

Decoupling Accountability and Liability: Case Study on the Interim Measures for the Opening of Public Data in Shanghai

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Abstract: As open public data initiatives have become prevalent among local and national governments across the globe with promises of benefits such as increased accountability, challenges, especially the governments' lack of willingness to open public data, have also begun to emerge. Existing governance research on open public data primarily focuses on how open public data can increase the accountability of public bodies. The important steps in achieving accountability are, however, ignored. In this paper, we view the perceived risk of liability as a barrier for the public bodies to disclose their data in the first place, and hence to achieve accountability as a desired outcome. We explore the link between perceived risk of liability and accountability by looking into the recently announced *Interim Measures for the Opening of Public Data in Shanghai* as an example of a local regulatory initiative of open public data. Our findings show that by identifying the specific data entities and outlining their corresponding duties, the interim measures clarify the roles of different public bodies and under what conditions they can incur liability. By introducing an exemption clause, they also provide public bodies with legal flexibility to cope with uncertain consequences of data utilization. In this way, we argue that the interim measures, outlining duties for specific entities in data opening in accounting for the consequences of data utilization while remaining flexible due to their temporality, constitute a novel regulatory approach towards reducing the legal uncertainty around perceived risks of liability in the area of open public data, hence potentially contributing to increased accountability.

Keywords: open public data, China, accountability, liability, interim measures

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Introduction

In 2019, the standing committee of the Shanghai Municipal People's Government passed *Interim Measures for the Opening of Public Data in Shanghai*, which constitute the first local government rules on open public data in China (Shanghai Municipal People's Government 2019a; 2019b). It is hardly surprising that Shanghai, as one of the very first Chinese local governments that have embarked on the open public data movement, is the birthplace of such regulation. The interim measures were celebrated by various major Chinese media outlets (e.g., Jiefang Daily 2019; Southern Metropolis Daily 2019) for their pioneering role in legislating open public data in China, among which one of the interviews with the legislators of the interim measures, titled "Shanghai legislates public data opening, introducing an "exemption clause" to unburden government departments" (Southern Metropolis Daily 2019), has caught our attention.

In the interview, one of the legislators, Qiu Wei, from the Shanghai Municipal Commission of Economy and Informatization, highlighted that one of the aims of the interim measures is to encourage the local authorities' willingness to make their data available by identifying the specific data entities, outlining their corresponding duties, and the conditions under which local public data entities can incur and be exempted from liability. The interim and detailed nature of the legislation constitutes a novel approach towards regulating open public data initiatives, which contrasts with approaches emphasizing on hard law and lack of concreteness (e.g., the European Union's Directive 2019/1024 on open data and the reuse of public-sector information). Furthermore, the measures were introduced by the Shanghai Municipal People's Government as a local regulatory initiative, in contrast to the majority of existing regulations on a supra-national and national level.

Inspired by this recent development, the purpose of this paper is to provide insights into the regulatory approach undertaken by the Shanghai Municipal People's Government, which aims at increasing public accountability by providing more clarity around potential liability issues that may rise for public bodies as a result of disclosing their data. In particular, we are interested in understanding how liability and accountability are linked in the context of open public data and how regulators can address them. Hence, we pose the following research question: *How can interim regulatory measures reduce the perceived risk of liability among public bodies and contribute to public accountability in open public data initiatives?*

To this end, we chose to study both the content of the *Interim Measures for the Opening of Public Data in Shanghai* and their interpretations as revealed by their authors. We

argue that the interim measures, outlining specific rules, constitute a novel regulatory approach towards reducing the legal uncertainty around public bodies' liability, which is one of the barriers preventing public bodies from participating in a meaningful way in open public data initiatives, and hence from achieving increased accountability as a desired outcome.

Before we present the details of the development of open public data in Shanghai and the emergence of the interim measures, we first position our study in relation to the existing knowledge on open public data in relation to governance, law and the relations between public accountability and liability. We then introduce our research design and present our findings. In the Discussion section, we outline the contributions of this study in relation to the existing research gaps.

Open Public Data, Public Accountability and Liability

In the past decade, open public data, defined as, “non-privacy-restricted and non-confidential data which is produced with public money and is made available without any restrictions on its usage or distribution” (Janssen et al. 2012: 258), have become widespread across the globe. An increasing number of local and national governments are making various datasets publicly available for public scrutiny and re-use (OECD 2020). Practitioners and governance researchers argue that open public data can bring several benefits, such as increased transparency, civil participation and innovation, and accountability (Lourenço et al. 2017; Peixoto 2013; Reggi and Dawes 2016; OECD 2020). Some researchers, however, have also pointed out that the availability of open public data does not necessarily lead to the achievement of all intended benefits (Cerrillo-i-Martinez 2012; Lourenço et al. 2017; Peixoto 2013, Reggi and Dawes 2016). For example, while the provision of open public data may increase transparency, it does not necessarily translate into increased accountability (Lourenço et al. 2017; Peixoto 2013; Reggi and Dawes 2016). In particular, several researchers have pointed out that while public bodies disclose data to the public, they have the discretion to select which datasets to make available and, as a result, often the open public data cannot be used to hold the disclosing public bodies accountable (Peixoto 2013; Reggi and Dawes 2016).

