y | Y | Y | Y |

Notes: Equation estimated using 2SLS. Data on protests from Arab Barometer surveys in Panel A and from GDELT in Panel B. Estimated Equation as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes, both times post. Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%). Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level in parentheses. *** denotes statistical significance at the 1% level (p < 0.01), ** at the 5% level (p < 0.05), and * at the 10% level (p < 0.10), all for two-sided hypothesis tests. FE: fixed effects.

Figure 2: Event Study.
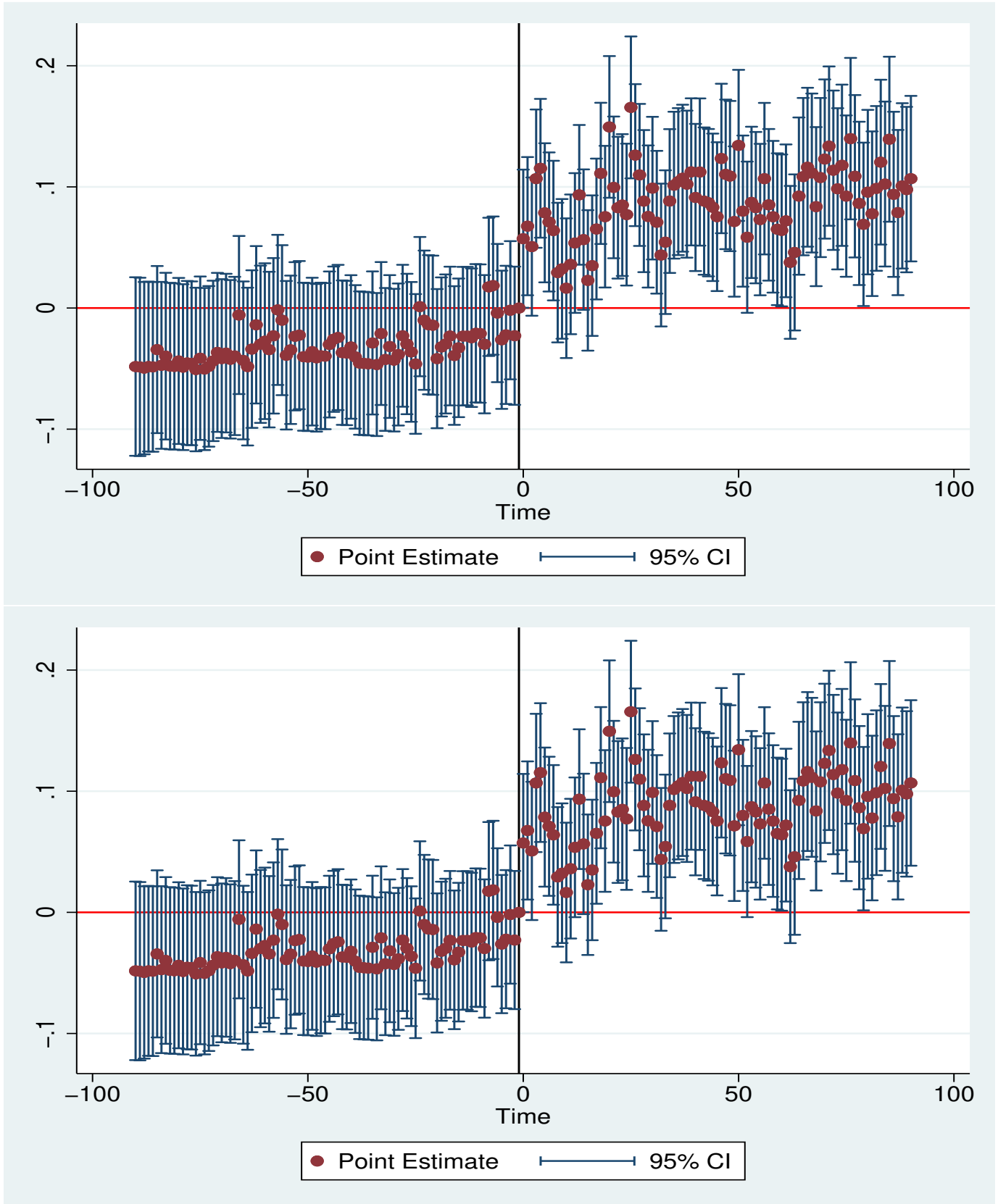
Source: The top (bottom) Figure implements an event study, regressing the GEDLT protests on our instrumental variables and 90 lags and leads of the seaquakes-based (lightning strikes) instrumental variable.

