

How Market Dynamics of Domestic and Foreign Social Media Firms Shape Strategies of Internet Censorship*

Jennifer Pan[†]

Abstract

There is on-going debate over whether authoritarian regimes can maintain control over media with the rise of social media and the Internet. In this debate, China is often cited as a prime example of how authoritarian regimes can retain control, but to date, there has been limited research on whether China's online censorship strategies can be replicated in other authoritarian regimes. This paper shows that China's ability to censor social media rests on the dominance of domestic firms in China's market for Internet content. The absence of U.S. social media firms in China allows the Chinese government to engage in censorship through content removal, which can quickly and effectively suppress information. In contrast, for most other regimes, the market for social media is dominated by U.S. multinational firms, e.g., Facebook, YouTube, Twitter, and in these contexts, content removal is an immense challenge. This paper then examines the prospects of instituting content removal by developing domestic social media or importing Chinese platforms, and finds that most authoritarian regimes are unlikely to be able to duplicate China's online censorship efforts.

Keywords: censorship, media, Internet, social media, China, domestic politics

*Many thanks to Shelby Grossman, Amanda Pinkston, Molly Roberts, and Chiara Superti for their extremely helpful comments and suggestions.

[†]Department of Communication, Stanford University. Email: jp1@stanford.edu.

1 Introduction

Authoritarian regimes have gone to great lengths to impose control on traditional media—newspapers, television, radio—through government ownership of media outlets as well as methods ranging from bribes to intimidation.¹ These efforts to control traditional media have been largely successful, even in a context of increased media commercialization.² However, there is on-going debate over the ability of authoritarian regimes to control the creation and dissemination of information on the Internet and social media platforms. One side of the debate argues that new media, in particular social media, disrupts the ability of authoritarian regimes to censor, and ultimately to maintain political power, because every individual can act as a broadcaster and the generation of information becomes too diffuse to control (Ferdinand 2000; Earl and Kimport 2011; Howard et al. 2011; Lotan et al. 2011). Indeed, the difficulty of controlling social media has led to speculation of how social media can improve coordination in collective action against authoritarian regimes and increase the reliability of information, especially information that is not accommodating toward the regime (Edmond 2013).³ The other side of the debate casts doubt over this outlook by arguing that most authoritarian regimes where Internet penetration has increased have used technology and more traditional forms of repression, such as arrests, to counter the dangers posed by social media (Kalathil and Boas 2010; Pariser 2011; MacKinnon 2012; Morozov 2012).

In this debate, the Chinese regime is often pointed to as one that has been successful thus far in controlling the dangers posed by the Internet (Kalathil and Boas 2010; MacKinnon 2012).⁴ However, we know little about whether the Chinese regime’s success in censorship is

¹For example, Djankov et al. (2001) finds that the largest media firms are often owned by governments, and government ownership undermines freedoms. McMillan and Zoido (2004) find that bribes under Montesinos in Peru were one hundred times higher to owners of television channels than to politicians or judges. Enikolopov, Petrova and Zhuravskaya (2010) find that independent television channels in Russia increase the probability of votes for the opposition while Lipman (2005) describe physical methods of intimidation against owners of independent media in Russia and Zuckerman et al. (2010) describe technical attacks such as distributed denial of service (DDoS) attacks and intrusion against independent media in Russia.

²Stockmann (2013) argues that commercialized media in authoritarian regimes can promote regime stability depending on institutional structures. Zhao (1998) finds that media groups in China reinforce the authority of the state.

³There has been a great deal of discussion and debate of the role of social media platforms such as Facebook, Twitter, and YouTube in The Arab Spring and anti-regime demonstrations from Iran to Russia (Axford 2011; Stepanova 2011; Van Niekerk, Pillay and Maharaj 2011; Weber 2011; Wilson and Dunn 2011; Aday et al. 2012; Bellin 2012; Hassanpour 2014).

⁴Although research focused on the early days of the Internet in China argued that new technologies would lend power to dissident and the population at large vis-a-vis the regime (Chase and Mulvenon 2002; Yang 2006; Esarey and Qiang 2008; Lindtner and Szablewicz 2011), more recent analyses have focused on the high degree of control the Chinese regimes exerts over online content (MacKinnon 2008; Stockmann and Gallagher 2011; King, Pan and Roberts 2013, 2014).

an outlier or foreshadows what other authoritarian regimes will also achieve. Research has not focused on whether the Chinese government’s censorship activities can be replicated in other authoritarian regimes, or even in democratic regimes wanting to impose control over online content. This paper moves a step forward in filling this gap by focusing on whether technical strategies of censoring social media employed by China are likely to be replicated by other authoritarian regimes.⁵

Using a variety of quantitative and qualitative analyses, this paper shows that China’s success in social media censorship is inexorably tied to the dominance of domestic companies such as QQ, Weibo, and YouKu in China’s market for social media content.⁶ This market dynamic allows the Chinese government to engage in censorship through *content removal* that quickly and reliably eliminates content deemed to be inappropriate, which in turn decreases the coordination potential of social media and covertly diminishes the reliability of information. In contrast, for most other regimes, the market for social media content is dominated by multinational firms, e.g., Facebook, YouTube, Twitter, which prevents these regimes from engaging effectively in censorship through content removal. Instead, these regimes rely on *content blocking*, which though powerful is less effective than content removal in reducing the potential of social media for coordination and in diminishing the reliability of information. With content blocking, content can still be accessed using circumvention technology. This paper also shows that government protectionism in the form of long-term content blocking of U.S. social media sites is not sufficient to explain the success or failure of domestic social media firms. For most countries that engage in long-term content blocking, U.S. social media firms are still dominant. In the Chinese case where long-term blocking of U.S. social media coincides with dominant domestic social media firms, the success of Chinese firms against U.S. competitors often predated the imposition of content blocking.

Section 2 reveals the contrast between China’s market for social media and those of other regimes by using data on website traffic. Section 3 demonstrates the difficulty for both autocratic and democratic regimes to engage in content removal on these U.S. social media platforms. Section 4 examines the relationship between long-term content blocking (de facto

⁵There has been research on when authoritarian regimes may exert more or less control over the media (Egorov, Guriev and Sonin 2009; Norris and Inglehart 2009), but this paper is focused on whether the strategies for censorship used by China are available to other authoritarian regimes, regardless of whether these regimes are motivated to use these tactics. The focus of this paper is solely on technical strategies of censorship, not strategies that involve off-line and real-world actions like arrests, intimidation, and other forms of physical repression. Finally, this paper does not discuss whether China’s censorship efforts are likely to endure going forward, but only whether existing methods of Internet censorship found in China can be adopted elsewhere.

⁶Although previous research has hypothesized that local sites can help the Chinese regime maintain control (Roberts et al. 2011), existing research has not compared the market for social media in China to that of other regimes, nor has research assessed whether this strategy can be replicated beyond China.

protectionism) and describes the rise of several Chinese Internet companies. Section 5 concludes.

2 Dominance of Domestic Social Media in China

This section analyzes the ownership of top social media sites across a number of authoritarian and democratic regimes. This section begins with an overview of the data used to determine the top social media sites in each country before moving to a description of social media ownership across countries. These data show that the landscape for social media in China differs greatly from that of other authoritarian regimes.

2.1 Measuring the Social Media Landscape with Website Traffic

To compare China’s market for social media to those of other regimes, website traffic data from Alexa is used. Alexa is a subsidiary of Amazon that gathers information on visitors to more than 30 million websites—for example, how many people visit each site per day, how much time visitors spend on the website, how many pages visitors look at before leaving, the demographics of these visitors. Alexa provides this information to businesses to enable them to compare the performance of their websites to other websites of interest, such as those of competitors.

Using data from 96 countries available on Alexa, the social media landscape of each country is assessed through the number of social media firms among the 25 most trafficked sites for each country and the ownership of each social media firm.⁷ Of the countries in the dataset, 25 are authoritarian regimes, and 71 are democratic.⁸ The traffic rankings used in this paper are based on the average estimated unique daily visitors and pageviews per visitor between May 22, 2015 and June 23, 2015.⁹ The number of unique daily visitors and pageviews per visitor are based on the browsing data of individuals who have installed the Alexa toolbar as well as other toolbars that track usage and report this data to Alexa.¹⁰

⁷Alexa provides a global ranking based on traffic overall, and a ranking for each country. No data is available on the proportion of traffic captured by each website, so the share of overall traffic represented by the top 25 websites will vary by country.

⁸Regime type based on Geddes, Wright and Frantz (2014). Both authoritarian and democratic regimes are examined to show that regime type is not a key driver of differences in social media landscape.

⁹If the same user makes multiple requests for the same URL in a 24 hour period, this is counted as a single pageview. Rank is based on the combination of unique visitors and pageviews (see <http://bit.ly/1cLUv1U>, accessed June 3, 2015).

¹⁰Since Alexa data is based on the user installed toolbars, if the user is visiting a website that is blocked in a particular country by using some circumvention technology, e.g., VPN, that visit will still be recorded because where the user ends up is visible to Alexa.

More recently, Alexa has introduced a plugin that web developers can install to provide more accurate data to Alexa. Alexa says millions of users have installed the toolbar on over 25,000 different browser extensions, and nearly 200,000 websites have installed the Alexa plugin.

Since Alexa relies on users to install their toolbar and sites to voluntarily share their traffic data, there is likely to be bias in the data. Use of Alexa data to make comparison between websites in terms of rank, the number of unique visitors, and other statistics has been heavily criticized.¹¹ Alexa acknowledges its data may over-estimate or under-estimate actual traffic given differences between its sample of users and the set of all Internet users, and this is especially true of sites with low levels of traffic. Alexa states that global ranks of below 100,000 are rough estimates, and accuracy increases with higher ranks. Given the likely bias of Alexa data, the analysis here focuses only on the top 25 sites in each country, all of which are among the global top 50,000 most trafficked sites. Alexa data is not used to make comparison between sites, but simply as a way to define the set of websites most likely to be among the most highly trafficked sites in each country. Even if the top 25 sites are not in reality the 25 most highly trafficked sites in a particular country, these 25 sites are more likely to have greater traffic than most sites trafficked in that country. Even if the data is biased because only certain types of internet users would install an Alexa toolbar, we have no reason to believe that the direction of bias would differ between countries.

Among the 96 countries, the 25 top trafficked sites yielded 1,146 unique *domain names*, which represent 948 unique *domains* if the top-level domain or second-level domain is removed.¹² For example, `google.co.cr` and `google.co.kr` are two unique domain names found among the 1,112, but once the second level domains (`co.cr` and `co.kr`) are removed, they represent the same domain: `google`. Each unique domain was visited to determine whether it is a social media site. Social media sites are defined as platforms where anyone can produce and share content, including text, images, and video. Example sites include social networking sites, blogs, microblogs, forums, bulletin boards, group messaging platforms, and question & answer sites. Platforms such as search engines, e-commerce platforms, classifieds, news sites, news portals, email services, gaming sites, and pornography sites are not considered social media platforms.

¹¹Many site owners have shown that Alexa's data for their site is inaccurate compared to the data they have for their site (see <http://bit.ly/1IJFpHu> and <http://tcrn.ch/1DmVHWw>, accessed June 3, 2015). However, with over six million unique visitors monthly, Alexa remains the leader in Internet traffic estimates and rankings.

¹²Using `www.example.co.uk` as an example, "example" is called the domain, "uk" is the top-level domain, which in this case is a country-code top-level domain, the "co.uk" is the second-level domain, and the combination of domain and second level domain "example.co.uk" is the domain name.

As show in Table 1, among the 948 unique domains, 66 (7%) fall into the category of social media sites. The largest proportion of domains (443) fall into the News category, including

Table 1. Most Trafficked Sites by Category

Type	Unique Domain Names	Unique Domains	Proportion Unique Domains (Percent)
News	459	443	46.7%
E-Commerce	194	138	14.6%
Search	108	12	1.3%
Company	87	81	8.5%
Social Media	76	66	7.0%
Entertainment	55	55	5.8%
Portal	54	51	5.4%
Information	38	33	3.5%
Other	28	24	2.5%
Ads	25	24	2.5%
Unknown	22	21	2.2%
Total	1146	948	

both general news as well as sports news sites. This is followed by the E-Commerce category (138), which includes business to business sites, business to consumer sites, and consumer to consumer sites such as classifieds sites. The Search category contains search engines, and accounts for biggest difference between domain names and domains. Here, the `google` domain includes the majority of domain names such as `google.sk`, `google.com.pa`, and `google.co.in`. Sites falling into the Company category consist primarily of national and international banks such as `Swedbank.ee` and `Maybank2u.com.my`. Portals are sites that provide access to a variety of content, often including news, email, and weather. Examples includes `yahoo.com`, `sohu.com`, and `seznam.cz`. Sites falling into the Entertainment category include sites providing movies and music as well as gaming sites and lifestyle sites. The Information category includes sites such as dictionaries and wikis, and the Ads category includes advertising platforms such as `onclickads.net`. Finally, the 21 domains could not be categorized because the site was not accessible are categorized as Unknown, and the Other category includes email services (7 domains), pornography sites (6 domains), torrent sites (6 domains), and government sites (5 domains).