Public accountability is a desired, but not guaranteed, outcome linked to data being made available (Peixoto 2013; Reggi and Dawes 2016). In particular, public accountability is achieved through a process involving several steps, such as disclosure of data, discussion around the available data, followed by the realization of certain

consequences (Bovens 2007; Lourenço et al. 2017; Schillemans, Van Twist and Vanhommerig 2013). Thus, for example, after data has been disclosed, relevant members of the public can review it and decide a course of action to ensure public accountability, which includes identifying issues, responsible parties and outlining consequences (Bovens 2007; Lourenço et al. 2017). These consequences can be both non-legal (e.g., negative publicity, submitting petitions; see Lourenço et al. 2017), which emphasize the social aspect of accountability, or legal (e.g., public bodies can be held liable, in some cases, where the data they provide are inaccurate, misused, or not updated; see Dulong de Rosnay and Janssen 2014). As public bodies can be held accountable, facing both legal and non-legal consequences, they may restrain from providing meaningful datasets and instead grant access to datasets “irrelevant for the purposes of accountability” (Reggi and Dawes 2016: 75). By doing so, public bodies try to manage the risk of being held socially accountable, but even more so legally liable. Thus, to mitigate the risks, public authorities may limit their participation in open public data initiatives, thus diminishing the overall benefits, which such initiatives can bring (Zuiderwijk and Janssen 2014).

Current research on open public data, however, seems to equate accountability solely with transparency, thus ignoring discussion and consequences as important steps in achieving public accountability (Lourenço et al. 2017; Peixoto 2013; Reggi and Dawes 2016). In this paper, we argue that it is important to understand better the link between public accountability as a desired outcome of open public data initiatives and the perceived risk of liability by public bodies as a barrier to fully participate in such initiatives.

Researchers have pointed out that the perceived risk stems from the lack of sufficiently clear legal rules, which outline under what conditions public bodies will be held liable when opening their data to the public (Dulong de Rosnay and Janssen 2014). Instead, there are various regulatory approaches, which not only are characterized by a lack of specific rules, but also are not harmonized, thus increasing the legal uncertainty. For example, under the newly amended European Union *Directive 2019/1024 on open data and the reuse of public-sector information*, public bodies are allowed to use licenses, which can contain liability waivers when offering their data for re-use by third parties, depending on the concrete liability provisions in the EU and in the relevant national law (Directive 2019/1024, para 44). Thus, each Member State has its own licensing rules, which can vary in terms of their strictness. Dulong de Rosnay and Janssen (2014), for example, observe that in some countries, such as the UK, the rules may prevent third-parties from misusing the provided open data, while other countries, such as

France, may take stricter approach by explicitly prohibiting any modification of the publicly available dataset.

Recently, we have observed that local regulators in China, such as the Shanghai Municipal People's Government, have adopted a novel approach towards encouraging public bodies to disclose more purposeful data by providing clear guidance in order to reduce the legal uncertainty around the situations in which they will be held liable. This is particularly interesting, as China's institutional and policy innovations are characterised by experimental governance, in which local officials are encouraged to experiment with new ways of problem-solving and their experiences are fed into the national problem solving (Heilmann 2008). Understanding the emergence of the interim measures in Shanghai, hence can shed light on an alternative law-making process for evolving technological phenomena, like open public data.

Method

Governance concepts, such as accountability and liability, manifest largely in institutionalized documents such as existing laws, regulations, rules and official statements (Bovens 2007), but also non-institutionalized interpretations among the regulators and legislators (Schillemans, Twist and Vanhommerig 2013). In the case of the local regulations on open public data in China, there have been recent experiments on the regulation of open public data at the municipal level, such as the *Interim Measures for the Opening of Public Data in Shanghai*, which was passed on August 16, 2019, by the standing committee of Shanghai Municipal People's Government. The interim measures, which took effect on October 1, 2019, are the first local government regulations on open public data in China (Shanghai Municipal People's Government 2019b). Prior to the interim measures, the Shanghai Municipal People's Government has also engaged in consecutive years of active collaboration with private organizations and universities to explore the opening and utilization of public data, i.e., Shanghai Open Data Apps 2015-2020 (Shanghai Open Data Apps, 2019), which also yielded evaluation reports assessing the overall development of open public data in different areas of public authorities (Fudan DMG Lab 2017a; 2017b; 2018a; 2018b; 2019), and open forum with different stakeholders exchanging opinions and interests on open public data (Fudan DMG Lab 2019).

