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The politics of platform power in surveillance capitalism: A comparative case study of ride-hailing platforms in China and the United States

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Abstract

This article uses a comparative case study of two ride-hailing platforms—DiDi Chuxing in China and Uber in the United States—to explore the comparative politics of platform power in surveillance capitalism. Surveillance capitalism is an emerging economic system that translates human experiences into surveillance assets for behavioral predictions and modifications. Through this comparative study, we demonstrate how DiDi and Uber articulate their operational legitimacy for advancing their corporate interests and visions of datafication in the face of legal uncertainty. Although DiDi and Uber are both "sectoral platforms" in urban mobility with similar visions of datafication and infrastructuralization, we highlight that they deploy different discursive legitimation strategies. Our study shows that Uber adopts a "confrontational" strategy, while DiDi employs a "collaborative" strategy when they need to legitimize their data and business practices to the public and regulatory authorities. This study offers a comparative lens to examine the social and political dynamics of platform firms based in China and the United States and, therefore, contributes to understanding the various aspirational logic of platform thinking in different political contexts.

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Introduction

In the presence of network effects and automated technologies, platform firms have expanded their capacity to extract, analyze, and translate human experiences into surveillance assets, or what Zuboff, 2019 calls "behavioral surplus." As such, user data become valuable assets for platforms to extract value and anticipate future revenue (Birch et al., 2021; Van Doorn & Badger, 2020; Zuboff, 2019). The goal of automated data extraction is not to simply track user behavior, but to pre-empt and modify user subjectivity in a way that results in desirable market outcomes (Andrejevic, 2020; Zuboff, 2019). An underlying premise of automated media is that "they address a perceived *problem*: the moment of uncertainty, unpredictability, inconsistency, or resistance posed by the figure of the subject" (Andrejevic, 2020, p. 2; italics original). As monopolistic platforms such as the so-called "GAFAM" (Google, Apple, Facebook, Amazon, and Microsoft) and "BAT" (Badiu, Alibaba, and Tencent) can access—and, perhaps more importantly, automate—a massive number of users, recent years have witnessed growing concern over platform power and its implications for public values (Van Dijck, Nieborg, & Poell, 2018; Van Dijck, Poell, & de Wall, 2019).

This article contributes to the literature concerning platform power through a comparative analysis of platforms' operational legitimacy for market expansion and survival in different institutional contexts. We argue that the articulation of operational legitimacy is essential for the maintenance of platform power in three ways. First, our analytical approach highlights the agency of platforms in which platforms actively build and manifest their legal and ideological legitimacy in a particular regulatory context. Second, and relatedly, platforms often engage in what Pollman and Barry (2017) call "regulatory entrepreneurship," meaning that "changing the legal environment is crucially important for the business's growth, or even its legality" (p. 393). Politically, articulating the operational legitimacy enables platforms to strategically position the relationship between themselves and other stakeholders (e.g., regulators and consumers) (Gillespie, 2010) and mobilize the public to support their businesses (Chan & Kwok, 2021). Third, platforms as market players must justify their data practices to consumers, often through an ideology of convenience (Huberman, 2021). In other words, platforms attempt to convince consumers to trade their data in exchange for convenience.

As such, platform power does not come naturally through technological means; instead, platforms must discursively legitimize their corporate visions of datafication (Chen & Qiu, 2019; Huberman, 2021) to regulators and the public. Datafication refers to the ways that platforms collect, analyze, and translate people's behavior into digital data with predictive qualities (Van Dijck, 2014). This process of datafication becomes intensified in a context of increasing platform infrastructuralization, which refers to the consolidation of various computing and network resources by means of socio-technical gateways (Plantin et al., 2018; Van Dijck, 2020).

In a recent call for theorizing "the platformization of Chinese society," de Kloet, Poell, Zeng, and Chow (2019) probe, "What does the platform society mean for China, and what does China mean for our thinking about the platform society?" (p. 150). On the one hand, they explain, "China presents an odd case" (p. 150) in part due to the state's regulatory and development trajectories. On the other hand, this line of inquiry might inadvertently reinforce the binary distinction between China and the West; therefore, they argue for the need to examine both convergence and divergence in different local contexts. Following this call, we present a comparative case study of

two ride-hailing platforms—DiDi Chuxing (hereafter DiDi) in China and Uber in the United States—to explore the discursive and political dimensions of platform power. They are chosen for two reasons. First, DiDi and Uber are "sectoral platforms" (Van Dijck, 2020; Van Dijck et al., 2018) in urban mobility, which represents a key avenue for articulating and contesting processes of what Plantin et al. (2018) term "platformization of infrastructures" (p. 306). As the two firms provide urban planners and government officials with traffic datasets for urban governance, they meanwhile expand their capacity to data extraction. This process may envision the possibility of transforming urban space "into an 'operational city' whose functions are administered in automated and opaque ways" (Andrejevic, 2020, p. 108). Hence, there is a need for understanding how they justify and legitimize the platformization of urban mobility. Second, datafication is central to both DiDi's and Uber's platform business models (Chen & Qiu, 2019; Van Dijck et al., 2018), which affords opportunities for exploring their discursive work so as to complicate current research on the platform economy (de Kloet et al., 2019).

How do DiDi and Uber envision their visions of datafication? How do they appeal to public values to legitimize their businesses in the face of legal uncertainty? What are the similarities and differences between their legitimation mechanisms? A critical inquiry into the two firms' legitimation mechanisms, we argue, contributes to understanding the varieties of platform power and surveillance capitalism. Platforms do not always succeed in navigating and adapting to regulatory regimes (Chan & Kwok, 2021; Thelen, 2018). In our earlier study of Uber's operation in Mainland China, Taiwan, and Hong Kong, we found that while the firm deployed convergent strategies to seek a rapid market growth when entering the three markets, its political playbook was largely constrained by the "government-platform political dynamics" (Chan & Kwok, 2021, p. 791). In this article, we demonstrate the institutional embeddedness of DiDi's and Uber's legitimation mechanisms and visions of datafication amidst the management of legal uncertainty in China and the United States. This study also contributes to spotlighting the convergent and divergent aspirational logic of platform thinking (Chen, 2020) in surveillance capitalism; specifically, the ways that platforms envision the potential of their data extraction practices in different institutional environments.

