**Error 404: How Executive Constraints Affect Online Censorship Strategies**

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## Introduction

Social scientists often cringe at the notion that "repression always wins", as Acemoglu & Robinson (2005) coldly assume in most of their models. Levitsky & Way (2010) are not much more comforting: they add a more optimistic nuance to this fatalistic maxim by arguing that organized protest can triumph only when the regime they fight is weak; it stands no hope of success where governments are strong. Yet steeped in the liberal tradition, which places democracy in a pedestal of peace and prosperity, most political scientists would much rather side with Acharya (2012), who sanguinely states that "the easier it is for [disenfranchised citizens] to organize, the more powerful they are, and the more likely it is that they will get the concessions they seek."

Recent waves of protest seem to have bolstered the position of the optimists. The most notorious of these episodes, the Arab Spring, evinced the power of popular protest as a means for democratization. Popular mobilization in the Muslim world contributed to the downfall of authoritarian regimes, as in Egypt, or destabilizing social movements, as in Iran (Comunello and Anzera, 2012; Howard 2013). What made these recent protest movements and regime transitions in the Middle East so disruptive? In this broad debate (see Eriksson and Giacomello, 2009), some commentators were quick to praise the Internet as the catalyst

of authoritarian downfall (Howard & Hussain, 2011; Tufekci & Wilson, 2012). Even before the Arab Spring, Shirky (2009) had developed an account of how the Internet can facilitate collective action and bolster democracy around the globe, a sanguine assessment echoed by Howard (2010). Others were more guarded, arguing either that the causal relationship between the Internet, protest activity and authoritarian collapse is unclear (Milner, 2006; Aday et al., 2010; Lynch, 2011), that regimes are becoming increasingly adept at controlling the cyberspace (Deibert, 2015), or that the Internet may in fact help authoritarian regimes consolidate power (Morozov, 2011).

The relationship between the Internet and politics remains understudied in political science due to its relative novelty (Farrell, 2012), and can be addressed from two angles. First, from the point of view of opposition movements and mobilization, research needs to clearly define the role of new technologies, social media and the Internet in people's behavior and in solving the opposition's collective action problem. Work on this strand of research has become plentiful of late (Zheng & Wu, 2005; Pierskalla & Hollenbach, 2013; Warren, 2015; Shapiro & Siegel, 2015; Weidmann, 2015). Second, from the point of view of the state and the institutions, researchers need to deepen the general understanding of how states respond to the Internet as a new conduit of information and facilitator of mobilization, with all the benefits and dangers it entails for regime survival. A relatively new but solid line of research has begun to answer key questions in this regard (Petrova, 2008; Egorov et al., 2009; King et al., 2013; Lorentzen, 2013, 2014; Roberts, 2014; Rød & Weidmann, 2015; Gohdes, 2015; Hellmeier, 2016). Only by collecting studies on the role of the Internet in opposition movements and on state responses to Internet activity will we be able to understand the relationship between the Internet and politics, a crucial issue in modern-day political science.

This paper falls in line with the strand of research concerned with censorship strategies of Internet activity by states. How do states respond to the Internet as a mobilizing tool and why do some opt for censorship while others allow free discussion? Similarly, why do some states censor certain types of content but permit others? The literature has yet to produce a comparative theory of censorship, and the need for one will not disappear even if data remain incomplete. To begin filling this gap in the literature, I offer a model that explains how and why regimes decide to censor online communications.

This article shows that there exist stark differences in censorship across autocracies. The central claim is that as the Internet becomes an increasingly threatening mobilizing tool, countries will differ in their online censorship strategy as a function of the level of constraints on executive power. Some countries with low levels of executive constraints, such as China and the Gulf states, predominantly use a form of censorship that I call *overt*, which aims at filtering, blocking and removing Internet content through increasingly sophisticated technology. Others with more constrained executives, such as Russia or Egypt, concentrate their efforts on implementing a *covert* censorship strategy, which shies away from consistent blocking and removal of Internet content and focuses instead on controlling the actors behind the messages and on modifying the content of the messages themselves.[1]

This argument builds on Hellmeier (2016), who argues that various regime characteristics affect how they approach online censorship. Among these characteristics are natural resource revenues, levels of social unrest, personalism, and democracy diffusion in neighboring countries. My argument contributes to this debate, first, in that it identifies an aspect of

[1]Indeed, China engages in both strategies (Roberts, forthcoming), and the way in which it uses both is interesting and illuminating to our discussion. However, in this paper I focus mostly on China's overt censorship tactics such as blocking access to certain sites.

authoritarian governance that explains differences in censorship in nondemocracies, executive constraints. Second, it problematizes the *type* of censorship. As the case of China, Russia and Egypt show, censorship exists beyond overt restrictions in access and communication. Here I provide an explanation for why some regimes may use one type of censorship over another or both.

