

The New Public Address System: Why Do World Leaders Adopt Social Media?*

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Abstract

The emergence of social media—and in particular Twitter and Facebook—has led scholars to focus on its effects on mass behavior and protest. Yet an important, and unanswered question is what explains the variation in the adoption and use of social media by world leaders? By the end of 2014, over 76% of world leaders had an active presence on social media, and used their accounts to communicate with domestic and international audiences. We look at several different potential hypotheses that explain adoption of social media by world leaders including: modernization, social pressure, level of democratization, and diffusion. We find strong support that increased political pressure from social unrest and higher levels of democratization are both associated with leader adoption of social media platforms. Although the association we identify is not causal, these findings reveal the relationship between institutional and political pressures and the political communication of country leaders.

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1 Motivation

Political leaders have long recognized how the use of public communication helps them maintain order and stay in power. For example, Roman emperors emblazoned coins with their own visage and their important military victories (Jowett and O'Donnell, 2014, p. 63). Given the coins' widespread circulation throughout the empire, this "low-cost" form of propaganda was particularly effective. In more recent times, autocratic leaders have asserted control over mass media and intimidated critical journalists to solidify their power (Bueno de Mesquita and Downs, 2005; Levitsky and Way, 2002; Gehlbach and Sonin, 2013).¹ For example Russian President Vladimir Putin has increased his influence over state media to silence dissent and promote a "pro-Kremlin" message both in Russia and abroad.²

In this paper we examine how world leaders strategically communicate with the public via their decision on whether to make use of social media platforms, such as Twitter and Facebook.³ Although the emergence of these sites is a recent phenomenon, our research is connected to a long history of political communication research that looks at the effects of mass media on the public (Lasswell, 1948; McQuail, 1994; Benoit, Hansen, and Verser, 2003; Freedman, Franz, and Goldstein, 2004), and its adoption and strategic use by political leaders (Mazzoleni and Schulz, 1999; Walgrave and Van Aelst, 2006; Scheufele and Tewksbury, 2007). Leaders are strategic in their adoption, use, and exercise of control of mass media, and this is especially true in autocracies, where popular protests can threaten the regime (Egorov, Guriev, and Sonin, 2009; Gehlbach, 2010; Kern, 2011). The advent of social media, and its ability to bypass traditional communication channels, has led some scholars and commentators to refer to it as a "liberation technology" (Diamond, 2010). Proponents of this view argue that social media and its associated technologies have disrupted the top-down (from elites to masses) political communication of traditional media

¹For instance, in Uzbekistan, a noted government critic, and independent journalist (Jamshid Karimov), was reported missing. He was eventually found having been forcibly committed a psychiatric clinic, where he remained captive until November 2011. He then disappeared in January 2012. http://en.wikipedia.org/wiki/Jamshid_Karimov.

²See <http://www.theatlantic.com/international/archive/2015/04/how-the-media-became-putins-most-powerful-391062/>

³We follow the Oxford Dictionary and define social media as "websites and applications that enable users to create and share content or to participate in social networking."

(Shirky, 2011). Social media thus represents a valuable new tool to protestors and challengers of the regime, putting world leaders in a disadvantaged position.

However, many have questioned this assumption that social media gives “power to the people,” arguing that it can also be a tool of incumbent leaders to monitor activists and dissidents (Morozov, 2012). Against this protest-incumbent dynamic, social media has played a prominent role in current political events (Weidmann, 2015). From the extensive use of social media by Hamas and Israel (particularly Twitter)⁴ in the 2012 Gaza Conflict (Zeitsoff, 2016), to internet censorship during Egyptian protests in 2011 (Hassanpour, 2013) and the Syrian Civil War (Gohdes, 2015), social media is increasingly becoming an important arena not just for political communication, but also for political conflict. Much of the existing research on social media’s effect focuses on its effects on mass behavior. I.e., does access to social media and other information communication technology (ICT) increase insurgency (Shapiro and Weidmann, 2012; Pierskalla and Hollenbach, 2013), protests (Lynch, 2011; Howard and Parks, 2012; Rød and Weidmann, 2015), and how can it mobilize constituents (Howard and Hussain, 2011; Bond et al., 2012)? Moreover, how do governments react strategically to popular challenges and protests via social media (King, Pan, and Roberts, 2012)?

Yet, the focus on mass mobilization has obscured the growth in a parallel phenomenon. Leaders themselves have signed up, and created their own social media accounts (e.g., Twitter, YouTube, Facebook). By the end of 2014, over 76% of world leaders had an active Twitter or Facebook account. Many of these online networks of leaders and their followers reflect offline, salient political cleavages (Zeitsoff et al., 2015; Barberá, 2015). These accounts have even been used to by leaders to document important diplomatic events, such as the famous phone conversation between Iranian President Hassan Rouhani and US President Barack Obama.⁵ Yet some downplayed the importance of social media, arguing that Twitter and Facebook are simply tools for propaganda, and do not provide meaningful insights into leader behavior.⁶ During the 2016 US presidential election, and continuing after his election, Donald Trump has made extensive use of his personal Twitter

⁴The conflict was dubbed the first “Twitter War” (Cohen, 2012).

⁵See <http://thelede.blogs.nytimes.com/2013/09/27/details-of-conversation-with-obama-deleted-from-twe>

⁶See <http://foreignpolicy.com/2015/04/28/these-are-the-most-influential-world-leaders-on-twitter-an>

account to mobilize his supporters and disparage opponents, as well as claim credit for his successes⁷ Yet, when and why leaders adopt social media is an important and unanswered question. Given the strong evidence that incumbent political leaders seek to maintain political power, and strategically manipulate coordination channels (such as social media) in order to do so (Magaloni, 2008; Bueno de Mesquita and Downs, 2005), this remains an important and unanswered debate.