Each of the 76 unique social media domain names was analyzed to determine the origin of the firm with ownership over the site by examining the registrar of the site, and the country of origin for the registrar.¹³ For example, `google.at` has the Austrian domain suffix but the

¹³The 76 domain names rather than 66 domains are examined in case a domain with different domain names belongs to a different registrar.

registrar is Google, Inc based in Mountain View, CA, and hence is categorized as having U.S. ownership. Ownership is determined by the location of the registrar, not the location in which the site is hosted. For example, `Sahafah24.net` is hosted by GoDaddy.com, a U.S. internet domain registrar and web hosting company, but the site is registered at GoDaddy.com by an organization based in Yemen, and as a result, `Sahafah24.net` is considered a Yemeni site. `Livejournal.com` is a site targeted toward Russians, but it is owned by a San Francisco-based company, and as a result is considered a U.S. company. When the specific identity of the registrar is obscured, the country is determined based on the content of the website. For example, the domain registrar for `ElaKiri.com` is name.com, but the name of the individual or organization using name.com's service is obscured.¹⁴ However, `ElaKiri.com` was founded by Sri Lankans, and is a social media site used by Sri Lankans, and as a result, `ElaKiri.com` is considered a Sri Lankan social media site.

This analysis generates a list of top social media sites by country, as well as the ownership country of each social media site. The top social media sites for each country is listed in Appendix A.1, and the ownership of each social media site can be found in Appendix A.2. The 76 unique social media domain names appear 559 times among the top 25 most trafficked sites for the 96 countries in the dataset. Ten social media sites (Facebook.com, YouTube.com, Twitter.com, Blogspot.com, LinkedIn.com, Instagram.com, Wordpress.com, Vk.com, Ok.ru, and Reddit.com) represent 477 (85%) of these 559 social media appearances. For example, Facebook.com and YouTube.com are both among the top 25 sites in 94 out of 96 countries.

If a top social media site is owned by a company from that country, then the social media site is considered to be domestic. For example, `reddit.com` is top social media site in the U.S. and it also has U.S. ownership, thus we say for the U.S. that `reddit.com` is a domestic social media firm. However, `reddit.com` is also among the top social media sites in Sweden, and for Sweden, `reddit.com` is considered a foreign social media site. Among the 76 unique social media domain names, Table 2 shows that 24 (31%) are owned by U.S. companies, six by Iranian companies (8%), five (7%) by Russian companies, five (6%) by Japanese firms, and four (5%) by Chinese firms.

Table 2 also shows the global dominance of U.S. social media firms. Twenty-four of the 76 social media sites are U.S. owned, and these 24 sites accounts for 483 (86%) of the 559 appearances social media firms make among the 25 most trafficked sites in these countries. One potential concern this result raises relates to the bias in Alexa data, whereby users who have installed the Alexa toolbar and sites that have shared their data with Alexa are

¹⁴See www.name.com/whois/ElaKiri.com where the administrative and technical contact simply shows "Whois Agent," which means the original contact information has been kept private through the WHOIS privacy protection service (accessed July 15, 2015.

Table 2. Social Media Site Ownership

Country of ownership	Number of social media sites in country	Total appearances among top sites
US	24	483
Russia	5	27
Iran	6	6
Japan	5	5
China	4	5
Georgia	2	2
Hungary	2	2
Poland	2	2
South Korea	2	2
Turkey	2	2

Note: the following 22 countries each have one social media firm, and all of these firms only appear one time among the top social media sites; these countries include: Australia, Bulgaria, Canada, Croatia, France, Germany, Indonesia, Ireland, Italy, Kazakhstan, Korea, Kyrgyzstan, Latvia, Malaysia, Netherlands, Nigeria, Oman, Romania, Saudi, Arabia, Sri Lanka, Thailand, Vietnam.

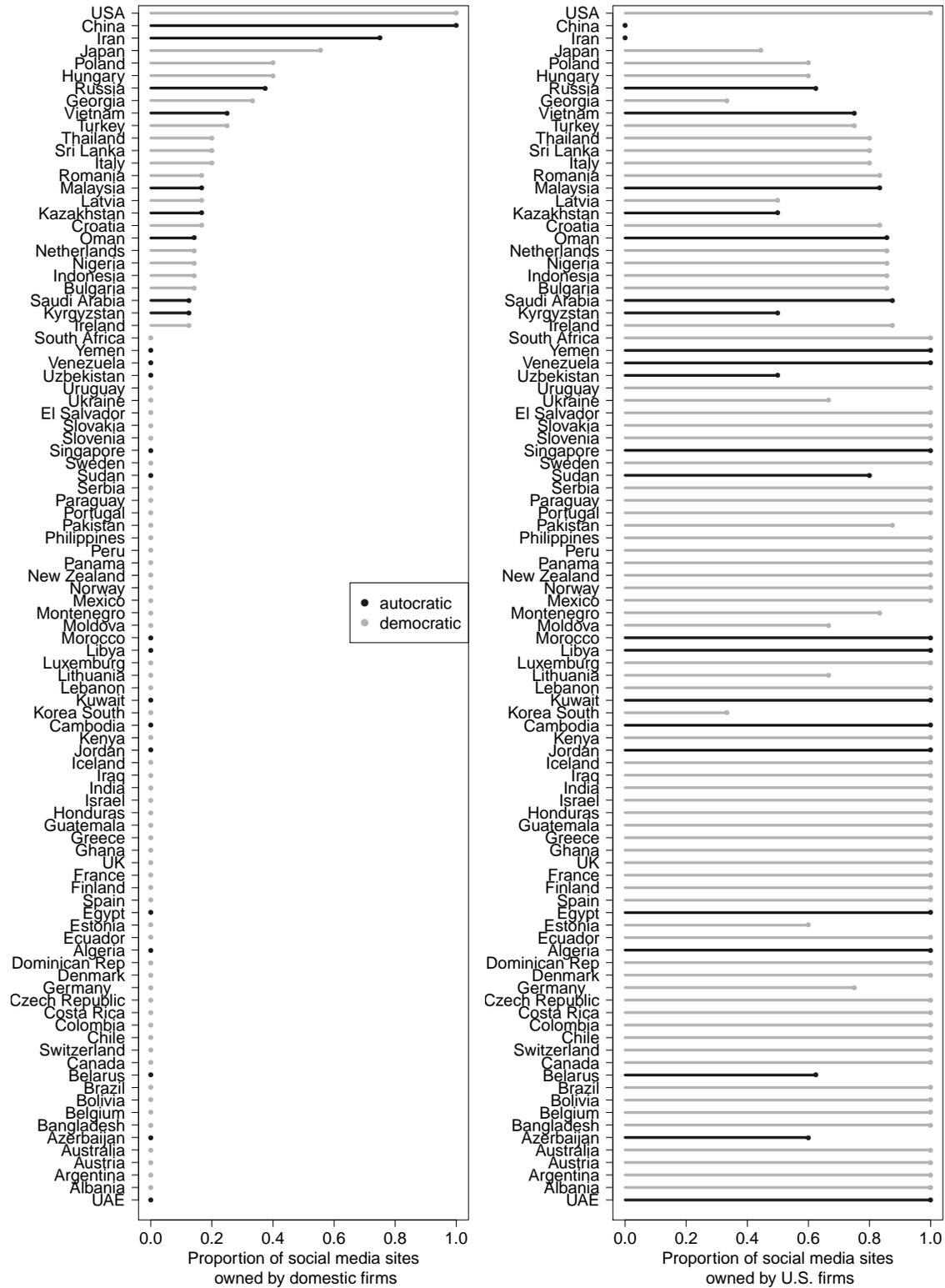
more likely to be U.S. oriented individuals and organizations, and as a result, that is why we see the dominance of U.S. social media sites. However, the picture of top social media sites emerging from Alexa data is corroborated by top social media sites as assessed by the number of users. As of the beginning of 2015, social media sites with more than 200 million users were primarily U.S. social media platforms. Facebook led the pack with 1.4 billion users, followed by LinkedIn with 347 million users, Google+ and Instagram each with 300 million, Twitter with 288 million, Viber with 326 million, and Tumbler with 230 million users.¹⁵ This shows that whatever bias exists within the Alexa data does not bias the use of top ranked sites as a proxy to identify highly trafficked social media platforms.

2.2 Domestic and Foreign Ownership Patterns

The left panel of Figure 1 shows for each country, the proportion of social media sites that are owned by domestic firms. Black denotes authoritarian regimes, while light gray denotes democratic regimes. This figure shows that the U.S. and China are distinct from all the other countries in that all of their top social media firms are domestic. Excluding China

¹⁵Data from 2015 first quarter investor reports, see summary at <http://bit.ly/1AMVqnH>, accessed June 3, 2015.

Figure 1. Social Media Firms



and the U.S., on average, only 7% of social media firms are domestic across countries. The key distinction between U.S. and China is that while U.S. social media firms are dominant across many countries, Chinese social media firms are popular primarily in China. The only Chinese social media site that appears among the top 25 most trafficked sites for another country is qq.com, found within the top 25 most trafficked sites in South Korea. However, because Internet users in China represent over 20% of the world's share of Internet users (over 600 million as of July 2014),¹⁶ the top social media sites confined to the Chinese market still emerge as major global players in terms of the size of their user base.

The right panel of Figure 1 shows the proportion of social media platforms among the 25 most trafficked sites that are owned by U.S. firms. Here, China and Iran differ from all countries in that none of their top social media firms are U.S. owned. Among authoritarian regimes other than China and Iran, 83% of social media firms are American. For many authoritarian regimes, including Venezuela, Singapore, Yemen, and Kuwait, all social media sites in the country are owned by U.S. firms.

From Figure 1, the country that bears the most resemblance to China is Iran. In Iran, 75% of social media sites are owned by domestic firms, and none of the most trafficked sites are U.S. social media platforms. However, while neither country's top social media sites are owned by U.S. firms, all of the top social media sites in China are Chinese companies while this is not the case in Iran. The most trafficked social media site among Iranians is `blogfa.com`, ranked third in the country after `google.com` and `yahoo.com`. Blogfa is a blog service targeted toward Persian speakers. While the service has close ties to Iran, it is wholly owned by Ravand Cybertech, a company headquartered in Toronto Canada.¹⁷ In addition to `blogfa.com`, another Persian language social media platform popular in Iran, `Persianblog.ir`, is also registered to company located outside of Iran.

Altogether, data from Alexa shows that the landscape for social media differs between China and other authoritarian regimes. These patterns of China's uniqueness based on traffic data are corroborated by user data, specifically the number of Chinese users registered on Chinese versus U.S. social media platforms. Chinese social media platforms such as QQ and Weibo, where over 97% of visitors come from mainland China, have hundreds of millions of users.¹⁸ As of the first half of 2014, there were 829 million active QQ accounts,

¹⁶See details at www.internetlivestats.com/internet-users-by-country/, accessed June 1, 2015 based on data from International Telecommunication Union, United Nations Population Division, Internet & Mobile Association of India, and the World Bank.

¹⁷See <http://www.blogfa.com/en/about.htm> and <http://www.ravand.com/aboutus.cfm>. Note that because blogfa serves Persian speaking users, the Iranian regime may have more control over the company than say a large multinational firm less dependent on accessing Iran's user base.

¹⁸Visitor traffic statistics based on Alexa data.

and a peak of 176 million concurrent users,¹⁹ as of the end of 2014, Weibo has 176 million monthly active users and 81 million daily active users.²⁰ In stark contrast, Ethan Zuckerman, director of the MIT Center for Civic Media, estimated in 2011 that the number of Twitter users in China is 1% of those who use domestic microblogging sites (http://www.ted.com/talks/ethan_zuckerman.html). More recently, the number of U.S. social media users in China as a share of those who use domestic social media is even smaller. Estimates put mainland Chinese Twitter users at 10,000 to 100,000 and Facebook users around 600,000.²¹

3 Content Removal between Domestic and Foreign Social Media Firms

This section contrasts the implementation of content removal among regimes with domestic social media firms with content removal among regimes where U.S. social media firms dominate. Content removal is first contrasted with other technical forms of Internet censorship. This section shows how Chinese social media firms play a key role in systematic and pervasive implementation of content removal, and also demonstrates how Russia and Iran exert pressure on their domestic social media firms to remove content. Finally, this section turns to the experience of content removal in places where social media is dominated by U.S. firms using data on government requests for content removal from Twitter and Google. Results based on Twitter data show that the vast majority of requests for content removal, from both authoritarian and democratic, are rejected. Results based on data from Google show that content removal only occurs when content violates the company's terms of service, and content is restricted from view in geographies where the content violates local laws, in essence resulting in content blocking rather than content removal.