Empirically, this paper first provides a descriptive analysis that shows country specific and regional differences in filtering and blocking technology in autocracies; that is, the extent to which countries have implemented more or less sophisticated systems that allow them to flag and remove particular types of content. Second, statistical analysis supports the main hypothesis that executives with low levels of constraints implement strong overt censorship. Third, evidence from China, Russia, Cuba and Egypt provides further support for the theory and helps frame the research in the experience of regionally and politically diverse states. I use data on Internet penetration[2] from the UN, and average bandwidth speed data from Akamai. Executive constraints data is taken from the PolityIV dataset's disaggregated scores. Censorship data is drawn from the ONI project and ranges from 2007 to 2012, as do the others (Hellmeier 2016).

This paper makes a few important contributions to various literatures. First, it provides the first comparative theory of censorship across nondemocracies. So far, most studies have focused on one country, region, or event. No studies have attempted to explain the differences in censorship strategies across the authoritarian world – a timely question that deserves focused attention and sharper theory. Second, it provides evidence that the pattern observed

[2]Measured as the ratio of active users per 100 people (see Milner (2006); Petrova (2008) for other papers that use this variable)

in China, i.e. that targeted censorship of collective action is more important to dictatorships than political dissent, is not unique to China but extends to other countries. My quantitative results show that messages of dissent are much less likely to be repressed than tools that aid collective action. Lastly, this is the first paper, to my knowledge, to hypothesize that Internet speed is relevant to censorship and to mobilization through the Internet more generally. Internet penetration had been used before (Milner, 2006; Petrova, 2008), but not speed. As pictures and hub websites like Twitter and Facebook become more relevant to mobilization, Internet speeds gain importance in the study of censorship that merely access to the Internet.

## Theory

### *The Internet as a Mobilizing Tool*

In a given autocracy, the political opposition has different tactics at its disposal to reach its political goals, which can range from outright revolution to focalized issue-based protests intended to sway the regime in a particular direction. Issues and reasons for overthrowing the government are usually plentiful; solutions to the collective action problem facing opposition movements in autocracies are notoriously lacking (Lichbach 1995). The technologies that allow for diffusion of political ideas and calls to collective action have changed over the years and continue to evolve today. In the old days, the late eighteenth and early nineteenth centuries, as Tarrow (1994) shows, the printing press and the socializing at certain cafes in England and France revolutionized opposition tactics and helped it mobilize and expand its support base. Well into the twentieth century, radio and television had a similar effect

(Davenport, 2009; Tarrow, 1994). Today, the Internet has become an important technology for opposition movements to mobilize their base, as occurred during the Arab Spring and during the so-called 'Twitter revolution' in Iran.

Since organizing tactics and technologies vary in cost and connective power, opposition movements will choose the most efficient technology available to them. First, a technology is chosen in accordance with its capacity to connect subjects within the opposition movement and reach supporters of the regime that may be persuaded to join the opposition. Secondly, the opposition will choose a technology that reduces its organizational costs. Assuming that resources are finite and often precarious for the opposition in authoritarian situations, the opposition will select the most efficient tool at its disposal. The opposition movement will choose the most efficient technology. With TV, newspaper, radio and other channels banned to the opposition in most authoritarian countries, the Internet becomes one of the most attractive technologies to organize the opposition and circulate information that may increase their overall support in the population.

Yet, the Internet will only solve the opposition's collective action problem if enough members of the opposition use it. I make the assumption that the Internet becomes a mechanism for mobilization and a threat to the regime if it has the capacity to connect and galvanize the opposition and the broader population. Thus, if a substantial part of the population has *access* to the Internet, they can use it to share information and become mobilized. Research by Tufekci and Wilson (2012) has shown that having access to the Internet at home significantly increased the likelihood of participating in protests during Egypt?s Tahrir Square protests of 2011. Similarly, the Internet can mobilize the opposition only if is sufficiently fast to share information on popular websites such as Twitter or Facebook. It is difficult to mobilize at

dial-up speeds, and at that point people are better of using text messaging (Pierskalla & Hollenbach, 2013). Thus, some level of Internet *speed* is necessary for the Internet to act as a coordination tool. If access to the Internet is heavily restricted, as in Cuba and, to a much greater extent, North Korea, the mobilizing potential of the Internet is limited. Similarly, if speed is low, it is difficult for the opposition to rely on key websites for coordination and communicate via pictures with its members.

