The Role of ICTs in Adaptive and Persistent Authoritarianism: A Study of China at the Administrative Division Level

Qinfeng Zhu  
Nanyang Technological University  
qinfeng.zhu@gmail.com

Marko M. Skoric  
City University of Hong Kong  
mskoric@cityu.edu.hk

Abstract
This study examines how the Chinese government adapts to the challenges posed by information and communication technologies (ICTs) by strengthening state capacity. Using secondary data, we quantitatively examine the relationship between ICT infrastructure and usage, public service delivery, and political control across 30 first-level administrative divisions in China. The results show that, on the one hand, administrative divisions with well-developed ICT infrastructure and high social media penetration are more likely to receive better public service than those with under-developed ICT infrastructure and low social media penetration. On the other hand, administrative divisions with good ICT infrastructure are found most likely to be subjected to greater political control. Furthermore, the government's provision of public services positively correlates to its implementation of political control. Such correlation seems to be stronger among the divisions with advanced ICT development than among the rest.

1. Introduction

From the early days of information technology revolution, many have pondered the question as to whether and how information and communication technologies (ICTs) can bring political or social changes. It is believed that the dispersed, decentralized, and easily available means of communication can foster freedom [7], and that the horizontal, networked, and socialized communication can produce discourses and meanings that challenge the institutionalized power relations [27]. Drawing on the libertarian and counter-culture ideology prevalent in the early Internet age and celebrated by politicians and pundits, it has become a conventional wisdom that ICTs, in particular the Internet, have a democratizing potential [19]. Studies suggest that ICTs can play a positive role in democratic transitions in both authoritarian states and emerging democracies, at both institutional level such as e-government [1] and with regards to citizens’ attitudes towards and demand for democracy [8, 14, 15, 29, 44].

Still, it would be wrong to assume that ICTs are inherently democratizing and draw conclusions about their impact without considering the context in which they operate [19]. As Lessig [22] argued, governments, both democratic and authoritarian, regulate the Internet by controlling its code and shaping the legal environment. Established institutions often persist by evolving in response to a changed technological environment, frequently attempting to regulate and control it [7]. Examples include licensing of the electro-magnetic spectrum, censorship of internet content, mass surveillance over citizens’ online activities, and so on. Therefore, political changes resulting from usage of the new technologies typically occur within the constraints of the established power relations and the institutions’ strive for regime stability.

To date, much of the empirical research on ICTs and political changes has been shaped by the discourse of ICTs and counter-power and centered on ICTs as a democratization force. The role of ICTs in power persistence has been generally under-researched, with some notable exceptions [13, 39]. This study intends to fill this gap by shifting the focus to how governments in authoritarian states adapt to the challenges posed by ICTs. This question is particularly important as many authoritarian governments choose to promote ICT development mainly for economic reasons while at the same time attempting to preserve the political status quo.

State capacity, particularly in the sense of capacity to maintain regime stability, includes the capacity for both accommodation (e.g., wealth redistribution and improving living standards) and repression (e.g., police and military force) [5]. Accordingly, in this study we focus on public service delivery (i.e., supplying essential commodities, such as water, gas, and transportation, to the general public by government) and political control (i.e. the repressive state apparatus, including police, courts,
army, etc.), as the two dimensions of state power. Public service quality that directly relates to the standard of living can be critical to citizens’ satisfaction and confidence in the government and therefore can foster regime stability in both democratic and authoritarian countries. While political control is typically viewed in a negative light, it represents one of the key tools enabling the functioning of any modern state, democratic or authoritarian alike. For example, surveillance (i.e., systematic gathering and processing of information about citizens and their activities) is regarded as a requisite of effective social organization, which is both an essential feature and a consequence of modernity [11], with the purpose of influencing or managing those under surveillance [23]. With this in mind, we are interested in the co-evolution of ICTs and institutions of governance in the context of non-democratic political systems.

We specifically look into the case of China and examine the relationship between ICT advancement, public service delivery, and political control across the first-level administrative divisions. We measure ICT development using the indices of ICT infrastructure as well as the usage, which includes citizens’ use of social media and governmental use of ICTs, i.e. e-government. The following three sections outline the existing literature on ICT development in China, and discuss its impact on public service delivery and political control.

2. ICT development in China

While the ICT development in China is centrally planned and ICT usage is often heavily censored and restricted, it has also shown to facilitate citizen engagement. Therefore, the rapid ICT growth is increasingly fueling the tension between economic development and the preservation of the political status quo.