¹⁹See Tencent investor report at <http://tencent.com/en-us/ir/news/2014.shtml>, accessed June 3, 2015

²⁰See <http://bit.ly/1IUEiqm>, accessed June 3, 2015.

²¹See <http://bit.ly/1hgCcVE>, <http://bitly.com/1pH7Isr>, and <http://bit.ly/1Dm85Gv> which use information such as the language of posts, time zone of the users, and self-described location of users to refute the widely reported claim that there were 35 million Twitter users and 64 million Facebook users in China in 2013 (accessed June 20, 2015). Along similar lines, research has found that Chinese is not among the most commonly used languages on Twitter, even though that is what we would see given the global share of Internet users from China were circumvention technology widely used by Chinese users to access Twitter (Hong, Convertino and Chi 2011).

3.1 Techniques of Online Censorship

Putting aside methods of censorship such as physical repression, there remains a variety of technical methods for controlling online media. The most well known is content blocking, often called website blocking or Internet filtering. Content blocking prevents individuals in a certain geographic location from accessing specified websites and other resources on the Internet. Content blocking can be achieved through a variety of technical means that differ in terms of resources required and degree of reliability.²²

Other forms of Internet controls include keyword blocking, which prevents certain terms from being included in online content; search filtering, where search engines filter results to prevent or make it very difficult for users to find certain content, and content removal, which is the deletion of content which has already appeared online. While keyword blocking prevents the production of certain types of information, content blocking, search filtering, and content removal prevent the dissemination of existing information.

Content removal is more difficult to detect and a more reliable method of preventing the spread of information compared to content blocking and search filtering because offending content is erased. In the case of content blocking, the information remains in existence, and can be accessed using circumvention technology such as VPNs, Tor or Psiphon (Feamster et al. 2002; Dingledine 2011).²³ For search filtering, changing the search engine can uncover the hidden content.

Although content removal is more effective, many authoritarian regimes engage in content blocking because it can be implemented directly by the government as long as the government has the relevant technical expertise. Of the 18 authoritarian regimes that had Internet penetration of over 40% as of 2014, all but four countries engage in content blocking related to political and/or religious topics.²⁴ As the results will demonstrate below, the feasibility of implementing content removal depends not on a regime's technical expertise but on whether it can garner the cooperation of Internet content providers where content resides.

²²For the purposes of this paper, content blocking includes TCP/IP header filtering, TCP/IP content filtering, DNS tampering, HTTP proxy filtering, and hybrid TCP/IP and HTTP proxy methods (Murdoch and Anderson 2008).

²³For more information on Tor see www.torproject.org/, and for Psiphon see <https://psiphon.ca/>.

²⁴These 18 countries are Armenia, Azerbaijan, Belarus, China, Jordan, Kazakhstan, Kuwait, Madagascar, Malaysia, Morocco, Oman, Russia, Saudi Arabia, Singapore, United Arab Emirates, Uzbekistan, Venezuela, Vietnam based on the 2014 Freedom House report on Internet controls (Sanja Kelly and Truong 2014). Of these countries, there has not been evidence of Internet filtering in the past five year in Morocco, Singapore, and Venezuela, although both Singapore and Venezuela have the legal and technical infrastructure in place to conduct Internet filtering. No data is available for Madagascar.

3.2 Domestic Social Media and Content Removal

China’s widespread content removal efforts are heavily dependent on the compliance of Chinese social media and other Internet companies to act in accordance with the wishes of the regime. In China, failure to comply with censorship directives can result in punishment ranging from fines to being shut down (MacKinnon 2008). Sina Weibo, which is listed on NASDAQ, describes in its 2014 SEC filings that failure to adequately comply with government regulations on censorship “may subject us to liabilities and penalties and may even result in the temporary blockage or complete shutdown of our online operations.”²⁵ Chinese social media firms comply with censorship requirements and have numerous employees who are focused on conducting censorship (King, Pan and Roberts 2013, 2014). Censorship generates direct costs, and can also entail indirect costs by adversely affecting users. Weibo reports in its SEC filings that:

“Although our active user base has increased over the past several years, regulation and censorship of information disseminated over the internet in China may adversely affect our user experience and reduce users’ engagement and activities on our platform as well as adversely affect our ability to attract new users to our platform. Any and all of these adverse impacts may ultimately materially and adversely affect our business and results of operations.”

However, these costs which are accepted because they allow Internet companies to compete in the Chinese market, where most of their revenue is derived. This is not to say that large Chinese social media firms always blindly follow the directives of the central regime; they push the boundaries of what is acceptable (Yang 2009).²⁶ However, censorship is widely accepted by domestic firms as part of being in the Internet business in China. When asked about censorship, Tencent founder Ma Huateng said: “Lots of people think they can speak out and that they can be irresponsible. I think that’s wrong...There should be order if the development of the cyberworld is to be sustainable” (Elliott 2014). Jack Ma, founder of Alibaba, said after taking over Yahoo China’s operations: “We don’t want to annoy the government...Anything that is illegal in China—it’s not going to be on our search engine. Something that is really no good, like Falun Gong? No! We are a business! Shareholders want to make money. Shareholders want us to make the customer happy” (Thompson 2006). Kaiser Kuo, director of international communication for Baidu has said in interviews regarding censorship that “We’re dedicated to expanding users’ information horizons, and

²⁵<http://1.usa.gov/1fzstAZ>.

²⁶Section 4 provides more details of the pressures Chinese social media firms have faced from the regime.

to providing the most equitable way for all to access information. At the same time, just as any company, we simply must comply with the laws of the country in which we operate” (Atkins-Kruger 2011).

Empirical analyses of censorship in China have shown that content removal occurs very quickly, usually within a few hours and almost always within a day (Zhu et al. 2013). Content removal in China has also been shown to be pervasive and systematic. King, Pan and Roberts (2013, 2014) show through a large-scale observation study as well as randomized experiment of censorship that content removal is focused on suppressing discussion of events with collective action potential, while allowing content critical of the regime. When collective action events such as protest occur, all discussion of this event whether critical or supportive of regime, are permanently removed. King, Pan and Roberts (2014) also show through participant observation that responsibility for content removal is devolved to the content provider, echoing prior experiments (MacKinnon 2009).

China’s strategy of content removal, focused on suppressing all discussion of collective action, by definition decreases the coordination potential of social media. Namely, if individuals do not know that protests are occurring, they have no opportunity to join. China’s method of content removal also covertly diminishes the reliability of information because a great deal of public discourse remains online, presenting a mirage of freedom. In China, 45% of Internet users believe that the Internet is a safe place to express their opinions, much higher than places like Russia (28% of Russians believe the Internet to be safe) where social desirability bias is a similar concern.²⁷ Furthermore, the method of content removal practiced by the Chinese regime is the opposite strategy to sudden and ubiquitous interruption of Internet access, which has been shown to facilitate social mobilization (Hassanpour 2014).

Beyond China, Iran and Russia have the largest number of domestic social media firms. Although the content removal strategy employed by China has not been systematically documented in these two regimes, anecdotal evidence suggests that domestic social media firms also play a role in content removal in Iran and Russia, and these regimes exert pressure on domestic firms to engage in content removal even when firms are reluctant to do so.

There have been reports of collaboration between China and Iran on online censorship efforts. In the beginning of 2014, Iran’s Ministry of Communications and Information Technology announced that China would assist the country in implementing a “clean Internet.” The Iranian spokesperson expressed a desire to learn from China’s experience in managing online content (Eades 2014). There are a growing number of Iranian Internet start-ups, and these domestic companies conform to the boundaries set by the regime (Azali 2015; Faucon

²⁷Based on survey from Dec. 2013 to Feb. 2014 of 1000 respondents in urban China, and 1,021 respondents in Russia. For details see <http://bit.ly/1K22TnJ>, accessed July 15, 2015.

and Jones 2015). For example, Saba Idea Technology Co., founded in 2005, began with a Farsi social network (Cloob), and expanded to include a blogging platform (MihanBlog), an online advertising company (SabaVision), a video streaming site (Aparat), and a photo sharing service (Lenzor). Saba’s director of business development and international affairs has said that Aparat ensures videos on its site shows respect for Iranian culture.

In the Russia case, increasing limits on new media in many ways reflected the country’s move from a transitional democracy back to authoritarianism (Becker 2004). When domestic media companies resist the regime’s increasing controls, they are often met with unfavorable outcomes—this is the plight of vk.com, a successful domestic social media company that lost the fight against the regime on censorship. Vk.com, short for VKontakte, was founded by Pavel Durov along with two friends in 2006. Within one year, VKontakte had gained three million users and continued to grow quickly, reaching 260 million registered accounts and 60 million daily users by 2014. In 2011, opposition groups became active on VKontakte, using the platform to exchange information and to organize large-scale protest after Putin announced his intention to run for president once again. Regime officials met with Durov, asking him to remove opposition content, but he refused and publicly defended his desire not to censor in an editorial on lenta.ru (Bradshaw 2014).²⁸ Durov’s non-compliance made him the target of regime intimidation. In early 2013, *Novaya Gazeta* published purportedly hacked emails that suggested VKontakte had been working for years with the FSB. Authorities raided VKontakte offices in April 2013 to investigate Durov for a hit and run accident, and shortly after, Durov’s two business partners sold their share of VKontakte to United Capital Partners, a private investment firm with strong ties to Putin (Johnston 2015). By the beginning of 2014, Kremlin allies had financial control of 100% of VKontakte shares, and in April of 2014, Durov was fired. According to those who monitor the media in Russia, political content has disappeared from vk.com since Durov’s removal (Johnston 2015).

3.3 U.S. Social Media and Content Removal

Examples from Iran and Russia suggest that even if domestic companies are not systematically engaged in widespread content removal like Chinese social media firms, authoritarian regimes can impose a great deal of control over domestic social media companies. This section turns to the result of government requests for content removal on foreign social media companies using data from Twitter and YouTube.

²⁸See <http://lenta.ru/articles/2011/12/12/durov/>, accessed July 15, 2015

Twitter: Low Rates of Content Removal Twitter publishes data on government requests to remove content from Twitter on a bi-annual basis.²⁹ This data is available from 2012 to 2014, and shows for each six month period, the number of removal requests based on court orders, the number of removal requests from any government agency, the number of accounts specified in removal requests, the percentage where some content was removed or withheld from view in certain geographic locations, the accounts affected, and the number of tweets affected by country. This data is used in this paper to measure the level of compliance U.S. social media companies have with removal requests of foreign governments. Although the behavior of other U.S. social media firms may differ, Twitter is in and of itself a meaningful object of study given its global scale and influence.

Government requests for Twitter to remove content have increased over time. Table 3 shows that in the second half of 2012, there were 84 requests, but by the second half of 2014, there were 1,592 requests. Over this entire time period, the largest number of removal requests have come from Turkey (678 requests total), France (456 requests) and Russia (154 requests).

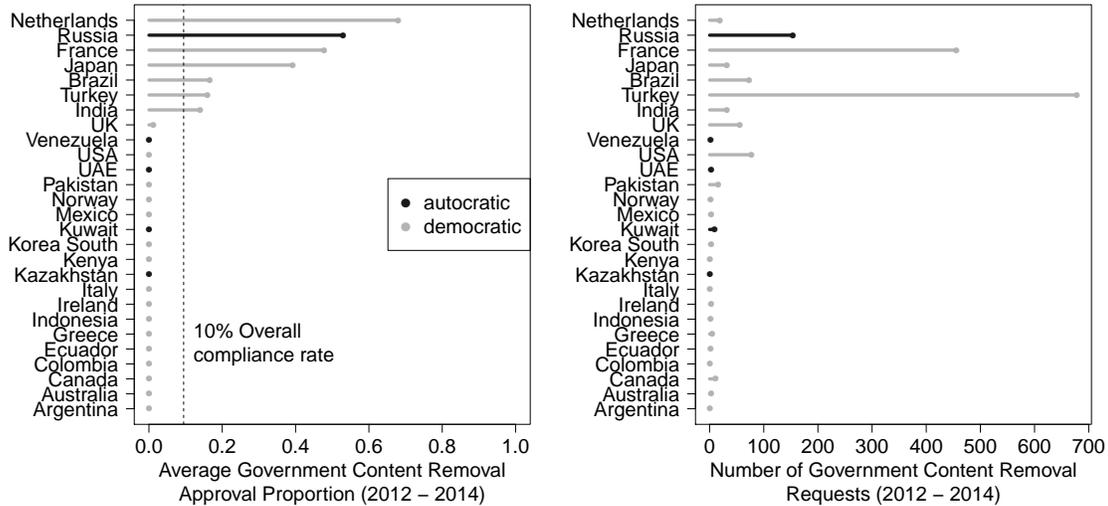
Table 3. Government Removal Requests For Twitter By Period

Period	Total Requests	Country with Greatest Number of Requests	Share of Total Requests
Jul - Dec 2012	84	Brazil	19%
Jan - Jun 2013	120	Russia	23%
Jul - Dec 2013	754	France	41%
Jan - Jun 2014	864	Turkey	22%
Jul - Dec 2014	1,592	Turkey	30%

Figure 2 shows that Twitter does not comply with most government content removal requests. Overall from 2012 to 2014, Twitter complied with 10% of removal requests, taking actions that include removal as well as withholding content from specific countries. The later case is more similar to content blocking than content removal since circumvention technologies can be used to access restricted content. As a result, the 10% represents a ceiling on the proportion of content removed. The highest compliance rate for requests is 68% for the Netherlands; however, the Netherlands only submitted 19 requests in this period. The second highest compliance rate for censorship was 53% for Russia, which submitted 154 requests, followed by France at 48% (with 456 submitted requests), Japan at 39% (with 32 submitted requests), Germany at 32% (with 53 submitted requests), and Brazil at 17% (with 73 submitted requests).