We have thus drawn on two primary data sources for this study: First, the Interim Measures for the Opening of Public Data in Shanghai; and, Second, available online resources such as official statements, reports of the open forums and interviews with the

main legislators of the interim measures. The interim measures and official statements that were collected through the official website of the Shanghai Municipal People's Government (<http://www.shanghai.gov.cn>), only exist in the Chinese version. The quotes have been translated into English by one of the authors. The reports of the open forums and the interviews with the main legislators of the interim measures are drawn from major Chinese media including Xinhuanet (<http://www.xinhuanet.com/>), Jiefang Daily (<https://www.jfdaily.com/>), China.org.cn (<http://www.china.org.cn>), Sohu (<http://www.sohu.com>), and official website of the forum “Yan Do Xian (腌do鲜高汤讲坛)” (<http://www.dmg.fudan.edu.cn/?p=7065>). We paid particular attention to the reports, speeches and interviews of key stakeholders from Shanghai Municipal Commission of Economy and Informatization (SMCEI), Shanghai Big Data Center (SBDC), and Shanghai Municipal Bureau of Justice (SMBJ) as these local authorities played distinctive and important roles in coordinating, promoting, utilizing and regulating open public data. More specifically, SMCEI is among the first local authorities in Shanghai that has been promoting and coordinating opening public data since 2012. SMCEI is responsible for directing, coordinating and making overall arrangements on promoting the opening and utilization of public data and the development of relevant industries in the Municipality. SBDC is responsible for building, operating and maintaining the Shanghai Open Public Data platform, as well as for setting up relevant technical standards. SMBJ is part of the working groups that drafted the interim measures. In addition, we have also drawn upon the reports that detail the development of open data movement in Shanghai to set the stage for the emergence of the interim measures (Gao 2018; Wang et al. 2018).

Given the exploratory nature of this study, the interim measures, official statements, reports, and interviews with the key stakeholders of the interim measures are analysed through qualitative coding using a hermeneutic approach (Bos & Tarnai 1999). Our coding entailed a two-step process in which the empirical material was first discussed and coded by both authors using an inductive coding scheme. This part of the analysis was conducted with an emphasis on how notions of liability were articulated in the different materials. We then used the existing definitions of concepts on accountability, liability and governance (Bovens 2007; Lourenco et al. 2007) as sensitizing devices (Bowen 2006) to make sense of the first-order codes.

The Shanghai Case and The Interim Measures for the Opening of Public Data in Shanghai

To answer our research question: *how interim regulatory measures can reduce the perceived risk of liability among public bodies and contribute to public accountability in open public data initiatives*, in this section, we start by presenting the development of open public data movement in Shanghai in the past decade and the challenges in pursuing local authorities to open their data, which paved the way for the making of the *Interim Measures for the Opening of Public Data in Shanghai*. We then look into the interim measures and regulators' interpretations of the measures to illustrate the way in which the municipal legislative bodies address the local authorities' unwillingness through the liability-related articles in the interim measures.

Open Public Data in Shanghai: Development

In the past decade, China has seen exponential growth in the availability of public data and the amount of open public data programmes across the country, including dedicated initiatives and policies (Open Data Barometer 2015; 2018; Fudan DMG Lab 2017a; 2017b; 2018a; 2018b; 2019a). For example, since the launch of the Shanghai Government Data Portal in 2012 as the first open public data platform in China, there were 81 new open public data platforms launched by a range of provincial, sub-provincial, and prefectural level governments by March 2019 (Fudan DMG Lab 2019). The development of China's open data movement is strongly linked to the development of big data and is primarily driven by the need to increase government effectiveness and efficiency (Barometer 2015), as well as innovation and entrepreneurship (Gao 2018).

While open public data is gradually being institutionalised as a sustainable practice across governments in China today, it was anything but mainstream when Shanghai embarked on the movement. In 2011, Shanghai pioneered in broadening data access in China, but had very little effects: the accessible data did not meet the demands of the programmers, and very little valuable data was released. In 2012, a research project was funded by the Shanghai Municipal Committee to explore ways to organize around open public data by studying cities that have already started to open their data to the public, such as New York, London and Singapore (China.org.cn 2019; Jiefang Daily 2019; XinhuaNet 2019). While these experiences may have provided inspiration for how to create value with public data, Shanghai's challenge at the time was primarily about how to increase data accessibility (Gao 2018).