| Country | Date |
|---|:---:|
| Algeria | December 28, 2010 |
| Egypt | January 24, 2011 |
| Iraq | February 11, 2011 |
| Jordan | January 13, 2011 |
| Lebanon | February 26, 2011 |
| Sudan | January 29, 2011 |
| Tunisia | December 17, 2010 |
| Palestine | February 09, **2010** |
| Yemen | January 27, **2010** |

Table 7: Country-specific begin of the Arab Spring

**Placebo Test:**  To examine the causal effect of independent media networks on political mobilization, we conduct placebo tests. Initially, we investigate the influence of state-owned media networks on protests and present our outcomes in Table 8. Our findings suggest that state-owned media networks do not have a role in prompting individuals to mobilize against their governments. If anything, there appears to be a marginal negative association between state-owned media and engagement in protests.[25]

Secondly, we differentiate between employees in the public sector and those in non-public sectors, and we present our results in Table 9. As anticipated, the influence of independent media networks on the engagement of public sector workers in protests appears to be negligible. However, a significant and positive influence of these networks on protests among non-public sector workers is observed.

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[25]Interestingly, our first-stage results show that lightening strikes is a stronger predictor of access to media than the incidence of seaquakes. That is in line with the fact state media is mainly broadcasted through television.

Table 8: Placebo Analysis: State-Owned Media and Participation in Protests.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Participation in Protests | | | | |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | |
| State Media Network | -0.0369 | -0.0305 | -0.0421 | -0.0547 | -0.0530 |
| | (0.0269) | (0.0255) | (0.0323) | (0.0378) | (0.0365) |
| R-squared | 0.1649 | 0.1705 | 0.1707 | 0.1708 | 0.1710 |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | |
| State Media Network | -0.2668** | -0.2504** | -0.2852** | -0.2919** | -0.2783** |
| | (0.1153) | (0.1200) | (0.1294) | (0.1288) | (0.1337) |
| R-squared | 0.0108 | 0.0178 | 0.0180 | 0.0202 | 0.0214 |
| Kleibergen-Paap rk Wald F | 3.812 | 3.367 | 3.176 | 3.240 | 2.900 |
| Root MSE | 0.323 | 0.321 | 0.322 | 0.321 | 0.321 |
| Hansen J p-value | 0.977 | 0.790 | 0.466 | 0.0961 | 0.0947 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | |
| Incidence Seaquakes (100 km buffer) | 0.2068** | 0.2137** | 0.2034** | 0.0366 | 0.0438 |
| | (0.0843) | (0.0937) | (0.0884) | (0.1029) | (0.1130) |
| Lightning Frequency Strikes | -0.7156 | -0.7256 | -0.4746 | -1.0502** | -1.0598** |
| | (0.4974) | (0.4973) | (0.3730) | (0.4287) | (0.4476) |
| R-squared | 0.9424 | 0.9425 | 0.9491 | 0.9567 | 0.9567 |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B, where independent media network is replaced by state-owned media network. Estimated Equation: Equation (2) using as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes in Panel C. Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level (65) are in parentheses. *** denotes statistical significance at the 1 % level (p < 0.01), ** at the 5 % level (p < 0.05), and * at the 10 % level (p < 0.10), all for two-sided hypothesis tests. FE: fixed effects.