We seek to understand why do world leaders adopt new forms of political communication – in this case social media (Twitter and Facebook). This question is central to many ongoing debates in international relations (IR), including the role of transparency (Hollyer et al., 2011), leadership turnover and selection (Colaresi, 2004; Wolford, 2007; Colgan and Weeks, 2015), and how new media is changing political communication (Aday et al., 2012; Tufekci and Wilson, 2012). Not unlike the advent radio or television, social media provide world leaders with a new platform to broadcast messages, mobilize constituencies, and persuade citizens. However, some affordances of social networking tools are unique: the gatekeeping role of journalists is diminished, there is increased competition for users' attention, and content can easily go "viral" and reach even those who do not regularly consume political information (Bakshy et al., 2015; Diehl et al., 2015). At the same time, social media usage is also likely to constrain and influence the behavior of political actors (Theocharis et al., 2016; Zeitzoff, 2016), and its adoption by political leaders may have unexpected consequences on the growth and success of social protests. For example it may focus online protest networks, and activate peripheral participants in these protests (Barberá et al., 2015). Examining this question is also particularly relevant, as social media is becoming an important source of political news for individuals all around the world.⁸

To answer our research question, we construct a new dataset that tracks when world leaders in UN-member countries became active on Twitter and Facebook (two of the largest social media platforms). We then match this data with key political, geographic, and socio-demographic variables. We test several potential hypotheses that may explain adoption of social media by world

⁷See <http://www.npr.org/2016/11/18/502306687/commander-in-tweet-trumps-social-media-use-and-president>

⁸Although comparative survey studies of social media use is limited, data from the 2014 Eurobarometer showed that 47% of European Union citizens use social networking sites more than once a week, and of those 69% agree that they are a "modern way to keep abreast of political affairs."

leaders, including modernization, political pressure, level of democratization, and diffusion. We have three key findings. 1) We find little support for the hypotheses that social media adoption by leaders is higher in richer countries or those with more internet users (modernization hypothesis), or that this process is driven by electoral pressure. 2) However, there is strong evidence of a relationship between social unrest and leader response. An increase number of civil society protests against the government is associated with social media adoption. 3) Finally, leaders in more democratic countries are more likely to adopt social media. Taken together, our results complement existing results and show how social media reflects political behavior (Tufekci and Wilson, 2012; Bennett, 2012; Ruths and Pfeffer, 2014), and how political institutions shape the strategic communication behavior of leaders (Baum and Potter, 2008; Dahlgren, 2009; Howard, 2010; Williams and Carpini, 2011).

2 World Leaders on Social Media

2.1 How are world leaders using social media?

The use of social media as a tool for political communication by world leaders has increasingly become widespread. As we show in Figure 1, by January 1st, 2014 the governments of 76% of U.N. member countries had an active presence on Twitter or Facebook. By early 2015, this figure had increased to over 81%.⁹ The list includes the presidents or prime ministers of the most powerful nations in the world, such as Barack Obama, David Cameron, Dmitry Medvedev, and Dilma Rousseff, and also of many other countries (e.g. Argentina, France, Ukraine, Tunisia, South Africa, Philippines, Japan, etc). Leaders from countries with limited press freedom, such as Iran, Kyrgyzstan, or Cuba, also have social media accounts. As we show in Figure 2, at least one of these two social media websites is used by world leaders essentially all around the world, with the exception of China and several African countries.

The presence of world leaders on social media takes mostly two forms: either a *personal* account

⁹See section 3.1 for additional details on how this dataset was collected.

Figure 1: Proportion of countries whose government has an active social media account

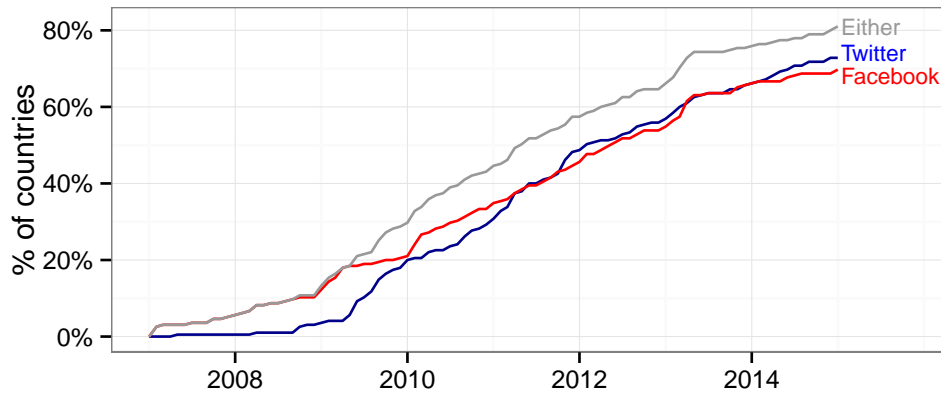
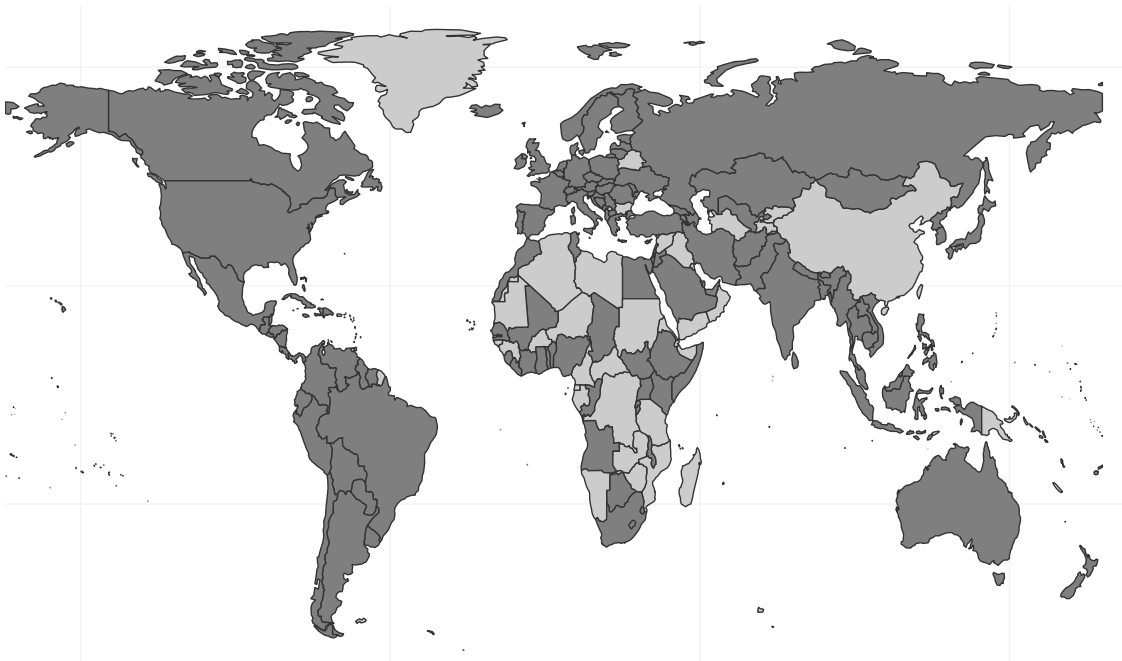


