From Internet to Social Safety Net: The Policy Consequences of Online Participation in China*

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Abstract

Internet is widely touted for its potential to reduce inequality in political influence among citizens, but research focusing on advanced democracies has yielded mixed results. We provide new evidence on the equalizing impact of internet by studying how political participation via a major national online petition forum affects local government policies in China, an authoritarian regime with the world’s largest internet-using population. Content analysis of over 900,000 petitions suggest that the forum was predominantly used by rural residents and other underprivileged social groups. Linking the geographic variations in petition volumes to a new dataset of government policy priorities, we further show that increase in online participation led city governments to place greater emphasis on social welfare issues, which tend to disproportionately benefit the poor. Additional analyses suggest that online participation induces policy changes by both raising the authority’s awareness of disadvantaged citizens and amplifying the threat of collective action.

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1 Introduction

It is widely recognized that not all citizens enjoy an equal voice in politics. Even in a democratic system, where political equality is one of its guiding principles, citizens with different social and class backgrounds often participate in politics at radically different rates (Lijphart 1997). A massive body of research has shown that individuals with higher socioeconomic status are more likely to turnout to vote, make campaign contributions, and contact governments via various means (Kasara 2007; Schlozman, Verba and Brady 2012; Verba and Nie 1972), and their activism often translates into greater de facto influence over the political and policy-making processes (Gilens 2012; Griffin and Newman 2005). If anything, this gap of influence is likely to be even larger in authoritarian regimes, which by definition conducts politics within a small group of elites (Bueno de Mesquita et al. 2003; Linz 2000). Even in dictatorships that condone some degree of non-electoral participation by the mass, there is evidence that citizens who have more access, education, and resources tend to utilize the existing participation channels far more frequently and effectively than others (Shi 1997; Tsai and Xu 2013). Inequality in policy influences is believed to not only have troubling normative implications (at least for democracies) but also important practical consequences. Recent research has shown that interventions aimed at lowering the cost of electoral participation can produce more egalitarian distributive and policy outcomes that are in favor of lower-class citizens (Fowler 2013; Fujiwara 2015).

As one of the most influential technological inventions of the 20th century, the internet has been repeatedly touted for its potential to reduce the persistent inequality in the political process. Many scholars and policy practitioners believe that the internet offers a direct and inexpensive way for marginalized groups to access political information, contact public officials, organize collective actions (Norris 1999), giving “new voice to people who’ve felt voiceless” (Gillmor 2004). However, existing research on the political consequences of the internet, which focuses primarily on advanced democracies (the United States in particular) has yet found convincing evidence for such an equalizing effect. A number of survey-based studies, for example, suggest that instead of helping to level the playing field in politics, the internet tends to replicate and even exacerbate
the existing participatory gap across classes and socioeconomic status (Jennings and Zeitner 2003; Norris 2001; Schlozman, Verba and Brady 2012, 483-533) and amplify the voices of a few elites (Hindman 2009; Margolis and Resnick 2000). More importantly, while some recent studies do find evidence that internet usage increases civic engagement for certain underprivileged groups (Cohen and Luttig 2016; Smith 2014), there is yet any systematic evidence on whether and how changes in participation patterns can affect substantive policy outcomes.

In this article, we provide new evidence on the political consequences of internet by studying how online participation shapes government policies in China. As an authoritarian regime that hosts the world’s largest internet-using population,¹ the Chinese case is not only practically important but also theoretically interesting, as existing theories about internet and authoritarian politics would yield contrasting empirical predictions. On the one hand, conventional theories of authoritarian politics would suggest that the effect of online participation on government policies would be minimal, as there is no explicit electoral pressure for government to be responsive to popular demands. On the other hand, however, the limitations of the traditional participatory channels and the unusually large internet-using population could also suggest that the introduction of new online participation channels may have a greater impact on government behaviors than that in many advanced democracies, where citizens already enjoy a full menu of offline methods to make their voices heard.

More specifically, this article examines the patterns and policy ramifications of mass participation through the Local Leader Message Board (LLMB), a large, national-level online petition forum created by Chinese authority to allow citizens to directly register complaints to leading party and government officials in their localities. Compared to the traditional methods of filing petitions by mail or in person, this online forum offers an unusually cheap and transparent alternative for citizens to communicate their concerns to the political authority. We expect this method to be especially attractive to lower-class citizens, who tend to be underrepresented in the more traditional political institutions and are usually most sensitive to changes in participation cost. Based on a

¹According to China Internet Network Information Center (CNNIC), the number of internet users in China is estimated to be over 710 million as of July 2016.
large body of research suggesting that low-income groups tend to hold stronger preference for redistribution than high-income individuals (Acemoglu and Robinson 2005; Alesina and Ferrara 2005; Meltzer and Richard 1981), we further hypothesize that expanded online participation is likely to shift government policies towards greater emphasis on social welfare and redistributive issues, as the voices of the lower-class citizens become better heard.

Our empirical analysis begins with an examination of the social and occupational composition among forum users. We manually identify participants’ occupations for over 70,000 petitions based on their content, and then use a nonparametric content analysis method developed by Hopkins and King (2010) to estimate the distribution of occupations within the entire body of over 900,000 petitions based on linguistic similarity. We find that, compared to nationally representative samples, citizens from lower class backgrounds, such as rural residents and low-income urban workers, have a disproportionately large presence in the petition forum while the better-off groups, such as party cadres, government employees and private entrepreneurs, tend to be underrepresented.

We then investigate how expanded online participation affected the substantive policy priorities of local governments. A key empirical challenge to this task is to construct a consistent measure of government policies that can be compared across time and space. To address this challenge, we apply machine learning techniques on over 4,400 Government Work Reports (GWRs), which are comprehensive policy blueprints published by the Chinese government, to extract clusters of words as topics, and use the topic proportions as a new measure of government policy priorities. Using a series of fixed-effects models, the empirical results confirm our main hypothesis that increase in online participation through the LLMB has a measurable impact on government policies. More specifically, we find that cities that received a large number of online petitions from local citizens tended to devote a significantly higher proportion of the government reports in the following year to a topic on social welfare, which broadly includes issues such as unemployment benefits, low-income/disability subsidies, medical care, and pension coverage. We also find evidence that these changes in stated policy priorities were not merely cheap talk, but were instead accompanied by
substantive changes in other measurable governance and fiscal outcomes, including more welfare-related legislation and more rapid growth in government spending on to social welfare issues.

We also evaluate three potential mechanisms by which online petitions affect policy changes: (1) information priming, (2) amplifying the threat of collective action, and (3) facilitating top-down monitoring by bureaucratic superiors. Our analysis suggests that policy responsiveness is especially high to petitions filed at local decision makers’ own message boards and during periods that government attention is high; these patterns provide support to the information priming mechanism. We also find that, consistent with the collective action mechanism, increase in offline protest can induce more frequent reply to individual requests and that the marginal impact of petition on policy is higher in localities with greater collective action potential. By contrast, we show that senior leader’s interest in the petition forum does not seem to significantly alter policy responsiveness of lower-level governments, suggesting that better top-down monitoring is not a main mechanism that drives policy changes.