Table 9: Independent Media Network and Participation in Protests

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Public Workers** | | | | | **Non-Public Workers** | | | | |
| | | | | | Participation in Protests | | | | | |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | | | | | | |
| Independent Media Network | 0.0427 | 0.0483 | 0.0276 | 0.0200 | 0.0175 | 0.0331** | 0.0293** | 0.0309** | 0.0330** | 0.0310** |
| | (0.0505) | (0.0531) | (0.0531) | (0.0578) | (0.0573) | (0.0127) | (0.0131) | (0.0137) | (0.0130) | (0.0132) |
| R-squared | 0.3753 | 0.3801 | 0.3819 | 0.3823 | 0.3827 | 0.1474 | 0.1521 | 0.1521 | 0.1522 | 0.1523 |
| | | | | | | | | | | |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | | | | | | |
| Independent Media Network | 0.0393 | 0.0467 | 0.0297 | 0.0041 | -0.0012 | 0.0406** | 0.0315 | 0.0339* | 0.0424*** | 0.0396** |
| | (0.0633) | (0.0689) | (0.0761) | (0.0785) | (0.0761) | (0.0192) | (0.0205) | (0.0202) | (0.0162) | (0.0162) |
| R-squared | 0.0188 | 0.0264 | 0.0293 | 0.0296 | 0.0302 | 0.0240 | 0.0282 | 0.0294 | 0.0283 | 0.0284 |
| Kleibergen-Paap rk Wald F | 51.78 | 50.16 | 30.92 | 30.66 | 29.17 | 62.37 | 58.42 | 46.17 | 48.81 | 43.58 |
| Root MSE | 0.320 | 0.318 | 0.318 | 0.318 | 0.318 | 0.317 | 0.317 | 0.317 | 0.317 | 0.317 |
| Hansen J p-value | 0.357 | 0.229 | 0.133 | 0.113 | 0.158 | 0.0302 | 0.0230 | 0.0252 | 0.0282 | 0.0481 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | | | | | | |
| Incidence Seaquakes (100 km buffer) | -0.9020*** | -0.8648*** | -0.8280*** | -0.8893*** | -0.8865*** | -0.8163*** | -0.7946*** | -0.8185*** | -0.9927*** | -0.9934*** |
| | (0.1006) | (0.1023) | (0.1116) | (0.1157) | (0.1206) | (0.0971) | (0.1010) | (0.0894) | (0.1022) | (0.1089) |
| Lightning Frequency Strikes | -1.4413** | -1.5469*** | -1.2263** | -1.4526** | -1.4750** | -1.9609*** | -1.9950*** | -1.6710*** | -2.3519*** | -2.3500*** |
| | (0.5797) | (0.5785) | (0.5735) | (0.6682) | (0.6776) | (0.5068) | (0.5048) | (0.5760) | (0.6121) | (0.6009) |
| R-squared | 0.9492 | 0.9503 | 0.9531 | 0.9540 | 0.9540 | 0.9402 | 0.9406 | 0.9468 | 0.9540 | 0.9540 |
| | | | | | | | | | | |
| Observations | 548 | 548 | 548 | 548 | 548 | 5,544 | 5,544 | 5,544 | 5,544 | 5,544 |
| Time and Region FE | Y | Y | Y | Y | Y | | | | | |
| Individual Controls | Y | Y | Y | Y | Y | | | | | |
| Regional Controls | Y | Y | Y | Y | Y | | | | | |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B for public vs. non-public workers. Estimated Equation as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes, both times post. Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%). Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level in parentheses. *** denotes statistical significance at the 1% level ($p < 0.01$), ** at the 5% level ($p < 0.05$), and * at the 10% level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

# 5 Channels

In the context of countries where media is primarily state-controlled, the positive contribution of independent media to political mobilisation is likely to be explained by the provision of information and the reinforcement of political accountability. We discuss alternative channels, notably the role of media as a coordination devise, the importance of the ideological orientation of independent media, and other forms of engagement.