²⁹Data found at <https://transparency.twitter.com/>, accessed June 3, 2015.

Figure 2. Twitter Does not comply with most Government Content Removal Requests

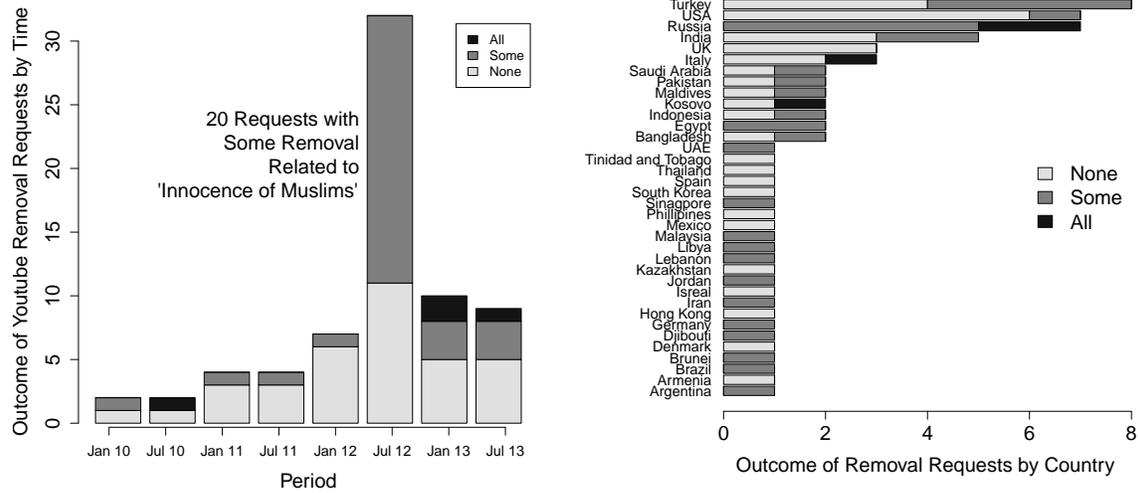


YouTube: Content Blocking not Removal Google also makes public court orders and requests from government agencies to remove content on a biannual basis. Google provides the number of requests and the relevant product for each country during each six month period.³⁰ In the second half of 2013, Google revealed that among 2,199 government requests to remove content from YouTube, 973 (44%) resulted in restriction or removal. However aside from sharing the overall numbers for YouTube in the second half of 2013, Google does not release the outcome of every government request for content removal, only the outcome for a selected sample. Google does not specify how this sample of outcomes is selected, thus this data is used primarily to give insight into how Google deals with content removal requests. What these results will show is that although compliance rates appear higher for YouTube than for Twitter, compliance largely occurs by restricting videos from view in specified geographies, not removing them from the platform altogether.

The sample of government requests for which there is data on outcomes contains 70 separate requests from governments for content removal between 2010 and 2013. The scope of each request varies greatly—a request could pertain to the removal of a single YouTube video, or a request could ask that hundreds of videos are removed. Of these 70 requests, 20 related to the video *Innocence of Muslims* and were made in second half of 2012 (see left panel Figure 3). When this data is examined by country, the right panel of Figure 3 shows that the majority of content removal requests result in no content being removed or restricted (in

³⁰For example, in the second half of 2013, Turkey issued 172 court orders and 723 government requests to Google to remove content for reasons ranging from copyright infringement to government criticism pertaining to 11 Google products. Products affected include Blog Search, Blogger, Gmail, Google Docs, Google Images, Google Maps, Google Play Apps, Google+, Web Search, and YouTube.

Figure 3. Content Removal Requests for Youtube



light gray) for both requests coming from democratic as well as authoritarian regimes, and very few requests receive full compliance (in black). Since the requests related to *Innocence of Muslims* constitute a burst of activity that deviates from the norm, excluding these 20 requests, 66% of requests to remove or limit access to YouTube content were completely denied, 26% of requests results in some geographic restriction or partial removal of content, and only 8% of requests received complete compliance.

Looking at the details of how Google deals with government requests to remove content from YouTube, we see that Google removes content only when it clearly violates YouTube’s community guidelines and restricts content from countries where content violates local laws. In other words, unless content violates YouTube’s community guidelines, Google does not engage in content removal, but rather in content blocking, which allows content to be retrieved with circumvention technology. The YouTube Community Guidelines prohibits pornography and sexual content, copyright infringement, “harmful or dangerous” content, “violent or graphic content,” “hateful” content, and threats. Anyone can report content they believe violates these rules, and reports are evaluated by YouTube staff.³¹

As described above, 20 removal requests related to the video *Innocence of Muslims*, which YouTube ultimately restricted from view in Indonesia, India, Jordan, Malaysia, Russia, Saudi Arabia, Singapore and Turkey, and temporarily restricted from view in Egypt and Libya. Google does not provide details on why it removed the video from view in some but not all countries that requested its removal, but this difference likely relates to the laws of the

³¹For additional details see www.youtube.com/yt/policyandsafety/communityguidelines.html, accessed June 3, 2015.

country as well as the way in which the request was made. For example, Australia and the United States both requested that YouTube review the video to determine whether it violated YouTube's community guidelines, and the company determined that it did not.

Among the 50 requests unrelated to *Innocence of Muslims*, 40 were related to politics, pertaining to individuals such as government officials or to political actions such as opposition protest. Content critical of or unflattering to government leaders is almost never removed. For example, a request from an Armenia politician to remove three YouTube videos that used profane language in reference to him was denied, and a request from the Government of Pakistan's Ministry of Information Technology to remove videos that satirized the Pakistan Army and senior politicians was denied. Even when other reasons are given for content removal requests, Google denies the request if it judges the provided reasons to be invalid and used as camouflage for government criticism. For example, a Saudi Arabian government agency requested videos be removed for defamation and violation of the privacy of various officials, but Google did not remove the videos and said that the content appeared to be critical of the officials. In another example, a Maldives law enforcement agency reported a video for copyright infringement, but again Google did not remove the video, and stated that the video appeared to be critical of the police.

Denying requests to remove videos with unflattering political content is not limited to requests from authoritarian regimes. Requests from democratic regimes are similarly rejected. When government officials from Mexico requested content accusing them of corruption be removed because of defamation, Google denied the request. When the Indonesian Consul General requested six videos be removed, Google did not do so and stated that the videos appeared critical of the Consulate. When Indian law enforcement agencies requested the removal of videos criticizing Chief Ministers and senior officials, Google denied the request. Other rejected requests to remove content critical of officials or the government came from Israel, Kosovo, and South Korea. Requests for content removal from mature democracies like the U.K. and U.S. are also denied. In the sample of data, Google publicized six requests from these two countries to remove content critical of police practices and local government, all of which were rejected.

Requests to remove content threatening to political opposition are also denied. The sample of data includes a request from the Turkish government to remove a YouTube video containing a survey of protesters that asked questions about the protesters' political aims and reasons for protesting, as well as a request from a local ministry in Kazakhstan to remove a YouTube channel supportive of the opposition. Both requests were denied.

In the sample of data, removal requests related to political content result in removal only when they violate YouTube's community guidelines. An example where content violated

YouTube community guidelines is a video that criticized then Italian Prime Minister Silvio Berlusconi and simulated his assassination with a gun. This video was removed as a result of a request from the Central Police in Italy, even though other requests from the Central Police pertaining to content critical of Berlusconi did not result in removal. Another example where community guidelines came into play are requests from the Turkish government to remove 17 videos containing content critical of Ataturk. Google removed 10 of these videos for violation of community guidelines.

When local laws prohibit certain forms of content, YouTube restricts the video from view in the geography where the law is in effect, but does not remove the content entirely. The right panel of Figure 3 shows that in India and Russia, a substantial share of requests result in some removal or restriction. For India, 40% of requests result in some censorship (dark gray segment in right panel of Figure 3). As an example, the Indian Computer Emergency Response Team asked Google to remove 64 YouTube videos related to violent protest in northeast India. Google removed one video for violating community guidelines, and restricted 47 videos that violated local laws. What is striking is that even in this case where local laws are in effect, not all the content detailed in the government request was restricted.

For Russia, about two thirds of requests result in some removal or restriction (dark gray segment in right panel of Figure 3), and one third of requests results in complete removal or restriction (black segment in right panel of Figure 3). This high level of censorship with respect to Russian content is crucially related to amendments to Russia's Administrative Code and laws protecting children from harmful content as well as laws counteracting extremist activity enacted in the past few years. For example, in the second half of 2013, Google received a request from Russia's Federal Service for Supervision in the Sphere of Telecom, Information Technologies and Mass Communications to remove a YouTube video related to the self immolation of a Buddhist monk for protest. Google restricted the video from Russia because Russia's new law to protect children from harmful content prohibited content that encouraged suicide.

When requests cite violations of local laws, Google requires full legal justification, and denies requests where legal procedures and documentation are incomplete. For example, Google received a removal request from the Hong Kong Customs and Excise Department related to 370 YouTube videos that allegedly infringed on copyright, but because the data from Hong Kong was incomplete, Google did not remove the content. In another example, Google received a request from Danish law enforcement to remove two YouTube video for criticizing a foreign ambassador, but because the legal basis for the request was not provided, the request was denied. And finally, a representative for a general elections candidate in India requested that a YouTube video accusing the candidate of financial corruption be removed,

but Google denied the request, stating that the request did not come through “proper legal channels.”

These examples come from a sample of data made public by Google, and we do not know if they are representative of the overall outcomes of content removal requests. However, even if this sample of requests is not representative, they provide examples of how Google decides to comply or reject government requests for content removal. Together, data from Twitter and Google show that U.S. social media firms generally reject government requests for content removal. If any action is taken, it is typically to restrict or block content from certain geographies where local laws apply. As a result, it is extremely difficult for regimes to engage in content removal on U.S. social media platforms, and China’s strategy of content removal, where domestic social media firms quickly remove all content related to real-world collective action events as they are happening, is practically impossible for governments to replicate on U.S. social media platforms.

4 Replicating China’s Censorship Strategy

Given the difficulty of implementing China’s strategy of content removal on U.S. social media platforms, are there other ways for countries to replicate China’s strategy of censorship? Two potential courses of action are examined here: 1) protectionism to facilitate the development of domestic social media platforms, and 2) importing Chinese social media platforms to conduct content removal. The success of Chinese social media companies is often attributed to the first approach—China’s content blocking through the so-called Great Firewall, which prevents users in mainland China from accessing international websites such as Twitter and Facebook, is often thought to be the reason Chinese firms have flourished (Zhang and Pentina 2012).³² This section takes a closer look at this claim by examining the relationship between the domestic social media and long-term blocking of U.S. websites across authoritarian regimes, and by examining the rise of Chinese Internet companies through several case studies. A second potential path to replicating China’s censorship strategy is for countries to import Chinese social media companies. This section discusses the assumptions underlying this approach.

³²News reports of China’s social media market often begin with this premise. For examples see <http://bit.ly/1E6DeIC> and <http://bit.ly/1T12R15>, accessed June 3, 2015.

4.1 Protectionism and Domestic Social Media

Blocking access to U.S. social media platforms is a common occurrence across authoritarian and democratic regimes.³³ The dominant rationale for preventing users from accessing U.S. social media sites is to prevent access to content. For example, YouTube was blocked for 23 days in the Democratic Republic of Congo during anti-government protests in early 2015. Various social media sites including Facebook, Twitter, and YouTube were blocked from June to July of 2014 during growing insurgency in Iraq. Google Search was blocked in Syria in June of 2011 during protests against the Al Assad regime. It is extremely unlikely that any of these content blocking measures were intended to protect domestic social media firms from U.S. competitors, and even if protectionism were the motivation, it is unlikely that a short reprieve from U.S. firms would be helpful to domestic companies. Only when content blocking is persistent over time can content blocking potentially serve as a form of de facto protectionism, to create conditions more amenable for the success of local companies. That said, even when blocking is persistent, preventing individuals from accessing content may still be the primary motivation for blocking.