This article begins with a review of the literature concerning platform power, surveillance capitalism, and the political economy of the platformization in China. After presenting the two cases and materials, we examine DiDi's and Uber's legitimation mechanisms concerning datafication in different regulatory contexts. What is at stake here is that both firms, to some degree, operate in and exploit legal gray zones for profit-making purposes. Despite such similarities, we demonstrate how their legitimation mechanisms were dependent on institutional contexts. Uber appealed to public values and relied upon social mobilization to confront the government's regulation. DiDi, similarly, appealed to public values, but they meanwhile legitimized their legal exploitation through collaboration with regulatory authorities. As such, they used different discursive strategies to achieve the very same goal—the management of legal uncertainty. We conclude by discussing the implications and limitations of the study.

Platform power and surveillance capitalism

Zuboff, 2019 work on surveillance capitalism is particularly relevant to understanding platform power because it highlights how platforms can extract value from the modification of user behavior through the deployment of automated technologies and datafication. Surveillance capitalism consists of four key features. First, even though it is similar to traditional types of capitalism in that they all build on similar "capitalist 'laws' such as competitive production, profit maximization,

productivity, and growth," surveillance capitalism "operate[s] in the context of a new logic of accumulation" through behavioral surplus; that is, profit generated from surveillance (Zuboff, 2019, pp. 66–67). Second, in surveillance capitalism, there is an imperative to collect data, as datafication has created a broad institutional environment in which organizations are increasingly judged by their relative capacity to utilize data for their own purposes (Constantious & Kallinikos, 2015). The data imperative, argue Fourcade and Healy (2017, p. 16), drives organizations to "believe they should be in the data collection business, even when they do not yet know what to do with what they collect. Third, surveillance capitalism denotes a new form of exchange relationships. Google search is free for all users, and there is no economic exchange between users and Google. All that users provide are raw data. The raw data could generate profit, but they are not directly sold to users (Zuboff, 2019). Fourth, surveillance capitalism is embedded in a datafication structure (Van Dijck, 2014). It is only through an expansive data infrastructure that the mass extraction, analysis, and application of behavioral data become possible.

Nonetheless, surveillance capitalism is not a necessary effect of technological development. Platform firms play a crucial role in facilitating surveillance capitalism by their effort in creating economic, social, and political environments in which extracting surplus from behavioral data faces less barriers and becomes increasingly profitable (Srnicek, 2017; Van Dijck et al., 2018). As Van Dijck et al. (2019) argue, platforms exercise their power through constructing an all embracive "ecosystem" which consists of "a mixture of old currencies (attention and capital) and now ones (data and users)" (p. 3). This ecosystem enables platforms to dominate and reuse data flows for algorithmic control, to exercise control over platform stakeholders, to govern the digital infrastructure through which online activities occur, and, more importantly, to interfere with the political processes in society (Van Dijck et al., 2019). Given the potential power of such an ecosystem, platforms therefore need to justify their construction and control of the ecosystem to relevant stakeholders.

Platforms confront challenges and reshape institutional, social, and cultural environments through the "dispossession cycle," which refers to "a sequence of maneuvers by which a company takes what it wants and grinds down obstructions in its path" (Ross, 2019; see also Zuboff, 2019). According to Zuboff, 2019, the dispossession contains four stages. The first stage of the cycle is "incursion into undefended space" (p. 138). It denotes a process through which firms attempt to penetrate all social and individual spheres to look for rooms for gathering data and making profit from it, particularly by disregarding social norms and legal rules, until they face resistance. The second stage is habituation. Firms intentionally bring disputes into lengthy legal procedures and take temporal advantages to habituate and broaden their user base. The third stage is adaptation. In face of public outrage, firms strategically respond to it by slightly modifying some of its practices, while letting those undiscovered problematic practices remain intact. The fourth stage is redirection, which is to "redirect" contested practices "just enough so that they *appear* to be compliant with social and legal demands" (p. 139, emphasis added). Taken together, the cycle aims not only at contesting institutional boundary of what data practices are allowed, but also social and cultural norms regarding the act of incursion by platforms (Milan & van der Velden, 2016). Existing studies have also examined how platforms exercise their power to reshape the socio-political environment by attempting to change institutional rules (Chan & Kwok, 2021; Collier, Dubal, & Carter, 2018; Pollman & Barry, 2017; Thelen, 2018) and to develop partnerships with the state (e.g., Plantin & de Seta, 2019). Platforms also reshape social and cultural dynamics (Van Dijck et al., 2018) through their strategic discursive framing of the relationship between platforms and users (Chen, 2020; Gillespie, 2010).

What is important in Zuboff, 2019 insight is that surveillance capitalism entails a process through which people are turned to be "automated subjects" via an automated process of subjection. An automated subject, according to Andrejevic (2020), is a subject that "would allow a fully automated society to run smoothly and frictionlessly" (p. 2). Thus, surveillance capitalism represents an attempt to construct a new social governing mechanism of control through processes of datafication and infrastructuralization. A crucial aspect of this governing mechanism is the promise that "data-driven systems will know what we desire or intend before we ourselves know" (Andrejevic, 2020, pp. 8–9). Platforms, given their active role in facilitating the process of infrastructuralization and datafication, are important actors in the construction and consolidation of surveillance capitalism. However, platforms' data practices are not uncontroversial because their practices essentially mean that they are acquiring controlling power over other stakeholders. As a result, all platforms need to confront the question of how to articulate an ideological legitimacy for their practices (Huberman, 2021). Whereas Zuboff, 2019 offers valuable insights into the economic and political logic of surveillance capitalism, we know less about the diverging legitimating discursive practices and platform-state political interactions in different regulatory contexts.