To tackle this challenge, Zhang Baijun, the Vice President of China Industrial Design Institute, who is a former civil servant that worked primarily with publishing information and data in Shanghai, gathered a group of researchers, entrepreneurs and open data advocates to organize a contest to help Shanghai Municipality to publish its public data, and in a way that makes sense to the market. The committee introduced the concept of “data crowdsourcing” to have different parties contribute to a virtual data pool, in the hope that the public can generate valuable ideas, and that, in turn, these ideas can push the local authorities to publish more data. In 2015, Shanghai launched the open public data-based application contest - Shanghai Open Data Apps (SODA) with 10 datasets from the local governments, public institutions and private companies. The results took the organizers and the data providing organizations by surprise: not only the contest had drawn 823 teams and more than 500 proposals across the country, many of the proposals were in fact applicable new business models, policy guidance and solutions to the problems of the data providing organizations. The results have, for the first time, showed the value of open public data and in this way drove the local governments and public institutions to make their data available (Gao 2018).

Today, with a distinct focus area of public data each year, SODA has continued as an annual contest, drawing more than 1500 teams, 6700 citizens to participate in the contest and generating 1470 innovative services based on open public data in Shanghai (Shanghai Open Data Apps 2019). As recognized by the Shanghai People’s Municipal Government, open public data is becoming an organic part of the local open environment, and an important driving force for promoting the development of the digital economy and protecting people’s well-being in Shanghai. Open public data is also seen as an inherent requirement to enhance the local government’s management philosophy, and to modernize its governance capabilities (Shanghai People’s Municipal Government 2019). Driven by this view, in recent years, the Shanghai People’s Municipal Government has carried out a series of work in classifying and opening public data, strengthening data security management and control, and promoting the cooperation of multiple data subjects. At the moment, Shanghai has ranked first in data openness among the local governments in China for three consecutive years since 2017, according to the China Open Data Index published by the Lab for Digital and Mobile Governance (DMG Lab) of Fudan University (Fudan DMG Lab 2019).

These local experiments and initiatives in the opening and utilization of public data in Shanghai have also paved the way for national push around open public data. As a result, in January 2018, Shanghai alongside four other provinces/municipalities, i.e., Beijing, Zhejiang, Fujian, and Guizhou, has been appointed as a pilot municipality to

open its local public information resources, that is, to make available the local public data (Shanghai Municipal Economic and Informatization Commission 2019; Xinhua Daily Telegraph 2018).

Open Public Data in Shanghai: Challenges and Motivations for Legislation

During the development of the open public data movement in Shanghai, there were also issues and challenges revealed in the extent and the way in which public data was open among the authorities in the Shanghai Municipality. For example, according to the Shanghai People's Municipal Government's reports, the governance mechanism of opening public data was still yet to be streamlined, there lacked access mechanism of public data; and the quality of data in some areas needed to be improved (Shanghai Municipal People's Government 2019b). More specifically, key stakeholders from public data opening and management bodies, such as SBDC and SMCEI, have mentioned in multiple public outlets, different challenges that they have experienced in coordinating open public data in Shanghai, which centered around the unwillingness of the local authorities to open high-quality public data (Fudan DMG Lab 2019; Southern Metropolis Daily 2019).

Wang Xiaomei, division director at the Shanghai Big Data Center, for instance, emphasized in an open forum on open public data that there are two major challenges in the opening of public data in Shanghai: the first relates to the overall data quality, and the second relates to local authorities' concerns about the risks of third-parties utilization of the open public data (Fudan DMG Lab 2019). According to Wang, the value of some public data that has been opened so far was low due to poor data quality. She further contended that the challenge with data quality should be tackled through fostering accountability, that is a sense of shared social responsibilities, between all government departments that collect, integrate and open data. Wang saw the local authorities' fear towards opening public data as one of the reasons why the quality of some open public data was low. But rather than enforcing shared social responsibilities, Wang contended that the challenge of local authorities' fear towards opening public data should be tackled through more formal institutional mechanisms, especially through legislation.

In the same open public data forum, *Qiu Wei*, division director at the SMCEI, argued, more specifically based on her experience in coordinating opening public data since 2012, why legislation, such as the interim measures, was viewed as an important

way to tackle the challenges in promoting open public data among local authorities (Fudan DMG Lab, 2019). Firstly, Qiu argued that since 2012 SMCEI mainly relied on administrative measures to impose rules and policies on local authorities to open public data. These administrative measures required the support of a legal basis in order to push for the next step in opening public data of higher quality, standardization and efficiency. Secondly, Qiu argued that the interim measures are also introduced to consolidate the municipality's accumulated experiences on open public data since 2012, for example, using the interim measures to institutionalize the best practices of data rating and categorization.