### *Are Internet Access and Speed Exogenous or Endogenous?*

The argument here may appear to assume that access and speed increase exogenously, as if the regime had no say on their expansion, and only reacted to the Internet becoming a greater factor for opposition movements and protests. This is certainly not true. In fact, Internet access and speed are a direct consequence of government policy: some, such as North Korea, prefer to restrict them as much as possible in an attempt to maintain an autarkic regime; others, such as China or Russia, actively expand them in order to keep up with gobalization. Howard (2010) sees the Internet as a modernizing force essential for economic growth – which, in turn, is one of the best predictors of authoritarian survival (Wright 2009). This rings true for most modernizing autocracies across the globe: from paradigmatic cases such as China, Russia and the Gulf States, to others like Belarus, which went from 8.9 percent of active users in 2000 to 54.17 percent in 2013, one of the highest among authoritarian states. The pattern is similar in most other autocracies, with the notable exceptions of outliers such as North Korea. Thus, autocratic governments across the world have expanded Internet access and speeds while implementing, in parallel, a host of varied censorship strategies.

*Internet Control in Autocracies: Regime Strength or Constraints on the Executive?*

The biggest puzzle from the discussion so far is this: if the Internet has become a powerful tool for mobilization across the authoritarian world, why do we observe such stark differences in the *response* of these states to the Internet, that is, in their *censorship strategies*? I will use the two paradigmatic cases to frame this discussion, China and Russia. In the case of China, the state has built a 'Great firewall' that blocks access within China to banned sites such as Facebook or twitter. It also uses an army of censors manually inspects each flagged message and removes the ones deemed inappropriate usually within 30 minutes of posting (KPR 2013, 2014).[3] Russia, on the other hand, has not built its infrastructure the same way. It has not implemented a far-reaching and powerful firewall, as has China. Rather, instead of directly controlling the network, Russia attempts to control the actors and the messages they post.[4]

An argument often used to explain differences in censorship across autocracies is resources. Countries with lots of resources, such as China, can establish sophisticated mechanisms of Internet control, while others do not use filtering techniques because they do not have the capacity to do so. This argument, while logical, has no bearing upon reality: does Russia not have the resources to, if it wanted, establish a 'Great firewall' as well? Resources are important, but they do not explain the full picture of censorship. Egypt, for instance, also

[3]China indeed uses covert censorship too. For instance, it jailed key online opinion leaders in 2013 and has recently been propagating pro-regime online messages through what look like regular citizen posts (Roberts, forthcoming). However, in this paper I focus primarily on China's overt censorship methods, which have long dominated discussion and remain a key component of the country's censorship strategy.

[4]I discuss the differences between Russia and China further in the empirical section.

has sufficient resources to establish a strong enough censorship network to, at the very least, register in many of the filtering tests performed. Yet no evidence exists that Egypt has filtered and censored Internet content using a strategy similar to China's. Rather, evidence suggests its strategy resembles that of Russia, with little focus on infrastructure and more emphasis on intimidation and control of actors. If it is not resources, what explains differences in censorship strategies? Let us look first at the two broad censorship strategies that states may adopt –with an implicit third option being a mix of the two.

### *Two Broad Types of Censorship*

I identify two broad strategies of censorship, both of which are certainly more nuanced than my discussion will allow. First, countries can establish mechanisms for *overt* censorship, which requires infrastructure aimed at blocking certain communications after they have occurred. By establishing a sophisticated monitoring network, the regime has a chance to remove threatening activity before it becomes difficult to control. By removing and censoring messages, it also educates actors in what will and what will not be permitted.[5]

Second, they can establish *covert* censorship. This strategy consists of identifying key actors in the dissemination of information and calls to action online, and exerting control over them. Messages are allowed to circulate in a majority of instances, but the actors are eventually pressured to divulge pro-regime rhetoric. This strategy is covert because it seeks to control the message directly before it is posted by controlling the messenger, and because it can often be performed without the population being aware of the control that

[5]I label this strategy 'overt' because, first, it represents a reaction to an action that has already taken place and, second, because it represents a conservative ideology of not allowing free discussion online under any circumstances.

the government exercises over certain actors. It can be covertly violent against opposition actors, and outright fake in other instances.

It is important to notice that both strategies are meant to induce self-censorship, but that the covert strategy is more effective at controlling the message that the population ultimately receives. As Little (2015) shows, such control can be crucial for the regime to project an image of strength and dissuade the general public from joining into protests or revolts against the leadership. Also, both strategies can be applied at the same time, but I argue that certain countries apply more overt censorship while others rely more on covert censorship, depending on the constraints that the executive faces. This is the central argument of this paper, and the one I outline in the following section.

Also, it is important to note that regimes certainly different in their abilities to use one type of censorship over the other. For instance, Pan (2017) argues that other authoritarian regimes may have difficulty replicating China's Internet censorship strategy because their markets are dominated by foreign social media companies, while only domestic firms are allowed in China. While this is true, governments are also becoming more adept at curtailing access to foreign social media sites during times of crises, as has happened recently in Turkey and Syria (Gohdes 2015). Curtailing access to Internet sites in any form falls squarely within the overt strategy, and more unconstrained executives will have greater leeway to use strategies like throttling specific sites or shutting them down entirely for periods of time than more constrained ones.