The political economy of the platformization in China

From a critical political economy approach, scholars have examined how the concentration of platform power can be achieved through vertical integration, infrastructuralization, and cross-sectorization (Van Dijck, 2020; see also Plantin et al., 2018). Consider, for example, Facebook, which has evolved from a social networking site to data infrastructure through its long-term deployment of boundary resources (e.g., partnership programs and APIs) and acquisitions of other social media apps such as Instagram and WhatsApp (Helmond, Nieborg, & Van der Vlist, 2019). These strategies not only facilitate the firm's ability for data extraction but also make it difficult for new market entrants to compete with the firm. In contrast to Facebook's platformization, LINE envisions itself as a "super app" (see also Chen, Mao, and Qiu (2018)'s analysis of WeChat as a "mega-platform") that facilitates every part of digital life, in part because of its local character culture and sticker market in Japan (Steinberg, 2020).

As de Kloet et al. (2019) aptly argue, "*The* platform society does not exist … We are left with time- and place- specific processes of platformization; their instability and contingency demand scholarly scrutiny that is sensitive to empirical detail and to specificity" (p. 254; italics original). In China, big data has been envisioned to be "the basic strategic resource" for promoting national security, economic restructuring, and technological development (Ministry of Industry and Information Technology [MITT], 2016; see also Liu, 2020). While the state plays an active role in driving processes of platformization (de Kloet et al., 2019), scholars have challenged the binary distinctions between the state and market as well as between China and the West (Hong, 2017a; Zhao, 2008). According to Hong, 2017a,

> To move beyond binary framing, we need to see the state as a combination of contending functions and interests rather than a uniform entity. Despite its relative autonomy, the state is partly constituted by contention, collusion, and compromises between regulatory bureaus and corporate actors, public and private sectors, transnational linkages and nationalistic interests, and powerful stakeholders and the rest of the society. (p. 20)

This approach admits the state's desire for expanding control over the Internet and the platform economy, while highlighting the complex interplay between the state, private actors, and the public in the global political economy.

In response to the global financial crisis of 2007–2008, the Chinese government has underscored "the Internet and ICT sectors as *the* pillar industry in national economic restructuring" (Tang, 2019, p. 18; italics original; see also Hong, 2017a, 2017b). The 2015 "Internet Plus" action plan, together with the 13th "Five-Year Plan," have encouraged domestic technology companies to expand China's global influence to contest the power of the West (Hong, 2017b; Keane & Yu, 2019; Tang, 2020). The Chinese technology companies, including BAT, have accordingly incorporated transnational capital and adopted globalization strategies to expand their business scale (Jia, Kenney, Zysman, 2019; Jia & Winseck, 2018; Tang, 2020). Jia and Winseck (2018), for example, found that foreign entities had sizable ownership of Tencent (40%) and Alibaba (47.4%). At the same time, techno-nationalism and protectionism remain important concerns in China's platform governance (Chen, 2020; Hong, 2017b; Plantin & de Seta, 2019) and data localization (Liu, 2020).

There is a growing body of literature concerning how platforms could maintain and expand platform power in China's techno-nationalist context (Chen & Qiu, 2019; Plantin & de Seta, 2019; Tang, 2019; Wang & Lobato, 2019; L. Zhang, 2020, 2021b). Wang and Lobato (2019), for example, argue that the Chinese video platform iQiyi is a national political project, as opposed to US-based video platforms as regulatory objects in liberal democracies. Plantin and de Seta (2019) found that WeChat might benefit from China's platform protectionism to build a national infrastructure for the digital economy, but it also helped to advance the state's techno-nationalist desire by creating a nationwide social platform and payment system (see also Chen et al., 2018). Using the framework of digital utility, Chen and Qiu (2019) contend that DiDi built a platform ecosystem of urban transport through its financialization, datafication, and labor management strategies. Despite DiDi's appeal to public values, its "intensive data extraction practices … are made possible by the exploitation of digital utility labor," namely, DiDi drivers (Chen & Qiu, 2019, p. 285; see also Chen, Sun, & Qui, 2020). As such, Chinese platform discourses might follow what Chen (2020) calls "platform thinking," which is characterized by "the perception of digital platforms as coalescing and connective forces to shake and improve the conditions for social changes and development at large" (p. 157).

Nonetheless, techno-nationalism is not the determinant of platformization in China. Existing research has demonstrated how the desire for commercialization (Miao & Chan, 2020; Z. Zhang, 2021b; Zhao & Lin, 2021) and internationalization (Miao & Chan, 2020; Jia et al., 2019) are essential for platforms' developmental trajectories. Additionally, Chinese platforms—like the counterparts in Euro-American contexts (Pollman & Barry, 2017)—may operate their businesses in legal gray areas. Consider the example of the variable interest entity (VIE). VIE is a contractual arrangement that enables Chinese firms to raise funds from foreign investors, especially in "sensitive" sectors such as telecommunications and technology (L. Li, 2021a). Since the early 2000s, many technology firms, including BAT, have adopted a VIE structure, whereas the Chinese government does not formally approve this structure. On the one hand, China relies on this flexible arrangement to develop the Internet industry (Li, 2021a). On the other hand, the example of the VIE showcases how regulatory arbitrage is central to China's platformization. More importantly, China's platform governance is arguably fragmented and decentralized because of its multi-level governance structure (Hong & Xu, 2019; Zhao & Lin, 2021). As Plantin and de Seta (2019) argue, "the 'Chinese model' should not be reduced to platform capitalism 'with Chinese characteristics,' nor should it be dismissed as the outright authoritarian control of digital media" (p. 270). Although platform firms in both Chinese and Euro-American contexts are economic actors that actively exploit potential legal gray zones for profit maximization, platforms' legitimation strategies for such profit-making behaviors and the state–platform interactions are nevertheless dependent upon specific institutional trajectories.