**Information versus coordination.** Several theoretical frameworks posit that media platforms enhance the likelihood of political protests by facilitating collective action (Edmond, 2013; Little, 2016; Barbera and Jackson, 2017; Enikolopov et al., 2020; Manacorda and Tesei, 2020). On the one hand, these platforms amplify the dissemination of information that motivates protesters to engage in actions, and on the other hand, they aid in the coordination among them. While the latter mechanism might be more pertinent to users of social networks, the former aligns well with our specific context. For instance, media operating in controlled contexts or nondemocratic environments could amplify political mobilization by generating a form of "common knowledge" regarding the significance of an issue that might not otherwise gain traction. In situations like these, individuals might not be inclined to bear the social and economic costs of expressing their opinions if they believe that they are alone in supporting a cause. Enikolopov et al. (2011) follows a similar line of reasoning and supports it.

**Ideology versus political accountability.** Contrary to recent advances (Gentzkow and Shapiro, 2010; Djourelova, 2023), our data do not allow us to study the content of the information provided by independent media. We nonetheless provide suggestive evidence that the introduction of independent media has played a role in political accountability, rather than its ideological content. In Table 10, we examine the distinct potential roles played by Al Jazeera and Al Arabiya networks in influencing participation in protests. In particular, numerous studies have conducted a comparative analysis of these two prominent Arab news platforms[26], particularly in their coverage of conflict situations in the Arab world such as warfare, terrorism, socioeconomic crises, and more (Zeng and Tahat, 2012; Fahmy and Emad, 2011; Kharbach, 2020). These media outlets both receive support from two major and competing actors in the region, Qatar and Saudi Arabia, respectively. However, as depicted in Table 10, our analysis indicates the absence of significant differences between the impacts of the two media sources, although the effect of the Al Arabiya viewers appears to be larger in magnitude than Al-Jazeera.

On the contrary, we find support for independent media strengthening the potential of independent media to influence viewers' preferences through persuasive means, a concept explored by DellaVigna and Gentzkow (2009). We delve into this effect by leveraging the inquiry about political alignment as a proxy for persuasion. Our findings are presented in Table 12. Column (3) corresponds to our baseline estimation as shown in Column (5) of Tables 3 and 4.The results of Column (3) of Table 12 reveal a notable negative impact of independent media on alignment, indicating the viability of this as a feasible channel. However, we should note that we do not observe any impact on generalized trust and trust towards governments (Columns (2) and (5) of Table 12.

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[26]Al Jazeera and Al Arabiya hold the top two positions in terms of news website traffic (Arab Media Outlook, 2012).

**TV vs. Internet:** Our investigation aims to uncover potential distinctions between individuals who use independent media networks via conventional means, like television, compared to those who access them through the Internet. Numerous research studies have examined the influence of social media as opposed to traditional media on involvement in protests (Enikolopov et al., 2020; Fergusson and Molina, 2020; Guriev et al., 2019; Manacorda and Tesei, 2020; Zhuravskaya et al., 2020). These studies differentiate between the information channel and the channel of collective action. While we are unable to analyze the role of social networks in the Arab Spring protests due to the absence of such data in Arab Barometer surveys, participants in these surveys do provide information about their most trusted information sources and their means of accessing this information. Hence, we distinguish between the use of independent media through two primary information channels: television and the Internet. Our findings are outlined in Table 11. Both our Ordinary Least Squares (OLS) estimates in Panel A and Two-Stage Least Squares (2SLS) estimates in Panel B reveal that the impact of using independent media through the Internet is considerably more pronounced compared to using television. However, the results from the 2SLS analysis predominantly reflect the fact that our instrumental variables are more apt to capture variations in Internet accessibility.

**Other forms of engagement.** An additional channel to consider is the potential for independent media to displace other modes of engagement, including non-violent ones. We explore this mechanism by using inquiries related to signing petitions and general trust. As depicted in Columns (4) and (5) of Table 12, our analysis appears to dismiss these mechanisms.