ICT growth in China has been mostly state led and aimed at maintaining competitiveness in the global market and solving problems arising from industrial reform such as unemployment and uneven development within the country, all with a goal of delivering economic improvements nationwide. In the Tenth Five-Year Plan (2001-2005), one of a series of social and economic development guidelines shaped by the Communist Party of China, “improving the national economy and social IT levels” was listed among the total 12 basic tasks. At the regional level, the governments are required and encouraged by the central government to improve local economies and living conditions through the deployment of ICTs [19]. The central planning combined with market incentives has resulted in a fast telecommunications build-up and, moreover, rapid ICT adoption among citizens. For example, by the end of 2012, China has brought 564 million people (42.1% of Chinese population online, which is around 25% of the whole Internet population [4].

In addition to economic incentives of ICT development, deploying the technologies to promote e-government with a mandate of strengthening the government’s administrative capacity and increasing citizen satisfaction is another important part of the state’s ICT strategy [19]. In 1999, “Government Online” project was launched as the central government’s initiative to bring the central governmental departments and the governments of the first-level administrative divisions online. The project was aimed at keeping citizens informed, providing online services, promoting bureaucratic transparency and openness, and enabling citizen feedback [30]. However, it is pointed out that e-government in China still lags behind when it comes to addressing the needs and service requirements of citizens [30, 42]. Some scholars argued that e-government was a strategy implemented by certain authoritarian countries including China to proactively control the Internet along with disseminating propaganda [20]. By analyzing the features of 31 Chinese provincial government web portals, Jiang and Xu [24] concluded that Chinese government web portals were a “subtle form of social control through information delivery, agenda setting, and containment of public dissent” (p.192) but paradoxically enabled citizen involvement, which, although constrained, could promote an incremental reform of China’s political institutions.

Together with the central planning and governmental use of ICTs comes political control inserted into the protocols. The most discussed and commented form of control is Internet censorship which is rated by OpenNet Initiative as one of “the most pervasive and sophisticated regimes of Internet filtering and information control in the world” [34]. It involves not only blocking websites and filtering content but monitoring and proactively shaping public opinion in the cyberspace [25, 38].

Although centrally controlled and heavily filtered and monitored, ICT use, in particular the rising of the Internet and social media platforms, has increased the capacity of citizens to engage in political and civic activities on an unprecedented scale, and amplified dissenting voices and actions challenging the status quo. Using a nationally representative survey data, Lei [44] found that Chinese Internet users were more politicized and critical about the party-state and the political conditions in China than traditional media.
users and non-users. Research suggests that online mobilization efforts are the primary targets of Chinese Internet censorship program [13], indicating the extent or potential of the Internet to promote engagement among citizens.

To summarize, the Chinese government is facing a situation in which ICTs are essential for development but at the same time have the capacity to challenge regime stability. Given its governance principle that “development is a priority and stability maintenance the foremost responsibility” [37], how has the government addressed this problem? We argue that the copying strategy goes beyond simple Internet censorship but that it is rather centered on leveraging ICT development to strengthen state capacity, which involves improvements in public service delivery paired with an increased surveillance and political control.

3. ICTs and public service delivery

Empirical evidence indicates that ICT diffusion has a significant positive impact on economic growth [17, 26]. The relationship between the two could be explained by ICTs facilitating knowledge diffusion and innovation, enhancing efficiency of resource allocations, reducing production cost and fostering demand and investment [21].

In addition, certain ICT application such as social media platforms may promote uses that have a bottom-up effect on public service delivery. While censoring online chatter challenging the regime legitimacy and stability, the government also allows a substantial room for a wide range of subjects to be discussed online such as government officials’ abuse of power and incompetence, environmental and food safety issues [13, 16, 25, 38]. Such online discourse has brought about certain tangible effects on government policies, addressing and even helping solve some social problems, and helping fight corruption [16, 38]. For instance, many governmental departments both at the central and regional levels have set up official Weibo microblog accounts to receive citizens’ feedback. To a certain extent we could argue that citizen engagement through ICT usage has made the government more responsive and attentive to citizens’ needs, potentially leading to better service delivery to the citizens, which could result in improved public service.