Against this backdrop, we conduct a comparative study of DiDi and Uber—two ride-hailing platforms in different institutional contexts. A comparative inquiry into the two firms' visions of datafication and infrastructuralization and legitimation mechanisms can help us to understand how they articulate the operational legitimacy to gain and sustain platform power in surveillance capitalism.

Cases and data

The primary objective of this study is to explore the platform power of two ride-hailing platforms—DiDi in China and Uber in the United States—in surveillance capitalism. Appendix Table 1 offers a brief overview of the two cases. This study focuses on how platforms gained their power through discursive and political strategies in respective national contexts. An underlying premise of the study is that while data extraction relies on automated technologies, such practices are rendered possible when they are tolerated by the public and regulatory authorities. Thus, data practices must be discursively justified and institutionally legitimized. This legitimation process is crucial for multisided platforms such as DiDi and Uber because their businesses are valuable conditional on their ability to accumulate a large user base. Put another way, we do not presume that platform discourses necessarily represent the firms' intentions or actual practices—and in fact, this is often not the case as illustrated in Zuboff, 2019 analysis—however, such discourses can reveal how the firms attempt to normalize their data extraction in public domains (Huberman, 2021) so as to consolidate platform power (Van Doorn, Mos, & Bosma, forthcoming).

We utilized a range of empirical materials to analyze DiDi's and Uber's discourses and political strategies. First, we drew on the two firms' public marketing materials about datafication, including "DiDi Brain," "DiDi Safety, "Uber Movement," and "Uber Transit." These materials reveal how the two firms legitimized their data extraction activities in public domains. As Uber is a publicly traded company, we collected information from its initial public offering (IPO) prospectus in 2019 as well as its 2019 and 2020 annual reports for investors. We paid particular attention to Uber's forward-looking statements in these reports because they represent how the firm envisioned the future of the business and platformization. These reports also discussed how Uber evaluated regulatory and legal uncertainty of its business. Second, we collected and analyzed China's State Information Centre's (SIC) annual reports about the Chinese "sharing" economy between 2016 and 2020. DiDi was featured as one of the pioneers in the reports. Third, as market consolidation is commonly referenced as a crucial way for platforms to gain power (Chen & Qiu, 2019; Jia & Winseck, 2018; Van Doorn et al., forthcoming), we also gathered the two firms' financial information, particularly concerning mergers and acquisitions, from Crunchbase and CB Insights (see Appendix Table 1). Finally, we drew on existing research and news coverage about the regulation of DiDi and Uber to supplement the analysis. Taken together, our goal is to draw empirical examples to illustrate how the two firms strategically framed and legitimized their businesses and data practices on a *discursive* level (Chen, 2020; Gillespie, 2010) rather than to provide a comprehensive overview of their development trajectories.

Indeed, there are other relevant critical methodological approaches in platform studies (Burgess, 2021). The walkthrough method, for example, allows researchers to systematically analyze an app's interfaces, affordances, and expected use environment (Light et al., 2018). This study, to some degree, shared a similar analytical focus on Uber's and DiDi's visions and operating models; however, we did not fully adopt the walkthrough method, particularly the technical walkthrough because the analysis focused more on the firms' public discourses rather than users' positions within

the app environment. As we illustrate in the concluding section, future studies can benefit from adopting hybrid digital methods (Burgess, 2021).

Studying platform power in comparative perspective

DiDi's vision of datafication and infrastructuralization

DiDi's vision of datafication and infrastructuralization can be analyzed in terms of their profit-making, transformative, and political potentials. As a car riding service provider, DiDi simultaneously rests on the existing data infrastructure and plays a key role in developing it (Chen & Qiu, 2019). DiDi's vision represents its immense ability to process a large amount of real-time data to expansively restructure urban transportation in China.

DiDi's president, Liu Qing, stated in the *Charlie Rose Show* in 2017 that Didi has been a pioneer in the application of technologies enabled by an expansive datafication and infrastructuralization:

> This technology [artificial intelligence and big data] is really helping everybody to get a ride faster, and if you time that to 25 million rides a day, because we are completing 25 million rides a day. So, every second in the peak hours, 600 rides. Every second, there are 600 rides delivered, and there is millions … of times of calculation underneath. (Charlie Rose Show, 2017)

Similarly, the official website of DiDi emphasizes that DiDi's ability to continuously offer good quality service rests on its "DiDi Brain" (DiDi, n.d.-c). DiDi Brain "is an intelligent system through which big data decisions are made for the world's leading transportation platform." DiDi also stresses that its brain processes "106TB+of daily new route data for real-time traffic status nationwide," and it can predict demands in the next 30 minutes to dispatch cars to areas of demand in advance (DiDi, n.d.-c). DiDi (n.d.-a) projects itself as a "global leader in the revolution in transportation and automotive technology" that stresses "data-driven thinking," meaning that it takes advantage of an already existing and growing trend of datafication. In this sense, DiDi projects itself as a technological advancement which helps to translate data inputs from drivers and users for better reshaping the conditions of traffic (Chen & Qiu, 2019).

This becomes clear when DiDi sees itself as a platform offering "more than a journey." The meaning of the slogan was made clear when its president explained in an interview that DiDi aims at applying AI and big data to "transform China" (Charlie Rose Show, 2017). In DiDi's (2017) *Corporate Citizen Report*, they openly stated that "we hope not only to trigger changes in the transportation and automotive industries in China, but also to extend our grand vision to the whole world" (p. 27). First, DiDi collaborates with more than 20 city governments in China to solve problems of travel congestion (Xinhua, 2020). As Liu Qing stated: "It's really a world class dilemma. How to move around 800 million urban Chinese" (Charlie Rose Show, 2017).