Figure 2: Countries with at least one leader on Twitter



Note: countries colored in dark grey correspond to countries where the head of government has an active Twitter or Facebook account, either personal or institutional.

for the head of government, with messages that at least appear to be written by the world leader herself, or an *institutional* account for the presidency or prime ministry. We distinguish personal accounts from institutional accounts by whether the name of the social media profile corresponds

to the world leader and the account uses his or her image as a profile picture.¹⁰ On Twitter, institutional accounts are slightly more common: leaders in 48% of countries have an institutional Twitter account, whereas 45% of them have a personal Twitter account. The opposite pattern can be observed on Facebook: 49% of leaders have a personal Facebook account, but only 37% of them have an institutional Facebook account. Note that many countries have multiple Twitter and Facebook accounts, and some have none. In fact, it is also fairly common to have multiple accounts for the same institution, each in a different language. For example, Dmitry Medvedev has an account in English (@MedvedevRussiaE) and another in Russian (@MedvedevRussia).

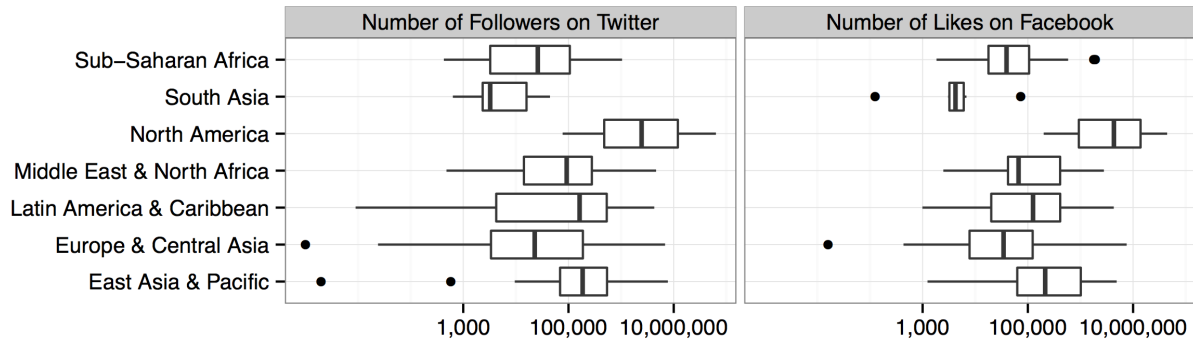
Most world leaders on Twitter are active users of this platform and also have large audiences. As of August 2015, the median Twitter account for a world leader has sent 2,110 tweets since it was created, and has 42,569 followers. Institutional accounts tend to be more active than personal accounts, with a median of 3,939 tweets sent vs 1,769 tweets sent, but they are also slightly less popular, with a median of 27,504 followers vs 70,143 followers. We find the same pattern when we analyze the levels of activity and popularity on world leaders' Facebook profiles. Institutional accounts on Facebook had posted a median of 1,085 messages vs 1,645 posts on leaders' personal Facebook pages. The median leader account was "liked" by 62,748 Facebook users, but this figure increases to 88,398 likes when we consider only personal accounts, and decreases to 40,918 likes for institutional accounts.

However, as we show in Figure 3, there is wide variation in the degree of popularity of world leaders on social media. 20 accounts have more than 1,000,000 followers and 18 accounts have more than 1,000,000 likes. A clear outlier is @BarackObama, with over 63 million followers and 44 million likes as of August, 2015. As one would expect, audience size is correlated with population (for example, the accounts with over a million followers or likes include the prime ministers or presidents of Argentina, Brazil, Germany, India, Mexico, Philippines, Russia, and Turkey), but we also observe a few cases where leaders from medium-sized countries – such as Chile, Israel, and

¹⁰We assume that in most cases social media messages are posted by the leader's communication office. Many accounts indicate when the messages are posted by the leaders themselves by signing the tweet with their initials (e.g. tweets written by Barack Obama on @BarackObama were signed -bo). Note that whether the leader is the person updating the account or not is irrelevant for our analysis, since we're interested in the general communication strategy taken by the leader—*institutional* or *personal*—rather than the leader's individual decisions.

Ecuador – are able to attract international attention and increase their audience size.