Implementation of e-government in China is an essential part of the Chinese government deploying ICTs to strengthen its state capacity by transforming bureaucracy [19]. With the mandate of keeping citizens informed, providing online services, promoting bureaucratic transparency and openness, and enabling citizen feedback [30], e-government in China promises to have a positive impact on public service. However, performance in addressing citizens’ needs and service requirements appears unsatisfying [30, 42]. How well the top-down e-governance initiative could be translated into the provision of tangible public service is still unclear.

Given the above, we pose the following research question:

Q1: What is the relationship between ICT infrastructure and usage (i.e., social media use and e-government), and public service delivery across Chinese administrative divisions?

4. ICTs and political control

As a single-party state, the Chinese government inevitably faces the issue of legitimacy. In authoritarian states, control over ICTs especially the Internet remains a critical issue. A number of case studies have shown that authoritarian regimes are finding ways to control ICTs. For example, by illustrating how China and Cuba maintain control over the Internet’s political impact with a combination of proactive and reactive approaches, Kathail and Boas [39] argued that authoritarian states might be capable of countering the challenges posed by the Internet and even profit politically and economically from it. Nina Hachigian [32] articulated a three-pronged strategy that China has been implementing to maintain authority in the networked society which included “providing economic growth and some personal freedoms, managing the Internet’s risks, and harnessing its potential” (p.118). In their review of Internet policy in authoritarian countries, Ko, Lee, and Jang [20] summarized that authoritarian countries’ Internet control could be placed on a continuum between reactive control (e.g., Internet filtering and censorship) and proactive control (e.g., distributing propaganda and implementing e-government services). In a recent special issue on China’s Internet, the Economist claimed that China had shown “great skill in bending the technology to its own purposes, enabling it to exercise better control of its own society and setting an example for other repressive regimes” [41].

In recent years, a number of cases of social unrest have been reported in China, usually triggered by corruption scandals, environmental pollution and degradation, and inter-ethnic tensions. China’s public security expenditure has directly corresponded to the level of social unrest in the previous years [37]. Though there is little empirical evidence of the role ICTs play in the cases of social unrest in China, the Internet and mobile phone use has been found critical
to the organization and success of social movement and collective actions such as the Arab Spring and the Occupy movement [2, 29]. In addition, scholars argue that the self-mass communication helps amplify collective grievance [14].

As to governmental use of ICTs, agenda setting and containment of dissent seem to be common practice in e-government [24]. It would therefore be plausible to propose that in the context of China, ICT development also coincides with stronger political controls. We therefore pose the second research question:

RQ2: What is the relationship between ICT infrastructure and usage (i.e., social media use and e-government), and political control across Chinese administrative divisions?

We further explore the relationship between development and political control by asking:

RQ3: What is the relationship between public service delivery and political control?

5. Method

5.1. Data

To answer the aforementioned research questions, an analysis of publicly available secondary data is conducted by employing the 2011 public service and domestic security expenditure data released by National Bureau of Statistics of the People’s Republic of China (PRC) [31], the 2011 Internet penetration statistics published by China Internet Network Information Centre (CNNIC) [4], the 2011 telecommunication statistics published by the Ministry of Industry and Information Technology of PRC [28], the government transparency score released by Peking University in 2011 [36], the 2011 e-government statistics released by China Software Test Center [6], and the 2011 Weibo user data published by Sina Weibo [45].

A question often raised is whether Chinese official statistics are reliable. Generally, government data contains errors and biases, which is not unique to China, and has been a cause for concern among scholars [18]. In authoritarian states like China where independent channels for data verification are usually missing, allegations of data distortion and falsification appear to be a common hurdle for using such data for academic research [12]. Still, we argue that, while not perfect, government data provides reasonably accurate macro- and meso-level indicators for many areas of research. First, these indicators and measures are used for internal economic planning. This means that any kind of data fabrication may hinder future development, providing a strong incentive for the government to avoid it [12]. In addition, the data from 2011 used in this study belongs to a long-term time-series datasets, which could to a certain extent ensure data accuracy and consistency [12]. Last but not least, with the Regulations of the People’s Republic of China on Open Government Information (OGI Regulations) published in 2007 and effective in 2008, an unprecedented amount of government information has been brought online under the scrutiny of every Internet users, both domestic and international. We believe that increasing data accessibility may promote accountability and reduce the likelihood of data distortion and falsification.

5.2. Variables and measurements

We focus on three groups of variables: ICT infrastructure and use, public service delivery, and political control respectively.

