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The Impacts of the "Tolerant and Prudent" Policy on Labour Precarity in China's Online Ride-
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Abstract

Since 2017, China has adopted the "tolerant and prudent" policy in regulating emerging digital platform industries. The impacts of this policy on labour precarity have been rarely studied. Drawing on an original survey of over 600 ride-hailing drivers in two Chinese cities, Nanjing and Beijing, we conduct a political economy analysis for a three-party framework involving the municipal government, capital, and labour. We find that, in accordance with the "tolerant and prudent" principle, municipal governments stipulated regulations regarding the qualifications of ride-hailing vehicles and drivers. These regulations, although they can help reduce labour precarity in the marketplace for licensed drivers, have exacerbated precarity in the workplace. Specifically, in response to the regulations, the ride-hailing platforms aligned with third-party rental companies that provided licensed vehicles. This arrangement has effectively trapped many ride-hailing drivers in the industry: our quantitative analysis shows that drivers bounded by a rental or rent-to-own agreement worked significantly longer hours than counterparts who steered their own vehicles.

Keywords: tolerant and prudent; online ride-hailing industry; digital platforms; labour precarity; China

To drive for the platforms, car renting and rent-to-own are both deep traps.

— A Didi Express driver

On July 28, 2016, the State Council of China approved and released “the world’s first nationwide online ride-hailing regulations,” lifting the online ride-hailing industry out of the grey area.¹ To be granted legal status in the market, both ride-hailing drivers and vehicles should obtain special ride-hailing licenses. Municipal governments across the country have since stipulated nuanced regulations for what qualifications or standards these licenses entail.² These regulations have had far-reaching impacts on not only the development of the ride-hailing industry but also the welfare of ride-hailing drivers.

The regulations stipulated by the municipal governments reflect the state’s “tolerant and prudent” (*barong Shenzhen 包容审慎*) principle towards the platform industry, which was formally articulated in the 2017 annual government work report.³ According to Premier Li Keqiang, “tolerant and prudent” means that the government shall allow and encourage the development of the emerging industry as long as it obeys extant laws.⁴ As he explained, ‘prudent’ has double meanings: “first, when these new forms of business are at their early stage, we should not impose extremely stringent regulations but should observe for a certain period until we fully understand them; second, we should stick to the bottom line of safety... and, in accordance with laws, we should firmly crack down on illegal behaviours... .”⁵ As such, this principle has not only granted a loose regulatory environment for the emerging platform sector, it has left the relations between platforms and labour in ambiguity.⁶

Based on an original survey of over 600 ride-hailing drivers conducted in two Chinese cities, Nanjing and Beijing, this study investigates both qualitatively and quantitatively how the “tolerant and prudent” policy has shaped labour precarity that ride-hailing drivers face.⁷ Our analysis indicates that, in translating the spirit of “tolerant and prudent”, municipal governments tend to carry out marketplace regulations by setting

¹ Clover and Ma 2016; Meng and Luo 2016.

² Ma and Li 2018.

³ Although the 2016 ride-hailing regulations appeared prior to the formal articulation of the “tolerant and prudent” policy, they are consistent with its spirit.

⁴ Li 2018.

⁵ Ibid.

⁶ Like other online platform services, the ride-hailing platforms in China maintain no standard employment relations with drivers. Although this arrangement offers some work flexibility, it exposes drivers to precarious work conditions, such as low income, long work hours, and excessive uncertainties.

⁷ According to the ILO (2016), the defining characteristic of precariousness is that the worker bears the risks associated with the job rather than the business that employs said worker. Labour precarity is typically understood as being low-paid, insecure, unprotected by law or collective agreements, and lacking insurance coverage. Driving for ride-hailing platforms is highly precarious globally and becomes more so when human mobility is restricted, as has occurred during the Covid-19 pandemic.

market entry qualifications. These qualifications, to a large extent, mimic the existing regulatory framework that governs the traditional taxi industry. The workplace relations between the platforms and drivers, however, are unattended. Such selectivity has produced mixed effects on labour precarity:

On the one hand, the regulations grant qualified drivers legal status and limit excessive competition by setting entry barriers, which can help reduce licensed drivers' precarity in the marketplace.⁸ On the other hand, the regulations have intensified precarity in the workplace. We find that to retain an adequate supply of drivers, the platforms aligned with third-party car rental companies to provide qualified vehicles to drivers who are otherwise constrained from working with an eligible car. Yet, as reflected in the opening quote from a ride-hailing driver we interviewed, many drivers feel trapped in the industry by the platform-rental company alliance. To pay off car loans or rents, drivers bound by rental or rent-to-own agreements have ended up working extra-long hours and bearing excessive income uncertainties. Specifically, our quantitative analysis shows that these drivers worked significantly longer hours (20-50 per cent more) than drivers who worked with their own vehicles.