Figure 3: Distribution of Number of Followers of World Leaders on Twitter, by Continent



World leaders use social media for a wide variety of purposes. Often they rely on these tools to communicate with domestic audiences, either to provide information about the government’s daily agenda, to advertise new legislative proposals and executive decisions, and to influence online and offline public opinion, sometimes even by creating hashtags related to political issues promoted by the leader. These uses of communication tools are similar to the type of credit-claiming and position-taking goals of the public communication of U.S. legislators, for example (Grimmer et al., 2014). However, social media tools provide opportunities for new types of communication strategies. For example, these platforms can be used to provide information about the personal life of the world leaders, including pictures about how they spend their leisure time with family. They can also be the medium to relay messages to international audiences. For example, social media posts can promote specific aspects of the country in order to attract tourists or improve its international image, but it can also be part of broader “digital diplomacy” strategies (Dizard, 2001). Although social media may not be a substitute for traditional diplomacy, it has become an outlet by which world leaders can communicate directly with citizens all around the world, without the need of traditional news media as an intermediary agent. Figures 1 and 2 in the Appendix provide some examples that illustrate these different issues. Of this last category, perhaps the most visible example was the tweet that Iranian president Hassan Rouhani posted to discuss the status of the negotiations about Iran’s nuclear program.

Interestingly, it is extremely rare that world leaders use social media to interact directly with their citizens, which suggests that they use these platforms as a top-down channel to broadcast information. As an example, less than 6% of tweets sent by leaders are replies to other users' tweets. Leaders are also rarely exposed to tweets by ordinary citizens, since the median number of users they follow is only 96.

2.2 Theories of social media adoption

A key question that many scholars have focused on is whether social media plays an important role in political behavior (Tufekci and Wilson, 2012), or whether it is simply epiphenomenal (Gladwell, 2010)? This question obscures the use of social media by world leaders: why do they sign up and use it in the first place? Theories of leader behavior tend to center around leaders seeking to maintain power (de Mesquita, Smith, Siverson, and Morrow, 2005; Acemoglu and Robinson, 2012). Leaders use the tools at their disposal within their current political system to maximize their chances of survival. Thus decisions about how to distribute goods – both public and private – and the use of media are made with an aim towards benefitting the leader politically. Yet, these decisions are shaped by the political institutions in which the leader operates. The amount of resources world leaders spend curating their social media accounts, as well as their large audiences online, highlight the potential importance of this platform as a mechanism for political communication (Howard, 2010).

What factors explain leaders' adoption and use of social media? We seek to understand differential rates of adoption, and the factors associated with the active use of this tool by leaders. If leaders view social media as an important tool, and not simply as an outlet for propaganda, then institutional constraints, social and electoral pressure, as well as country-specific demographic factors should help explain when world leaders adopt Twitter. We argue that there are four potential channels or hypotheses that could influence social media adoption. We delineate these hypotheses below.

1. **Modernization Hypothesis.** Social media adoption by world leaders depends on the so-

ciodemographic characteristics of the country. World leaders will be more likely to adopt social media at higher rates in richer countries, as well as those countries with higher rates of internet penetration and social media usage. This hypothesis argues that leaders use social media in order to adapt to general communication practices by members of their society, and richer countries with greater social media access will use social media more. This is related to the modernization hypothesis –democracy consolidation occurring at higher levels of income– that Lipset (1959) proposed. Thus, social media adoption by world leaders is a function of underlying advances in a given country. Critics of this argument would argue that the large-scale adoption of mobile phones and internet across the developing world make this channel less likely (Howard and Hussain, 2011).

2. **Political Pressure Hypothesis.** The second channel hypothesizes that leaders (incumbents) create social media accounts in order to promote their political activities, with the purpose of staying in power. Elections place pressure on incumbents to campaign and reach out to supporters (Carey and Shugart, 1995), as well as engage in negative campaigning to challenge opponents (Ansolabehere and Iyengar, 1996). If this is true, leaders facing a competitive election will be more likely to try to adopt social media.

A second type of pressure placed on leaders is the threat of social unrest and protests. There is ample evidence that leaders are keenly aware of how social media technologies may be used to coordinate protests and foment unrest that may challenge their hold on power (Howard and Hussain, 2011; Morozov, 2012; King, Pan, and Roberts, 2012). Under threat from protests or armed actors, leaders may seek to disrupt social media and other coordination goods by blocking activist accounts, and in extreme cases “pulling the plug,” to dissipate the unrest (Hassanpour, 2013; Gohdes, 2015). Not only will leaders seek to manage and block activists, but they will also use social media to craft their own narrative.¹¹ In the face of heightened social unrest, leaders will be more likely to adopt social media.

3. **Transparency/Democracy Hypothesis.** Democratic leaders are held to higher standards of accountability to the general public than autocratic leaders (Przeworski, Stokes, and Manin,

¹¹See Chen (2015) and Cohen (2012).

1999). Previous research argues that this is why democratic leaders provide higher amounts of public goods compared to autocratic leaders (de Mesquita, Smith, Siverson, and Morrow, 2005). Voters' ability to retain good incumbents and punish bad incumbents (Ferejohn, 1986) puts pressure on democratic leaders to both 1) engage in credit claiming about their successes while in office, and 2) be more transparent about their policies (Stiglitz, 2002). Social media provides a unique (and relatively low-cost) solution to reach voters, particularly those of younger ages, who may not be as beholden to traditional media outlets. Given these pressures, democratic leaders are more likely to create social media accounts in order to be more transparent and to credit-claim their own policy successes.

4. **Diffusion hypothesis.** International relations scholars have long argued that policy diffusion is an important mechanism for explaining state and leader behavior. From pension reforms (Weyland, 2005) to liberal economic ideas (Simmons and Elkins, 2004), research has shown that policy changes tend to cluster in time and space, and that leaders take their cues from states that share similar characteristics. For instance, during the Arab Spring many have argued that the spread of the protests across the Middle East and North Africa closely tracked the diffusion and uptake of social media in the region (Lotan, Graeff, Ananny, Gaffney, Pearce et al., 2011; Howard and Hussain, 2013). Thus, leaders are more likely to adopt social media following adoption by neighboring leaders.

Conversely if none of these four hypotheses are borne out, then this would suggest that the null hypothesis is true—i.e., that social media adoption is epiphenomenal, and tangential to world leaders' principal concerns of staying in office and maximizing power.