5.2.1. ICT infrastructure and use. This group of variables focused on both infrastructure and use of ICTs. It included three measures which were ICT infrastructure, Weibo (a Twitter-like microblogging service in China) penetration as a measure of citizens’ usage of ICTs, and e-government as a measure of government’s usage of ICTs.

ICT infrastructure (ICTI) was measured with 4 items including Internet penetration rate (data obtained from the CNNIC 29th Internet report [4]), broadband subscribers port (data from the Main Indicators on Internet Development of China Statistical Yearbook 2012 [31]), mobile phone penetration rate and the capacity of mobile phone exchange (data published by the Ministry of Industry and Information Technology of PRC [28]). All of the above measures were from the end of 2011. The 2nd and 4th items were normalized by population size and all of the items were computed to 1-10 scales prior to constructing the measurement. The reliability test yielded a Cronbach’s α value of 0.96 (Mean=3.96, SD=2.13).

To measure the Weibo penetration variable (WP), we used the 1-5 scale of the numbers of Weibo users published by Sina Weibo (1=0-5 million, 2=5-10 million, 3=10-15 million, 4=15-30 million, and 5=more than 30 million) [45]. This was the only Weibo user data publicly available currently. However, this number did not reflect Weibo penetration (i.e., the percentage of Weibo users among the whole population) in each administrative division. To create this measure, we normalized the number of Weibo users for each first-administrative division by its population size. Beijing had the
highest Weibo penetration score of 2.66 and Guizhou province had the lowest score of .52 (S.D. = .43). The Weibo penetration score had no numerical meaning but an indication of a division’s Weibo penetration rate in relation to the other divisions. We acknowledge the limitation of this measure and suggest that the results should be interpreted with caution.

The measurement of the e-government (EGV) consisted of three items. They were: (1) open government information on the government websites, (2) citizen-government interaction on the government websites, and (3) government transparency as an indicator of the overall e-government outcome. The data pertaining to the first two items was obtained from the Government Website Effectiveness Evaluation Report [6]. The first item was about local governments publishing information on their websites relating to matters such as personnel appointment and removal, civil servant recruitment, financial information, government executive meetings, and so on. The second item focused on the aspect of government websites enabling citizens engaging in government affairs consulting, complaints and reports, real-time communication between government agency and citizens, public opinion survey, and so on [6]. Data for the third item was the aggregate government transparency score of each administrative division published in the China Administrative Transparency Annual Watch 2010-2011 [36]. The evaluation was conducted by the research teams from eight Chinese universities by searching through government information online, examining government bulletins and annual reports, and requesting government information disclosure [36]. The reliability test of the e-government measurement yielded a Cronbach’s α value of .69 (Mean = 5.66, S.D. = 1.91).

5.2.2. Public service delivery. Public service delivery variable (PSD) consisted of 8 items, including (1) urban population with access to tap water, (2) urban population with access to gas, (3) number of public transportation vehicles per 10,000 population, (4) number of environmental sanitation vehicles per 10,000 population, (5) per capita daily disposal of city sewage, (6) per capita public health expenditure, (7) per capita operating expense of education, and (8) per capita social welfare expenditure. We used the 2011 public service statistics from the China Statistical Yearbook 2012 [31]. All the items were computed into 1-10 scales prior to constructing the measurement. Reliability test yielded a Cronbach’s α score of 0.88 (Mean = 4.10, S.D. = 1.64). Beijing scored the highest (8.94) and Guizhou Province scored the lowest (1.70).

5.2.3. Political control. The political control variable was measured by the public security expenditure per capita in 2011 (i.e., total public security expenditure divided by the population size of each first-level administrative division). China’s public security expenditure, commonly known as “stability maintenance expenses”, primarily fund repressive state apparatus including armed police, public security, courts, judicial administration systems, and others [37]. Among the public security expenditure, huge sums have been spent on creating a nationwide surveillance system, including developing, buying, and installing cutting-edge tools to monitor and filter the Internet, building and maintaining large Internet police teams, installing a huge number of surveillance cameras within cities, etc. [35]. The source of the data was the China Statistical Yearbook 2012 [31]. The political control score ranged from .02 (Anhui Province) to .11 (Beijing) with a mean of .05 and a standard deviation of .02.