Examining countries which have blocked U.S. social media sites for more than one year (365 days) as an indicator of de facto protectionism, Table 4 shows for each of these countries, which U.S. social media sites were blocked, the timing of the block, and the country's share of domestic social media firms as of 2015.³⁴

The number of countries that have engaged in long-term content blocking is very small, so conclusions should be taken with a grain of salt; however, there does not appear to be a relationship between the strength of domestic social media and content blocking, either in terms of the duration of blocks or the number of sites blocked. Table 4 shows that China, Iran, and Vietnam have all been blocking U.S. sites since 2009, but the strength of domestic firms in these countries greatly varies. In China, 100% of social media firms are owned by domestic firms, but in Vietnam only 25% are. Likewise, the number of blocked U.S. sites does not appear related to the strength of domestic social media. Kazakhstan, Libya, and Pakistan all block one U.S. site, but in Kazakhstan one social media site is domestic (representing 17% of all social media sites), while the other two countries have no domestic social media presence. Iran and Vietnam both block the same three platforms, but the domestic share of social media in Iran is 75% and only 25% in Vietnam. All together, protectionism coincides with the dominance of domestic firms in China but not in other countries.

³³Google reports that users in more than 30 countries have been unable to access its products and services at some point in time. These countries range from democratic regimes such as Australia and authoritarian regimes such as Syria.

³⁴Data from Google Transparency Report <http://bit.ly/1UuHEE3>, and news reporting of site blockages.

Table 4. Long-term Content Blocking by Country and Platform

Country	U.S. Social Media Sites U.S. Blocked	Share of Social Media Sites Owned by Domestic Firms
China	Blogspot (2009-)	1
	Facebook (2009-)	
	Twitter (2009-)	
	YouTube (2009-)	
	Instagram (2014-)	
Iran	Facebook (2009-)	0.75
	YouTube (2009-)	
	Twitter (2009-)	
Vietnam	Facebook (2009-)	0.25
	YouTube* (2009-)	
	Twitter* (2009-)	
Kazakhstan	Blogger (2010-2012)	0.17
Libya	YouTube (2010-2011)	0
Pakistan	YouTube (2012-)	0

* *YouTube and Twitter are intermittently unavailable in Vietnam but not systematically banned.*

4.2 Rise of Chinese Internet Firms

To explore the relationship between protectionism and the development of domestic firms in China, this section employs case studies of Chinese firms using data from interviews with current and former Internet executives of Chinese and U.S. firms as well as company financial records and news reports. The section begins with a case study of the rise of Tencent’s social media platform QQ and its competition with Microsoft’s MSN. Next, competition between Alibaba and Ebay, as well as between Baidu and Google are briefly discussed. Alibaba and Baidu are not social media companies but an e-commerce platform and a search engine, respectively, but both are major Chinese technology companies that competed directly with U.S. firms in the absence of government initiated content blocking. This section then discusses the competition for China’s micro-blogging market and the effect of Twitter’s ban from China in 2009. Together the cases in this section show that content blocking is not a sufficient explanation for the success of Chinese social media companies, and shed light on other factors both within and outside of the regime’s control that contributed to the success of these firms. Together, the evidence suggests that replication of China’s market dynamics will be challenging for most regimes, both authoritarian and democratic.

Tencent QQ: Tencent was founded in 1998 by Ma Huateng and Zhang Zhidong. Early the next year, Tencent released its first product, then called OICQ, based closely on ICQ, an

instant messaging program developed by an Israeli company in 1996 and purchased by AOL in 1998. Due to the threat of trademark infringement by ICQ, Tencent changed the name of its messaging product to QQ. 200,000 users registered QQ accounts within two months of the product's launch, registered users exceeded one million by November of 1999, and by early 2002, QQ exceed 100 million registered users (Wu and Frantz 2011). Tencent was listed on the Hong Kong Stock Exchange in June of 2004, and a decade later in 2014, Tencent has revenues of 78.9 billion RMB (\$12.7 billion USD) and gross profits of 48.1 billion RMB (\$6.7 billion USD).³⁵ Tencent's meteoric rise may seem inevitable in hindsight, but in the late 1990s, its success was far from guaranteed. Facing competitive pressure from Microsoft's MSN as well as state-run China Mobile, Tencent's success depended on its ability to access capital, its products and business model innovations, as well as China's large market of Internet users.

Within 16 months of its founding, Tencent raised \$2.2 million USD in capital from IDG capital partners, a venture fund originally based in San Francisco, and from PCCW, a Hong Kong-based information communications technology companies, giving each of these investors a 20% ownership stake. With this initial funding, Tencent launched mobile and telecomm value-added services in August 2000 and Internet value-added services in June 2001 to expand its sources of revenue beyond advertising. In 2001, MIH (Myriad International Holdings), the offshore investment arm and holding company of the Naspers Group, bought PCCW's 20% share as well as 13% of IDG's shares. By the time of Tencent's IPO on the Hong Kong stock exchange, MIH held 37.5% of Tencent's shares, the two initial co-founders 30.74% of shares, other founders 6.77% of shares, and public shareholders 25% of shares. These infusions of capital from foreign investors were critical in Tencent's early years, but depended upon complex legal and contractual structures that sidestepped Chinese law prohibiting foreign ownership of Internet and telecommunications companies.

In order to gain access to foreign capital, Tencent initially consisted of an investment holding company ("the Company") incorporated in the British Virgin Islands and later transferred to the Cayman Islands by Ma Huateng and Zhang Zhidong, a limited liability company ("Tencent Computer") established in mainland China and legally owned the Chinese founders, and a subsidiary of the Company incorporated in mainland China as a wholly foreign owned enterprise ("Tencent Technology"). Among these three entities, Tencent Computer is the only one authorized to run an Internet and telecommunications company, but foreign funders could not take a stake in Tencent Computer. Instead, foreign financing was provided to Tencent Computer via Tencent Technology so that foreign

³⁵Based on Tencent investor and annual reports, see <http://bit.ly/1SKiMt9>, <http://bit.ly/1hikxwP>, accessed June 3, 2015.

investors had no direct stake in the Chinese company. Only through contractual agreements was it stipulated that decision-making rights, operations, and financial activities of Tencent Computer are ultimately controlled by the Company and its subsidiary Tencent Technology. Most importantly, contracts stipulated that all the operating profits, residual benefits, and intellectual property of Tencent Computer belongs to the Company.³⁶

This complex structure, commonly referred to as the “variable interest entity” (VIE), is the primary method through which Chinese Internet companies, including Sina, Baidu, and Alibaba, were able to obtain foreign capital to support their early activities. For decades, this structure was neither blessed nor condemned by key Chinese regulators.³⁷ What is notable is many of the most successful Chinese Internet companies did not receive Chinese government funding at their inception but rather competed for foreign venture capital, and firms that obtained foreign funding did so through a complex financial arrangement that in essence circumvented or at least stretched limits set by the Chinese regime on the influx of foreign capital.

In its early days, Tencent faced competition from Microsoft’s MSN as well as China Mobile. MSN, an instant messaging platform owned by Microsoft, also launched in China in 1999. At the time, MSN had a better brand reputation than QQ and was the platform preferred by white collar workers. In the early years, many believed that MSN would beat QQ in the China market; however, MSN quickly lost market share, and by 2003, QQ had 74% of China’s market share for instant messaging and MSN only 11% (Lu 2011). Interviewees attribute MSN’s loss to its stagnant product, which was not tailored to the Chinese market, while QQ was designed and evolved to meet the needs of Chinese consumers. As to which specific features differentiated QQ from MSN, Meng and Zuo (2008) argue that QQ’s key product differentiation from MSN was allowing for interactions among strangers such as that any user could find any other users by searching for location, online status, and nickname, and complementing these features with stronger tools to block existing contacts. Others cite QQ’s ability to resume interrupted downloads (Clarke 2009), or to the addition of new features such as message boards, virtual items that could be purchased using virtual currency, and gaming (Bethune and Viard 2012). Regardless of the exact features which led QQ to greater user adoption, by 2012 MSN had less than 5% of China instant messaging market, and by 2014, shut down its services in China.

QQ competed against MSN and won against MSN on the basis of its product, not because

³⁶See Tencent 2004 Annual Report <http://bit.ly/1KPgc0K>, accessed June 3, 2015.

³⁷In early 2015, the Chinese Ministry of Commerce publicized draft legislation that would regulate foreign investment not based on ownership but on control. This legislation would threat current VIE structures, but its outcome has yet to be determined.

of government protectionism. In reality, in its early years, Tencent came under pressure from the state and state-owned enterprises. Prior to 2004, a substantial part of Tencent's revenues (45%) came from its partnership with China Mobile. In this partnership, Tencent created mobile QQ that China Mobile, who held a monopoly over 3G and 4G technology, sold to users for 5 RMB (\$0.60 USD based on 2000 exchange rates), with Tencent would keep 20% of these revenues. By the end of 2004, China Mobile ended this fee sharing agreement with Tencent, instead moving to a fixed monthly maintenance fee agreement that decreased Tencent revenues by millions of RMB. In 2006, China Mobile announced its own mobile messaging product, and banned the use of QQ and MSN on its phones. During this time, QQ market share declined from 79% in 2005 to 69% in 2006,³⁸ and MSN tried to take advantage of Tencent's weakness by entering into a joint venture backed by Shanghai's State-owned Assets Supervision and Administration Commission. Neither China Mobile nor MSN were successful in their efforts to put forth a competitive product, while these competitive pressure motivated Tencent to shift to new sources of revenue, specifically gaming combined with the sale of virtual goods and premium services (together called value-added services). Because of China's large Internet and mobile user base, and Tencent's ability to attract users, value-added services generate large amount of revenue for the company, even though they represent relatively small financial outlays on a per user basis per transaction basis. For example, in 2014, these services were 80% (63.3 billion CNY) of Tencent's revenues, far ahead of advertising revenues, and represented approximately 80 RMB of annual spending per user. On the basis of this business model, Tencent is estimated to have the highest shareholder total return of any large firm globally from 2008 to 2012, ahead of Amazon and Apple, and with much greater revenue and profit margins than Facebook.³⁹

Alibaba and Taobao: Tencent's rise to market dominance despite foreign and government competitive pressures is echoed in the story of Alibaba's Taobao. Founded in 1999 by Jack Ma, Alibaba was initially a business to business portal that connected Chinese manufacturers to overseas buyers. Like Tencent, Alibaba was funded by foreign investors, initially investors like Goldman Sachs and Fidelity Capital, and later on investors such as AIG Global Investment, Taiwanese billionaire Terry Gou, and Yahoo.⁴⁰ In 2003, eBay entered China by buying EachNet for \$150 million USD, China's leading consumer auction site at the time.⁴¹ Ma was concerned that eBay would move into business-to-business transactions so as a defensive strategy launched Taobao, consumer-to-consumer auction site to prevent eBay from

³⁸See http://en.people.cn/200607/07/eng20060707_281020.html, accessed June 1, 2015.

³⁹See <http://econ.st/1DoHZme>, accessed June 3, 2015.

⁴⁰Alibaba Press Release May 2001, see <http://bit.ly/1JL4wKJ>, accessed June 3, 2015.

⁴¹eBay financial release July 2003, see <http://bit.ly/1JL4X7S>, accessed June 3, 2015.

taking away Alibaba's customers. At the time, industry experts were skeptical of Taobao's financial sustainability because Taobao allowed sellers to make listing for free, unlike eBay which charged sellers to list products. However, this approach, combined with better terms for customers and extra services such as communications between buyers and sellers, paid off, and Taobao quickly gained users over eBay. By March 2006, Taobao had 67% of user market share, while eBay's share fell to 29%, and by the end of 2006, eBay left China.

Baidu and Google: Unlike the cases of QQ and Taobao, Baidu's success over Google is more controversial. There are many who argue that Baidu's success is a result of government intervention that prevented Google's from being able to succeed. However, what data shows is that Google was defeated by Baidu in the market before Google stirred up the antagonism of the Chinese regime.

Baidu was founded in 2000 by Robin Li who had developed a new search algorithm while working as a developer for IDD Information Services in the U.S. in 1996, along with Eric Xu. Li and Xu raised \$1.2 million from Integrity Partners and Peninsula Capital, two U.S. venture capital firms, as seed capital to launch Baidu. Later in 2000, they raised another \$10 million USD from two other U.S. venture capital firms, Draper Fisher Jurvetson and IDG Technology Venture. Initially offering search services to other Chinese sites, Baidu created its own site `baidu.com` in September 2001. Baidu raised a third round of financing in 2004, and Google was one of the investors, contributing \$5 million. When Baidu filed to go public in 2005, Google offered a bid of \$1.6 billion USD to acquire Baidu, but ultimately the Baidu board voted to go public instead. Individuals involved in that decision have speculated that Google could have acquired Baidu at that time had it made a higher offer, but instead Google launched `google.cn` that same year.