3 Research design

3.1 Data

Our dataset includes the social media accounts of the heads of government in all 193 United Nations member states as of January 1st, 2014.¹² The list of heads of government and names of the corresponding institution in each country was collected from the United Nations Protocol and Liaison Service website (www.un.it/protocol). For each of these names and institutions, we identified manually the corresponding Twitter and Facebook account, if it exists. Our list of Twitter accounts was in part based on the “Twiplomacy” dataset (Burson-Marsteller, 2012), which we revised and updated. When multiple Twitter or Facebook accounts with the same name existed, we chose the one that was verified.¹³ In the absence of verification, we selected the account with the largest number of followers.¹⁴ We only considered active accounts – those that had sent 10 or more posts in 2013.

The second step in our data collection process was to compile a dataset with information about each of these social media accounts from Twitter’s REST API and Facebook’s Graph API. These additional variables include the number of followers/likes and tweets/posts sent, and when each account was created. We also downloaded the entire history of tweets and posts in order to identify the date in which the first tweet or post was published.¹⁵ Our dependent variable – social media adoption– was constructed using this information. Following the distinction we introduced in the previous section, we distinguished between personal and institutional accounts, and also considered either Twitter or Facebook, although our main independent variable of interest is whether the world leader was active on *any* platform, regardless of the type of account.

¹²We have data on world leaders through mid-2014. However, many of our control variables end in November 2013.

¹³Verification is granted by Twitter and Facebook to public figures, including politicians, journalists and media outlets, in order to certify that their profile corresponds to their real identity. It is denoted by a blue “check” sign on the social media profile.

¹⁴We were also careful to exclude parody or fake accounts, as well as “community” Facebook pages, created by supporters of a politician and not the leader herself.

¹⁵Twitter limits the data that can be downloaded from the API to the 3,200 most recent tweets for each account. In the cases of those world leaders who posted more than that amount, we conducted manual searches through the advanced search options of Twitter’s web interface (which does allow to search past tweets during certain intervals), extracted the additional tweet IDs, and then downloaded the complete dataset in the same format as the initial 3,200 from the REST API.

Table 1 provides summary statistics for this variable, as well as our independent variables, which include GDP per capita, internet users, and social media users (Modernization Hypothesis); a dummy variable indicating whether an election was going to be held in the coming 12 months, a variable measuring whether polls were generally unfavorable towards the incumbent (Hyde and Marinov, 2011), and an index of social unrest computed using event data from the ICEWS dataset (Political Pressure Hypothesis); the Polity IV democracy score (Democracy/Transparency Hypothesis); and the count of neighboring countries (among the K=4 nearest neighbors, based on distance between capital cities) that had adopted social media at each time point (Diffusion Hypothesis). All of our models include region fixed effects.¹⁶ For more information about the operationalization and sources for these variables, see Table 1 in the Appendix.

Table 1: Summary Statistics: Monthly Data from Jan 2007 to Nov 2013

Variable	Mean	Std. Dev.	Min.	Max.	N
Leader Has Active Social Media Account	0.362	0.481	0	1	16185
Leader Has Active Personal Account	0.254	0.435	0	1	16185
Leader Has Active Institutional Account	0.214	0.41	0	1	16185
Leader Has Active Twitter Account	0.267	0.442	0	1	16185
Leader Has Active Facebook Account	0.297	0.457	0	1	16185
Monthly Count of Tweets (All)	19.76	64.912	0	1473	16185
Monthly Count of Posts (All)	13.24	50.668	0	601	16185
% of Tweets in English, by Month	0.339	0.428	0	1	3869
Log GDP Per Capita	9.064	1.251	6.039	12.777	15177
Internet Users	32.506	27.691	0	96.547	15770
Social Media Users	0.421	0.994	0	10.594	16185
Election Within 12 Months	0.202	0.401	0	1	16185
Index of Social Unrest (ICEWS)	1.132	1.233	0	5.984	13695
Polity IV Score	3.863	6.287	-10	10	13351
Adoption by K=4 Nearest Neighbors (1 lag)	1.408	1.366	0	4	15335
Population, in 1000s (log)	8.523	2.287	-0.693	14.102	16185

One of our key independent variables is the proportion of social media users in each country by month. Unfortunately, neither Twitter nor Facebook provide public statistics of how many users are active on these platforms, and the existing public surveys (e.g. the Eurobarometer studies, or the surveys conducted by the Pew Research Center) only include a limited subset of countries,

¹⁶We use the same classification of countries into regions as the World Bank: East Asia and Pacific (15%), Europe and Central Asia (27%), Latin America and Caribbean (17%), Middle East and North Africa (11%), North America (1%), South Asia (1%), and Sub-Saharan Africa (24%).

without the granularity required for our analysis (at the month level). In order to overcome this limitation, we applied an alternative strategy that provided us with a good proxy that captures change over time in citizens' adoption of social media platform. In particular, we estimate the number of Twitter users by country and month based on the number of geolocated tweets sent from each country during a one-month period in 2013, and then examining the distribution of account creation dates in order to estimate how many users were created in each month since 2008. (See the Appendix for a discussion of the limitations of this measure, and how we validated it properly captures the number of social media users.)

4 Results

To better understand the factors that influence social media adoption by world leaders, we use event history analysis (Box-Steffensmeier and Jones, 2004). We model the probability (hazard rate) that a country's leadership will adopt at least one of the two social media platforms we consider, and examine how political and demographic variables influence the probability of adoption using monthly data from January, 2007 to November, 2013.