Table 10: Independent Media Network and Participation in Protests

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Al Jazeera** | | | | | **Al Arabiya** | | | | |
| | Participation in Protests | | | | | | | | | |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | | | | | | |
| Independent Media Network | 0.0314** | 0.0247* | 0.0238 | 0.0257* | 0.0230 | 0.0405*** | 0.0378*** | 0.0451*** | 0.0459*** | 0.0445*** |
| | (0.0139) | (0.0145) | (0.0148) | (0.0144) | (0.0146) | (0.0102) | (0.0105) | (0.0115) | (0.0117) | (0.0120) |
| | 0.1653 | 0.1707 | 0.1707 | 0.1708 | 0.1709 | 0.1666 | 0.1719 | 0.1720 | 0.1721 | 0.1722 |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | | | | | | |
| Independent Media Network | 0.0486** | 0.0376* | 0.0389* | 0.0482** | 0.0454** | 0.0642*** | 0.0501* | 0.0661*** | 0.0745*** | 0.0718*** |
| | (0.0201) | (0.0217) | (0.0220) | (0.0205) | (0.0200) | (0.0239) | (0.0261) | (0.0242) | (0.0226) | (0.0246) |
| R-squared | 0.0246 | 0.0302 | 0.0310 | 0.0301 | 0.0302 | 0.0255 | 0.0315 | 0.0323 | 0.0312 | 0.0314 |
| Kleibergen-Paap rk Wald F | 45.20 | 43.38 | 37.60 | 33.37 | 34.09 | 8.157 | 6.712 | 9.131 | 9.991 | 9.157 |
| Root MSE | 0.320 | 0.319 | 0.319 | 0.319 | 0.319 | 0.320 | 0.319 | 0.319 | 0.319 | 0.319 |
| Hansen J p-value | 0.0275 | 0.0161 | 0.0150 | 0.0157 | 0.0261 | 0.0337 | 0.0138 | 0.0222 | 0.0229 | 0.0301 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | | | | | | |
| Incidence Seaquakes (100 km buffer) | -0.8969*** | -0.8636*** | -0.8692*** | -1.0961*** | -1.1596*** | -0.6947*** | -0.6399*** | -0.6760*** | -0.8610*** | -0.9102*** |
| | (0.1073) | (0.1094) | (0.1047) | (0.1399) | (0.1439) | (0.2024) | (0.2156) | (0.1676) | (0.1985) | (0.2262) |
| Lightning Frequency Strikes | -2.0588*** | -2.1018*** | -1.9648*** | -2.7480*** | -2.6633*** | -1.5124 | -1.5901 | -0.7110 | -1.3492 | -1.2834 |
| | (0.4440) | (0.4388) | (0.4796) | (0.5183) | (0.5213) | (1.2293) | (1.2221) | (0.8457) | (0.9359) | (0.9393) |
| R-squared | 0.9439 | 0.9445 | 0.9457 | 0.9540 | 0.9548 | 0.8407 | 0.8421 | 0.8886 | 0.8939 | 0.8944 |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B. Estimated Equation as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes, both times post. Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%) separately. Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level in parentheses. *** denotes statistical significance at the 1% level ($p < 0.01$), ** at the 5% level ($p < 0.05$), and * at the 10% level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