Last but not the least, legislation was seen as a way to fulfil the need for formally implementing accountability, including specifying the role of data opening entities and their responsibilities. According to Qiu, before the legislation took place, it was common that local authorities and departments perceived open data as a service rather than a duty (Fudan DMG Lab 2019). Some local authorities and departments were not even aware that they were in fact data opening entities. Some departments were reluctant to open their data, partly because they had little to no understanding of the value of the data, and partly because they were also afraid of the far-reaching effects and consequences of data quality issues. In addition, Qiu also saw data quality as a manifestation of the level of the administrative capacity of the local authorities and departments. By formally institutionalizing the roles and responsibilities of data opening entities, legislation is seen as a way to improve the data governance capacity in the Shanghai Municipality.

Along this line, reading from the Shanghai People's Municipal Government reports and the key stakeholders' accounts of open public data in Shanghai, it appears that there are in general two inter-related challenges with open public data in Shanghai - one has to do with the low data quality in the currently opened public data, and the other has to do with the lack of willingness among local authorities and departments in open public data due to the public bodies' fear of the third-party risks in data utilisation, as well as the lack of awareness of roles and responsibilities. In tackling these two challenges, it seems that the Shanghai People's Municipal Government had primarily invested in establishing a shared sense of accountability to foster the understanding of the roles and responsibilities among the local authorities and departments in open public data, as well as using administrative measures to enforce the actions needed to be done. Nonetheless, as the development of open public data furthers, the Shanghai People's Municipal Government is motivated to formally institutionalize the roles and responsibilities

through legislation to further promote the local authorities and departments' capacity of data governance.

Interestingly, the legislation was not only motivated by the coordination needs of the municipality, but also by the private stakeholders' interests in data utilization. In October 2018, the extent of openness of public data in Shanghai was highlighted in the consultation conference between the mayor Ying Yong and the international entrepreneurs in Shanghai. At the conference, the CEOs/presidents of a number of multinational corporations suggested the Shanghai People's Municipal Government should further improve the access of public data to stimulate industrial development in Shanghai. The vested interests from the private stakeholders in utilizing data for industrial growth also pushed the legislation to put emphasis on liability issues that stemmed from the utilization of open public data. Soon after the consultation conference in October 2018, Shanghai Mayor Ying Yong gave clear instructions to carry out the legislation on the openness of public data (Shanghai Municipal People's Government, 2019).

The Interim Measures: Main Content and Liability Clauses

Motivated by the institutional need to clarify the roles and responsibilities of local authorities and departments in open public data in Shanghai, as well as the private stakeholders' interests in utilizing open public data for driving industrial growth in the area, the Shanghai People's Municipal Government has decided to legislate different areas that are associated with open public data.

On August 16th, 2019, the Standing Committee of the Shanghai Municipal People's Government passed the *Interim Measures for the Opening of Public Data in Shanghai*. The interim measures, which took effect on October 1, 2019, are the first *local government rules* (地方政府规章) on open public data in China. Here, local government rules generally refer to administrative regulations issued by the local government within the scope of their administrative powers and their contents are specific to a certain matter (Shenyang Municipal People's Congress 2017), in this case, the opening of public data in Shanghai. The local government rules mainly concern the functions and responsibilities of administrative subjects, and the rights and obligations of administrative counterparts. It is important to note that *local government rules* and *local regulations* (地方性法规) are both treated as law with binding force according to the Legislation Law of the People's Republic of China (2015 Amendment). While the *local regulations* are issued by the local people's congress and its standing committee,

the *local government rules* are issued by local governments. According to the legislation law, when there are existing national laws and local regulations of a specific matter, the national laws and local regulations prevail over local government rules at the same level (Zou, 2006). If not, local government rules can be issued first in response to the administrative needs of the local government (Shenyang Municipal People's Congress 2017) and used as experiments that precede local regulations and national laws (The Central People's Government of the People's Republic of China 2020). In the latter case, according to Article 82 in the Legislation Law, two years after the local government rules are issued, local governments can propose to the local people's congress or its standing committee to make local regulations when the local governments need to continue to implement administrative measures.

The interim measures consist of 8 chapters, 48 articles, which include general provisions, opening mechanism, platform construction, data utilization, diversified data opening, supervision and protection, liability, and supplementary rules. The interim measures primarily cover 6 areas of open public data, including clarifying the management mechanism for opening public data; establishing a long-term mechanism for opening public data; optimising the construction of open public platform; ensuring the legitimacy of public data utilization; creating a diversified system for opening public data, and strengthening the supervision and protection of opening public data (Shanghai Municipal People's Government 2019b). The interim measures have categorized four different types of entities, including data opening entities (数据开放主体), data utilization entities (数据利用主体), platform management entities (平台管理主体), and security management entities (安全管理主体). In Chapter 7, the interim measures specify the corresponding liabilities of the four entities, that are the range of behaviours the different entities are legally responsible for, which we present below.