By offering, to our knowledge, the first systematic assessment of the policy consequences of internet-based participation, this study is related first and foremost to a large literature on how the internet, or advancement in information communication technologies (ICTs) in general, shape political activities and quality of governance. Existing research have found that new ICTs can help strengthen government accountability (Besley and Burgess 2002) and reduce corruption (Bailard 2009), but may also facilitate violent collective action (Pierskalla and Hollenbach 2013) and increase ideological polarization (Lelkes, Sood and Iyengar 2015). However, there is still limited research on whether and how the expansion of new ICTs affects the de facto political inequality among citizens. Most related to our work here, recent studies by Grossman, Humphreys and Sacramone-Lutz (2014, 2016) use field experiments to investigate the effect of Short Message Services (SMS) on interest articulation of marginalized populations in Uganda. While the authors find a significant flattening effect of SMS in an earlier pilot (2014), they fail to recover a similar effect in a follow-up study where the experiment was expanded nationwide (2016). The existing research on the participatory implications of new ICTs, however, has yet investigated whether the
equalization of participation on the part of citizens can lead to behavioral or policy changes on the part of the political authority. Our study not only confirms the literature’s main finding about the new ICT’s potential to mitigate the de facto participatory inequality among citizens but also offers further evidence that the technology-induced closing of participation gap can produce meaningful changes in government policies.

Moreover, our study also contributes to a nascent but rapidly growing literature on responsiveness in authoritarian regimes. Several prior studies have shown that in some autocracies, and China in particular, inquiries and demands made by individual citizens receive replies from governments at a comparable rate as in democracies (Chen, Pan and Xu 2016; Distelhorst and Hou Forthcoming), and that individual bureaucrats are generally receptive to citizen opinions (Meng, Pan and Yang 2014). The existing literature, however, has not yet provided any evidence as to whether the preferences and demands from citizens are systematically being taken into account in government policy making—a much more fundamental definition of political responsiveness according to classical writings on this concept (Dahl 1971; Miller and Stokes 1963). By showing that online participation can indeed have collective impacts on local government policies even in the absence of formal electoral institutions, our study thus provides the first piece of definitive evidence on the existence of a form of authoritarian responsiveness that conforms with the conventional usage of the concept in democratic settings.

2 Participation Bias in Authoritarian Regimes and the Equalizing Role of Internet

Traditional theories of authoritarian regimes posit that there are few meaningful ways for citizens to participate in politics in those systems (Linz 2000). This view, however, has been increasingly challenged. Recent studies have argued that it may be in the survival interest of authoritarian regimes to allow limited participation by citizens as a way to collect information and preempt more violent uprisings. Commonly studied participation mechanisms in authoritarian regimes include
semi-competitive elections (Blaydes 2010; Levitsky and Way 2010), petitions (Shi 1997) and/or a relatively independent media to which citizens can whistle blow wrongdoings of lower-level officials (Egorov, Guriev and Sonin 2009).

Little attention, however, has been paid to the inequality in citizens’ ability to access and utilize the participation institutions in nondemocratic systems. Existing research on participation in democracies suggest that citizens with different levels of interests, political skills, and resources may participate in politics at different rates (e.g., Brady, Verba and Schlozman 1995). Aside from these variations from the demand side, autocrats may also deliberately supply their attention in a way that favors certain groups over others. One classical manifestation of such tendency is the so-called urban bias (Lipton 1977; Wallace 2013), whereby citizens living in major cities receive disproportionately greater attention from the autocrats than does rural residents because of the former’s greater economic and political significance. More generally, the selectorate theory developed by Bueno de Mesquita et al. (2003) argues that political leader’s survival depends critically on maintaining support from a winning coalition among members of the selectorate, implying that leaders will be more responsive to the segment of the selectorate that constitute the winning coalition. Several follow-up empirical research has shown that regimes with small coalitions tend to under-provide public goods and implement more regressive policies that benefit the rich and the powerful (e.g., Bueno de Mesquita, Downs and Smith 2017; Morrow et al. 2008).

Democratization is often seen as a means to rectify the political inequality in autocratic systems (Acemoglu and Robinson 2005; Meltzer and Richard 1981), although the empirical evidence on the equalizing impact of democratization remains mixed (Gallagher and Hanson 2009). We argue that advancement in new ICTs—and the internet in particular—offers another way to reduce the de facto influence gap among citizens without inducing systemic regime changes. By lowering the physical barriers and the financial costs associated with communication, the internet helps improve citizen’s capability to effectively convey their grievances to the authority and organize collective actions among themselves (Bennett and Segerberg 2015). These new opportunities can be especially valuable for underprivileged citizens, who often lack the resources or capacity to ef-
fectively utilize the more traditional political institutions (Gibson, Lusoli and Ward 2005; Krueger 2002).

It is also important to note that compared to democratic systems, authoritarian regimes may be especially attentive to demands made via these new channels due to the underdevelopment of the more traditional forms of participation. The absence of strong representative institutions and regular, competitive elections, for examples, implies that authoritarian governments often have difficulties in acquiring accurate and complete information about citizens’ demands and opinions through the traditional, institutionalized channels (Kuran 1997; Lorentzen 2013); this can motivate them to place much greater weight on information conveyed through alternative mechanisms, including the internet, when making political and policy decisions. Moreover, online discussions are sometimes harbingers of more disruptive offline collective actions, which typically pose a much greater existential threat to autocratic than democratic governments. While in some cases such threats are neutralized through placing restrictions on the scope and content of internet discussions (King, Pan and Roberts 2013), in other cases where repression becomes too costly or ineffective, concerns about major popular uprisings could also motivate autocrats to pursue a more pacifist strategy, which involves making policy concessions and being substantively responsive to citizens’ demands.

3 Traditional and Internet-based Participation in China

Although Chinese citizens do not enjoy the right to elect their government officials, prior research has shown that regime does have a number of alternative channels through which citizens can make their voices heard (Shi 1997). Officially sanctioned channels include participating in elections for community/grassroots leaders, filing petitions to party and government agencies, attending government-organized hearings, and contacting the media, local officials or People’s Congress deputies (O’Brien 2008; Shi 1997; Tang 2016). Some research further suggests that certain types of protests and collective-actions may be implicitly tolerated by higher-level authority as a way
to gather information from below (Lorentzen 2013). While the presence of these participation
canals is likely to have increased the inclusiveness of the regime and improved its ability to de-
liver effective governance, an important but often overlooked caveat is these traditional channels
are not utilized equally by citizens from all social groups. For example, a number of studies on
political participation in China have consistently found that individuals who are wealthier, more
educated and closer to the regime (i.e., with affiliation with the party, the government or public
organizations) are more likely to participate in competitive local elections, communicate their is-

sues to the government, and/or reflect their personal grievances to the media (Guo 2007; Landry,
Davis and Wang 2010; Tsai and Xu 2013). The differential rate of utilization is a result of not
only the difference in information access and resource endowment across classes, but also some of
the inherently discriminatory designs incorporated in these traditional institutions. Participation in
grassroots elections, for instance, is often limited to those officially registered as a local resident
(i.e., with a local hukou) and typically excludes migrant workers, who constitute a sizable share of
local population in many affluent regions. Similarly, quota for deputies in national and legislative
bodies are often allocated in favor of the wealthy class, such as private entrepreneurs, intellectuals,
and professionals, and the urban residents in general (Truex 2016).²