Table 11: Independent Media Network and Participation in Protests

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | **TV** | | | | | **Internet** | | |
| | | | | | Participation in Protests | | | | | |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | | | | | | |
| Independent Media Network | 0.0104 | 0.0091 | -0.0046 | -0.0154 | -0.0151 | 0.0375** | 0.0289* | 0.0316 | 0.0331 | 0.0312 |
| | (0.0239) | (0.0233) | (0.0367) | (0.0347) | (0.0345) | (0.0151) | (0.0157) | (0.0212) | (0.0209) | (0.0204) |
| R-squared | 0.1647 | 0.1703 | 0.1704 | 0.1704 | 0.1706 | 0.1652 | 0.1706 | 0.1706 | 0.1706 | 0.1708 |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | | | | | | |
| Independent Media Network | -0.4024* | -0.4451 | -0.8729 | 0.0944 | 0.1025 | 0.0909** | 0.0733* | 0.0918** | 0.1023*** | 0.0939*** |
| | (0.2199) | (0.2769) | (0.7738) | (0.1162) | (0.1085) | (0.0388) | (0.0419) | (0.0408) | (0.0371) | (0.0352) |
| R-squared | -0.0170 | -0.0184 | -0.0729 | 0.0289 | 0.0290 | 0.0234 | 0.0294 | 0.0300 | 0.0289 | 0.0294 |
| Kleibergen-Paap rk Wald F | 1.785 | 1.269 | 0.544 | 4.530 | 3.984 | 14.03 | 11.91 | 27.94 | 29.04 | 43.17 |
| Root MSE | 0.327 | 0.327 | 0.336 | 0.320 | 0.320 | 0.321 | 0.320 | 0.320 | 0.320 | 0.320 |
| Hansen J p-value | 0.693 | 0.745 | 0.681 | 0.00129 | 0.00585 | 0.0287 | 0.0155 | 0.0256 | 0.0266 | 0.0467 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | | | | | | |
| Incidence Seaquakes (100 km buffer) | 0.1093 | 0.0861 | 0.0668 | -0.1643** | -0.1878** | -0.5104*** | -0.4802*** | -0.5046*** | -0.6429*** | -0.7452*** |
| | (0.0880) | (0.0898) | (0.0676) | (0.0632) | (0.0795) | (0.1014) | (0.1055) | (0.0679) | (0.0844) | (0.0821) |
| Lightning Frequency Strikes | -0.6711 | -0.6270 | -0.1583 | -0.9561** | -0.9247** | -0.9894* | -1.0245* | -0.4303 | -0.9073** | -0.7707** |
| | (0.6063) | (0.6038) | (0.3287) | (0.4283) | (0.3997) | (0.5837) | (0.5784) | (0.2845) | (0.3471) | (0.3292) |
| R-squared | 0.9730 | 0.9734 | 0.9840 | 0.9908 | 0.9909 | 0.9509 | 0.9514 | 0.9735 | 0.9766 | 0.9788 |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B. Estimated Equation as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes, both times post. Independent Media Network: Sum of Al Jazeera and Al Arabiya networks (%) through TV and Internet. Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level in parentheses. *** denotes statistical significance at the 1% level ($p < 0.01$), ** at the 5% level ($p < 0.05$), and * at the 10% level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

Table 12: Independent Media and Political Actions.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Participation in Protests | Trust towards Government | Political Alignment | Signing Petitions | General Trust |
| **Panel A:** | **Ordinary Least Squares (OLS)** | | | | |
| Independent Media Network | 0.0296** | 0.0358 | -0.0795** | 0.0119 | 0.0039 |
| | (0.0146) | (0.0240) | (0.0359) | (0.0165) | (0.0168) |
| R-squared | 0.1711 | 0.1531 | 0.1140 | 0.1100 | 0.0303 |
| **Panel B:** | **Second-Stage: Two-Stage Least Squares (2SLS)** | | | | |
| Independent Media Network | 0.0458** | 0.0332 | -0.1148** | 0.0037 | 0.0218 |
| | (0.0190) | (0.0369) | (0.0471) | (0.0202) | (0.0270) |
| R-squared | 0.0307 | 0.0245 | 0.0347 | 0.0411 | 0.0055 |
| Kleibergen-Paap rk Wald F | 34.96 | 34.96 | 34.96 | 34.96 | 34.96 |
| Root MSE | 0.319 | 0.458 | 0.469 | 0.329 | 0.391 |
| Hansen J p-value | 0.0259 | 0.0887 | 0.00373 | 0.0735 | 0.768 |
| **Panel C:** | **First-Stage: Predicted Independent Media Network** | | | | |
| Incidence Seaquakes (100 km buffer) | -1.1924*** | -1.1924*** | -1.1924*** | -1.1924*** | -1.1924*** |
| | (0.1462) | (0.1462) | (0.1462) | (0.1462) | (0.1462) |
| Lightning Frequency Strikes | -2.5786*** | -2.5786*** | -2.5786*** | -2.5786*** | -2.5786*** |
| | (0.6054) | (0.6054) | (0.6054) | (0.6054) | (0.6054) |
| Observations | 6,092 | 6,092 | 6,092 | 6,092 | 6,092 |
| Time and Region FE | Y | Y | Y | Y | Y |
| Individual Controls | Y | Y | Y | Y | Y |
| Regional Controls | Y | Y | Y | Y | Y |