*Types of Constraints and Censorship Outcomes*

Once the Internet has become a primary means of communication, the authoritarian leadership is forced to map a censorship strategy. Indeed, even democracies are forced to restrict the Internet in some way, as most Western democracies ban, for instance, certain types of pornography or gambling online. Autocracies also establish censorship strategies, but they often face less constraints than democracies. This allows them to limit certain forms of interaction and content that democracies are required to permit.

We know from extant work that complete censorship is not an optimum strategy for governments to regulate the online sphere (Lorentzen 2013). Other work confirms that some governments, such as the Chinese, prefer to allow a certain amount of communication, but restrict only those messages and interactions most dangerous for the regime, usually the ones most likely to ignite or spread collective action (KPR 2013, 2014; others cite local level). These restrictions, however, tend to be strong and strictly enforced (KPR 2013, ONI Project 2013). On the other hand, governments such as Russia and Egypt, to name two examples, do not restrict online communication directly –for instance, in the ONI data, Russia receives an overall score of 2 out of 14 while China receives 12 out of 14 points in an ascending censorship scale.

So which countries apply more overt censorship and which ones focus on covert censorship? I argue that countries in which the executive faces low levels of constraints on its power prefer overt censorship, and countries with high levels of constraints on the executive opt for covert censorship. The main reason is that governments that face little constraints can impose restrictions on Internet communications that are more direct and effective at limiting

collective action, paying few audience costs. In the end, as Dickson (2016) argues, only a very small percentage of the population actually encouters the 'Great Firewall' in China. So the government can impose target, efficient and effective restrictions on the capacity of the opposition to organize without incurring high costs. On the other hand, countries such as Russia or Egypt that have more constrained executives, placing such restrictions would prove costlier, as the opposition is likely to rally against the regime and people could easily check online whether the regime is, in fact, highly restrictive. I break down two types of constraints that lead executives to prefer one strategy over the other.

There are two primary constraints that executive face when establishing a censorship strategy: the strength of the organized domestic opposition and the influence of a global power on domestic affairs.[6] Even in a state with a strong executive and resources to implement censorship strategies of almost any kind, an organized and influential opposition thwarts most attempts by the leadership to establish an overt form of censorship, restricting Internet access in a sweeping and overt fashion. Such attempts are likely to backfire, as the opposition already has ways to organize outside of the Internet. There is, therefore, an implicit cost to imposing overt censorship on an organized opposition, as it could lead to a generalized revolt. Where no organized opposition exists, however, overt censorship ensures that the opposition remains unorganized and cannot use the Internet as a mobilizing tool to its full potential. Similarly, states that require assistance from a democratic global power are likely to maintain an façade of online freedom and shun overt censorship in order to maintain the favor of their benefactor. This is the case of Egypt, the second largest recipient of US aid after Israel and

[6]Others may exist, such as elite splits that weaken the leadership, and all need to be investigated further. Here, I investigate the two that I believe matter most for variations in censorship strategies.

a key player for American diplomacy in the Middle East (Alesina and Dollar 2000).

Yet countries in which overt censorship is less viable still need to control the proliferation of content and calls to action on the Internet. I argue that, instead of placing noticeable and costly restrictions on Internet communications, the leadership will concentrate on establishing covert censorship strategies. These strategies are usually characterized by, first, controlling the main actors that produce content online and who have influence with the general public; and, second, producing their own online content to generate confusion regarding negative aspects of the regime or outright propaganda to generate support.[7]

We should expect, therefore, the following hypothesis to hold given the discussion so far:

H1: As the Internet becomes a mobilizing tool, overt censorship (filtering of messages and blocking of sites) should be high when constraints on the executive are low.

H2: As the Internet becomes a mobilizing tool, covert censorship should increase and overt censorship decrease when constraints on the executive are high.

## Empirical Analysis

In this section I provide quantitative and qualitative evidence for these two hypotheses. The statistical tests provide direct evidence for the first hypothesis, showing that as access to the internet and overall speeds increase, countries with lower levels of executive constraints will use overt censorship. They also show, indirectly, evidence for hypothesis 2. In the second part I provide qualitative evidence for hypothesis 2, comparing evidence from China, Russia,

[7]That censorship strategies often include some elements of the two broad approaches described here is evidenced by the fact that China, for instance, has created a network of content-producing agents that spread propaganda in favor of the regime. Still, the regime has focused primarily on overt censorship and these attempts to generate content have been obvious and rather unsuccessful (Roberts 2014).

Egypt and Cuba.