The rapid expansion of the internet in China since the 1990s and especially during the first
decade of the 21st century has brought profound changes to the way citizens and governments in-
teract. The emergence of online forums, weblogs, and virtual communities have facilitated lively
discussion of public affairs and provided citizens with new channels to to articulate problems in
a way that draws broad attention. At the same time, seeing the internet’s potential as an impor-
tant outlet for publicity and a means to improve administrative effectiveness, the political authority
has also undertaken systematic efforts to expand the government’s online presence. The word
“E-government (dianzi zhengfu 电子政府)” first appeared in a major party policy document at
the 16th Party Congress in 2002, and the State Council subsequently undertook a series of mea-

²According to the law, urban residents are entitled to four times as many deputies as rural residents. See Election
Law on National and Local People’s Congress http://www.people.com.cn/GB/14576/28320/39838/39842/
2947944.html.
sures to promote the development of government websites, with a special emphasis on information availability and ease of public access. As of 2008, almost all local governments at or above the city-level had created their own website, and the majority of the website contained at least some function for citizens to communicate their views and register grievances, albeit with varying degrees of effectiveness.

The question of how the emergence of online medium has altered the composition of citizens participating in politics, however, has not been adequately answered in the extant research. In the rest of the section, we provide some preliminary evidence on this issue by drawing on individual-level data from the China Citizenship Attitude Survey (CCAS), a nationally representative survey conducted by Peking University in 2008 and 2009. The survey contains a battery of questions on respondents’ past political participation. We construct two binary variables: Traditional Participation, which indicates whether a respondent has ever used any of the conventional, offline methods to contact the government, and Internet Participation, which is based on a question that specifically asks whether the respondent has ever “participated or expressed opinions in an online platform on issues related to politics.” We then explore how (logged) family income, a proxy for socioeconomic status, affects the respondents propensity to participate. Figure 1 plots three simple bivariate relationships using locally weighted regression. There appears to be a strong, positive relationship between log family income and participation through the traditional channels (the blue solid line). This relationship, however, is much weaker for Internet-based channel (the yellow dotted line), and effectively disappears when we further restrict to the sample of respondents who report to use the internet on a weekly basis (the red dashed line).

Taken together, these contrasting patterns suggest that there does exist quite substantial de
facto inequality in the traditional participation channel, but such inequality is much less severe in the internet-based channel, in which the rich and the poor appears to be participating at roughly comparable rates. If the government is truly responsive to citizen demands, then bringing more voices of lower-class citizens into the political process is likely to make government policies more aligned with the interests of the poor and disadvantaged. More specifically, based on a large body of political economy research (e.g., Acemoglu and Robinson 2005; Meltzer and Richard 1981; Hibbs, Rivers and Vasilatos 1982), we expect that the direction of policy shift is towards greater emphasis on redistribution and social welfare, as lower-class citizens tend to benefit disproportionately from public goods and government-sponsored welfare programs.8

4 The Local Leader Message Board

The Local Leader Message Board (LLMB) was created and operated by People’s Daily Online (www.people.cn 人民网), the official website of the central state media. The forum was created in 2006 and went through a major functional upgrade in 2008, after which it quickly became a popular venue for ordinary citizens to file complaints and express grievances directly to local officials. The LLMB is by far the largest and only national-level petition forum in China.9 As of August 2016, it has received over 914,140 petition filed by citizens from all Chinese provinces (except for Taiwan). These petitions cover a wide variety of issue areas, ranging from personal issues and concerns (the vast majority) to suggestions on local policies and development strategies. Among them, about 552,240, or over 60 percent, have been replied by local authorities.

Figure 2 provides a snapshot of the actual web interface. For every local administrations above the county level (i.e., 33 provinces, 333 cities, and over 2,000 counties), the website contains two message boards for the head of the party and the head of the government, respectively. Within each message board, the way the messages are organized is similar to a regular online forum, with

8 We provide additional survey evidence on the diverging preferences between the rich and the poor in the appendix.
9 Many local governments later replicated this model and create their own petition forums (Distelhorst and Hou Forthcoming).
all messages listed in according to the time of posting and replies and follow-ups are attached to
the original message. Participants can leave messages either anonymously or with a registered
account. Registration allows the petitioner to customize the name appearing on the message and
requires only a functional cell phone number or email address. After a petition is filed and before it
was publicly posted, the website will undertake a quick check to ensure that the message contains
no vulgar language or any politically sensitive content. We have personally experimented with the
system and find the degree of censorship to be quite minimal.

Insofar as policy responsiveness is concerned, several features of the LLMB deserve special
mentioning. First, in contrast to more locally operated websites, in which the local authorities have
a direct control over the content to be displayed, the LLMB is operated by the central media, which
typically has little direct interest in covering up problems on behalf of local government. This
ensures that the local governments could not simply bury any undesirable issues through censorship
and that grievances of local residents will be directly and publicly communicated. Additionally, the
website also employs several measures to strengthen the publicity pressure on local governments.
Each leading official’s name, for example, is printed alongside his or her message board and key
summary statistics, such to how many petitions one have been filed and replied in the current year,
are given. The contents of all petitions are made public and can be seen by not only individual
citizens but also the official’s colleagues, competitors, and superiors. Petitions that touched on
common grievances of a large group of local population might therefore serve as a focal point
for local residents to coordinate collective actions; and the superiors of local leaders may also
use the contents of these petitions as a more direct measure of their subordinates’ performance
in addition to the more manipulable statistical figures. Occasionally, the LLMB’s own reporting
team would even actively use the LLMB to search for new-worthy materials and conduct their
own follow-up investigation. Taken together, all these factors—the relative independence of the
operator, the transparency of the content, and the potential high publicity associated with individual
petitions—may give local government officials strong incentives to be attentive to the petitions
made on the LLMB.
Anecdotal evidence suggests that at least on surface, local governments appeared to have taken petitions on the LLMB seriously: Since June 2008, 19 provinces have established standard work routines to process, document, and respond to petitions made via the LLMB, and to regularly communicate important information from these petitions to the local leadership. Moreover, over 50 provincial party secretaries and governors, the highest-ranking regional leaders in China, have personally responded to citizen petitions via the LLMB, along numerous city- and county-level leaders.

5 Who Participate?

We first provide descriptive evidence on the distribution of the users’ occupational backgrounds in this online forum. Because not all petitioners reveal such information in their petitions, we adopt a semi-automated content analysis method developed by Hopkins and King (2010) to infer the overall occupation distribution in the entire body of petitions from a manually coded subset, where the relationship between individual backgrounds and petition content can be more reliably established. The key assumption here is that petitioners from the similar background tend to voice similar grievances and issues and that this similarity will be reflected in similarities in linguistic patterns in the petition text. We provide more details on the estimation procedure in the appendix.