Second, Liu stated that DiDi's goal is to be part of future cities, cities that "built around people, rather than parking lots and vehicles." This further denotes that DiDi sees the process of datafication and infrastructuralization as a process of re-centering the material infrastructure of the city to focus on the needs of people without sacrificing their mobility, and it sees part of its mission as not purely economic in the sense of profit-making, but political in the sense of building smart cities through the data that it gathers and processes (Chan, 2020).

Third, an even more noteworthy aspect is that DiDi perceives itself carrying a semi-political mission of solving people's discontent over life in the city. This is in line with L. Zhang's (2020)

observation that platforms in China are usually embedded in culturally specific political goals. DiDi's self-imposed mission is semi-political because DiDi positions itself as part of an innovative tool to resolve the discontent over urban planning. As Liu Qing explained,

> One of the key challenges I see is … when the city becomes bigger, when there is more population, and everyone wants a very good quality lifestyle, but at the same time, how can we solve the resource issue. … [our mission is to] make people feel living in the city life can still make me feel happy and inner peace. (Charlie Road Show, 2017)

In other words, their vision of datafication includes a political vision, which is an innovative solution to the traditional political question of resources distribution. It proclaims itself as an inseparable part of any big city which aims to provide a happy and good quality lifestyle to its citizens.

DiDi's collaborative legitimation mechanisms

Like Uber, DiDi has operated in the shadow of regulatory regimes and been known for its exploitation of workers' rights (Chen & Qiu, 2019). A key question, therefore, is how DiDi has discursively legitimized its practices, even though its pursuit of private interests might go against the interests of regulatory authorities.

The Chinese government has legalized ride-hailing platforms by issuing the *Interim Administrative Measures for the Business of Online Taxi Booking Services* in 2016, but DiDi had offered private car services *before* the legalization. The 2016 regulation, however, has delegated the authority to the local governments to set their own regulations, resulting in a "multi-headed" regulatory structure (Chen et al., 2020). In short, DiDi must obtain operational licenses in different cities (for a detailed analysis, see Chen et al., 2020). As Chen and Qiu (2019) summarize, "As of June 2018, DiDi has obtained legal operational licenses in only 51 cities in China while it operated in over 400 cities" (p. 281) and many DiDi drivers are unlicensed. DiDi has also faced pressure from the government to improve the safety of its ride-hailing services (SIC, 2018).

Against this backdrop, DiDi (n.d.-b) has positioned itself as a "one-stop transportation platform" and implemented various safety screening measures (e.g., background check, facial recognition, and driver verification). Among all safety measures, "DiDi Safeguard" enables the company to collect and analyze drivers' phone sensor and locational data to detect "unsafe" actions. DiDi also partners with the Criminal Investigation Department and the Ministry of Public Security to conduct background checks and facilitate the development of "Internet Plus Police." DiDi (2020), for example, collaborates with the police to broadcast safety messages and enables the public to report crimes to police through the in-app safety center. The company also assists the police with investigation requests through data-sharing practices. Over 98% of the investigation requests could be completed within 10 minutes (SIC, 2020).

Since 2016, the SIC, a government think tank, has published annual reports about the Chinese "sharing" economy in response to the central government's promotion of the sharing economy in the 13th "Five-Year Plan" (SIC, 2016). Considered as a "pioneer" of "Internet Plus Transportation" (SIC, 2018), these reports often used DiDi as a case study to analyze the development of ride-hailing platforms in China (SIC, 2019, 2020). These reports emphasized how DiDi and the wider sharing economy could help to create job opportunities, facilitate economic restructuring, and promote innovation (see Chen, 2020). SIS (2020), for instance, stated that DiDi has created 12 million direct

employment opportunities and 6.3 million indirect employment opportunities. This discourse is in line with DiDi's (2017) positioning of "corporate citizen" who promotes employment. Following the national strategy of "going out," DiDi creates overseas jobs in "One Belt One Road" countries and builds data-driven infrastructures in Latin America (SIC, 2020).

Unlike Uber, DiDi has deliberately avoided disrupting the taxi industry (Chen & Qiu, 2019). DiDi has not become a platform through which private gig-drivers compete with traditional taxi-drivers, which is a source of conflicts that Uber has caused in many cities that it operates. Thus, one of its legitimating discourses is to create collaborative partnerships "with more than 50 leading taxi companies in Tier-1 and Tier-2 Chinese cities" and "*datafy* the urban transport ecosystem, including taxis, and occupy the center of the converging networks of information, traffic, and transaction involving all kinds of vehicles and transport services" (Chen & Qiu, 2019, p. 280; italics original). In other words, this "DiDi Traffic" system attempts to legitimize DiDi's data and business practices through the promises of creating additional employment opportunities without creating new conflicts with existing taxi industries, while also effectively utilizing traffic data from its drivers, local governments, and related partners for managing city traffic (Chen & Qiu, 2019, p. 280).

Meanwhile, DiDi's datafication strategies may be shaped by techno-nationalism through its strategic partnerships with the Chinese authorities and business entities. Consider, for example, DiDi's alliances with the authorities in Shenzhen and Jiangxi to promote smart transportation. DiDi mobilized the language of "Internet Plus" to advocate for the role of traffic data and the platform in reducing traffic congestion. In March 2018, DiDi announced a strategic partnership with the National Development Reform Commission to share credit information to build the social credit system (China Daily, 2018). Specifically, under the system of "Credit Yixing," DiDi offers discounts and promotion to users who are classified in the "Red lists" (i.e., people who are believed to be "trustworthy"; see also Wong & Dobson, 2019). More recently, DiDi announced several strategic partnerships to advance its data and financial infrastructures. First, in line with the government's emphasis on the development of big data industries (MITT, 2016), DiDi has teamed up with Centrin Data Systems to build two data centers in Wuhan to increase their capabilities for data collection and analytics, with goals to promote smart transportation systems and plan for economic recovery from COVID-19 (IDCNova, 2020). Second, since July 2020, DiDi has partnered with the Digital Current Research Institute of the People's Bank of China to experiment with digital currency (i.e., digital Yuan)—a techno-national ambition of pursuing a "cashless" society (Ma, 2020).