Starting with the data opening entities, which are all departments of the Shanghai Municipal People's Government, district people's governments and other public administration and service institutions, these entities are held liable if they:

- fail to open and update the public data of the unit in accordance with regulations
- fail to desensitize and declassify open data in accordance with regulations
- do not meet the unified standards; establish new independent open channels; or fail to incorporate existing open channels into the municipal open platform in accordance with regulations

- fail to handle the objections or notifications from natural person, legal person, or unincorporated organizations in accordance with regulations
- have other behaviours that do not fulfil the data opening duties in accordance with regulations

In these cases, the people's government at the same level and the competent department shall command a correction to the data opening entities. If the circumstances are serious, the person in charge directly responsible and other persons directly responsible shall be punished according to law.

Second, the data utilization entities are held liable if the entities:

- fail to fulfil its obligations listed in the data utilization agreement
- violate other people's legal rights, including trade secrets and individual privacy
- utilize public data to obtain illegal gains
- fail to take security measures in accordance with regulations, causing incidents that endanger information security
- have other behaviours that violate the provisions of the interim measures

Third, the platform management entity (i.e., the Municipal Big Data Center) is held liable if the entity:

- fails to document the entire opening and utilization process of the public data in the open platform in accordance with regulations
- fails to deal with the objections or notifications of natural person, legal person and unincorporated organizations in accordance with regulations
- fails to perform other platform management duties in accordance with regulations

In these cases, the competent authority shall command a correction. If the circumstances are serious, the person in charge directly responsible and other persons directly responsible shall be punished by the competent authority.

Fourth, the interim measures also specify four types of security management entities, including the Municipal Cyber Security and Public Security Department, Municipal Big Data Center, Data Opening Entities and other departments with network security management functions and their staff. According to the interim measures, if the security management entities fail to perform security management duties in accordance with regulations, the people's government at the same level or the competent department at the higher level shall order correction. And if the circumstances are serious, the person-in-charge as well as other directly responsible persons shall be punished according to law.

In addition, as we have mentioned above, the interim measures also specified an exemption clause for the data opening entities. According to the interim measures, in cases where the data opening entities opened their public data and performed the duties of supervision, management, and reasonable care according to laws, regulations and rules, the data opening entities are not held liable or exempted from the corresponding liabilities for the loss of data utilization entities or other third parties caused by issues such as data quality.

In an interview with a major Chinese media outlet, Southern Metropolis Daily, Qiu, division director at the SMCEI, revealed one of the primary motivations to introduce the interim measures was to improve the coordination of the local authorities and departments in opening public data by specifying the four types of entities, their duties and the legal consequences in case the entities failed to fulfil their duties (Southern Metropolis Daily, 2019). In addition, the exemption clause, according to Qiu, was introduced to further improve the willingness of the local authorities and government departments to open their data by providing legal waiver for the local authorities and government departments in cases of data quality issues causing economic loss of the data utilization entities. As Qiu explained in the interview with Southern Metropolis Daily:

Private enterprises utilize the public data to make data service products or business plan layout, which may actually cause economic loss. In the interim measures, we don't encourage enterprises to hold government departments accountable because the enterprises believe the failure of their product is caused by the data provided by governments. The exemption clause is thus introduced to unload the burden of government departments to the maximum extent through legislation.

In addition, Qiu also emphasized that the liability measures, which are the specified legal consequences, are not the only driver for local authorities and government departments to open public data of better quality. Informal institutional pressures, such as organizational reputation, is also an important driver for the local authorities and government departments to improve their data quality, as Qiu explained:

From a government's perspective, once their data is open to the public, the data can only be of better quality. That is to say, it is not possible that the government departments open data of problematic quality to the public. Even if the government departments can get exempted from their liabilities, the consequences of opening problematic data can still cause damage to their organizational reputation, which will not be good for to these government departments.

Along this line, the liability measures in the *Interim Measures for the Opening of Public Data in Shanghai* appear to emerge from the need to solve the coordination challenges in opening public data in the Shanghai Municipality - more specifically, on the local authorities and government departments' willingness to open public data of high quality. While formal institutional acts such as liability clauses offer guidelines on who should be held accountable for what, information institutional pressures also push public bodies to open high-quality datasets in order to preserve their organizational reputation.

Discussion

The overview of the development of open public data initiatives in Shanghai helps us identify the lack of willingness of the local authorities and government departments to open public data as a key barrier that emerged in the coordination among the data opening entities as well as the demands of data utilization entities. Seeing the unwillingness of the local authorities and government departments as a reflection of unclear recognition of roles and duties, lack of understanding of the value of open public data, as well as limited administrative capacity, the Shanghai Municipal People's Government used legislation, i.e., the *Interim Measures for the Opening of Public Data in Shanghai*, as a way to reduce legal uncertainties around liability and formally institutionalize the roles and duties of different stakeholders of open public data in the municipality. In the meantime, the Shanghai Municipal People's Government also helps the data opening entities to cope with uncertain consequences of data utilization by introducing the exemption clause.