Our analysis focuses on six largely mutually exclusive groups: farmer (农民), worker (工人), cadre and government employees (干部和编制内人员), businessman/vendor/manager (企业家/个体户/管理人员), and other occupations. We first created a training dataset by manually coding 70,000 petitions with identifiable information and then apply this training set to estimate class distribution in the entire body of petitions for every quarter separately. Figure 3 shows final estimated occupation proportions over time. The results suggest that rural residents not only

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10 Typically, a special office will be created to handle all the online petitions and allocate them to different departments. This office is often placed directly under the General Office of the local government (地方政府办公厅). For an example, see http://leaders.people.com.cn/GB/9335291.html (in Chinese).

11 Implemented in the R package ReadMe.

12 In cases where there are ambiguity and judgment is needed, coding priority is given to the more advantaged class. Note that this approach likely to underestimate the share of lower-class petitioners in our final results.
constitute the largest user group on the forum by absolute number, but are also relatively over-represented compared to their share among all internet users. Workers are another group that is disproportionately represented in the forum. By contrast, business owners and regime insiders (cadres and government insiders), who tend to be more privileged class in terms of influence, have the smallest presence on the platform. Overall, this pattern strongly supports our claim that the LLMB has indeed been disproportionally utilized by people of humble social backgrounds.

To provide an intuitive summary of the issues raised by forum participants, we plot in Figure 4 the (translated) word clouds for both the entire sample of petitions and the five separate occupation groups. The size of each word is scaled to correspond to its frequency in the sample. Consistent with the content analysis, the full-sample word cloud clearly demonstrate that rural residents and workers are dominant user groups in this forum (as indicated by the large words for villager, worker, and farmer). It is also evident that most of the petitions are about mundane, personal issues as opposed to grand policy or political demands. The most frequent words for rural residents appear to be related to issues such as land compensation, family planning, and access to basic services. For workers, the most salient issues appear to be about wage, pension, and labor contracts.

6 The Policy Consequences of Online Participation

6.1 Data on Number of Online Petitions

To analyze the policy consequences of online participation, we construct a panel dataset that records the number of petitions to and policy priorities of city-level governments. The panel covers the period between 2008 and 2013, which has the best match with other important socioeconomic covariates. We exclude three far-flung western provinces, Xinjiang, Tibet, and Qinghai. Given their geographic remoteness and distinct ethnic composition, we have reasons to believe that the landscape of participation and government policy making may be qualitatively different from other

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13Because the non-parametric method that we use for estimating occupation distribution does not generate classification for individual petitions, we only use the subset of manually coded petitions in plotting the occupation-specific word clouds.
The key independent variable we are interested in is the total number petitions directed toward a city in each year. This includes both petitions filed directly at the city’s message boards and those at the city’s supervising provincial government. While the first type of petition is easy to obtain (by simply summing up all the petitions filed to the city secretary and the city mayor in a given year), counting the second type of petition is more challenging because there is no standardized information to us to identify the petitioner’s local origins. We develop automated algorithms to locate geographic origins of this portion of petitions to cities through both IP address and keyword matching. The value of the independent variable is the logged sum of both types of petitions.

During this period, an average city receives about 160 petitions per annum, with a large variation of 243. While some cities received practically 0 petitions (likely due to local residents’ unawareness of the forum), several received more than several thousand in a single year. Figure 5 illustrates the geographic variations in the average number of petitions per 10,000 residents during the period of interest. Interestingly, we find that, consistent with the pattern at the individual level, the regional variation in aggregate participation is also negatively associated with economic wealth: The more developed coastal areas actually saw lower participation (i.e., lighter shade) compared to many less developed, interior regions.

6.2 Data on Local Government Policy Priorities

We measure the policy priorities of local governments by analyzing the text of local government work reports (GWRs 政府工作报告). GWR is a form of formal communication that Chinese government delivers to the legislative body of the same level at its annual session. A typically GWR provides a comprehensive description of policy blueprints for the incoming year and highlights the key priorities of the administration. The document has to be formally approved by legislators through an anonymous vote. As one of the most important policy document issued by local gov-

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14 For example, during the period of interests, the average number of petitions filed in the three provinces is less than 1/10 of what were filed in the rest of the provinces.
ernments annually, the party standing committee, which is the highest decision-making body at each level, has to collectively read and approve the content of the report before it was delivered.

Work reports typically have a highly standardized structure: They often begin with a litany of introduction, followed by a brief summary of the government’s achievements in the previous year, and then devote a large portion of the text to laying out plans and directions for the next year. While a report typically has to cover a relatively fixed set of policy issues, the amount of emphasis placed on each of the policy area can vary greatly across both time and places, and these variations are often used by both the media and government insiders to infer the leadership’s policy priorities in the following year.

We collected the full text of over 4,400 government reports at both the city and provincial levels between 2000 and 2014, and use a Latent Dirichlet Allocation (LDA) model (Blei, Ng and Jordan 2003) to uncover topics (i.e., cluster of words) from the text and estimate their relative proportions. This unsupervised learning method does not require imposing any arbitrary association between words, which may not be consistent with government’s actual policy narratives.15 We estimate a 10-topic model as the baseline but also run a 20-topic model as a robustness check. In both models, we are both to recover a clear topic of social welfare issues.16 The following paragraph is a segment of a government work report by Luoyang city in 2009, with key words to the social welfare topic highlighted in red.

[All levels and departments should]...carefully work on the issue of employment and reemployment, and fully implement supporting policies such as social security subsidies and tax breaks, with the goal of making 200 million yuan of microfinance loans in the whole year, adding 100 thousands urban jobs, and developing 1000 new commonweal posts...[We need to] encourage migrant workers to return home to set up

15The advantages of estimating topic models over human reading and coding in our case are threefold. First, the algorithm clusters words strictly according to their co-occurrence patterns, thus avoiding the arbitrariness and errors in hand coding. The somehow ambiguous boundary between topics and the fluid nature of language makes it challenging for a human coder to consistently parse the text with some pre-specified rules, where such rules may be hard to define in the first place.

16The most frequent words in this topic include social safety net (社会保障), pension coverage (养老保险), medical insurance (医疗保险), labor force (劳动力), social security (社会保险), migrant workers (农民工), and so on.
businesses and to perfect the urban and rural social security system...[We also need to] strive to become a pilot city of rural pension, expedite the development of a social security system for landless farmers...[and] increase the construction of affordable housing.