### *Data - Dependent and Independent Variables*

To measure the dependent variable, censorship, this paper uses the Open Net Initiative cross-sectional dataset of 74 countries from 2007 to 2012[8] that scores each country's level of censorship into four categories of censorship. After removing democracies from the sample, a total of 49 nondemocracies are left for the analysis. While the project defines four categories of censorship, I only focus on two for theoretical purposes: political and tools censorship.[9] The *political censorship* score focuses "primarily on Web sites that express views in opposition to those of the current government." The *tools censorship* score focuses on "sites that provide e-mail, Internet hosting, search, translation, Voice-over Internet Protocol (VoIP) telephone service, and circumvention methods." Moreover, to get a sense of the total of level of censorship in a given country, I construct an aggregate variable, which I call 'Overall', that adds up the score in all four categories for every observation.

Measurement for our main explanatory variables is as follows. To measure the level of access in each country, I use the ITU/World Bank/UN indicator for active users per 100 inhabitants, also known as level of Internet penetration.[10] This variable is a good proxy to capture the extent to which the population can be directly mobilized by the Internet. I lag the *access* variable one year, as it helps our causal story that censorship is a function of the level of threat perceived by the elites, that is, the extent to which citizens are connected and

[8]Each country is measured once within this period.

[9]The other categories are social censorship and conflict-security censorship

[10]This variable has been challenged on the grounds that regimes overstate penetration figures. However, no clear evidence of systematic inflation exists. It has also been used in various studies (Milner, 2006; Petrova, 2008; Nisbet et al., 2012).

can be mobilized. I then lag it another year as a robustness check. Given that ONI censorship data includes observations ranging from 2007 until 2012, access figures have been matched with the year for which we have censorship data, and lagged values have been generated from that year as well. To measure speed, I use data on average megabits of download per second for a country from 2007 until 2012 (the structure of the data is the same). These data were obtained from Akamai, a private worldwide Internet service provider, and are available from the author. That the results are robust using two different variables from unrelated sources provides strong support for the theory.

To measure executive constraints, my main measure is *xconst* from the PolityIV dataset, which captures precisely the level of constraints placed on executive power by the political system in a given country. To provide robustness, I also use executive recruitment, or *xrcomp*, which captures the level to which executive positions are competitive. Both measures are good proxies for the extent to which an executive has freedom to set censorship policy, and how much it may need to compromise. Thus, we can expect that states that score low in these variables will use more censorship.

Three final notes on the data and the independent variables. First, the Internet access variable has been centered on the minimum value to ease the interpretation of the interaction. Second, the final sample consists of 49 nondemocratic regimes for the main tests with internet access and 45 for the tests using internet speed. This small loss of observations is due to missing speed data for four countries: Bangladesh, Ethiopia, Nigeria and Uzbekistan. Lastly, democracies are coded as 1 if their polity score is equal or higher than 6, and 0 otherwise. Even if this is a relatively low threshold, it is still more demanding than a majority of datasets that code democracy in procedural grounds and assign a dichotomous value. For instance,

Nigeria has a Polity score of 4 and I consider it a nondemocracy, while it is given a '1' in a majority of dichotomous datasets.[11]

### *Data - Control Variables*

Diverse economic and demographic variables can affect censorship and access to the Internet. First, the level of economic development greatly explains access to the Internet: the more developed a country is, the more likely its citizens are to be connected to the world wide web. It also can explain censorship: more developed authoritarian countries use censorship because they have the resources to do so. For nondemocracies, the total level of resources is more relevant than the level of development. Therefore, we expect China and Russia, with large economies with middle levels of development, to have the necessary resources to censor. Therefore, rather than controlling for both GDP per capita as well as total GDP, the analysis includes only a control for total GDP from the most recent World Bank figures. The results remain unchanged if we control for GDP per capita.

Religion and ethnicity variables could also be driving the relationship between access and censorship. Governments in countries with high levels of religious and ethnic fragmentation could use targeted censorship of minority groups. The analysis therefore includes controls for ethnic and religious fragmentation, with the understanding that in more fragmented countries, governments controlled by a certain ethnicity may use censorship tactics against other ethnic groups, as well as restrict their access to the Internet while increasing their own group's online resources. These data are taken from Alesina et al. (2003).

[11] Changing the way democracy is coded does not alter the results significantly.

I also include a control for natural resource rents as a percentage of GDP with data from the World Bank. Egorov et al. (2009) found that resource-rich authoritarian countries tended to censor substantially, while countries that depended on other sources of income allow for freer media. This is due, they argue, to the "Gorbachov dilemma", according to which nondemocratic leaders permit greater criticism of the government in an effort to make government workers and officials more efficient. Lacking resource rents, this efficiency is required to generate foreign exchange. Their theory does not explain variation across nondemocracies, and instead could be picking up what I identify in this paper: variations in the level of constraints. Lastly, I control for the country?s average level of education by including a measure of enrollment in secondary education from the World Bank databank.

It is important to note that the results remain unchanged in the naïve model, without any of these controls, and in all the models (not shown) that include each control variable separately. Thus, I prefer to include all those controls that I suspect to be relevant to the relationship.