Our findings make four contributions to the existing governance studies on open public data. First, we present a Chinese case on open public data that is new and emergent and has not been explored among the governance research community. Currently, there have been scattered studies focusing on achieving accountability of open public data and investigating the legal and non-legal consequences associated with it (Cerrillo-i-Martinez 2012; Lourenço et al. 2017; Peixoto 2013; Reggi and Dawes 2016). In terms of legal consequences, these studies primarily focus on liability measures on national level (e.g., UK, USA, and so on) and supra-national level (the EU). To the best of our knowledge, this paper is among the first studies that explore the local legislative measures on open public data (i.e., at municipal level) and in a Chinese context. Our findings show that the Shanghai Municipal People's Government chose to issue *Interim Measures for the Opening of Public Data in Shanghai* as *local government rules* that are issued by the local governments, instead of *local regulations* that are issued by the local people's congress and its standing committee. This choice can have some interesting implications, when it comes to the implementation of the interim measures. As we have mentioned before, there are some differences between the local government rules and the local regulations, but the distinction is not as clear, especially when there is no existing national law or regulation of a specific matter. Nevertheless, in practice, existing study shows there is a common perception among the local governments in China that local regulations have a higher legal status than local government rules, which may compromise the authority and effectiveness of local government rules (Liu, 2015). In this sense, future studies should follow up on the implementation of the *Interim Measures for the Opening of Public Data in Shanghai* and investigate what are the perceptions of the interim measures among the local authorities, especially considering their different positions, pressures and perceptions of risks, and if there is any interplay between the perceived legal status of the interim measures and the effects of implementation. Based on studies as such, one can look further into whether the *local government rules* are suitable legal instruments for regulating open public data in the long run in the Chinese context.

Moreover, as we have mentioned above, China's institutional and policy innovations during the economic reform are observed to be characterised by experimental governance, in which the central policymaking relies on the experiences of local experimentation to address uncertainty (Heilmann 2008a; 2008b; 2009). While our findings on the making of the *Interim Measures for the Opening of Public Data in Shanghai* confirm a similar pattern of law-making in an evolving technological area like open public data, there are also nuances. This is mainly considering the open public data movement and the SODA contest that preceded the making of the regulation was

not developed under the top-down mandate of the central government. Rather, it was only after the Shanghai Municipality became successful in organizing the contest and exploring open public data that, in 2018, the central government appointed the four cities, including Shanghai, as pilot areas. Future studies should look into whether such hybrid patterns between a bottom-up experiment and a top-down recognition would be an emerging experiment governance mode in China to address uncertainties in technological innovation, such as artificial intelligence or blockchain.

Second, from the case analysis, we have identified that reducing legal uncertainty around different stakeholders' liabilities constitutes a new way to increase the accountability of the stakeholders, participating in open public data initiatives. As we have mentioned previously, several governance researchers have argued that open public data can bring benefits such as increased government accountability (Lourenço et al. 2017; Peixoto 2013; Reggi and Dawes 2016). Nonetheless, other scholars have also pointed out that the availability of open data to the public does not necessarily lead to the achievement of all intended benefits (Peixoto 2013; Reggi and Dawes 2016). Rather, accountability is achieved through a process involving several steps, such as disclosure of data, followed by discussion around the open data and the realization of certain consequences (Bovens 2007; Lourenço et al. 2017; Schillemans, Van Twist and Vanhommerig 2013). Our finding shows that the Shanghai Municipality sees governments' accountability in open public data initiative as a process that is achieved through multiple types of entities (i.e., data opening entities, data utilization entities, platform management entities, and security management entities) with a specific range of duties. Through legislation under the form of interim measures, the Shanghai Municipal People's Government manages to reduce legal uncertainty around the liabilities, which these four different types of entities can incur, and in this way removing one of the barriers preventing public bodies to participate fully in open government initiative, consequently leading to increased accountability.

The interviews with the legislators also reveal organizational reputation as an important driver for local governments to open high quality data. Apart from legal consequences (i.e., liability), open data initiatives can also lead to non-legal consequences such as negative public image (Lourenço et al. 2017). In particular, the increased visibility of actions by public bodies can reveal poor decision-making and judgement (Lourenço et al. 2017). In addition, as our case reveals, the opening of public data in Shanghai is a process that starts from local authorities and then expands to the other authorities. During this process, the data opening level of local authorities that have already made available their high-quality data and benefited from the citizen participation may

become an informal institutional pressure (DiMaggio and Powell 1991) for the other authorities to conform due to changes of expectations on the norms of public service provision among both the citizens and the local authorities. Future studies should extend the focus on liability measures as formal institutional measures to achieve accountability and investigate the informal institutional measures that motivate public bodies to act in order to achieve better accountability.