We perform several post-estimation diagnostics to evaluate the qualities of the topics. We focus on two metrics. The first one is coherence, which measures the tendency for top words in the topic to appear together\(^\text{17}\); the second one is specificity, which indicates whether the distinctiveness of the words in a given topic compared to those in other topics.\(^\text{18}\) Figure 6 displays the relative positions of the 10 estimated in terms of both coherence (x axis) and specificity (y axis). It turns out that our welfare topic is ranked among the highest in terms of both metrics, suggesting that it is one of the highest quality topics in the 10-topic LDA model. We are therefore more confident in extracting policy information from this topic. We also find that on average, the welfare topic makes up about 8 percent of city-level GWRs, with a standard deviation of about 3 percent. The emphasis on welfare was generally higher under the Hu Jintao’s administration (2002-2012); a variance decomposition exercise further suggests that within-city variation accounts for about 63% of the total variation in this topic.

6.3 Empirical Strategy

We then procedure to estimate the effect of online participation on local governments’ emphasis on welfare-related policies. Given the panel structure of the data, our baseline specification is a straightforward fixed-effects regression:

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\text{Welfare Topic Share}_{it+1} = \delta_1 \log \text{Petitions}_{it} + X_{it} \beta + \phi_i + \tau_t + \epsilon_{it},
\]

\(^{17}\)The formula for calculating coherence is \(\sum_i \sum_{j<i} \log \frac{N(w_j, w_i) + \beta}{N(w_i)}\), where \(w_i\) is the \(i\)th ranked word in a given topic, \(N(w_i)\) is the number of documents that contain \(w_i\), \(N(w_j, w_i)\) is the number of documents that contain both \(w_j\) and \(w_i\), and \(\beta\) is a smoothing parameter.

\(^{18}\)Specifically, our specificity measure calculates the Kullback-Leibler divergence between the word distribution of a given topic and the uniform distribution.
where $i$ indexes cities and $t$ indexes years. The main independent variable, $Log \text{Petition}_it$ is a non-negative continuous variable for the (logged) number of petitions filed at the city-level leaders’ message boards, including petitions directed to both the city party secretary and the mayor. Because the delivery of the government work reports typically occurred at the beginning of a year (January or February), we match the number of petitions with the GWR welfare topic in the next year. $\phi_i$ and $\tau_t$ represent city and year fixed-effects, respectively. The main regression also includes a set of province-specific linear trends to account for influence from time-variant, province-specific unobserved factors.\(^{19}\) Furthermore, $X_{it}$ encompasses a rich set of time-variant covariates that may be important confounders to the main quantity of interest. We detail these covariates below.

**Frequency of Offline Protests** The most important confounder to our analysis is the intensity of public grievances expressed through other, non-internet channels. Dissatisfied citizens may concurrently use multiple means to make their grievances heard and changes in government policies may be attributable to their more substantive offline actions rather than the online participation per se. One of the most important alternative measures that Chinese citizens use to express their discontent, for example, is through collective protest (Lorentzen 2013; O’Brien 2008); anecdotes suggest that large-scale protests tend to receive tremendous attention from the political authority and can often produce major shifts in government policies. To capture the intensity of protest, we make use of the Collective Incidents Dataset, compiled by the institute of sociology at the Chinese Academy of Social Sciences (CASS).\(^{20}\) The CASS dataset contains detailed information about major mass protests in China between 2007 and 2013, collected from both internal government documents and domestic and overseas media reports (for more details, see appendix). We match each incident to a prefecture-level location and calculate a city-level measure of protest intensity. A simple correlation test suggests a strong positive association between the intensity of offline protest and the volume of online petition, with a coefficient of 0.24 ($p < 0.0001$).

\(^{19}\)An alternative specification is to use province-year dummies, which would consume more degrees of freedom in the estimation. Our main result is substantively the same under the alternative specification.

\(^{20}\)The dataset can be accessed at http://www.cssn.cn/sjxz/yhfw/qtxsjsjk/qtxsjkjj/201312/t20131211_903667.shtml
**Socioeconomic Conditions**  The second set of covariates that we include capture important *local socioeconomic* conditions. Since unemployment is a common source of popular grievances and main driver for welfare expansion in many systems, we include controls for a city’s population size (*Log Population*) and level of employment (*Log Employment*). We also control for local economic and fiscal conditions, such as *Log GDP*, *GDP Growth Rate*, *Log Fiscal Revenue* and *Log Fiscal Expenditure*. Because welfare-related spending is covered primarily by local government budgets in China, welfare provisions in a locality is likely to be a function of the locality’s economic performance and the local government’s fiscal capacity (Huang 2015).

**Leadership Characteristics**  The third set of control variables concern personal characteristics of local leaders. We include a number of demographic variables (for both the city secretary and the mayor), such as age, gender, education, tenure length and political connection with the provincial leadership. The age and tenure length, in particular, have been found to be highly correlated with the career incentives of local leaders as well as their policy preferences (e.g., Guo 2009). We also include the total length of time they have served in a given city (*City Secretary*/ Mayor’s *Years of Local Service*), as prior research suggests that those with a longer local career tend to be more attentive to local interests and prefer more redistributive policies (Persson and Zhuravskaya Forthcoming).

### 6.4 Baseline Results

The main results are presented in Table 1. We begin with the most parsimonious model with only two sets of fixed-effects and linear province trends as controls, and then incrementally add the socioeconomic and city leader controls. In Columns 4 to 6, we replicate the same analysis on a dependent variable based on a 20-topic model. The results consistently suggest that an increase in online petitions has a strong, positive effect on the proportion of welfare-related topics in the following year’s government work reports. Focusing on Column 3, the result suggests that for an average city, one standard deviation increase in online petition is associated with about 0.33
percentage points increase in the proportion of welfare topic in the next year’s GWR. Since the 
average share of welfare topic is only about 8%, this magnitude thus amounts to about 4.7 percent 
increase from the baseline proportion.

We also conduct several robustness checks of the main results but will leave the details to the 
online appendix in the interest of space. To briefly summarize, we find that our main results are 
robust to (1) using incremental changes in (as opposed to level of) welfare topic as the dependent 
variable and (2) alternative estimation strategies (beta regression and fractional logit) that takes 
into the proportional nature of the dependent variable, and (3) a permutation inference that ran-
domly reshuffles the correspondence between city identities and petition volumes. Furthermore, 
a placebo test that manipulates the timing of the dependent variable suggests that the volume of 
online petition is only significantly associated with GWR welfare topic in the next year \((t + 1)\), but 
not with that in the earlier years \((t \text{ or } t - 1)\).

6.5 Effects of Online Participation on Substantive Outcomes

Next, we examine whether changes in stated policy priorities have any substantive conse-
quen ces beyond a change in rhetoric. We begin by examining whether online participation has 
any broader policy ramifications beyond changes in GWR topics. To do so, we make use of PKU-
LAW (www.pkulaw.cn), a comprehensive database on laws and regulations in China maintained 
by Peking University. We conduct a series of queries using the top 30 key words as identified 
in the GWR welfare topic, and calculate the total number of welfare-related legislation for each 
city-year spell. Column 2 of Table 2 presents regression results using this number as the dependent 
variable. Here, we see that online participation also has a positive and significant impact on the 
number of welfare legislation issued in the subsequent years. It thus appears that changes in GWR 
topics, therefore, are not merely cheap talk but have instead been followed by more substantive 
and meaningful policy and legislative initiatives.