In sum, its legitimation mechanisms are threefold. First, it discursively frames itself as a collaborator with local governments and posits itself as an innovative solution to urban problems. As Chen and Qiu (2019) point out, local authorities partner with DiDi to explore and take advantage of the flexibility resulting from the "regulatory vacuum." Second, it frames itself as a non-conflictual employment creation platform. Because DiDi's legitimation strategy is primarily a collaborative one, it must avoid causing local conflicts which would draw local authorities' attention to the problems of its platform. Third, like other platforms in the United States and China, it frames itself as a public good whose goal is to better the public life quality (Chen & Qiu, 2019; L. Zhang, 2020).

Uber's vision of datafication and infrastructuralization

Positioning itself as a "personal mobility" platform, Uber (2019) has a mission "to ignite opportunity by setting the world in motion" (p. 1). Datafication and infrastructuralization often become intertwined in Uber's public and corporate discourses. In this subsection, we focus on how the firm articulated its "super app" vision and urban transport solutions.

In Uber's (2019) IPO prospectus and annual reports, it clearly articulated its "massive network" as one of the business foundations. The massive network refers to "tens of millions of Drivers, consumers, restaurants, shippers, carriers, and dockless e-bikes and e-scooters, as well as underlying data, technology, and shared infrastructure" (p. 1). Drivers and riders are not simply service providers and recipients; instead, they contribute data to this massive network. Such data can then be automatically processed for informing algorithmic pricing, matching, and prediction. Consider the example of demand prediction. Such prediction, or what Uber called "forecasting" is challenging because "The Uber platform operates in the real, physical world, with its many actors of diverse behavior and interests, physical constraints, and unpredictability" (Bell & Smyl, 2018). Echoing Andrejevic's (2020) discussion of automated media, there is a belief that with more data from users (i.e., drivers and riders), the platform can quantify uncertainty and visualize real-time demand prediction (Uber, 2019). As a result, the network "becomes smarter with every trip" (p. 1). As such, datafication and infrastructuralization are mutually constitutive—datafication is essential for automating the network, while it requires Uber to build a personal mobility infrastructure that connects millions of users.

Uber's infrastructuralization is exemplified by its recent ambition to reconfigure the platform as a "super app" (Uber, 2020, 2021)—"being the one-stop shop for transportation and daily commerce needs," as its chief product officer Manik Gupta explained (Collins, 2019). In East Asia, WeChat (Chen et al., 2018) and LINE (Steinberg, 2020) have positioned themselves as "super apps" by designing themselves as a "sticky" one-stop site for everyday life (e.g., social networking, payment, and video services). By contrast, there are arguably no such "super apps" in the West. While Uber has announced this plan as one of the platform synergies in the 2019 annual report, this strategy is a path-dependent process of what Van Doorn et al. (forthcoming) terms "actually existing platformization." As shown in Appendix Table 1, Uber has consolidated its "personal mobility" business through acquisitions of ride-hailing companies (e.g., Autocab and Careem), delivery platforms (Cornershop and Postmates), bike-sharing platforms (Jumpy Bikes), geospatial mapping service (deCarta), and autonomous vehicles (Mighty AI). Uber, meanwhile, has developed a range of personal mobility services (e.g., food delivery, freight, and e-bikes) and partnered with public transportation agencies to develop journey planning apps (i.e., Uber Transit). Until 2019, Uber has begun integrating these services into a single "super app" in the name of convenience and efficiency (Uber, 2020, 2021).

Additionally, Uber has actively sought partnership with local and national governments by situating itself in the frontier of a global smart city project. For instance, Uber expanded its DC office in 2015 and launched a new Greenlight Hub to create new jobs and bring "millions of dollars in investment into the location" (DC Government, 2018). In 2017, Uber launched the Uber Movement project that claims to deploy "Uber's data to help urban planners make informed decisions about our city" (Uber Newsroom, 2017). Through the Uber Movement, Uber sees the potential of its data go beyond the mere profit-making side, but also as a platform that provides a data infrastructure for smart city buildings, as the central goal of the project is to assist policy makers to "invest in future solutions to make our cities more efficient" (Uber Movement, n.d.). Against the backdrop of COVID-19, Uber articulates how Uber Transit can fulfill its "Public Transport 2030 vision" (Mihov, 2021):

> We believe that public transportation is well into the early stages of a massive transformation that will play out over the course of the next decade. At the highest level, we see public transportation systems transforming from decentralized networks, where different modes can often operate in silos, toward a system that is truly integrated, connected, and optimized in a highly agile way. (p. 5)

In Uber's vision, the pandemic has become a crisis for urban transportation due to the decreased ridership and funding as well as the slow pace of economic recovery. Uber Transit is presented as an

integrated product solution that reconfigures transportation agencies as "mobility managers" to design and optimize data-driven transportation networks. Uber Transit, meanwhile, can allow customers to better plan their everyday mobility practices through "Mobility-as-a-Service" apps (Mihov, 2021). As such, cities become "operational" (Andrejevic, 2020) where urban planning and governance are confined within Uber's data-driven ecosystem.