5.3. Analysis

The unit of measurement is the first-level administrative division in the People’s Republic of China. We included all the first-level administrative divisions of PRC in our study except for Tibet, Hong Kong Special Administrative Region, and Macao Special Administrative Region, due to a large amount of missing data (N=30).

We conducted a three-step analysis. First, correlational analysis was done to give an overview of the relationships between ICTs, public service, and political control. Following the correlation analysis, we conducted simple regressions in order to further detect the effects of ICT infrastructure and usage in public service and political control respectively. Cluster analysis was performed to group the administrative divisions according to ICTs, public service delivery, and political control respectively. Based on the clustering results, to each administrative division we compared the levels of ICT development, public service, and political control. These three steps of analysis aimed at answering RQ1 and RQ2. In order to answer RQ3, correlational analysis between the public service variable and political control variable was performed with the administrative divisions grouped according to the ICT cluster.

6. Results
First, we report the correlations between the three ICT variables (see Table 1). ICT infrastructure was highly correlated with Weibo penetration \((r = .67, p < .001)\) and moderately correlated with e-government \((r = .43, p < .05)\). It suggested that ICT infrastructure provides a good foundation for different applications of ICT by both citizens and government. In addition, Weibo penetration rate had a high correlation with e-government \((r = .67, p < .001)\), indicating the interplay between usage of ICTs from the two sides.

### Table 1. Correlations between ICTs, public service delivery, and political control

<table>
<thead>
<tr>
<th>ICT Infrastructure &amp; Usage</th>
<th>Public Service Delivery</th>
<th>Political Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICTI</td>
<td>0.67***</td>
<td>0.43*</td>
</tr>
<tr>
<td>WP</td>
<td>0.67***</td>
<td>0.69***</td>
</tr>
<tr>
<td>EGV</td>
<td>0.38</td>
<td>0.23</td>
</tr>
</tbody>
</table>

\(N=30, * p < .05, ** p < .01, *** p < .001\)

### 6.1. Relationship between ICTs and public service

ICT infrastructure \((r = .78, p < .001)\) and Weibo penetration \((r = .69, p < .001)\) were both highly correlated with public service. E-government had a modest correlation with public service \((r = .38, p < .05)\).

### Table 2. Summary of OLS regressions

<table>
<thead>
<tr>
<th></th>
<th>DV1: Public Service Delivery</th>
<th>DV2: Political Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\beta)</td>
<td>(p)</td>
<td>(\beta)</td>
</tr>
<tr>
<td>Constant</td>
<td>.241</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>.20</td>
<td>.423</td>
</tr>
<tr>
<td>ICTI</td>
<td>.43***</td>
<td>.076</td>
</tr>
<tr>
<td>WP</td>
<td>.37*</td>
<td>.064</td>
</tr>
<tr>
<td>EGV</td>
<td>-.5</td>
<td>.350</td>
</tr>
<tr>
<td>F (df)</td>
<td>12.91 (4, 29) ***</td>
<td>11.82 (4, 29) ***</td>
</tr>
<tr>
<td>(R^2)</td>
<td>.67</td>
<td>.65</td>
</tr>
</tbody>
</table>

\(N=30\)

We also conducted OLS regressions to detect the effect of ICTs infrastructure and usage (IVs) in public service delivery (DV), when controlling for economic conditions, measured by GDP per capita of each administrative division. The results showed that the ICT variables together with GDP per capita explained a significant proportion of variance in public service delivery, \(R^2 = .67, F(4, 29) = 12.91, p < .001\). Specifically, when controlled for GDP per capita, ICT infrastructure and Weibo penetration both marginally predicted public service \((\beta = .43, p = .076; \beta = .37, p = .064)\). Results also indicated a non-significant negative association between e-government and public service when controlling for GDP per capita. This suggests that the administrative divisions with well-developed ICT infrastructure and high Weibo penetration rate are more likely to receive good public service.

### 6.2. Relationship between ICTs and political control

To answer RQ2, we also performed correlations and OLS regressions. Correlational analysis revealed a high positive correlation between ICT infrastructure and political control \((r = .80, p < .001)\) and a moderate positive correlation between Weibo penetration and political control \((r = .53, p < .01)\). E-government was not significantly correlated with political control (see Table 1).