Another way to assess the substantive consequences of online participation is to look at changes 
in government spending patterns. To do so, we collect data on three welfare-related areas in which
government spending statistics are available—social welfare (shehui baozhang), medicine and health (yiliao weisheng), and education (jiaoyu), and regress annual log difference in fiscal spending on our main participation variable. The results, displayed in the last four columns of Table 2, suggest that increase in online petition is also associated with significantly more rapid growth in social spending and positive but insignificant changes in the other two areas. As a benchmark, we report in the last column results from a placebo test using the log difference in non-welfare expenditure the dependent variable.\textsuperscript{21} As the expected, we find that online participation has little bearing on growth in fiscal outlays that are unrelated to social welfare.

### 6.6 Responsiveness by Petition Topics

We also explore which type of petitions tend to trigger the greatest responsiveness for local authorities. To do so, we conduct unsupervised topic modeling to extract topics from the petitions texts and assign each petition to the topic that takes up the highest proportion in the text. For each topic $T$, we then estimate a revised baseline specification as follows:

\[
\text{Welfare Topic Share}_{it+1} = \delta^T \text{Log Petitions in Topic } T_{it} + \delta^{NT} \text{Log Petitions Not in Topic } T_{it} + X_{it} \beta + \phi_i + \tau_t + \epsilon_{it}.
\]

We collect all positive and statistically significant $\delta^T$’s and plot them in Figure 7 (along with their 90% confidence intervals). We also indicate the top ten keywords that is most closely associated with each of the topics. A quick reading of the keywords suggests that many of the topics are closely tied to issues concerned by lower-class citizens: Topic 16, for example, is about land disputes and compensation, which mostly concerns farmers and rural residents. Topic 7 encompasses several issues related to migrant workers, such as local resident permit, household registration, and

\textsuperscript{21}Non-welfare expenditure is calculated by subtracting from total expenditure the spending in the three aforementioned areas.
birth planning. Topic 21 also includes a number of words that directly refer to the disadvantaged groups, such as low-income households and individuals with disabilities.

6.7 Evaluating Potential Mechanisms

The preceding analyses have shown that increased mass participation in the LLMB has resulted in a notable shift in government priorities towards redistributive and social welfare issues. An important question that remains, however, is what induced unelected local authorities to make policy responses to these online petitions. This section evaluates three plausible channels through which online participation might have affected local government decision-making: (1) information priming, (2) amplifying the threats of collective action, and (3) facilitating top-down monitoring.

6.7.1 Information Priming

The first possible mechanism is that the inflow of large volume of petitions from previously underrepresented groups might have primed local governments’ about their presence and make the authority more aware of their issues and concerns about demands (Iyengar, Peters and Kinder 1982). This mechanism rests on the assumption that the local policy makers possess a general inclination to serve the interests of their constituencies but their ability to make policies are somewhat constrained by the quality and representativeness of the information they acquire. Although city leaders are not electorally accountable by their constituencies in China, they may feel a normative pressure to be responsive to local citizens as both the Confucian political culture and the Communist mass-line ideology place heavy emphasis on political leaders’ moral obligation to faithfully serve the people (Tang 2016; Yang and Zhao 2015). Anecdotes also suggest that many officials care deeply about their personal reputation among local citizens (koubei). It is therefore possible that exposure to large volumes of grievances from underprivileged citizens would increase the salience of social welfare issues in the eyes of the local officials, leading to substantive policy changes.

22 For an example, see http://news.cctv.com/society/20081203/102490.shtml.
To test the validity of the priming mechanism, we examine several of its direct testable implications. To begin with, we examine the differential impacts of three types of petitions: (1) petitions filed at provincial-level message boards regarding city-level issues, (2) petitions filed at city-level message boards, and (3) petitions filed in all county-level message boards within a given city. The first four columns of Table 3 presents the result from regressing the welfare topic proportion on different types of petitions (separately and altogether). Consistent with our expectation, we find that while the volume and content of all three types of petitions track closely with each other, the number of city-level petitions has the strongest association with policy changes in subsequent years. By contrast, the estimates for petitions at the provincial and county-level, while positive, are much smaller in size and statistically insignificant in general.

A second, and related, set of testable implications following from the priming mechanism is that policymaking may place greater weight on petitions filed during certain time intervals when local leaders are most receptive to such information. Because the preparation of the GWR usually starts towards the end of the previous year, according to the well-known recency bias literature, petitions filed during the later months of a year are likely to produce the greatest impact on the content of the next year’s GWR. Similarly, because government offices that are responsible for collecting and reporting online petitions typically work on weekdays, we should also expect petitions filed between Monday and Friday to have larger influence on policies than those filed over the weekends.

These hypotheses are tested in the last two columns of Table 3. Column 5 reports results from a regression where we separately calculate the total number of petitions for three four-month intervals. The results suggest that petitions filed between August and December in the previous year have the most significant influence over GWR content the in subsequent year than petitions filed in earlier months. Column 6 further shows that, compared to those filed over weekends, petitions made during the weekdays tend to be more closely associated with changes in GWR welfare topics.24 Taken together, these results consistently show that information priming is an

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23 Provincial vs. city: \( \rho = 0.80 \); provincial vs. county: \( \rho = 0.64 \); city vs. county: \( \rho = 0.67 \).

24 It is also worth noting that the estimates become much noisier when we include multiple groups of petitions at the
important mechanism through which online participation changes government policies.

6.7.2 Amplifying Threats of Collective Action

A second possible mechanism is that online participation amplified the threat of collective actions by lower-class citizens. It is widely documented that the Chinese authority is preoccupied with maintaining social stability and has devoted tremendous resources into preventing and preempting collective actions (Chen 2013; King, Pan and Roberts 2013). A large volume of petitions can be seen as a precursor of more significant off-line protests; and the transparent nature of the forum might have also played a conducive role in facilitating disadvantaged citizens with common grievances to find each other and organize. Given these considerations, local governments facing heightened online participation might be motivated to make policy concessions as a way to preempt potential collective actions.

Table 4 presents results from several regressions testing various aspects of this mechanism. Column 1 shows that, consistent with the view that online petition is a signal of a locality’s collective action potential, there is a strong positive association between online petition and intensity of off-line protest. Column 2 reports results from a regression using reply rate to individual petitions as the dependent variable. The results indicate that the frequency of protests is positively associated with reply rates to individual petitioners, suggesting the presence of a link between the intensity of offline contention and local governments’ online responsiveness. This finding is also consistent with the recent study by Chen, Pan and Xu (2016), who show that threatening collective action significantly increases the probability of receiving a reply from government websites.