What is at stake here is not whether Uber's "super app" ambition and "Public transport 2030 vision" come true, but a broader concern over how Uber legitimizes the visions of datafication and infrastructuralization. On a discursive level, Uber invoked the ideas of convenience and efficiency to justify how its datafication strategies could be innovative urban mobility "solutions." Importantly, Uber's market expansion and partnership strategies provided the firms with "boundary resources" (Van Doorn et al., forthcoming) for building such data infrastructures.

Uber's confrontational legitimation mechanisms

The development of Uber is a story of regulatory arbitrage and confrontation. While Uber develops partnerships with local governments to develop data infrastructures, the firm meanwhile openly confronts and evades existing regulations for profit-making purposes (Collier et al., 2018; Pollman & Barry, 2017). Even the naming of the firm exemplifies the exploitation of legal gray zones. Back in June 2010, the firm was called "UberCab" which mainly offered luxury ride-hailing services for professionals in San Francisco. In October 2010, the firm renamed itself as "Uber," in part because the San Francisco Municipal Transportation Agency denounced the company for offering unlicensed taxi services. At that time, Travis Kalanick, a co-founder of the firm, stated in the office: "We ignore it … We'll drop 'Cab' from our name" (Isaac, 2019, p. 112).

Uber's confrontational approach is particularly salient in the disruption of taxi regulations and employment classification (Collier et al., 2018; Thelen, 2018). These two arenas can significantly determine whether Uber can retain a critical mass of drivers—the key foundation of the so-called "massive network" and data infrastructure. Specifically, drivers are key "data points" in ride-hailing platforms as they contribute locational and mobility data (Van Dijck et al., 2018). By classifying drivers as independent contractors and framing them as "partners," Uber can distance itself from employment responsibilities (Rosenblat, 2018). Highlighting the financial risks associated with drivers' employment status, Uber (2019) noted in the IPO prospectus:

> [W]e may not be successful in defending the independent contractor status of Drivers in some or all jurisdictions. Furthermore, the costs associated with defending, settling, or resolving pending and future lawsuits (including demands for arbitration) relating to the independent contractor status of Drivers could be material to our business. (p. 28)

In the 2019 annual report, Uber (2020) cited the passing of Assembly Bill 5 (AB5) in California—which required Uber and other on-demand labor platforms to classify workers as employees—as a key risk factor that might hurt the financial performance.

In response to AB5, Uber threatened to suspend their ride-hailing services in California. Together with DoorDash, Lyft, and Instacart, Uber sponsored the Proposition 22 (Prop 22) campaign, a ballot that pushed back the AB5. This campaign spent over US$205 million, making it the most expensive ballot measure in California since 1999. Uber and Lyft reportedly required drivers and riders in California to tap the "confirm" button on the in-app messages about how the passing of Prop 22 could save workers' flexible employment opportunities, lower wait times, and avoid higher prices before accepting or requesting a ride (Hawkins, 2020). Indeed, Uber (2021) has used "arbitration agreement"

as part of its user agreement to preclude drivers from participating in class actions against the firm. Besides, "Yes on Prop 22" advertisements problematized AB5 as a threat to the availability of app-based ride-hailing and delivery services, while promising that Prop 22 would provide app-based workers with essential wage and health care protection for app-based workers. The advertisements, particularly concerning "driver stories," frequently featured racial minorities who worked on Uber and other on-demand labor platforms (Dubal, 2021) to mobilize public support.

In short, Uber aimed to rationalize Prop 22 as a legal attempt to "modernize the safety net" (Uber, 2020, p. 10) and to classify drivers as a new class of independent "network workers" (Dubal, 2021). Prop 22 was eventually passed in January 2021. Although Uber claims to provide drivers with guaranteed minimum earnings, it does not compensate for the waiting time which accounts for a significant portion of drivers' working hours (Dubal, 2021). While Prop 22 is only one of Uber's attempts to confront existing regulations, this example reveals the ways that Uber deploys legal means, socio-technical affordances (i.e., in-app notifications), and social mobilization to legitimize its confrontational approach.

Conclusion

In this article, we situate platform firms as a crucial facilitating element of surveillance capitalism. We argue that platforms achieve this through the process of increasing datafication and infrastructuralization. As Andrejevic (2020) argues, the process represents the construction of a data-driven system in which subjects are turned to become automated subjects that help to consolidate a new social governing mechanism which they have increasingly less control. Meanwhile, as Chen and Qiu (2019) suggest, platforms often rely on the exploitation of workers and legal gray zones to make a profit. These two features of platforms imply that they have to legitimize their data practices to both the public and the regulatory authorities. Although Zuboff, 2019 has shown us the operative logic of surveillance capitalism, she has not clearly articulated how platforms, as key agents in surveillance capitalism, discursively legitimize their data practices (see Huberman, 2021) and how their legitimation mechanisms diverge in different regulatory contexts.

Our study shows that although Uber and DiDi both share relatively similar visions of datafication and infrastructuralization and they both intentionally exploit the legal gray zones for profit-making, their legitimation mechanisms diverge. While Uber often employs confrontational legitimation mechanisms by putting the people against the regulatory authorities in the United States, DiDi in China has sought to build collaborative relationships with local authorities at all levels and has even attempted to avoid causing potential conflicts with the taxi industry so as to avoid being perceived by the regulatory authorities as a disutility to the public good. Although platforms follow the logic of surveillance capitalism in terms of its visions of datafication and profit motives, their discursive legitimation mechanisms are different because of different political features of the regulatory contexts.