This research makes two contributions. First, it develops a political-economic analysis for comprehending how the "tolerant and prudent" policy accommodates the advent of new economic forms and its impacts on labour welfare. Through a tripartite framework involving municipal governments, capital (platforms and third-party car rental companies), and labour, we explore how regulations are crafted, how capital reacts, and how labour precarity is eventually shaped. Second, our analysis is based on an original survey conducted in the summers of 2018 (in Nanjing) and 2019 (in both Nanjing and Beijing). We chose these two cities because Nanjing is representative of China's big cities in terms of ride-hailing regulations, whereas Beijing is unique for its extremely stringent regulations. Their comparison uncovers some interesting findings. In the survey, we interviewed more than 600 ride-hailing drivers of Didi Express (Didi Kuaiche 滴滴快车)—the standard, and core, service of Didi Chuxing.⁹ Unlike online surveys distributed through the web or the platform app, face-to-face surveys increase response rates and allow the interviewers to probe for more detailed, and more accurate, information from the interviewees.¹⁰ Also, the relatively large sample size allows us to quantitatively gauge the effect of the platform-car rental company alliance on drivers' precarity.

The remainder of this article consists of the following sections. We begin with an analysis of the "tolerant

⁸ The effects for unlicensed drivers are mixed, which we will discuss below.

⁹ We also interviewed three municipal-level regulators, three staff members of a platform company, and about twenty traditional taxi drivers; moreover, we visited eight car-rental companies and one traditional taxi company. Over our two-year period we constantly traced ride-hailing industry-related media reports.

¹⁰ Doyle 2014.

and prudent" policy towards the advent of the platform economy. We then propose a tripartite framework to demonstrate how municipal governments craft regulatory policies to accommodate the "tolerant and prudent" principle, how capital reacts to those policies, and how drivers' precarity is shaped. A quantitative analysis follows that estimates the magnitude of labour precarity measured by work hours. In the last section, we discuss the implications and conclude our work.

Contextualizing the "Tolerant and Prudent" Policy

The "tolerant and prudent" policy was formulated during a time when the government's supply-side structural reform since late-2015 worsened employment. It was also a time when China's private sector investment was struggling with stagnant growth, putting further pressure on employment. Under these circumstances, the ride-hailing sector was finally given a green light and promoted in the national development agenda as a champion of job creation.¹¹

Indeed, the ride-hailing sector has a number of advantages in the area of job generation. First, platform jobs present a combination of flexibility and low-barrier to entry. Second, private car ownership in China has increased rapidly in recent years,¹² making the online ride-hailing industry a convenient solution for many of the unemployed and underemployed. Third, the ride-hailing industry has the potential to further create jobs by continuously improving dispatching algorithms and architecting big data infrastructure in the cloud. Finally, as a nascent industry, the ride-hailing sector in China has attracted intense investment worldwide,¹³ which predicts growing job opportunities.

The "tolerant and prudent" regulatory approach signals that the state, in the midst of economic downturns, embraces the platform economy and the creation of a loose regulatory environment. "Prudent" does not mean that the government holds a cautious or skeptical attitude towards the development of new industries; rather, it reflects the state's determination to restrict itself from intervening and leave the rest to the market. Consistent with this spirit (while taking into account local circumstances), China's municipal governments have demanded only that emerging industries obey existing laws and regulations that are intended to regulate market order and avoid excessive competition. In the ride-hailing industry, the online platforms are required to follow existing regulations that govern the traditional taxi industry in the marketplace. As noted in the next section, these regulations focus mainly on setting market entry qualifications for drivers

¹¹ Chen 2020; Jiang 2016.

¹² According to Kemp (2019), private car ownership grew from 6.1 vehicles per 100 urban households in 2007 to 37.5 in 2017.

¹³ According to Crunchbase (2020), as of July 2019, Didi Chuxing has raised a total of US\$21.2 billion during more than 18 funding rounds.

and vehicles.

There is, however, one major problem with this arrangement: the employment relationship in the new industry is not subject to the existing regulatory framework. Particularly in scholarship about labour law, there has been an explosion of discussion during the last several years about whether platform workers deserve the same legal protection as standard employees.¹⁴ Also growing is literature that explores how the rise of the platform economy has aggravated labour precarity in China.¹⁵ Several conclusions have been posited. Platforms act as intermediaries that connect service/product providers and customers, furnishing them with an easy escape from employers' obligations (minimum wage, social insurance, paid sick leave, etc.) and allowing them to outsource and pursue lean production "in heightened form".¹⁶ Because platforms profit from charging commission fees for each service, they have incentives to maximize the number of service suppliers, which often leads to excessive competition and uncertainties in employment for suppliers. Platform workers may have the freedom to decide when to work and for how long, but they cannot decide how their work should be done once they log in. Their activities are closely monitored by the platform's algorithmic management.¹⁷ Under the "tolerant and prudent" principle, the state in effect has allowed the welfare of platform labour to be determined by market forces.