We further regressed political control on ICT infrastructure, Weibo penetration, and e-government, when controlling for GDP per capita. The results showed that the ICTs variables together with GDP per capita explained a significant proportion of variance in public service delivery, \(R^2 = .65, F(4, 29) = 11.82, p < .001\). After controlling for GDP per capita, ICT infrastructure significantly predicted political control \((\beta = .84, p < .01)\). However, Weibo penetration and e-government were not found to be significant predictors. The results suggest that the administrative divisions with well-developed ICT infrastructure are likely to be subjected to tight political control.

### 6.3. Cluster analysis

We conducted a cluster analysis in order to compare the levels of ICT infrastructure and use, public service, and political control for each administrative division. We clustered the 30 first-level administrative divisions based on ICT infrastructure and usage (variables including ICT infrastructure, Weibo penetration, and e-government), public service, and political control respectively. To identify the number of clusters, hierarchical cluster analysis using between-groups linkage and Euclidean distance as interval was used to the ICT variables \((k=4)\). K-means cluster analysis was then conducted to group the 30 divisions into 4 clusters based on ICTs, public service, and political control respectively.
As we can see in Figure 1 (darker shade means better ICT infrastructure and higher ICT usage), most of the administrative divisions belonging to tiers 1 and 2 are coastal with some exceptions. The largest region with the lowest ICT development is the northwest part which includes Xinjiang Uygur Autonomous Region and Qinghai Province which are among the regions with the highest inter-ethnic tension and conflict. The former region witnessed a large-scale social unrest in 2009 and as a consequence Internet access was interrupted for almost one year following the crisis.

In general, most of the administrative divisions were grouped into clusters of similar levels in terms of ICTs, public service, and political control, as we can see in Table 3 that the tier numbers of the three clustering for most divisions were similar or within 1 degree difference. For example, a division with tier 1 ICT infrastructure and usage was most likely to be also in the first or second tier of public service and political control. This finding supported the findings of the previous two sessions.

There were also few exceptions which could be summarized as following:

Outlier 1—a combination of underdeveloped ICT infrastructure and low social media usage coupled with poor e-government, decent public service, and strong political control. Examples included Xinjiang Uygur Autonomous Region and Qinghai province. The former had frequent social unrest due to inter-ethnic conflict and the Internet connection of the region was often interrupted or even cut-off during such incidents. Though there was no large-scale social unrest in Qinghai province between 2003 and 2011, it borders Tibet and Xinjiang Uygur Autonomous Region, and has several minority ethnic groups making up 46.5% of the population including 20.7% Tibetans and 16% Hui.

Outlier 2—a combination of developed ICT infrastructure and high social media usage coupled with good e-government, moderate-to-good public service, and relatively loose political control. A typical example was Jiangsu province, an eastern coastal province bordering to Shanghai with a Han Chinese proportion of 99.64%, and one of the most densely-populated provinces in China. It had the highest GDP per capita of all Chinese provinces in 2011, right after the provincial-level municipalities of Shanghai, Beijing, and Tianjin. In addition, it had much fewer large-scale social unrest incidents compared to other divisions at a similar level of socio-economic development [43]. Fujian province, Shanxi province and Shaanxi province were three other divisions in this model.

### Table 3. Clustering results summary

<table>
<thead>
<tr>
<th>Division</th>
<th>Tier number</th>
<th>Public service</th>
<th>ICTs development</th>
<th>Political Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Jiangsu*</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Shanghai</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Fujian*</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Guangdong</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hainan</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Liaoning</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Shaanxi*</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Shanxi*</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Zhejiang</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Anhui</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chongqing</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Guangxi</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hebei</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hubei</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hunan</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Inner Mongolia</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Jilin</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ningxia</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Shandong</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sichuan</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Tianjin</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Yunnan</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Gansu</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Guizhou</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Henan</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Jiangxi</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Qinghai*</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Xinjiang*</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### 6.4. Relationship between public service and political control
To answer RQ3, correlations were performed between public service and political control. Result showed a substantial association between the two ($r = .77$, $p < .001$). A scatter plot with these two variables and cases grouped based on ICTs clustering result was presented in Fig.2. As we can see, the administrative divisions belonging to ICTs tier 1 and tier 2 (i.e., with good ICT infrastructure, high social media usage and good e-government) were generally located close to the fit line, whereas those of tier 3 and tier 4 were more sparsely located around the line. This suggests that the correlation between public service and political control might be stronger in divisions with high ICT development than those with low ICT development.