Notes: Estimated Equation: Equation (1) using OLS in Panel A and 2SLS in Panel B (see full Table **??** in the Appendix). Estimated Equation: Equation (2) using as IV the seaquakes incidence over the distance of the region's centroid to the cable's landing station and the frequency of lightning strikes in Panel C. Independent Media Network: Sum of the Al Jazeera and Al Arabiya networks (%). Individual Controls: age, gender, education, religion, marital status, employment. Regional Controls: share of Internet and traditional (TV and press) users, nightlight density, (extreme) precipitation and temperature. Robust standard errors clustered at the region-settlement level (65) are in parentheses. *** denotes statistical significance at the 1 % level ($p < 0.01$), ** at the 5 % level ($p < 0.05$), and * at the 10 % level ($p < 0.10$), all for two-sided hypothesis tests. FE: fixed effects.

# 6  Conclusion

In this paper, we look at the impact of independent media networks on the engagement of individuals in protests within the Arab World. Prior to the late 1990s, media dynamics in the Arab world were largely characterized by state control, leaving minimal space for divergent perspectives that questioned the actions of incumbent governments. The emergence of Al Jazeera in Qatar as the foremost independent media outlet in the Arab World, followed by the establishment of Al Arabiya in Saudi Arabia as the second prominent independent media entity, has significantly molded the information landscape in the region. These platforms have provided a voice to citizens who express discontent with the political behaviours of their governments.

This context is crucial in framing the backdrop against which our study takes place.

With the onset of the Arab Spring uprisings towards the close of 2010, individual grievances were brought into the open across numerous nations in the Arab World. While a considerable body of research has focused on deciphering the underlying factors driving these uprisings, the role played by the media has been largely overlooked. Specifically, the existing body of literature has explored the potential influence wielded by independent media outlets like Al Jazeera and Al Arabiya in shaping the perspectives of citizens within this region. However, when it comes to the Arab Spring protests, the impact of these media platforms has been predominantly discussed in anecdotal terms.

In our study, our aim was to address this gap in academic discourse by quantitatively assessing the influence exerted by the two main independent media networks – Al Jazeera and Al Arabiya – on the course of protests during the Arab Spring.

We used data from Arab Barometer surveys to gather information about individual media usage. Constructing a metric for independent media networks that encompasses Al Jazeera and Al Arabiya, we proceed to gauge the influence of their use on the propensity for participation in protests. One of the challenges we face is the potential endogeneity in the decision of individuals to engage with independent media networks, originating from unobservable factors like "critical thinking."

To mitigate the potential bias arising from omitted variables, we employ an instrumental variable approach. We measure individuals' ability to access Al Jazeera and/or Al Arabiya media networks via satellite TV and the Internet. In our endeavor to distinguish between supply-side and demand-side factors, we employ exogenous shocks that negatively impact the provisioning of satellite signal and Internet connectivity as instruments. Our primary model is constructed as an overidentified equation, where the proportion of viewers of independent media is instrumented by occurrences of lightning strikes – which can affect satellite towers – and seaquakes – which lead to disruptions in submarine cables.

Our initial findings reveal a positive and statistically significant relationship between the use of independent media networks and the inclination to participate in protests. Within our specific context, Al Arabiya emerges as the channel exerting a more potent impact on individuals' choices to engage in protests, while Internet access exhibits the most pronounced effect on the final outcome. Interestingly, our analysis does not uncover any discernible influence from state media or the use of independent media among individuals employed in the public sector on the propensity to participate in protests.

A challenge in our study, concerning the data from Arab Barometer surveys, is the unavailability of our key explanatory variable pertaining to independent media usage over different time periods. Additionally, there is a dearth of consistent data for several countries. It would be beneficial to incorporate data from alternative sources that enable the measurement of independent media consumption across a broader temporal and geographical scope. This would aid in assessing the applicability of our findings beyond the current context and enhancing the external validity of our results.