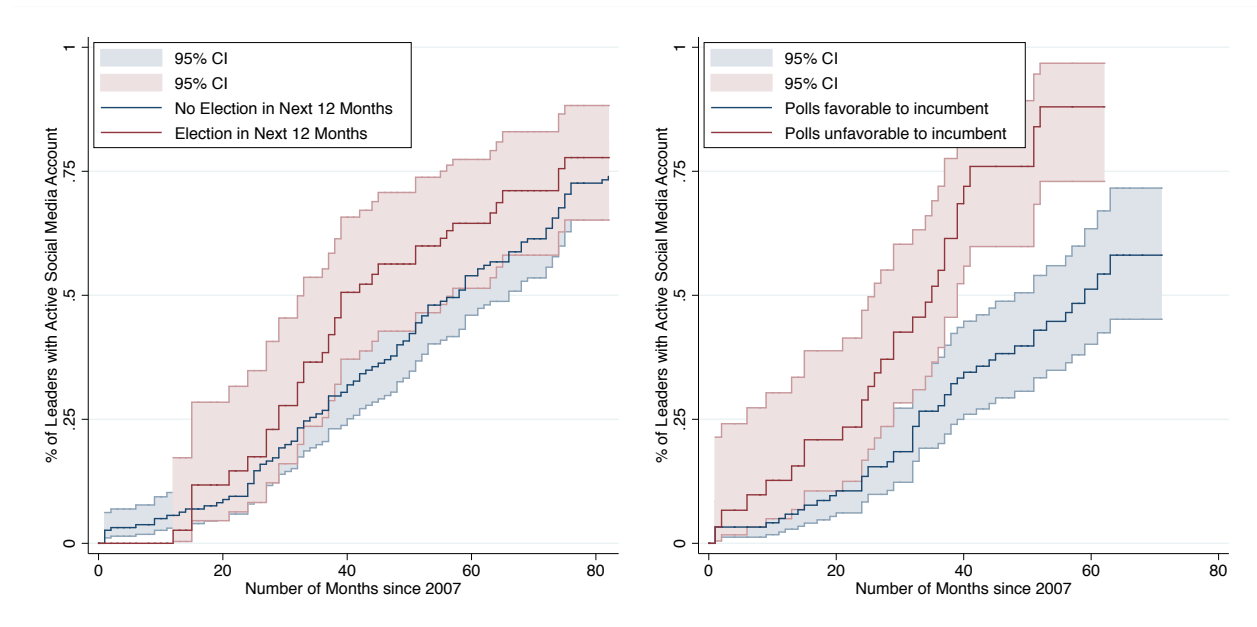
One component of our Political Pressure Hypothesis is that world leaders are more likely to adopt social media when they are facing a competitive election. We offer a preliminary analysis of this hypothesis in Figure 4. Here, the Kaplan-Meier plots examine the probability of social media adoption by world leaders as a function of time comparing countries that have an election within the year compared to those that do not (left panel),¹⁷ and countries where reliable polls were favorable for the incumbent with those where they were not, or such polls were not available (right panel).¹⁸ We find that leaders facing elections in the next 12 months are slightly more likely to adopt social media than those who are not facing elections, although this difference is not statistically significant ($p = 0.16$). In addition, the prospect of an electoral defeat appears to

¹⁷We test a smaller time window—election within six months—and we find no difference.

¹⁸The source of this variable is the National Elections Across Democracy and Autocracy Dataset (Hyde and Marinov, 2011). Note that this dataset is currently only available until the end of 2012, which explains why the length of the survival curves do not reach the end of the x-axis. See Table 1 in the Appendix for additional details.

incentivize social media adoption: incumbents in countries with reliable and unfavorable polls are between 10 and 30 percentage points more likely to become active on Twitter or Facebook. These results suggest that electoral pressure may be an important determinant of social media adoption, although these results should be interpreted by caution, as part of these patterns may be capturing simply differences between democratic and autocratic countries, as we now discuss.

Figure 4: Kaplan-Meier Graph of Social Media Adoption by Levels of Electoral Pressure



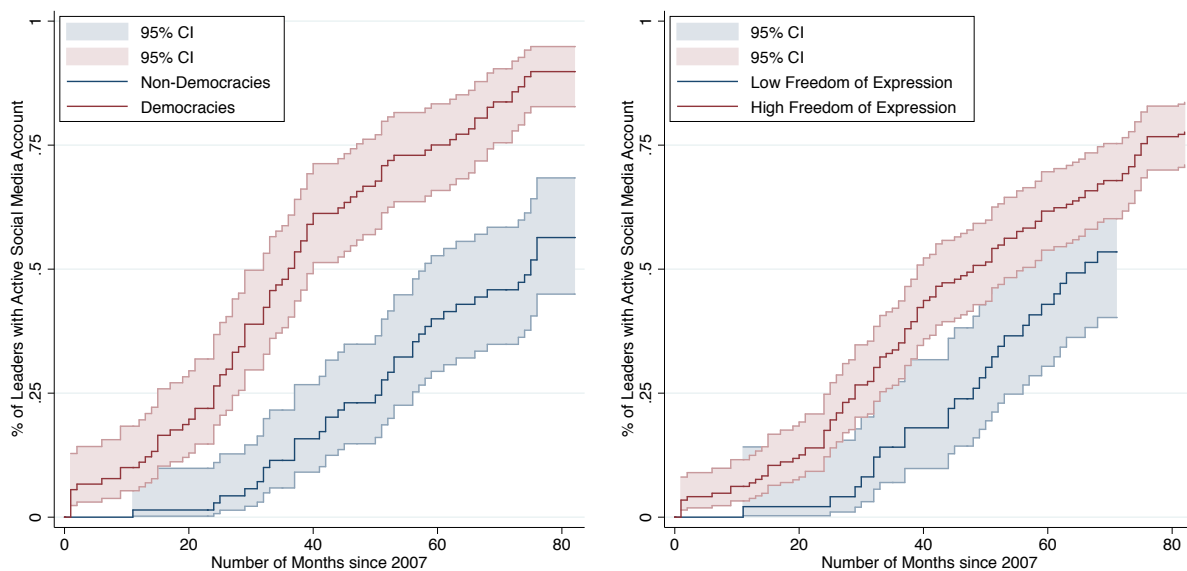
Note: The plot displays “failure,” or active social media adoption (i.e. whether a country has an active Twitter or Facebook account associated with a leader).