As we can see, the administrative divisions belonging to ICTs tier 1 and tier 2 (i.e., with good ICT infrastructure, high social media usage and good e-government) were generally located close to the fit line, whereas those of tier 3 and tier 4 were more sparsely located around the line. This suggests that the correlation between public service and political control might be stronger in divisions with high ICT development than those with low ICT development.

![Fig.2. Scatter plot of public service delivery and public security expenditure](image)

7. Discussion and conclusion

The findings weigh in on the ongoing debate about whether ICTs have democratizing potential or whether they help authoritarianism adapt and persist. More specifically, we focused on the ICT growth-fueled tension between development and control in China and delved into the question how Chinese government maintains its regime stability by leveraging ICTs to strengthen state capacity. We found that, on the one hand, administrative divisions with well-developed ICT infrastructure and high social media penetration were more likely to receive better public service than those with under-developed ICT infrastructure and low social media penetration. On the other hand, administrative divisions with good ICT infrastructure were found most likely to be subjected to greater political control. Furthermore, a divisional government’s provision of public service to a large extent correlated to its implementation of political control. Such correlation seemed to be stronger among the divisions with advanced ICT development than those with poor ICT development.

The positive relationship between ICTs and provision of public service is in line with the contemporary discourse surrounding technologies and development. How ICT development is translated to the state’s public service delivery may involve both top-down and bottom-up initiatives. As to the former, the explanation can be that ICT’s growth in China is centrally planned and driven mostly by economic objectives. A region with well-developed ICT infrastructure attracts business activity which contributes to local tax revenues and further increases the government’s capability to deliver. Public service can improve urban infrastructure and produce skilled labor force, which can in turn increase the region’s demand for ICTs. As to the bottom-up impact of ICTs on public service, the explanation can be that ICT’s enable horizontal communication among citizens and facilitate citizen-government interaction, though not without significant filtering and censorship. It gives the government a channel to listen to what the citizens need and respond, without explicitly yielding power to the people. Compared to the time when citizens had little means to express their needs and be heard, this can be seen as a positive change.

Receiving quality service and improving living, economic, educational, and health conditions for most citizens is indeed a good thing, but it also helps establish the norm of hegemony and attracts citizens to accept it willingly. As Foucault [9] argued, power is not only coercive and negative but can also be pervasive, productive, and positive. Along with hard power of coercion and control, there is also soft power of attraction and persuasion [33]. Provision of public service is a way of exercising soft power to sustain regime legitimacy and stability, as it can result in increased citizen satisfaction and confidence towards the government. On this basis, we argue that improved public service may not only be a direct consequence of ICT advancement but rather of the government’s deliberate attempt to win citizens’ endorsement and thereby reinforce power legitimacy through ICTs.

The finding that the administrative divisions with well-development ICT infrastructure tend to be subjected to tighter political control indicates that ICTs can promote state repression. Indeed, the government could be better informed of any instances of dissent and rebellion in the flattened, widely-used communication network that can still be subjected to
surveillance. In addition, we could also infer from the finding that the divisions with better-developed ICT infrastructure receive stronger political control because the horizontal and networked communication could increase or amplify citizens’ collective grievances [2, 14].

Moreover, the positive relationship between public service and political control is stronger among the divisions with advanced ICT development than those with poor ICT development. It indicates that ICTs seem to be driving-up citizen demands for improved living standards and greater civic and political rights. The finding also suggests that surveillance acts not only as the means of political control but also enables citizens to influence a specific process or state of affairs (in this case public service delivery) by incorporating their separate comments and actions into the system. Such “dialectic of control” is considered essential to the development of citizenship rights. However, in an authoritarian state, government surveillance is devised with a greater focus on limiting the citizens’ ability to engage in any kind resistance or subversion, which directly erodes their civic and political rights.

To summarize, the state has a great capacity to shape new technologies for its own purpose – namely to sustain the regime stability, by being responsive and adaptive on the one hand, and tightening control on the other. Furthermore, stability translates to policy consistency which can be beneficial to economic and social development. ICT advancement seems to be changing a traditional authoritarian state such as China into a modern adaptive hierarchical state. The survival of such a state is not only dependent on massive surveillance and control of its citizens, but also on constant improvements in bureaucratic efficiency and service delivery. We hence raise the question here as a counterpoint to Fukuyama's end of history argument [10]: can a large, modern, well-functioning state be something other than a liberal democracy?

8. References