Prior to 2005, Chinese Internet users could use `google.com` or `baidu.com`. In 2003, `google.com` and `baidu.com` had very similar market share in China, 35% and 31%, respectively (Lu 2011). However by the time `google.cn` launched, Baidu's market share had already increased to 57% while Google's had stagnated at 33% (Lu 2011). In other words, even before Google entered the Chinese market and faced decisions on whether to engage in censorship, it already trailed in market share to Baidu. Baidu's gain in market share between 2003 and 2005 is attributed to Baidu's MP3 search, which allowed Chinese Internet users to search for and download music for free, regardless of copyright restrictions. By the end of 2004, Baidu estimated that nearly 50% of China's Internet users searched for music.⁴² When pressed about IP protection, Li said "If [users] are looking for certain type of content that is publicly available, we cannot say, in order to make sure record companies are happy, let's

⁴²Baidu IPO prospectus, see <http://1.usa.gov/1KPqTQN>, accessed June 3, 2015.

completely block out this type of service. We choose not to do that” (Stone and Einhorn 2010). Google could not do the same as it faced strong constraints from the U.S. music industry and U.S. regulators. During this period, Baidu’s popularity among young people, individuals in Western and Central China, as well as less highly educated individuals soared. Google’s share of China’s market for Internet search continued to decline, falling to 23% by 2009, while Baidu’s share continued to grow, reaching 72% by the same year (Lu 2011).

From 2005 forward, the antagonistic relationship between the Chinese government and Google may well have prevented Google from succeeding in the Chinese market, but what is clear from this time line is that Baidu surpassed Google in the China market before government interventions in `google.cn` began. Moreover, Baidu also faced pressures from the government. For example, in late 2008, the government-controlled CCTV aired investigations into Baidu’s business practices on Robin Li’s 40th birthday, likely as a warning to the company. Baidu’s spokesperson Kaiser Kuo said of Baidu’s relationship with the government that “We get smacked as hard as anyone” (Stone and Einhorn 2010).

Micro-blogging in China: Sina Weibo is a leading micro-blogging site in China today, and its success is often attributed to the Chinese government’s ban on Twitter (Zhang and Pentina 2012) because the timing of Sina Weibo’s launch. Content blocking of Twitter began in June 2009, and Sina Weibo was launched in August 2009. However, prior June 2009 when Twitter was universally accessible in China, Twitter faced stiff competition from a number of Chinese micro-blogging sites, and lagged behind Chinese competitors in share of users. Twitter was blocked in June 2009 as part of a broad-ranging government clampdown of micro-blogging platforms that also resulted in blockages of Chinese micro-blogging platforms. Although Sina Weibo benefited from the Chinese government clampdown on micro-blogs in 2009, it is unclear whether the Chinese government ban of Twitter was beneficial or detrimental to domestic micro-blogging firms overall.

Twitter was launched in July 2006, and by 2007 a number of domestic micro-blogging sites had emerged in China, including Taotao, Fanfou, Digu, Jiwai.de, Zuosa, kommo.cn, and SBTalk. Many of these sites were almost identical replicas of Twitter (Kotowski 2009), but others incorporated features such as embedded video and images then unavailable on Twitter (Li and Rao 2010). A breakthrough moment for micro-blogging in China occurred in May 2008, when news of the 2008 Sichuan earthquake first broke on Twitter, and was widely discussed on Twitter and Chinese micro-blogs (Moore 2008).

Before Twitter was blocked, it competed with both foreign and Chinese micro-blogs for market share in China, and what evidence is available suggests that Twitter did not dominate the Chinese market. In 2008, Twitter likely only had a few thousand users in China. In

February 2008, the Twitter Blog released data on Twitter traffic from around the world and showed that 60% of Twitter traffic came from outside the U.S.⁴³ In the graphic—a pie chart—released by Twitter, none of the international traffic came from China. Around the same time, a search of Twitter users by self-declared location revealed 2,754 users located in mainland China.⁴⁴ In early 2008, Twitter had 1 million users overall; if we round up and assume Twitter had 3000 users in China, China accounted for only 0.5% of international Twitter users (0.3% of all Twitter users). By July 2009, according to leaked internal Twitter documents, Twitter had grown to over 37 million users globally, of which 17 million (46%) came from outside the U.S.⁴⁵ These documents revealed that adoption was particularly weak in China and South Korea, where Twitter faced competition from domestic social media services (Smith 2009). Assuming that Twitter’s share of users in China did not decrease from the 2008 estimate of 0.5% of international users, then by 2009 there were 85,000 Twitter users in China. By contrast, the local micro-blogging site Fanfou had one million users by 2009 (Li and Rao 2010).

In June 2009, before the 20th anniversary of the Tiananmen Square incident, Twitter and its Chinese competitors, including Fanfou, Digu, Jiawai.de, were blocked in China. After this clampdown, Sina launched Weibo with assurances to the Chinese regime that content would be tightly controlled. Sina Weibo copied Twitter’s 140 character limit, but added functionality such as direct comments and comment threading to appear to Chinese users (Sullivan 2012). Sina Weibo quickly outpaced other domestic micro-blogging competitors that emerged after the June 2009 clampdown, and dominated China’s micro-blogging market until Tencent launched its microblogging product, Tencent QQ Weibo, in 2010. Since 2010, Sina Weibo and Tencent Weibo have held on to China’s microblogging market in a virtual tie.

In sum, domestic micro-blogging companies in China dominated Twitter in market share before the government crackdown on Twitter and Chinese micro-blogs in mid-2009. Without the 2009 clampdown, Chinese micro-blogs such as Fanfou may very well have out-competed Twitter. Although the rise of Sina Weibo is no doubt related to government crackdown on micro-blogs, even without the 2009 clampdown and banning of Twitter, Chinese firms might have become the leaders of China’s micro-blogging market.

De facto protectionism is not sufficient to explain the success of Chinese Internet firms. The cases described above paint a picture of the rise of domestic Chinese firms *despite* government limits on access to capital, burdensome stipulations related to censorship, and

⁴³See <https://blog.twitter.com/2008/twitter-web-traffic-around-the-world>.

⁴⁴See <http://theory.isthereason.com/?p=2163>.

⁴⁵See <http://tcrn.ch/1TGtZch>, <http://tcrn.ch/1LMAiVk>.

competitive pressures from state-owned companies. Chinese firms led U.S. competitors in market share before U.S. platforms were blocked from China. These cases suggest that the success of Chinese firms in gaining users more quickly than their U.S. counterparts during the initial stages of competition was rooted in a better understanding of the Chinese market and their ability to innovate based on this knowledge. Examples of these innovations from the cases discussed above include QQ’s features allowing strangers to connect and chat, Alibaba’s free seller listing, Baidu’s MP3 search, Chinese micro-blogs’ embedded videos and image features. While a thorough examination of what accounts for the success of Chinese firms in product design goes beyond the purview of this paper, relevant factors may include the availability of entrepreneurial and technological talent in China and their ability to access funding from U.S. financiers as well as structural factors such as China’s large consumer market for Internet products and ambiguous IP protections.

4.3 Importing Chinese Social Media

The development of domestic social media firms obedient to the censorship demands of the government is one path to mimicking China’s “success” in Internet censorship. The above sections reveal that developing such a domestic sector is not as straightforward as imposing government protection against foreign social media companies. Another path to copying China’s censorship strategy of content removal is to import Chinese social media platforms to China. Indeed Iran seems to hint at this path when Iran’s Ministry of Communications and Information Technology expressed a desire for Chinese Internet companies to increase their presence in Iran (Eades 2014).⁴⁶ However, in order for regimes to replicate China’s model of content removal by importing Chinese social media platform, two critical assumptions must hold.

The first assumption relates to market competition. In order for other countries to replicate China’s content removal by importing Chinese social media firms, users in those countries have to adopt Chinese social media platforms instead of the U.S. platforms they are currently using. There is a large literature on market competition that shows how established platforms are difficult to displace in sectors like social media where users’ interactions are subject to network effects (Economides 1996; Evans, Hagiu and Schmalensee 2008; Katz and Shapiro 1985; Rochet and Tirole 2003). There is a cost for users of switching to different platforms, and the success of Chinese firms is not guaranteed.

The second assumption is that Chinese social media companies would comply with content removal requests of the local regime. Chinese social media firms comply with content

⁴⁶See <https://www.ict.gov.ir/fa/news/10162> for details.

removal requests from China, and they incur costs to do so. As discussed in Section 3.2, costs of content removal include direct cost employing in-house censors, as well as indirect costs of users who are lost because of experiences with or fear of censorship. Chinese firms willingly incur these costs in China because being able to operate in the Chinese market, where there are more than 600 million Internet users (over 20% of the world’s share of Internet users), is economically attractive. It cannot be taken for granted that Chinese firms would be willing to incur these costs in every market, unless the potential revenues to be gained in that market can offset these costs. Potential revenues may depend on the size of the market and existing competitors for the market.

Both approaches countries could take to replicate China’s strategy of content removal depend heavily on conditions outside of the regime’s control. Regimes could enact protectionism through long-term content blocking, but that does not guarantee the development and success of domestic firms. Regimes could bring in Chinese social media companies, but there is no guarantee that local users will adopt Chinese platforms or that Chinese firms will agree to censor. Existing research on sectors subject to network effect suggests that until there are revolutionary products or services, new entrants are unlikely to displace current market leaders (Bresnahan and Greenstein 1999; Henderson and Clark 1990). This means that even with protectionism and/or the importation of Chinese social media companies willing to censor, domestic and Chinese platforms are unlikely to displace U.S. platforms in markets where U.S. social media firms already dominate. Likewise, even without protectionism, it is unlikely that U.S. platforms would have surpassed Chinese competitors after they fell behind in the early days of competition.

5 Conclusion

This paper shows that China’s social media landscape, which is dominated by strong domestic social media platforms, differs greatly from that of other authoritarian regimes where U.S. firms tend to dominate. China’s domestic firms comply with China’s censorship requirements, allowing the Chinese regime to engage in content censorship which quickly removes online content pertaining to collective action while retaining a great deal of information, including criticisms of the government, online. In contrast, content removal is incredibly difficult to achieve on U.S. social media platforms, making it practically impossible for regimes where U.S. social media firms dominate to engage in the type of social media censorship found in China.

Given the futility of pursuing content removal on U.S. platforms, other countries could try to replicate China's censorship model by developing domestic social media firms or by importing Chinese social media platforms that engage in content removal. However, the success of these approaches does not rest entirely within a regime's control. For the first path, development of domestic social media does not appear to be endogenous to government blocking of U.S. social media platforms. De facto protectionism through long-term content blocking rarely coincides with strong domestic social media presence. In China, where de facto protectionism coincides with a dominant domestic social media sector, the rise of China's social media companies suggests that success in these efforts requires more than simple government protectionism against foreign competitors. For the second path, the ability of authoritarian regimes to replicate China's content removal efforts by attracting Chinese social media companies rests on the assumption that Chinese firms will agree to engage in content censorship outside of China and that Chinese firms can displace entrenched U.S. platforms.

Finally, two points deserve emphasis. The first is that this research does not speak to the motivations of authoritarian regimes to censor or adopt specific methods of censorship, but simply whether one of the censorship strategies successfully employed by China is available to other authoritarian regimes. This means that even if another country could replicate China's market dynamics, it may choose to use other strategies, such as real-world repression to impose control over social media. Russia may fall into this camp. Russia has strong domestic social media companies, which the regime can control; however, existing evidence suggests that Russia relies more heavily on technical methods such as DDoS attacks, bots, and trolls to control media.⁴⁷ The second point is that while China's content removal efforts may be a success in the eyes of the regime from the perspective of media control, it may negatively affect the country's economic potential by constraining the success of Chinese companies. Most directly, content removal depresses the profits of Chinese social media firms and hurts the prospects of these firms for expanding beyond China. If Chinese social media firms stopped content removal today, their profits would increase as they no longer had to bear the cost of employing censors and complying with government stipulations. Furthermore, because Chinese Internet companies are known to engage in pervasive censorship, they are often perceived negatively by U.S. and European consumers, which hurts their prospects for growing into lucrative markets.

⁴⁷See <http://bit.ly/1g9P2nM> and Zuckerman et al. (2010), accessed June 3, 2015.