Third, we argue that the interim nature of the measures is critical for experimenting with legislation around emergent and uncertain technological phenomena, such as open public data, which leaves space for changes in case the phenomena evolve. Existing studies have looked into regulatory instruments such as Directives (on EU level), and national laws (e.g., Dulong de Rosnay and Janssen 2014) to guide implementation of open data initiatives, with limited degree of success. The introduction of such hard law legal instruments prematurely, however, can lead to negative repercussions such as curbing innovation efforts (Mandel 2017). In addition, in the context of uncertainty brought by new technologies, legal scholars have also advocated for the use of certain principles, which are mainly technology-neutral, and which outline broad recommendations on how to address the emerging uncertainty (Mosses 2017). While these principles have their own merits, due to their broad scope and relative vagueness (also in relation to incurred liability), they may lead to local authorities complying with them in a minimal manner or altogether circumventing them. In response to this concern, one of the implied findings of the Shanghai case is the interim nature of the regulatory instrument that the Shanghai Municipal People's Government uses, which, while providing concrete recommendations, also leaves room for adjustment. Thus, we rather argue that it may be more beneficial for regulators to reduce uncertainty around liability by adopting rather specific measures, which are at the same time temporary, hence flexible. While the current interim measures are being tested and implemented into formal measures in Shanghai, future research should embark on investigating the relation between the adopted regulatory instrument and its impact on successfully addressing the uncertainty of technological development.

In addition, our study sheds further light on the appropriate level to regulate open data initiatives in order to ensure that such initiatives can achieve the desired benefits. Scholars have already investigated whether supra-national level, national or local authorities should regulate given open public data initiative in order to make it successful (see, e.g., Dulong de Rosnay and Janssen 2014; Schillemans, Van Twist and Vanhommerig 2013). Our study contributes further to this debate by drawing attention to the importance of local measures to guide specific open public data initiatives. As

the local measures can be targeted towards specific characteristics of a given open public data initiative and can be drafted and passed through a relatively simplified legal process, we argue that, for some initiatives, regulating on local level, rather than national level, may be more beneficial for ensuring broader, high-quality participation. We further argue that, faced with the need to reduce legal uncertainty around liability issues in connection to open public data, legislators may benefit not only from regulating at a local level, but also by adopting interim measures, thus allowing for more flexibility in case the adopted measures are not suitable for achieving the desired benefits. We urge researchers to investigate in detail examples of regulatory measures around open public data initiatives at a local level in order to map the different approaches and estimate their effectiveness. Scholars can also study the perception of different local authorities towards the introduced interim measures and further analyze their willingness to comply with them and their degree of compliance. As the different local authorities differ in terms of their goals, structures, risk attitude, and so on, we could expect some variations in their perceptions and responses to the interim measures. In addition, we call for researchers to further compare and contrast regulatory measures on supra-national, national and local levels in order to point out under what circumstances, authorities at each level should regulate and to what degree.

Conclusion

In this paper, we have explored the link between public accountability as a desired outcome of open public data initiatives and the perceived risk of liability by public bodies by looking into the contexts of emergence as well as the contents of the recently announced *Interim Measures for the Opening of Public Data in Shanghai*. We particularly focused on the clauses around liability and the motivations for introducing them. Our findings show that the interim measures are a formal way to institutionalize the roles and duties of different stakeholders of open public data in the Shanghai municipality. Meanwhile, they also protect the data opening entities to cope with uncertain consequences of data utilization by introducing the exemption clause. In this way, we argue that the interim measures, outlining duties for specific entities in data opening while remaining flexible in accounting for the consequences of data utilization, constitute a novel regulatory approach towards reducing the legal uncertainty around perceived risks of liability in the area of open public data. This approach can potentially influence public bodies to participate in a meaningful way in open public data initiatives.

This paper makes four contributions to the understanding of open public data legislation: first, we present a Chinese case on open public data that is new and emergent and has not been explored among the governance research community. The case raises interesting discussions on the implications of implementing local government rules, as well as on the mode of experimental governance to address evolving technological phenomena in a Chinese context. Second, from the case analysis, we have identified reducing legal uncertainty around different stakeholders' liabilities as a way to improve data opening entities' willingness to open public data, hence potentially increasing the accountability of these public bodies. Third, we have also emphasized the interim nature of the measures as key to experiment legislation around emergent and uncertain technological phenomena, such as open public data, which leaves space for changes in case of technological development. Last, we have drawn further attention to the importance for authorities to regulate at a local level, as opposed to national and supra-national levels, in order to ensure more efficient realization of the benefits related to open public data initiatives.

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