Market-focused Regulations, the Platform-Car Rental Company Nexus, and Labour Precarity

We propose a political-economy framework to examine the impacts of the "tolerant and prudent" principle on labour precarity in China's ride-hailing sector. As Figure 1 briefly summarizes, this framework consists of three stakeholders—the municipal government, capital (including both the platforms and third-party rental companies), and labour (ride-hailing drivers)—that act in sequence. First, to accommodate the state's "tolerant and prudent" principle while addressing and balancing its own objectives/interests, the municipal government applies local market entry regulations to the online ride-hailing industry, mimicking the ones that govern the traditional taxi industry in the marketplace. Otherwise, the workplace of the newly emerging industry is left unattended. Second, to meet the regulations stipulated by the municipal government while ensuring smooth operations, the platform chooses to align with third-party car rental companies that provide eligible vehicles. Third, drivers decide their work mode and work time in response to their financial circumstances. This whole process has shaped the precarity of different driver groups in different aspects.

¹⁴ Edelman and Geradin 2016; Prassl and Risak 2016.

¹⁵ Chen et al. 2020; Chen 2018; Sun, 2019.

¹⁶ Zwick 2018; Srnicek 2017, 90.

¹⁷ Rosenblat and Stark 2016.

In the rest of this section, we elaborate in detail the strategies and logic of action of each stakeholder.

(Figure 1 is about here.)

The municipal government: the logic of market-focused regulations

We begin with the municipal government. At the municipal level, the state's "tolerant and prudent" policy is translated into market-focused regulations that align with the municipal government's multiple objectives. The ride-hailing economy requires two dimensions of space to grow.

First, the development of the platform economy needs infrastructure space. Because the provisioning of ride-hailing services uses physical resources, such as roads and parking facilities, over-expansion of the industry can increase traffic congestion and air pollution in metropolitan areas.¹⁸ Moreover, the online-hailed ride services can divert passengers from public transportation to private vehicles; thus, the efficiency of public transport as a common pool resource can be undermined and the "tragedy of the commons" can occur.

Second, the development of a platform economy needs market space. The services provided by ride-hailing drivers and traditional taxi drivers are highly homogeneous, but the former is often less costly to passengers for a variety of reasons. For instance, the ride-hailing platforms usually provide heavy subsidies at the early stages of development to entice passengers (and also drivers); part-time drivers are likely to accept lower price rates; and, more importantly, the platforms provide no employment-related benefits to drivers and, therefore, enjoy a labour cost advantage over traditional taxi companies. As a result, the development of the ride-hailing platforms poses a serious threat to the traditional taxi industry.

The allocation of spaces depends upon how municipal governments prioritize competing objectives. In the Chinese context, two main problems emerged in the early stage when the market was not regulated: exacerbated traffic congestion; and ramping discontent among traditional taxi companies and drivers. For example, evidence shows that new vehicle ownership in China suddenly increased after Uber entered the Chinese market.¹⁹ Government officials from the Beijing Municipal Commission of Transportation linked the sudden deterioration of Beijing's traffic conditions in 2015 to the rapid expansion of ride-hailing industry (exacerbated also by plunging oil prices).²⁰ The fast-growing industry also has provoked taxi driver strikes and protests across China.²¹ As a result, on December 21, 2016, Beijing's municipal

¹⁸ Balding et. al. 2019; Hawkins 2019; Erhardt et al. 2019; Parkes 2016.

¹⁹ Gong et al. 2017.

²⁰ Yu 2016.

²¹ Liu 2015.

government issued ride-hailing service regulations, *Detailed Regulations for Implementing the Beijing Online Ride-hailing Service Management Measures* (*beijingshi wangluo yuyue chuzu qiche jingying fuwu guanli shishi xize* 《北京市网络预约出租汽车经营服务管理实施细则》), that stipulate that the development of ride-hailing services should be tailored to address concerns specific to Beijing, China's capital city, including traffic congestion and high rates of taxi usage.²² A parallel document issued in Nanjing on January 19, 2017, *Nanjing Municipality's Temporary Measures on the Management of Online Ride-hailing Services* (*nanjingshi wangluo yuyue chuzu qiche guanli zanxing banfa* 《南京市网络预约出租汽车管理暂行办法》), states more specifically that public security organs should assist relevant supervisory departments to “actively prevent and appropriately manage mass incidents in the taxi industry and maintain social stability”.²³