### *Methods*

In this paper, I explore whether regime-specific institutions affect censorship strategies. I use a two-step approach. First, I show the geographical distribution of censorship intensity across the countries for which we have available data. This descriptive first step gives us a sense of how different types of regimes censor political message and organizing tools differently. Second, I use regression analysis to test how censorship strategies vary at different levels of executive constraints, competition and openness, as the Internet gains importance in the

country. The key variable of interest will be the interaction between access/speed and each of the values of executive power from PolityIV. The reason is that we need to model the extent to which the Internet is a feasible mobilizing tool in a given country at a particular point in time.

Given the small sample size bias of maximum likelihood estimation, my statistical tool of choice is ordinary least squares regression with robust standard errors, which I use throughout the empirical analysis. While the dependent variable is ordinal, the fact that it takes five values which are well apportioned leads me to believe that the OLS coefficients will be largely reliable. I have conducted three robustness checks: (1) a linear probability model after transforming the dependent variables into dichotomous measures, (2) logistic regression with the dichotomous dependent variables, and (3) multiple lags of the independent variable. All these tests are available from the author and produce consistent results.

## Results

How do we explain the variation in censorship across authoritarian regimes? Our theory predicts that countries with more constraints on executive power and greater opportunities for contestation will use less systematic censorship than those with less constrained executives. If this is true, we should see empirical differences between competitive authoritarian regimes and stable autocracies. Figure 1 illustrates the overall level of censorship in nondemocratic regimes using ONI data. We can see that, for both scores, high levels of censorship are concentrated in the Middle East (Gulf states particularly) and in China. These are among the most stable authoritarian regimes in our dataset. This is consistent with what we know

from extant research (KPR 2013). Russia and Egypt, among other countries, exhibit low levels of overt censorship, which also fits within our expectations.

[ Tables 1 and 2 here ]

Turning to the quantitative analysis, Tables 1 and 2 report the main results of this paper. Table 1 shows the effect of executive constraints on the three theoretically relevant dependent variables of censorship as access to the Internet increases. The main takeaway from these models is that increases in access when the value of executive recruitment is zero (i.e. a closed executive) will produce significant increases in overall and tools censorship, while political censorship will remain largely unaffected. The interaction term shows that as executive constraints increase, broader access to the Internet is associated with significantly lower intensity of censorship. Consistent with our theory, these results are statistically significant at the 0.05 and 0.001 level respectively. Also consistent with our expectations, countries with greater resources will use more censorship, as indicated by the coefficient of GDP. This is relevant because it does not invalidate one of the counterarguments to our theory, but rather makes them compatible.

Table 2 captures the effect of access on censorship at different levels of executive competition. The results show the exact same pattern: high levels of significance for the coefficient of access when the disaggregated polity variable is zero in all the models except for political censorship. This means that in those regimes with the least competitive executives, censorship of Internet tools to organize collective action will be blunt and forceful, while mere political dissent will not increase significantly. The interaction terms for overall and tools censorship also show a remarkably strong moderating effect of increases in executive competitiveness as

access to the Internet becomes more widespread.

These two tables provide strong support for our theoretical association between low constraints on the executive and high levels of censorship of collective action tools. If these results are robust, they should hold when we use a different independent variable that captures a similar theoretical idea. Instead of access, Tables 3 and 4 report the results of the interaction between *speed* and executive constraints/executive competition –this test follows directly from the theoretical discussion on access and speed. The results are similar to those in Tables 1 and 2, in that the interaction term is negative and statistically significant for tools censorship but not political censorship.

[ Tables 3 and 4 here ]

[ Figure 2 here ]

The results are even more striking when we graph the predicted values of tools censorship at different levels of access for countries with high and low levels of executive constraints and executive competition. This is shown in Figure 2. The steep positive line represents the predicted censorship values for powerful executives with little or no constraints on their decision-making capabilities (left) and for executives with low levels of competition. The x-axis ranges from 0 to 40 to account for the fact that access to the Internet in nondemocracies is much lower than in democracies, rarely going over 40 active users per 100 inhabitants. For an authoritarian regimes with low constraints on executive power, high levels of access (for instance, 35 percent of active users) will translate into intense censorship of 3 out of 4 in the

ONI scale. At lower levels of access, there is no difference between the two levels of constraints, as expected. Governments will not use direct censorship if only a really small number of the people are online. This contrasts with a country with high levels of constraints, which will have a predicted score of either 0 or 1 (low intensity) in the ONI scale. This is substantially relevant, as autocracies that become increasingly competitive, as Egypt or Zimbabwe, see their ability to impose direct and palpable restrictions on online usage heavily curtailed. To put this in context, Russia has a value of 4 out of 6 in the executive constraints scale from the PolityIV dataset, a high level of access (41.94 users per 100 people) and an overall censorship score of 2 out of 14, with 0 out of 4 for tools censorship. Our model predicts an overall score for Russia of 3.13 out of 14 and a tools score of 0.65 out of 4. For China, where access is also high (37 users) the model predicts a high overall score of 11.85 and an equally high tools score of 3.07.