Another one of our hypotheses (Transparency/Democracy) is that democratic leaders are more likely to adopt social media due to pressures to be more transparent and communicate with voters. The Kaplan-Meier plot in Figure 5 shows the probability of social media adoption as a function of time comparing democracies and non-democracies (left panel), and comparing countries with high and low levels of freedom of expression and belief.¹⁹ The results show that democratic leaders were much more likely to adopt Twitter compared to non-democracies.

Of course, the differences that we observe in these four Kaplan-Meier graphs could be due to

¹⁹Following standard practice (Jagers and Gurr, 1995), code countries with a Polity IV score of +6 or higher as democracies. We apply a similar transformation of the variable measuring freedom of expression, coding countries with a score of 8 or higher (out of a maximum of 16) as having high freedom of expression.

Figure 5: Kaplan-Meier Graph of Social Media Adoption by Levels of Democracy



Note: The plot displays “failure,” or active social media adoption (i.e. whether a country has an active Twitter or Facebook account associated with a leader).

the effect of key omitted variables, such as GDP per capita or the number of social media users in each country. To account for this possibility, we now show the results of multivariate Cox proportional hazard models that estimate the determinants of social media adoption (Table 2), and distinguish across account types – institutional versus personal – and across platforms – Facebook versus Twitter – (see Table 5 in the Appendix).

First, in Table 2 we look at the correlates of social media adoption (having an active Twitter or Facebook account) by world leaders.²⁰ To account for regional effects that may explain differential speeds of adoption, each regression controls for region-fixed effects. Each column tests one of our proposed hypotheses for social media adoption. Column H1 looks at the effect of wealth, internet penetration, and social media adoption (Modernization Hypothesis), Column H2 looks at the effect of elections and social unrest (Political Pressure Hypothesis), Column H3 looks at

²⁰Note that the size of our dataset varies across models due to the different levels of coverage of the datasets we use. In particular, an important constrain is that NELDA (Hyde and Marinov, 2011) only covers the period until 2012 – whereas our full dataset ends in 2013 – and does not include some small countries. Given that this missingness pattern is not random, multiple imputation would not be appropriate. However, our main results are robust to excluding the variables that reduce our sample size, as we show in Table 2 and in the Appendix.

Table 2: Cox Proportional Hazard Model

	H1	H2	H3	H4	All1	All2
Log GDP Per Capita	0.25*				0.54**	0.21
	(0.13)				(0.22)	(0.16)
Internet Users	0.01*				-0.01	0.01
	(0.01)				(0.01)	(0.01)
Social Media Users	0.02				0.11	0.08
	(0.11)				(0.17)	(0.12)
Election Within 12 Months		0.03			0.02	0.00
		(0.27)			(0.27)	(0.21)
Unfavorable polls (NELDA)		0.61**			0.09	
		(0.26)			(0.31)	
Index of Social Unrest (ICEWS), Lagged		0.38***			0.27**	0.21**
		(0.07)			(0.12)	(0.08)
Polity IV Score			0.07***		0.11***	0.05**
			(0.02)		(0.04)	(0.02)
Adoption by K=4 Nearest Neighbors (1 lag)				0.17**	-0.13	-0.03
				(0.08)	(0.14)	(0.10)
Population, in 1000s (log)					0.00	-0.00*
					(0.00)	(0.00)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9267	5577	8059	9822	5238	7577
Number of Countries	180	149	160	186	143	151
Number Get Account	134	73	120	138	70	114

Dependent variable: Does the Leader Have an Active Social Media Account? Robust standard errors in parentheses. Signif.: *10% **5% ***1%.

the effect of democracy (Transparency/Democracy Hypothesis), Column H4 examines the effect of neighboring countries' adoption of social media (Diffusion Hypothesis), the Column labeled "All1" compares H1-H4 against each other, and the Columns labeled "All2" replicates that analysis but excluding the variable from the NELDA dataset, which reduces the number of missing observations.

Two clear findings emerge. First, our results show that social unrest has a positive and statistically significant effect on social media adoption, even after controlling for other covariates. A one-unit increase in this variable, which corresponds for example to the difference between the average social unrest in Ireland (1.14) and Venezuela (2.16), increases the probability that a world leader will adopt social media by around 30%. This result is in line with our hypothesis that

leaders may be adopting social media in response to protests and threats to their regime.

Second, we also find strong support for the hypothesis that leaders in more democratic countries are more likely to create social media accounts, confirming the results from Figure 5.²¹ A five-unit increase in the Polity IV score, which would correspond to the difference between Venezuela and the United States, increases the probability of social media adoption by around 72%.

However, our results only provide partial support for our Political Pressure Hypothesis. Having an election within the year does not appear to increase social media adoption. Leaders facing an upcoming election in a position of electoral vulnerability are more likely to become active on social networking platforms, but this effect is smaller in magnitude and significance in the full model.

In contrast to these two clear findings, our other hypotheses find lukewarm support. Wealth appears to have a positive effect and significant effect on social media adoption, although this result is not robust when we consider our full set of controls (Column H1 compared to Columns All1 and All2). Similarly, internet penetration and popularity of social media are not significant predictors of world leaders' adoption of these tools once we control for other variables. This result is consistent with the view of critics of the Modernization Hypothesis: economic explanations of the adoption of new technologies appear to be less important than political explanations. Similarly, although geographic diffusion appears to explain social media adoption in the bivariate model (Column H4), it appears that other variables are explaining the spread of social media across countries, as it is not statistically significant in the full model.