Moreover, we also estimate a regression that uses the GWR welfare topic as the dependent variable and includes an interaction term between online petition and the cumulative average number of protests in a given locality (since 2007). The cumulative measure of protest is intended to capture the perceived collective action potential in a given locality. If the collective action mechanism...
anism holds, it is natural to expect that local governments’ responsiveness to online participation would be higher in cities that have experienced more collective protests in the past. Column 3 of Table 4 confirms this intuition: Consistent with our expectation, the coefficient for the interaction term is positive and statistically significant. The marginal impact of online petition on welfare topic proportion almost doubles (from 0.28 to 0.5 percentage points) when the average number of protests changes from 0 to 1.

6.7.3 Facilitating Top-down Monitoring

Finally, the third mechanism we evaluate is that online participation helps strengthen top-down monitoring within the government. Given that the forum provides direct and largely uncensored information about citizen demands, it could serve as a useful channel for senior leaders (at provincial level or higher) to learn about local grievances and assess the performance of their subordinates. Anecdotes suggest that some provincial leaders were indeed actively using the forum to reach out to local citizens; this could in turn give local agents the incentive to appeal to the demands of online petitioners so as to demonstrate responsiveness in the eyes of their superiors and to reduce the upward flow of negative information that may reveal their malfeasance or incompetence.

To evaluate this possibility, we interact the main petition variable with several other variables that measure the level of online activism by the provincial authority as well as the cost of monitoring through conventional bureaucratic methods. To measure the level of online engagement by the provincial leader, we use both the reply rates and the total volumes of petition in provincial leaders’ own message boards. We also calculate the log distance between a city and its provincial capital as a proxy for monitoring cost. The results, which are shown in Table 5, suggest that magnitudes of coefficients for all three interactions are rather small and none of them reach the conventional level of statistical significance.
7 Concluding Remarks

Do new communication technologies mitigate or exacerbate inequalities in political influence among citizens? This study presents new evidence to this question by analyzing how the expansion of internet-based participation forums affects citizen participation and government policy-making in China, a non-democratic country that hosts the world’s largest internet-using population. Our main results suggest that these petition forums are disproportionately used by citizens with lower-class backgrounds, and that citizen participation in these channels has led local governments to place greater emphases on social welfare issues in both policy rhetoric and fiscal spending. Furthermore, we provide empirical evidence that helps adjudicate three potential mechanisms that link online participation with policy change. The results lend support to both priming and the collective action threat mechanism, but do not support the monitoring mechanism.

The finding that internet can help mitigate de facto political inequality among citizens carries important practical implications. Research has shown that a high level of inequality tends to breed numerous socioeconomic problems such as crimes, conflicts and under-provision of public goods (Thorbecke and Charumilind 2002), and that the root of social and economic inequalities often lies in the political realm (Acemoglu et al. 2007). The advent of new technology thus may present a unique opportunity to address these intertwined problems by giving disadvantaged citizens greater influence over the policy-making process. While we do need to be cautious about over-generalizing our findings about a particular forum to other settings, it is also worth noting that the key features that make the forum effective, including high publicity, transparency, and ease of access, are not rare qualities in the cyberspace. Therefore, we have reasons to expect similar equalizing effects if this model is replicated in other settings.

By showing that a nondemocratic government not only tolerates, but also actively responds to, opinions and demands made on the internet, this study also offers a more nuanced perspective on the relationship between internet and authoritarian regimes. Previous studies tend to portrait a largely confrontational picture, focusing on either the internet’s capacity to subvert authoritarian rule (Ferdinand 2000) or the regime’s efforts to control and manipulate the online sphere (Kalathil...
and Boas 2010; King, Pan and Roberts 2013). By contrast, our analysis suggests that the interaction between the two is not always zero-sum: Some authoritarian regimes may be able to harness the democratic potential of the internet and use it to fulfill important governing functions that are often associated with formal democratic institutions, such as gathering information, channeling social contention, and strengthening bottom-up accountability. These benefits may, therefore, paradoxically help prolong the rule of authoritarian regimes by allowing them to improve governance without making fundamental changes to their political systems.
References


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Smith, Aaron. 2014. “African Americans and Technology Use.”


Figures and Tables

Figure 1: Online Participation is Less Sensitive to Income

-0.5
0.0
0.5
1.0
1.5
4 6 8 10 12
Log Family Income
Probability of Participation
Traditional participation Online participation Online Participation
(among regular internet users)
Figure 2: A Sample of the Message Board

(a) Entry Interface

(b) Message-viewing Interface

Message 1: School enrollment for child
Message 2: disputes on real estate purchase
Message 3: School fees for books and tests

Area for entering one’s message
“Submit the message”
Figure 3: Occupational Distribution Compared: LLMB User vs. Nationally Representative Surveys
Figure 4: Word Clouds by Occupation

(a) Full-Sample

(b) Peasants

(c) Worker

(d) Business Owners

(e) Cadres and Government Employees

(f) Other Occupations
Figure 5: Average Number of Petitions per Capita, 2008-2013
Figure 6: Topic Quality: Coherence vs. Specificity

Coherence vs. Specificity

- Welfare topic
Figure 7: Responsiveness by Petition Content

Topic 21: handicapped people, village cadre, village government, reconstruction of dilapidated buildings, credit union, poor household, low-income guarantee household, forest bureau, subsidy, cooperative

Topic 10: staff, phone call, DMV, whether, driver's license, office, folks, excessive fee, insurance company, traffic police

Topic 7: police station, ID card, one-child policy, single child, birth permit, household registration, rural hukou, resident permit, birth-planning office, marriage certificate

Topic 16: village committee, township government, residential land, compensation, ordinary people, village party secretary, village government, basic agricultural land, village head, compensation fee
### Table 1: Main Results