The government–platform political dynamics become more complex in light of the on-going policy debates on anti-monopoly and data security issues in China and elsewhere. For instance, while the VIE structure allows Chinese technology companies to evade foreign ownership restrictions, it reflects China's adaptive governance (L. Li, 2021a; see also Heilmann & Perry, 2011). China never formally approves the VIE and thus can swiftly take a more proactive regulatory approach. Such was the case in June and July 2021, when the Cyberspace Administration of China (CAC) accused DiDi of seriously violating laws regarding national data security after DiDi had gone public in the United States (Yang, 2021). In DiDi's IPO prospectus (Xiaoju Kuaizhi Inc, 2021), the firm warned about the uncertainties surrounding the VIE structure and risks of operating business in

China. For example, it conducted a "self-inspection" in response to the Chinese government's anti-monopoly regulations in April 2021. Yet, the firm noted in the prospectus,

> We cannot assure you that the regulatory authorities will be satisfied with our self-inspection results or that we will not be subject to any penalty with respect to any violations of anti-monopoly, anti-unfair competition, pricing, advertisement, privacy protection, food safety, product quality, tax and other related laws and regulations. We expect that these areas will receive greater and continued attention and scrutiny from regulators and the general public going forward. (p. 54)

Two days after DiDi's IPO, the CAC ordered the firm to remove its app from app stores until the investigation is completed. According to the CAC, the investigation was to "safeguard national data security and protect national security" (Yang, 2021). At the time of writing this article, DiDi remained largely silent and only stated it "will fully cooperate with the relevant government authority during the review" (J. Zhang, 2021a).

Perhaps, more importantly, the Chinese government reportedly has begun regulating other Chinese VIE firms (Reuters, 2021). It is out of the scope of this article to analyze the on-going investigation and its policy implications, but the crackdown highlights the importance of taking seriously the dynamics of regulatory arrangements and changes, especially in the global platform economy. Expectedly, this investigation not only affects DiDi and other Chinese VIE firms, but also the public reception to such firms in the United States. This also raises legal and political questions about the financialization strategies and cross-national data practices of Chinese platform firms as China modifies its regulations of platforms and data security.

In closing, there are some limitations of the research design, which we hope that future research will address. First, while this study focused on platforms' visions of datafication and infrastructuralization on a discursive level, we should not assume such discourses become necessarily translated into corporate actions. The discrepancies between platform discourses and actions may become even more salient, considering that platforms often operate in legal gray zones. Second, future research should examine how various stakeholders anticipate and interpret platforms' data extraction practices in cross-national contexts. These stakeholders include but are not limited to workers and consumers. Recent research also highlights the role of fleet management companies in collaborating with DiDi to facilitate the management of flexible labor (Li, 2021b). This also points to the value of studying multiple layers of institutional structures in which labor platforms are embedded in. Digital hybrid methods such as the combination of the walkthrough method (Light et al., 2018) and interviews with various stakeholders (see, for example, Li, 2021b) can be valuable tools for systematically analyzing the expected and actual practices of digital platforms. Third, the findings may only be limited to the ways that sectoral platforms become embedded in cities and gain infrastructural power. Following Van Dijck (2020)'s metaphor of platformization tree, future research should examine not only the *branches* (i.e., sectoral platforms) of the tree, but also its interplay with roots (i.e., digital infrastructure) and trunk (i.e., intermediary platform) in different ecosystems (i.e., regulatory environments).

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Appendix 1

Comparison between DiDi Chuxing and Uber by November 2020 (Source: Authors' summary of Uber's and DiDi's websites and the profiles of the two companies on Crunchbase and CB Insights).

	DiDi Chuxing	Uber
Founded year	2015 (formerly called DiDi Dache between 2012 and February 2015; and DiDi Kuaidi between February and September 2015)	2009
Market areas	Over 400 cities in China and overseas markets such as Australia, Japan, and Brazil	Over 700 cities in the US and overseas markets such as Canada, Australia, New Zealand, and Europe
Major services offered	Ride-hailing (e.g., DiDi Express, DiDi Taxi, and DiDi Hitch), shuttle bus (DiDi Bus), bike-sharing (DiDi Bike), financial services (DiDi Car Insurance), and cloud (DiDi Cloud)	Ride-hailing (e.g., UberX, Uber Pool, and Uber Black), food delivery (Uber Eats), logistics (Uber Freight), electric bike (Uber Bikes), public transportation information (Uber Transit), financial services (Uber Money), and elevate (Uber Air)
Total amount raised across funding rounds	US$21.2 billion	US$25.2 billion (and US$8.1 billion raised at IPO in May 2019)
Lead investors in the funding rounds	Apple (US), Booking Holdings (US), China Life Insurance (China), China Merchants Bank (China), Foxconn (Taiwan), GSR Ventures (US), Mirae Asset Global Investments (South Korea), Mubadala Investment (the United Arab Emirates), Softbank (Japan), Temasek (Singapore), Tencent (China), and Toyota (Japan)	Axel Springer (Germany), Baidu (China), Benchmark (US), Fidelity (US), First Round Capital (US), Garrett Camp (US), Glade Brook Capital Partners (US), Goldman Sachs (US), LetterOne (US), Menlo Ventures (US), Morgan Stanley (US), PayPal (US; Post-IPO equity), Saudi Arabia's Public Investment Fund (Saudi Arabia), Softbank (Japan), Tata Capital (India), Techstars (US), Toyota (Japan), Travis Kalanick (US), and Google Ventures (US)
Acquisitions and mergers	19pay (e-commerce payment), 99Taxi (ride-hailing), Bluegogo (bike-sharing), Kola Shuttle (bus-hailing), Kuaidi Dache (ride-hailing), Orange Heart Optimal Technology (e-commerce) Uber China (ride-hailing)	Autocab (ride-hailing), Careem (ride-hailing), Complex Polygon (product studio), Cornershop (grocery delivery), deCarta (geospatial software), Geometric Intelligence (machine learning), Jump Bikes (bike-sharing), Mighty AI (autonomous vehicles), orderTalk (online restaurant ordering), Otto (self-driving truck), Postmates (delivery), Routematch (public transportation software), Swipe Labs (mobile social app)

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