We explore the robustness of our main findings in the Appendix, where we show that alternative measures of electoral competition and democratization yield similar results. We also explore any potential differences in the propensity to become active on Twitter or Facebook. Although the results largely confirm our findings here, we do find that leaders in more democratic regimes are more likely to adopt a personal account, and to do it on Facebook. This suggests that the Transparency/Democracy Hypothesis effect is most strongly operating at the leader level. This

²¹Note that here we do not include a measure of freedom of expression, since it is highly correlated with the Polity IV score, and would result in attenuation bias due to multicollinearity (these two variables are correlated at $r=0.86$.)

result echoes recent research on how Facebook may be a better platform for politicians to “market” themselves to constituents (Enli and Skogerbø, 2013)

5 Discussion and Conclusion

Our paper used a unique dataset to understand the determinants of social media adoption by world leaders. We find support for two channels of adoption. First, democratic leaders are more likely to adopt social media. We further show that this effect is strongest for personal accounts and Facebook (a more personal medium compared to Twitter). One potential explanation of this result is that democratic leaders face greater pressure to promote their political activities in order to remain popular. The relatively cheap and easy nature of social media to broadcast targeted messages to audiences may be attractive for democratic leaders who must be responsive to electorates. However, we do not find that adoption increases in the period leading to elections, or when leaders are unpopular, which suggests that a more likely explanation may simply be that democracies create incentives for governments to be more transparent overall, regardless of election timing. Either interpretation would be consistent with previous literature that highlights the important role of institutions in shaping leader behavior (Bueno de Mesquita and Downs, 2005).

Second, social unrest is strongly associated with leader adoption of social media. This suggests an intriguing, and little-studied effect of social media related to contentious politics. Most previous research has focused on the effects of social media usage by protestors (Weidmann, 2015; King, Pan, and Roberts, 2012). Yet, our findings suggest that world leaders also adopt social media strategically in response to unrest. World leaders are becoming equally sophisticated as protestors in their use of social media, and see it as an important platform for shaping their own narrative about unrest.²² Leaders are challenging the “protestor” social media advantage, and using social media to discredit and disrupt protests (Gunitsky, 2015; Sanovich, Stukal, Penfold-Brown, and Tucker, 2015; Pearce, 2015).

Taken together these findings show that world leaders are strategic in their adoption of social

²²See <http://www.latimes.com/business/la-fi-social-media-politics-20150808-story.html>

media, and that these platforms play an important and growing role as a tool for political communication. However, two important questions remain unanswered. First, here we have focused on *why* leaders adopt these platforms, but not *how* they use them. That type of content analysis would provide much greater insight into the mechanisms we have identified here. Such analysis, which would need to be conducted in multiple languages, is beyond the scope of this research note, but our informal categorization of the types of posts we have observed, introduced in Section 2, could be a good point of departure. Relying on the literature on communication and legislative politics in the US (Fenno, 1978; Grimmer et al., 2014), we argue that social media could be used for credit-claiming or position-taking, and with the goal of reaching an international or domestic audience. We would also expect leaders to emphasize each of these communication modes depending on the political context, including some of the factors we identified here, such as social unrest, the degree to which elections are contested or the state of diplomatic relations with other countries.

This last point suggests a second path for future work. How do *both* incumbent leaders and challengers strategically use Twitter, Facebook, and other social media in the context of contentious politics? Several recent uses of social media provide clues to how social media may be used by political actors. The 2012 Israel-Gaza Conflict is dubbed by many as the first “Twitter War” (Zeitsoff, 2016). Israel announced its offensive on social media with its assassination of Ahmed Jabari, one of the leaders of Hamas’s military wing. Throughout the conflict, Hamas and Israel emphasized their own military prowess and denigrated each others’ actions, all while trying to rally world opinion to their side of the conflict.²³ The Islamic State of Iraq and al-Sham (ISIS) has been credited with using a slick social media campaign (via Twitter and Facebook) and their online magazine *Dabiq* to recruit Westerners to their cause, intimidate rivals, as well as raise money.²⁴ Others have taken a different tactic. Russia has used social media to both block criticism and spread misinformation in countries it views as rivals.²⁵ Finally, in the context of the US 2016 presidential elections, perhaps no candidate embraced or used social media, and in particular

²³See <http://www.cnn.com/2012/11/15/tech/social-media/twitter-war-gaza-israel/>

²⁴See <https://www.wired.com/2016/03/isis-winning-social-media-war-heres-beat/> and <http://www.theatlantic.com/international/archive/2014/06/isis-iraq-twitter-social-media-strategy/372856/>

²⁵See <http://www.nytimes.com/2015/06/07/magazine/the-agency.html> and <http://www.nytimes.com/2016/05/31/world/europe/russia-finland-nato-trolls.html>

Twitter, as effectively as President-elect Donald Trump. Many have traced his unexpected success as a candidate directly to his Twitter prowess, as he has used it to bypass traditional media outlets, direct his supporters, and cultivate a unique personality.²⁶ Following his surprising electoral win, Trump himself credited social media, and in particular Twitter, with his win, saying that it gave him a “method of fighting back” against bad news coverage.²⁷ Trump’s success with Twitter, and continued use of the platform post-election, points to the likely future uses of social media as a way to rally supporters and denigrate the opposition while bypassing the traditional media.

More generally, future work should do more to tease out how social media influences international opinion amid domestic or foreign policy crises. For example, how do autocratic governments respond to the use of these platforms by protestors and insurgent groups, in order to garner support and distribute their message (Tufekci and Wilson, 2012; Theocharis et al., 2015; Berger and Morgan, 2015)? If leaders are adopting social media platforms as a response to social unrest, are their strategies effective? For instance, are they able to disrupt mass protests, or to become a leading voice in countering violent extremism? Tracing out how leaders and groups engaged in contentious politics (protests, civil war, terrorism, etc.), foreign policy, and non-contentious politics (e.g., campaigns) use social media is an important next step.

²⁶See http://www.nytimes.com/2015/10/06/us/politics/donald-trump-twitter-use-campaign-2016.html?_r=0 and <https://www.washingtonpost.com/news/the-fix/wp/2015/12/10/reading-6000-of-his-tweets-has-convinced-us-donald-trump-is-a-social-media-master/>

²⁷See <http://money.cnn.com/2016/11/12/media/donald-trump-twitter-60-minutes/>

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