<table>
<thead>
<tr>
<th></th>
<th>Welfare Topic at $t + 1$ (10-topic)</th>
<th></th>
<th>Welfare Topic at $t + 1$ (20-topic)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Log petitions</td>
<td>0.0033**</td>
<td>0.0034**</td>
<td>0.0034**</td>
<td>0.0033**</td>
</tr>
<tr>
<td></td>
<td>(0.0014)</td>
<td>(0.0015)</td>
<td>(0.0014)</td>
<td>(0.0013)</td>
</tr>
<tr>
<td>Log protests</td>
<td>-0.0034*</td>
<td>-0.0031*</td>
<td>-0.0030*</td>
<td>-0.0027*</td>
</tr>
<tr>
<td></td>
<td>(0.0018)</td>
<td>(0.0018)</td>
<td>(0.0016)</td>
<td>(0.0015)</td>
</tr>
<tr>
<td>Log employment (10,000 persons)</td>
<td>0.0006</td>
<td>0.0005</td>
<td>-0.0012</td>
<td>-0.0013</td>
</tr>
<tr>
<td></td>
<td>(0.0037)</td>
<td>(0.0034)</td>
<td>(0.0035)</td>
<td>(0.0033)</td>
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<tr>
<td>Log GDP</td>
<td>-0.0032</td>
<td>-0.0034</td>
<td>0.0005</td>
<td>-0.0004</td>
</tr>
<tr>
<td></td>
<td>(0.0091)</td>
<td>(0.0100)</td>
<td>(0.0093)</td>
<td>(0.0095)</td>
</tr>
<tr>
<td>Log population</td>
<td>-0.0111</td>
<td>-0.0083</td>
<td>-0.0142**</td>
<td>-0.0102</td>
</tr>
<tr>
<td></td>
<td>(0.0069)</td>
<td>(0.0071)</td>
<td>(0.0070)</td>
<td>(0.0070)</td>
</tr>
<tr>
<td>GDP growth rate</td>
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<td>-0.0005**</td>
<td>-0.0003*</td>
<td>-0.0003*</td>
</tr>
<tr>
<td></td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
</tr>
<tr>
<td>Log fiscal expenditure</td>
<td>0.0047</td>
<td>0.0053</td>
<td>0.0062</td>
<td>0.0073</td>
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<td></td>
<td>(0.0092)</td>
<td>(0.0089)</td>
<td>(0.0083)</td>
<td>(0.0081)</td>
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<tr>
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<td>-0.0014</td>
<td>-0.0021</td>
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<td></td>
<td>(0.0055)</td>
<td>(0.0056)</td>
<td>(0.0049)</td>
<td>(0.0050)</td>
</tr>
<tr>
<td>City secretary’s age</td>
<td>0.0004</td>
<td>0.0004*</td>
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<td></td>
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<tr>
<td></td>
<td>(0.0002)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mayor’s age</td>
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<td>0.0003</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.0003)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>City secretary’s tenure</td>
<td>0.0003</td>
<td>0.0002</td>
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<tr>
<td></td>
<td>(0.0004)</td>
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<tr>
<td>Mayor’s tenure</td>
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<tr>
<td></td>
<td>(0.0005)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>City secretary’s years of local service</td>
<td>-0.0003**</td>
<td></td>
<td>-0.0002*</td>
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<td></td>
<td>(0.0001)</td>
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<tr>
<td>Mayor’s years of local service</td>
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<td>0.0001</td>
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<td></td>
<td>(0.0001)</td>
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<tr>
<td>Connected city leader</td>
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<td>0.0008</td>
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<tr>
<td></td>
<td>(0.0017)</td>
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</tbody>
</table>

**City and year fixed-effects** ✓ ✓ ✓ ✓ ✓ ✓

**Province-specific trends** ✓ ✓ ✓ ✓ ✓ ✓

**Adjusted R²** 0.25 0.25 0.26 0.26 0.26 0.27

**Number of Cities** 300 300 300 300 300 300

**Observations** 1719 1687 1685 1719 1687 1685

**Note:** This table shows the results from OLS regressions. The dependent variables are incremental increase in the share of social welfare topic in government work reports (for both the 10-topic model and the 20-topic model). Robust standard errors clustered at city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test)
Table 2: Change in Substantive Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Welfare legislation at $(t + 1)$</th>
<th>$\Delta$ Log Fiscal expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Log petitions</td>
<td>0.0911*** (0.0340)</td>
<td>0.0479** (0.0210)</td>
</tr>
<tr>
<td>City and year fixed-effects</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Province-specific trends</td>
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<td>✓</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.41</td>
<td>0.16</td>
</tr>
<tr>
<td>Number of Cities</td>
<td>295</td>
<td>304</td>
</tr>
<tr>
<td>Observations</td>
<td>1689</td>
<td>1810</td>
</tr>
</tbody>
</table>

**Note:** The table reports results from regressing other policy outcomes on petition volumes. The specification is based on Column 3 of Table 1. Column 1 additionally controls for the total (logged) number of laws and regulations passed in a year. Robust standard errors clustered at city level are reported in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test)
Table 3: Mechanism 1: Information/Priming

<table>
<thead>
<tr>
<th>Welfare Topic (10-topic)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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</thead>
<tbody>
<tr>
<td>Log petition (provincial-level)</td>
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<td>0.0003</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.0015)</td>
<td></td>
<td></td>
<td>(0.0016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log petition (city-level)</td>
<td></td>
<td>0.0027***</td>
<td></td>
<td>0.0026***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0009)</td>
<td></td>
<td>(0.0010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log petition (county-level)</td>
<td></td>
<td></td>
<td>0.0009</td>
<td>0.0001</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0009)</td>
<td>(0.0010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log petition (Sep-Dec)</td>
<td></td>
<td></td>
<td></td>
<td>0.0025*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log petition (May to Aug)</td>
<td></td>
<td></td>
<td></td>
<td>0.0000</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0015)</td>
<td></td>
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<tr>
<td>Log petition (Jan to Apr)</td>
<td></td>
<td></td>
<td></td>
<td>0.0002</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0014)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log petition (weekdays)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0036*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0020)</td>
<td></td>
</tr>
<tr>
<td>Log petition (weekends)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.0004</td>
<td></td>
</tr>
<tr>
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<td></td>
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<td></td>
<td>(0.0017)</td>
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</table>

City and year fixed-effects ✓ ✓ ✓ ✓ ✓ ✓
Province-specific trends ✓ ✓ ✓ ✓ ✓ ✓
Adjusted $R^2$ 0.26 0.26 0.26 0.26 0.26 0.26
Number of Cities 300 300 300 300 300 300
Observations 1685 1685 1685 1685 1684 1685

Note:
Robust standard errors clustered at city level are reported in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test)
Table 4: Mechanism 2: Amplifying the Threat of Collective Action

| | Log Protest Reply Rate Welfare Topic at t + 1 (10-topic) |
|---|---|---|
| | (1) | (2) | (3) |
| Log petitions | 0.0408** | 0.0707*** | 0.0028* |
| | (0.0205) | (0.0186) | (0.0015) |
| Log protests | | 0.0267** | |
| | | (0.0124) | |
| Log petition × Average # of protests per year (since 2007) | | 0.0025** | |
| | | (0.0012) | |
| City and year fixed-effects | ✓ | ✓ | ✓ |
| Province-specific trends | ✓ | ✓ | ✓ |
| Adjusted R² | 0.07 | 0.21 | 0.26 |
| Number of Cities | 303 | 303 | 300 |
| Observations | 1778 | 1778 | 1685 |

Note:
Robust standard errors clustered at city level are reported in parentheses.  
* p < 0.1, ** p < 0.05, *** p < 0.01 (two-tailed test)

Table 5: Mechanism 3: Top-Down Monitoring

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<th>Welfare Topic (10-topic)</th>
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<td>Log petitions × Log total petition to provincial leaders</td>
<td>-0.0000</td>
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<td></td>
<td>(0.0008)</td>
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<tr>
<td>Log petitions × Reply rate by provincial leaders</td>
<td></td>
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<tr>
<td>Log petitions × Distance to provincial capital</td>
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<td></td>
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<tr>
<td>City and year fixed-effects</td>
<td>✓</td>
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<td>Province-specific trends</td>
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<tr>
<td>Adjusted R²</td>
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<tr>
<td>Observations</td>
<td>1685</td>
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</tbody>
</table>

Note:
Robust standard errors clustered at city level are reported in parentheses.  
* p < 0.1, ** p < 0.05, *** p < 0.01 (two-tailed test)