[ Figure 3 here ]

Figure 3 shows a similar effect using speed instead of access (Model 3 from Table 3), although now the interactive effect is even stronger. Non-competitive executives (plot on the right) will be more likely to censor mobilization mechanisms as internet speeds increase, whereas competitive executives will be significantly *less* likely to do so. Unconstrained executives (plot on the left), on the other hand, are much more likely to use censorship of internet tools for mobilization as internet speeds increase. These results are consistent with those in Figure 2 and provide strong support for the main hypothesis that constrained and uncompetitive authoritarian executives will increase censorship of online mobilization tools

as the Internet becomes more widespread and fast.

The substantive effects of this are multiple. First, these countries will likely resort to greater efforts of intimidation to induce self-censorship, as did Egypt in the example I showed earlier. Or, second, they will empower the opposition and increase the probability of regime change. It could also be the case that, third, governments in nondemocracies where executive constraints are high manipulate become highly apt at distorting information online. They may do this by coopting bloggers, producing their own pro-regime content in ways that are difficult to differentiate from supporters in the population at large. The avenues for research in this sense are, therefore, practically endless.

## Robustness checks

I test the robustness of the models in four ways. First, I identify those observations that have above-average levels of influence in the estimations, using a leverage against residual squared plot and dropping the most influential observations. I perform this test on each regression from the main OLS results. Second, I perform all of the OLS and logistic regression tests lagging the variable access one extra year. Given that, theoretically, increases in access precede government censorship, which sets its censorship strategy as a function of the level of threat it perceives, I have lagged access an additional year. Again, lagging access an extra year does not challenge the results, as all coefficients remain significant at the same level or higher.

Third, the main criticism against OLS in this paper could be that the dependent variables of censorship are ordered categorical variables and not quantitative. Aside from the argu-

ments already provided for the use of OLS, I tackle this challenge by performing two further tests. I first run a logistic regression with the censorship variables dichotomized. I assign a value of 0 if no censorship was detected, and 1 otherwise. The results remain robust: both the baseline and the interaction using the executive power and structure variables remain significant for tools censorship. This is also the case when lagging the dependent variable two years.

Lastly, I dichotomize the two PolityIV variables from the main analysis and generate two categories, low and high. The results remain strongly significant, both with and without the control variables and keeping both access lagged and the robust standard errors. The results remain the same: in low levels of *xconst* tools censorship increases significantly (p=0.018) while political censorship is flat (p=0.96); the interaction term is highly significant, and negative, at the 0.01 level both for medium levels and high levels of *xconst*.

## Evidence from China, Russia, Cuba and Egypt

In this section, I provide comparative evidence from four different countries: China, Russia, Cuba and Egypt. I have selected these cases for their diversity in terms of executive constraints, level of access, and censorship strategies. They also represent regional diversity, which helps generalize the theory.

I have already made some reference to the cases of China and Russia and their different approaches to online censorship. China is the perfect example of the overt approach. We know from King, Pan and Roberts' (2013, 2014) extensive research that the Chinese government heavily curtails calls to action. Dickson (2016) concurs but points out that a small share of

the population actually encounters any kind of censorship. The rest of interactions, while monitored, are allowed. This goes in line with Lorentzen's (2013) that complete censorship is a suboptimal strategy –the government is better off focusing on targeted censorship of what it considers most threatening. All these works have shown, in summary, that China's 'Great Firewall' is extensively targeted to a small share of the political discussion and a large share of collective action messages. KPR (2013) show, for instance, that Chinese censors heavily targeted the 2011 protests in Inner Mongolia or the Zengcheng Protests of the same year, but little attention was paid to discussions around the government putting the nuclear program on hold or even the rise of food prices.

This strategy, I argue, is largely due to the lack of constraints that the executive faces in terms of an organized opposition and the influence of international democracies. The Chinese government has not allowed an influential opposition to develop, which gives them free reign to take away coordination capabilities with a relatively low cost. Similarly, its international standing as a superpower, has allowed it to maintain its strong censorship policy without harming its trade positions and international influence more generally. We will see that this stands in stark contrast to Egypt, where international influence has prevented successive governments from imposing strict limitations on online communication.