References

- Aday, Sean, Henry Farrell, Marc Lync, John Sides and Deen Freelon. 2012. “Blogs and Bullets: New Media and Conflict after the Arab Spring.”
URL: bit.ly/1iQyIXP
- Atkins-Kruger, Andy. 2011. “6 Myths Chinese Search Engine Baidu Would Rather Like To Correct.” *Search Engine Land* August.
- Axford, Barrie. 2011. “Talk about a revolution: Social media and the MENA uprisings.” *Globalizations* 8(5):681–686.
- Azali, MohammadReza. 2015. “Iran: Censorship and Opportunities Afterwards.” *Techrasa* June 24.
- Becker, Jonathan. 2004. “Lessons from Russia A Neo-Authoritarian Media System.” *European journal of Communication* 19(2):139–163.
- Bellin, Eva. 2012. “Reconsidering the Robustness of Authoritarianism in the Middle East: Lessons from the Arab Spring.” *Comparative Politics* 44(2):127–149.
- Bethune, Richard and V Brian Viard. 2012. “When Monopolies Collide: Winning Mobile IM in China.” *Cheung Kong Case Center*.
- Bradshaw, James. 2014. “A Russian social network tale: Censorship and a CEO on the run.” *The Globe and Mail* July 12.
- Bresnahan, Timothy F and Shane Greenstein. 1999. “Technological competition and the structure of the computer industry.” *The Journal of Industrial Economics* 47(1):1–40.
- Chase, Michael S and James C Mulvenon. 2002. *You’ve Got Dissent! Chinese Dissident Use of the Internet and Beijing’s Counter-Strategies*. Rand Corporation.
- Clarke, Tom. 2009. “QQ: The MSN killer that’s made in China.” *Softonic* November.
- Dingledine, Roger. 2011. Tor and Circumvention: Lessons Learned. In *Advances in Cryptology–CRYPTO 2011*. Springer pp. 485–486.
- Djankov, Simeon, Caralee McLiesh, Tatiana Nenova and Andrei Shleifer. 2001. “Who Owns the Media?” *National Bureau of Economic Research* NBER Working Paper No. 8288.
- Eades, Mark C. 2014. “China’s Newest Export: Internet Censorship.” *US News and World Report* Jan. 30.
- Earl, Jennifer and Katrina Kimport. 2011. *Digitally Enabled Social Change: Activism in the Internet Age*. MIT Press.
- Economides, Nicholas. 1996. “The economics of networks.” *International journal of industrial organization* 14(6):673–699.
- Edmond, Chris. 2013. “Information Manipulation, Coordination, and Regime Change.” *The Review of Economic Studies* p. rdt020.
- Egorov, Georgy, Sergei Guriev and Konstantin Sonin. 2009. “Why Resource-poor Dictators Allow Freer Media: A Theory and Evidence from Panel Data.” *American Political Science Review* 103(4):645–668.
- Elliott, Dorinda. 2014. “Tencent: The Secretive, Chinese Tech Giant that can Rival Facebook and Amazon.” *Fast Company* May.
- Enikolopov, Ruben, Maria Petrova and Ekaterina Zhuravskaya. 2010. “Media and political persuasion: Evidence from Russia.” *American Economic Review* 101:3253–3285.
- Esarey, Ashley and Xiao Qiang. 2008. “Political Expression in the Chinese Blogosphere:

- Below the Radar.” *Asian Survey* 48(5):752–772.
- Evans, David S, Andrei Hagiu and Richard Schmalensee. 2008. *Invisible engines: how software platforms drive innovation and transform industries*. MIT Press.
- Faucon, Benoit and Rory Jones. 2015. “Technology Startups Take Root in Tehran; Iranian Versions of Amazon, Google Play, Groupon Fill the Void Left by Censorship and Sanctions.” *The Wall Street Journal* February 25.
- Feamster, Nick, Magdalena Balazinska, Greg Harfst, Hari Balakrishnan and David R Karger. 2002. Infranet: Circumventing Web Censorship and Surveillance. In *USENIX Security Symposium*. pp. 247–262.
- Ferdinand, Peter. 2000. “The Internet, democracy and democratization.” *Democratization* 7(1):1–17.
- Geddes, Barbara, Joseph Wright and Erica Frantz. 2014. “Autocratic breakdown and regime transitions: A new data set.” *Perspectives on Politics* 12(02):313–331.
- Hassanpour, Navid. 2014. “Media Disruption and Revolutionary Unrest: Evidence From Mubarak’s Quasi-Experiment.” *Political Communication* 31(1):1–24.
- Henderson, Rebecca M and Kim B Clark. 1990. “Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms.” *Administrative science quarterly* pp. 9–30.
- Hong, Lichan, Gregorio Convertino and Ed H Chi. 2011. Language Matters In Twitter: A Large Scale Study. In *ICWSM*.
- Howard, Philip N, Aiden Duffy, Deen Freelon, Muzammil M Hussain, Will Mari and Marwa Mazaid. 2011. “Opening Closed Regimes: What Was the Role Of Social Media During the Arab Spring?”.
- Johnston, Casey. 2015. “Crime, Punishment, and Russia’s Original Social Network.” *Motherboard* February 12.
- Kalathil, Shanthi and Taylor C Boas. 2010. *Open Networks, Closed Regimes: the Impact of the Internet on Authoritarian Rule*. Carnegie Endowment.
- Katz, Michael L and Carl Shapiro. 1985. “Network externalities, competition, and compatibility.” *The American economic review* 75(3):424–440.
- King, Gary, Jennifer Pan and Margaret E Roberts. 2013. “How Censorship in China Allows Government Criticism but Silences Collective Expression.” *American Political Science Review* 107(2):1–18.
- King, Gary, Jennifer Pan and Margaret E Roberts. 2014. “Reverse-engineering censorship in China: Randomized experimentation and participant observation.” *Science* 345(6199):1–10.
- Kotowski, Von Timo. 2009. “Twitter-Alternativen: Zwitscher-Küken aus aller Welt.” *Spiegel Online* .
- Li, Jessica and HR Rao. 2010. “Twitter as a rapid response news service: An exploration in the context of the 2008 China earthquake.” *The Electronic Journal of Information Systems in Developing Countries* 42.
- Lindtner, Silvia and Marcella Szablewicz. 2011. China’s Many Internets: Participation and Digital Game Play Across a Changing Technology Landscape. In *Online Society in China: Creating, Celebrating, and Instrumentalising the Online Carnival*, ed. David Herold and Peter Marolt. New York: Routledge pp. 89–105.

- Lipman, Maria. 2005. "Constrained or Irrelevant: The Media in Putin's Russia." *Current History* 104(684):319–324.
- Lotan, Gilad, Erhardt Graeff, Mike Ananny, Devin Gaffney, Ian Pearce et al. 2011. "The Revolutions Were Tweeted: Information Flows During the 2011 Tunisian and Egyptian Revolutions." *International Journal of Communication* 5:31.
- Lu, Jia. 2011. "American Internet Companies' Predicament in China: Google, eBay, and MSN Messenger." *Javnost-The Public* 18(1):75–91.
- MacKinnon, Rebecca. 2008. "Flatter World and Thicker Walls? Blogs, Censorship And Civic Discourse in China." *Public Choice* 134(1-2):31–46.
- MacKinnon, Rebecca. 2009. "China's Censorship 2.0: How companies censor bloggers." *First Monday* 14(2).
- MacKinnon, Rebecca. 2012. *Consent of the Networked: The Worldwide Struggle For Internet Freedom*. Basic Books.
- McMillan, John and Pablo Zoido. 2004. "How to Subvert Democracy: Montesinos in Peru." *Journal of Economic Perspectives* 18(4):69–92.
- Meng, Zhaoli and Meiyun Zuo. 2008. Why MSN lost to QQ in China market? Different privacy protection design. In *Information Security and Assurance, 2008. ISA 2008. International Conference on*. IEEE pp. 384–388.
- Moore, Malcolm. 2008. "China earthquake brings out citizen journalists." *The Telegraph* .
- Morozov, Evgeny. 2012. *The Net Delusion: the Dark Side of Internet Freedom*. Public Affairs.
- Murdoch, Steven J. and Ross Anderson. 2008. *Access Denied: The Practice and Policy of Global Internet Filtering*. MIT Press chapter Tools and Technology of Internet Filtering, pp. 57–72.
- Norris, Pippa and Ronald Inglehart. 2009. *Cosmopolitan Communications: Cultural Diversity in a Globalized World*. Cambridge University Press.
- Pariser, Eli. 2011. *The Filter Bubble: What the Internet is Hiding from You*. Penguin UK.
- Roberts, Hal, Ethan Zuckerman, Robert Faris, Jillian York and John Palfrey. 2011. "The Evolving Landscape of Internet Control." *Berkman Center for Internet and Society* .
- Rochet, Jean-Charles and Jean Tirole. 2003. "Platform competition in two-sided markets." *Journal of the European Economic Association* 1(4):990–1029.
- Sanja Kelly, Madeline Earp, Laura Reed Adrian Shahbaz and Mai Truong. 2014. "Freedom on the Net 2014: Tightening the Net: Governments Expand Online Controls." *Freedom House* .
- Smith, Tom. 2009. "Twitter - to the billion?" *Global Web Index* .
- Stepanova, Ekaterina. 2011. "The role of information communication technologies in the "arab spring" ." *Ponars Eurasia* 15:1–6.
- Stockmann, Daniela. 2013. *Media Commercialization and Authoritarian Rule in China*. New York: Cambridge University Press.
- Stockmann, Daniela and Mary E Gallagher. 2011. "Remote Control: How the Media Sustain Authoritarian Rule in China." *Comparative Political Studies* 44(4):436–367.
- Stone, Brad and Bruce Einhorn. 2010. "How Baidu Won China." *Bloomberg Business* November.
- Sullivan, Jonathan. 2012. "A tale of two microblogs in China." *Media, Culture & Society*

- 34(6):773–783.
- Thompson, Clive. 2006. “Google’s China Problem (and China’s Google Problem).” *New York Times* April.
- Van Niekerk, Brett, Kiru Pillay and Manoj Maharaj. 2011. “Analyzing the Role of ICTs in the Tunisian and Egyptian Unrest from an Information Warfare Perspective.” *International Journal of Communication* 5:11.
- Weber, Rolf H. 2011. “Politics through Social Networks and Politics by Government Blocking: Do We Need New Rules?” *International Journal of Communication* 5:9.
- Wilson, Christopher and Alexandra Dunn. 2011. “Digital Media in the Egyptian Revolution: Descriptive Analysis from the Tahrir Data Set.” *International Journal of Communication* 5:25.
- Wu, Jane Peihusn and Terrill L Frantz. 2011. “Largest IM Platform In China—Tencent’s QQ.” *Journal of Business Case Studies (JBCS)* 8(1):95–102.
- Yang, Guobin. 2006. “Activists beyond Virtual Borders: Internet-Mediated Networks and Informational Politics in China.” *First Monday* 7.
- Yang, Guobin. 2009. *The Power of the Internet in China*. Columbia University Press.
- Zhang, Lixuan and Iryna Pentina. 2012. “Motivations and usage patterns of Weibo.” *Cyberpsychology, Behavior, and Social Networking* 15(6):312–317.
- Zhao, Yuezhi. 1998. *Media, Market, and Democracy in China: Between the Party Line and the Bottom Line*. University of Illinois Press.
- Zhu, Tao, David Phipps, Adam Pridgen, Jedidiah R. Crandall and Dan S. Wallach. 2013. The Velocity of Censorship: High-fidelity Detection of Microblog Post Deletions. In *Proceedings of the 22Nd USENIX Conference on Security*. Berkeley, CA, USA: USENIX Association pp. 227–240.
- Zuckerman, Ethan, Hal Roberts, Ryan McGrady, Jillian York and John Palfrey. 2010. “Distributed Denial of Service Attacks against Independent Media and Human Rights Sites.” *The Berkman Center* .