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# Tables and Figures for:

# The Impact of Independent Media on Political Mobilization during the Arab Spring

December 19, 2023

**Abstract**

This document contains a set of appendixes with supplemental material.

## Appendix A    Tables and Figures

Summary Table for Data Availability on Media Networks and Political Mobilization for Countries in MENA Region.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Data | **The Arab Barometer**[I] | | | **Comments** |
| Period | Wave 2[II] 2010-2011 | Wave 3 2012-2014 | Wave 4 2016-2017 | |
| Algeria | 15 Apr-11 May 2011 | 13 Mar-6 Apr 2013 | 3 May-16 May 2016 | Data on media network available in wave 2 after 17 December 2010. Data on political mobilization available in waves 2-4. |
| Egypt | 16 Jun-30 Jun 2011 | 31 Mar-7 Apr 2013 | 15 Apr-23 Apr 2016 | Data on media network available in wave 2 after 17 December 2010. Data on protest and petition available in waves 3-4. Data on political alignment and institutional trust available in waves 2-4. |
| Iraq | 20 Feb-12 Mar 2011 | 6 Jun-29 Jun 2013 | – | Data on media network available in wave 2 after 17 December 2010. Data on political mobilization available in waves 2-3. |
| Jordan | 10 Dec-16 Dec 2010 | 27 Dec 2012-6 Jan 2013 | 9 Mar-16 Mar 2016 | Data on media network available in wave 2 before 17 December 2010. Data on political mobilization available in waves 2-4. |
| Lebanon[III] | 24 Nov-6 Dec 2010 9 Apr-24 Apr 2011 | 3 Jul-26 Jul 2013 | 20 Jul-16 Aug 2016 | Data on media network available in wave 2 before 17 December 2010. Data on political mobilization available in waves 2-4. |
| Saudi Arabiya[IV] | 5 Jan-6 Feb 2011 26 Mar to 9 Apr 2011 | – | – | Data on media network available in wave 2 after 17 December 2010. Data on political mobilization only available in wave 2. |
| Palestine | 2 Dec-5 Dec 2010 | 20 Dec-29 Dec 2012 | 18 Feb-27 Feb 2016 | Data on media network available in wave 2 before 17 December 2010. Data on political mobilization available in waves 2-4. |
| Sudan[V] | 12 Dec-30 Dec 2010 24 Mar-23 Apr 2011 | 29 Apr-29 May 2013 Round 5 (2012-2013) | – – | Data on media network available in wave 2 around 17 December 2010. Data on political mobilization available in waves 2-3. |
| Tunisia | 30 Sep-11 Oct 2011 | 3 Feb-25 Feb 2013 | 13 Feb-3 Mar 2016 | Data on media network available in wave 2 after 17 December 2010. Data on protest and petition available in waves 3-4. Data on political alignment and institutional trust available in waves 2-4. |
| Yemen | 5 Jan-6 Feb 2011 26 Mar-9 Apr 2011 | 2 Nov-4 Dec 2013 | – | Data on media network available in wave 2 after 17 December 2010. Data on political mobilization available in waves 2-3. |

I Wave 1 of the Arab Barometer is excluded because there is no data on survey respondents' region.

II Only countries with data on survey respondents' most reliable media network are reported. This information is available in wave 2 of the Arab Barometer.

III Data from supplementary interviews in 2011 (wave 2) excluded as after 17 December 2010.

IV Saudi Arabiya is excluded from the study as no data is available after wave 2 of the Arab Barometer.

V Sudan is included as a robustness check as data on respondents' most reliable media network is available slightly before and slightly after 17 December 2010. Data from supplementary interviews in 2011 (wave 2) excluded as after 17 December 2010. Data on Political mobilization completed with data from round 5 of the Afrobarometer, which corresponds to 2012-2013. Data from rounds 6 and 7 of the Afro Barometer only give a sub-set of the initial regions and therefore are not used.