Egypt and Russia serve as examples of the covert censorship strategy. Egypt's 2014 constitution formally established guarantees of freedom of speech and banned the regime from curtailing the free flow of information online. The government has largely abided by the new rule on the technical side, with few instances of filtering, blockage, or restrictions of access. Instead, reports during the last two years suggest that the state has focused most of its censorship efforts in identifying influential actors in the online sphere and pressure them

to change their message toward more pro-regime positions. Among the threats these actors face are the cancellation of advertising contracts, the prosecution of the actors themselves on dubious or overly broad legal grounds, and threats to their physical integrity. Similar reports emerged in Russia, where the government co-opts bloggers and threatens others in an effort to prevent these actors from posting material that the regime wants to silence. Freedom House reports a telling example: "A 2014 law requires any website, blog, or public social-media account with more than 3,000 daily viewers to register with Roskomnadzor as a media outlet and comply with the regulations accompanying that status, including bans on anonymous authorship and legal responsibility for comments posted by users" (Freedom House 2016). The site ranks the country as 'not free', even if no evidence of a strong firewall and pervasive filtering exist.

Cuba is example of lower access, but how greater access also leads to greater threats (see Hoffman 2011). The Cuban government has long accepted the status quo of low access to the Internet by a majority of the population in the island. Access has increased from 9 users per 100 inhabitants in 2005 to 25 in 2014. Even so, a majority of these users are not active and almost all connect at dial-up speeds. The Cuban government has been aided by the US blockade, which has prevented high-speed fiber optic connections to reach the island until very recently. All fast connections are established via satellite, an expensive solution. The government, while it would like faster Internet to compete in the pharmaceutical and IT sectors, has partly welcomed the lack of infrastructure and kept tight control around Internet communication. So far, filtering is not pervasive, but with low levels of access, it does not need to be (Biddle 2013). People at workplaces cannot access global sites such as google and its email service between 8am and 6pm. Internet connections for locals remain limited,

either to higher-ranking loyalists or foreigners, who obtain 2 dial-up connections and often sell one to a local. After a new fiber optic cable was laid in 2013, the Cuban government is beginning to expand Internet access. Instances of filtering are beginning to proliferate, with opposition websites blocked (San Pedro 2016).

## Conclusion

The central claim of this article is that, as access to the Internet expands, censorship patterns across authoritarian regimes differ markedly and can be grouped into two camps (which, as with all categorizations, retain a degree of fluidity): reactive and covert censorship. I have shown that constraints on executive power help explain why regimes with similar amounts of resources and competence, such as China and Russia, differ so greatly in their approaches to Internet censorship. China, a regime with low levels of constraints on executive power, has built a 'great firewall' aimed at restricting communication online with a particular emphasis on collective action. Russia, on the other hand, uses filtering techniques sparingly and, if it does, it focuses more on dissent than collective action. Gulf states have also used filters extensively, while Egypt after 2014 has not. After the new constitution set strong precepts regarding freedom of expression online, Egypt developed a strategy of intimidation designed to induce self-censorship among key actors generating content outside the regime's purview.

I have provided strong descriptive, qualitative and quantitative evidence for this general theory of censorship in nondemocracies based on differences in constraints to executive power. The main regression results show that, as access to the Internet expands in a country, direct censorship of online tools useful for collective action is much higher in nondemocracies with

low levels of constraints on executive power. This main finding is corroborated by qualitative evidence from Russia and Egypt, on the one hand, and China and the Gulf states on the other.

This article makes multiple contributions. First, this is the first article to offer a comparative theory of Internet censorship around one key mechanism of governance. It explains differences among authoritarian regimes while leaving the door open to new theories that may elucidate the mid-level and micro mechanisms underpinning this broad pattern. Also, by providing a theoretical framework to the issue of censorship in nondemocracies from a comparative perspective, this article will help refocus the process of generating censorship data. Comparative, cross-national data on censorship, both narrowly conceived in terms of filtering and broadly conceived as self-censorship and manipulation of information, is scant. This paper uses a small sample because it is the best quality dataset available. We need better and more coherent cross-national data on both fronts to tackle the important issue of censorship in the twenty-first century. I also provide quantitative evidence that the pattern identified by King et al. (2013) that China censors collective action more heavily than political dissent is not particular to China.

Perhaps the true relevance of this paper, and the study of modern day censorship, lies in the future. In the authoritarian world, we are observing concerted attempts to shape the effect that the Internet will have on information and mobilization across the authoritarian world. These attempts are increasingly sophisticated and more technologically advanced. Still today, anyone with a decent VPN service can circumvent the 'great firewall' of China, even if most are unwilling to pay these costs (Roberts 2014). The question, however, for anyone interested in information and new technologies in authoritarian regimes, be it from

the angle of protest or from the lens of censorship, is what censorship will look like in a decade, or in a generation. China still uses human censors to block messages, but are slowly implementing machine learning techniques to gain efficiency. If people are unwilling to pay the increasing costs of free information, what will happen if these costs become greater as time passes? The political relevance of censorship will only increase in parallel with technological innovations, and researchers need to continue innovating to find ways to understand this complex and meaningful issue.

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