A Appendix

A.1 Social Media Sites Among 25 Most Trafficked Sites by Country

Country	Social Media Sites
Albania	Facebook.com, Youtube.com
Algeria	Facebook.com, Blogspot.com, Youtube.com
Argentina	Youtube.com, Linkedin.com, Instagram.com, T.co, Facebook.com, Twitter.com
Australia	Instagram.com, Youtube.com, Facebook.com, Linkedin.com, Twitter.com, Reddit.com, Pinterest.com, Imgur.com
Austria	Facebook.com, Twitter.com, Youtube.com
Azerbaijan	Ok.ru, Vk.com, Twitter.com, Facebook.com, Youtube.com
Bangladesh	Twitter.com, Blogspot.com, Wordpress.com, Blogger.com, Facebook.com, Linkedin.com, Youtube.com
Belarus	Vk.com, Ok.ru, Livejournal.com, Talks.by, Facebook.com, Instagram.com, Youtube.com, Twitter.com
Belgium	Twitter.com, Youtube.com, Linkedin.com, Facebook.com, T.co
Bolivia	Facebook.com, Youtube.com, Blogspot.com, Slideshare.net, Twitter.com
Brazil	Instagram.com, Linkedin.com, Facebook.com, Twitter.com, Wordpress.com, Youtube.com
Bulgaria	Vbox7.com, Facebook.com, Stackoverflow.com, Youtube.com, Linkedin.com, Blogspot.com, Twitter.com
Cambodia	Blogspot.com, Twitter.com, Facebook.com, Youtube.com, Blogger.com, Wordpress.com
Canada	Facebook.com, Pinterest.com, Youtube.com, Instagram.com, Twitter.com, Linkedin.com, Reddit.com, Imgur.com, T.co
Chile	Youtube.com, Facebook.com, Blogspot.com, Twitter.com
China	Qq.com, Weibo.com, Tianya.cn, Youku.com
Colombia	Blogspot.com, Instagram.com, T.co, Facebook.com, Twitter.com, Youtube.com
Costa Rica	Linkedin.com, Blogspot.com, Youtube.com, Twitter.com, Wordpress.com, Facebook.com
Croatia	Forum.hr, Facebook.com, Youtube.com, Blogspot.com, Linkedin.com, Twitter.com
Czech Republic	Youtube.com, Facebook.com
Denmark	T.co, Youtube.com, Twitter.com, Imgur.com, Linkedin.com, Reddit.com, Facebook.com
Dominican Rep	Blogspot.com, Instagram.com, Facebook.com, Youtube.com, Twitter.com
Ecuador	Twitter.com, Blogspot.com, Youtube.com, Facebook.com, Slideshare.net
Egypt	Facebook.com, Youtube.com, Blogspot.com
El Salvador	Youtube.com, Facebook.com, T.co, Blogspot.com, Twitter.com, Wordpress.com
Estonia	Vk.com, Ok.ru, Youtube.com, Facebook.com, Blogspot.com
Finland	Blogspot.fi, Linkedin.com, Facebook.com, Twitter.com, Youtube.com
France	Linkedin.com, Twitter.com, T.co, Youtube.com, Facebook.com
Georgia	Myvideo.ge, Vitube.ge, Vk.com, Ok.ru, Facebook.com, Youtube.com
Germany	Gutefrage.net, Facebook.com, Twitter.com, Youtube.com
Ghana	Youtube.com, Blogspot.com, Linkedin.com, Facebook.com, Twitter.com

Greece	Wordpress.com, Twitter.com, Facebook.com, Youtube.com
Guatemala	Facebook.com, Twitter.com, Linkedin.com, Blogspot.com, Wordpress.com, T.co, Youtube.com
Honduras	Facebook.com, Blogspot.com, Wordpress.com, Youtube.com, Twitter.com
Hungary	Blog.hu, Velvet.hu, Facebook.com, Youtube.com, Blogspot.hu
Iceland	Facebook.com, Youtube.com, Imgur.com, Twitter.com
India	Blogspot.in, Twitter.com, Stackoverflow.com, Wordpress.com, Youtube.com, Linkedin.com, Quora.com, Facebook.com
Indonesia	Kaskus.co.id, Wordpress.com, Blogspot.com, Blogger.com, Facebook.com, Twitter.com, Youtube.com
Iran	Rozblog.com, Aparat.com, Picofile.com, Mihanblog.com, Blogfa.com, Blog.ir, Persianblog.ir, Facenama.com
Iraq	Facebook.com, Twitter.com, Youtube.com, Blogspot.com
Ireland	Boards.ie, Linkedin.com, Youtube.com, Reddit.com, Facebook.com, Twitter.com, T.co, Imgur.com
Israel	Linkedin.com, Facebook.com, Youtube.com, Twitter.com
Italy	Altervista.org, Linkedin.com, Youtube.com, Twitter.com, Facebook.com
Japan	Pixiv.net, Ameblo.jp, Nicovideo.jp, 2ch.net, Blog.jp, Twitter.com, Youtube.com, T.co, Facebook.com
Jordan	Linkedin.com, Youtube.com, Facebook.com, Blogspot.com, Twitter.com
Kazakhstan	Vse.kz, Vk.com, Ok.ru, Twitter.com, Facebook.com, Youtube.com
Kenya	Twitter.com, Blogspot.com, T.co, Linkedin.com, Facebook.com, Youtube.com
Kuwait	Facebook.com, Blogspot.com, Youtube.com, Linkedin.com, Twitter.com, T.co, Instagram.com
Kyrgyzstan	Blive.kg, Vk.com, Drive2.ru, Ok.ru, Twitter.com, Youtube.com, Facebook.com, Instagram.com
Latvia	Draugiem.lv, Ok.ru, Vk.com, Youtube.com, Twitter.com, Facebook.com
Lebanon	Facebook.com, Youtube.com, Linkedin.com, Stackoverflow.com, Twitter.com, T.co
Libya	Blogspot.com, Twitter.com, Youtube.com, Instagram.com, Facebook.com
Lithuania	Vk.com, Facebook.com, Youtube.com
Luxemburg	Youtube.com, Linkedin.com, Twitter.com, Blogspot.com, Facebook.com
Malaysia	Lowyat.net, Twitter.com, Linkedin.com, Youtube.com, Blogspot.com, Facebook.com
Mexico	Blogspot.mx, T.co, Twitter.com, Wordpress.com, Facebook.com, Youtube.com, Linkedin.com
Moldova	Vk.com, Ok.ru, Blogspot.com, Twitter.com, Youtube.com, Facebook.com
Montenegro	Vk.com, Blogspot.com, Facebook.com, Youtube.com, Twitter.com, Instagram.com
Morocco	Youtube.com, Facebook.com, Blogspot.com, Twitter.com
Netherlands	Dumpert.nl, Twitter.com, Linkedin.com, T.co, Youtube.com, Facebook.com, Blogspot.nl
New Zealand	Twitter.com, Youtube.com, Imgur.com, Reddit.com, Facebook.com, Linkedin.com, Pinterest.com
Nigeria	Nairaland.com, Youtube.com, Twitter.com, Facebook.com, Blogspot.com, Linkedin.com, Instagram.com
Norway	Imgur.com, Reddit.com, Twitter.com, Linkedin.com, Facebook.com, Youtube.com
Oman	S-oman.net, Twitter.com, T.co, Blogspot.com, Youtube.com, Linkedin.com, Facebook.com

Pakistan	Dailymotion.com, Wordpress.com, Youtube.com, Facebook.com, Blogger.com, Linkedin.com, Blogspot.com, Twitter.com
Panama	Twitter.com, Instagram.com, Wordpress.com, Youtube.com, T.co, Linkedin.com, Facebook.com, Blogspot.com
Paraguay	Twitter.com, Youtube.com, Blogspot.com, T.co, Facebook.com
Peru	Blogspot.com, Youtube.com, Facebook.com, Slideshare.net, Wordpress.com, Twitter.com
Philippines	Linkedin.com, Blogspot.com, Wordpress.com, Pinterest.com, Youtube.com, Twitter.com, Instagram.com, Facebook.com
Poland	Gazeta.pl, O2.pl, Blogspot.com, Facebook.com, Youtube.com
Portugal	Facebook.com, Linkedin.com, Twitter.com, Youtube.com, Wordpress.com, Instagram.com
Romania	Filelist.ro, Linkedin.com, Youtube.com, Wordpress.com, Twitter.com, Facebook.com
Russia	Vk.com, Ok.ru, Livejournal.com, Rutracker.org, Facebook.com, Twitter.com, Youtube.com, Instagram.com
Saudi Arabia	Adslgate.com, Youtube.com, Instagram.com, Linkedin.com, Twitter.com, Blogspot.com, T.co, Facebook.com
Serbia	Blogspot.com, Facebook.com, Twitter.com, Linkedin.com, Youtube.com
Singapore	Instagram.com, Reddit.com, Linkedin.com, Wordpress.com, Twitter.com, Facebook.com, Youtube.com, Tumblr.com
Slovakia	Youtube.com, Facebook.com
Slovenia	Youtube.com, Facebook.com, Twitter.com, Blogspot.com
South Africa	Instagram.com, Pinterest.com, Facebook.com, Youtube.com, Linkedin.com, T.co, Blogspot.com, Twitter.com
South Korea	Qq.com, Clie.net, Tistory.com, Todayhumor.co.kr, Youtube.com, Facebook.com
Spain	Blogspot.com.es, T.co, Youtube.com, Twitter.com, Instagram.com, Facebook.com, Linkedin.com, Wordpress.com
Sri Lanka	Elakiri.com, Facebook.com, Youtube.com, Blogspot.com, Twitter.com
Sudan	Dailymotion.com, Youtube.com, Twitter.com, Blogspot.com, Facebook.com
Sweden	Linkedin.com, Facebook.com, Youtube.com, Twitter.com, Instagram.com, Reddit.com, T.co
Switzerland	Twitter.com, Youtube.com, Linkedin.com, Facebook.com
Thailand	Pantip.com, Blogspot.com, Twitter.com, Facebook.com, Youtube.com
Turkey	Eksisozluk.com, R10.net, Youtube.com, Twitter.com, Facebook.com, Instagram.com, T.co, Blogspot.com.tr
UAE	T.co, Twitter.com, Linkedin.com, Instagram.com, Facebook.com, Youtube.com
UK	Twitter.com, Youtube.com, Linkedin.com, Reddit.com, Instagram.com, Facebook.com, T.co
Ukraine	Ok.ru, Livejournal.com, Vk.com, Twitter.com, Youtube.com, Facebook.com
Uruguay	Blogspot.com, Facebook.com, Linkedin.com, Twitter.com, Youtube.com
USA	Instagram.com, Youtube.com, T.co, Reddit.com, Imgur.com, Blogspot.com, Twitter.com, Tumblr.com, Linkedin.com, Pinterest.com, Facebook.com
Uzbekistan	Vk.com, Ok.ru, Facebook.com, Youtube.com
Venezuela	Youtube.com, Blogspot.com, T.co, Facebook.com, Twitter.com, Instagram.com
Vietnam	Facebook.com, Youtube.com, Blogspot.com, Clip.vn
Yemen	Youtube.com, Blogspot.com, T.co, Facebook.com, Twitter.com

A.2 Ownership of Social Media Sites

Social Media Site	Appearance Among Top 25 Sites	Country of Ownership
Facebook.com	94	US
Youtube.com	94	US
Twitter.com	81	US
Blogspot.com	48	US
Linkedin.com	46	US
T.co	28	US
Instagram.com	26	US
Wordpress.com	19	US
Vk.com	13	Russia
Ok.ru	11	Russia
Reddit.com	10	US
Imgur.com	8	US
Pinterest.com	6	US
Blogger.com	3	US
Livejournal.com	3	US
Slideshare.net	3	US
Stackoverflow.com	3	US
Dailymotion.com	2	France
Qq.com	2	China
Tumblr.com	2	US
2ch.net	1	Japan
Adslgate.com	1	Saudi Arabia
Altervista.org	1	Italy
Ameblo.jp	1	Japan
Aparat.com	1	Iran
Blive.kg	1	Kyrgyzstan
Blog.hu	1	Hungary
Blog.ir	1	Iran
Blog.jp	1	Japan
Blogfa.com	1	Canada
Blogspot.com.es	1	US
Blogspot.com.tr	1	US
Blogspot.fi	1	US
Blogspot.hu	1	US
Blogspot.in	1	US
Blogspot.mx	1	US
Blogspot.nl	1	US
Boards.ie	1	Ireland
Clien.net	1	Korea
Clip.vn	1	Vietnam
Draugiem.lv	1	Latvia
Drive2.ru	1	Russia
Dumpert.nl	1	Netherlands
Eksisozluk.com	1	Turkey
Elakiri.com	1	Sri Lanka
Facenama.com	1	US
Filelist.ro	1	Romania

Forum.hr	1	Croatia
Gazeta.pl	1	Poland
Gutefrage.net	1	Germany
Kaskus.co.id	1	Indonesia
Lowyat.net	1	Malaysia
Mihanblog.com	1	Iran
Myvideo.ge	1	Georgia
Nairaland.com	1	Nigeria
Nicovideo.jp	1	Japan
O2.pl	1	Poland
Pantip.com	1	Thailand
Persianblog.ir	1	Australia
Picofile.com	1	Iran
Pixiv.net	1	Japan
Quora.com	1	US
R10.net	1	Turkey
Rozblog.com	1	Iran
Rutracker.org	1	Russia
S-oman.net	1	Oman
Talks.by	1	Russia
Tianya.cn	1	China
Tistory.com	1	South Korea
Todayhumor.co.kr	1	South Korea
Vbox7.com	1	Bulgaria
Velvet.hu	1	Hungary
Vitube.ge	1	Georgia
Vse.kz	1	Kazakhstan
Weibo.com	1	China
Youku.com	1	China