With these concerns in mind, the municipal governments of Nanjing and Beijing set concrete qualification requirements for both drivers and vehicles. The regulations stipulated by the two cities share a common and essential element: a requirement for “double-licenses” (*shuang zheng* 双证). That is, in addition to holding an ordinary driver's license, each prospective ride-hailing driver must apply for and receive from the municipal Department of Transportation a special “online ride-hailing driver's license” (*wangluo yuyue chuzu qiche jiaoshiyuanzheng* 网络预约出租汽车驾驶员证). Also, vehicles used for ride-hailing operation require a special “online ride-hailing vehicle license” (*wangluo yuyue chuzeche yunshuzheng* 网络预约出租车运输证) that indicates the vehicle's commercial status. To fulfil this requirement, a local license plate is required, as is a more expensive insurance for commercial vehicles, and the vehicle used must comply with specified hardware thresholds, such as wheelbase width and swept volume.

Despite similarities, marked differences distinguish the stringency of the two cities' regulation measures. These distinctions are primarily determined by differences in the policy objectives of the two municipal governments. Compared to Nanjing, Beijing imposes more stringent regulations on driver and vehicle qualifications. For example, in Nanjing, the prerequisite for applying for a ride-hailing driver's license is a local residence permit (*juzhuzheng* 居住证); in contrast, the Beijing municipality requires a local *hukou* (permanent residency status), which is far more difficult to obtain.²⁴ Although in both cities a local license plate is the main prerequisite for applying for a ride-hailing vehicle's license, in practice, the requirement is far more difficult to achieve in Beijing: to combat traffic congestion and air pollution, the Beijing municipal government since 2011 has employed a lottery system that limits the number of local license

²² Beijing Municipal Commission of Transport 2016.

²³ People's Government of Nanjing Municipality 2017.

²⁴ Liu and Shi 2019.

plates issued annually.²⁵ No such restriction is imposed in Nanjing. Clearly, the more stringent ride-hailing regulation unveiled in Beijing is intended to limit the entry of vehicles and drivers (and especially migrant workers) into the market. This difference reflects Beijing's pressing goal of limiting population, minimizing congesting, and harnessing pollution. The requirements in Beijing have *de facto* eliminated the possibility that migrant workers could work legally in the ride-hailing sector.

To a great extent the market-focused regulations replicate the policy framework used for supervising the traditional taxi sector. For example, like ride-hailing drivers, traditional taxi drivers in both Nanjing and Beijing must hold a specific taxicab license as well as an ordinary driver's license. In Beijing, both traditional taxi drivers and ride-hailing drivers are required to have a local *hukou*, while drivers in Nanjing only need to have local residency. Embedding a new form of economy into the existing institutional framework is consistent with the state's "tolerant and prudent" principle. The main logic behind the market-focused regulations is that, by applying uniform thresholds for market entry, municipal governments can balance the interests of the traditional and newly emerging sectors.

The regulations can restrain excessive competition by setting entry barriers; thus they can reduce marketplace precarity for licensed drivers. However, it should be noted that illegal drivers still widely exist in both cities, who benefit from less competition but face increased marketplace precarity due to the risk of being penalized. Once being caught by regulators, these drivers have to either pay the penalty (approximately 10,000-30,000 yuan) or quit the market. Thus, the regulations have mixed effects on the marketplace precarity for unlicensed drivers. Our survey shows, in 2019, 72 per cent of the drivers in Nanjing fulfilled the requirement, while the vast majority of drivers in Beijing did not. The contrast illustrates how the municipal governments navigate both the state's "tolerant and prudent" principle and complex local priorities and objectives.²⁶ Nevertheless, in both Beijing and Nanjing, regulators have shown no interest in intervening in the relationship between the platforms and drivers, thus leaving the distribution of gains between capital and labour to be determined by market power. Apparently, job creation ranks higher in the government agenda than conflicts in capital-labour relations.

The platform: forging alliance with third-party car rental companies

Our analysis of the platform is based on Didi Chuxing, which has captured 80 per cent of the market share in the Mainland since the acquisition in 2016 of Uber's China operations. Despite dominant market share, competition in the country's ride-hailing industry remains intense as new rivals (including but not limited

²⁵ Bloomberg News 2019.

²⁶ Sharif 2019.

to Meituan, Shouqi, and Caocao) are quickly springing up.²⁷ Retaining drivers has increasingly been critical for Didi. The number of service providers and passengers are mutually dependent.²⁸ When drivers are in short supply, a vicious cycle of losing passengers by losing drivers can occur. The regulatory hurdles laid out by the municipal governments of both Nanjing and Beijing are obviously a tough call for Didi because they have great potential, albeit in different degrees, to reduce the number of drivers in the market. The platform has to achieve a balance between complying with regulations and retaining as many drivers as possible: if the platform strictly follows government rules, the number of drivers will be substantially reduced because many drivers have no qualified identification or vehicles; however, if the platform continues recruiting disqualified drivers, then both the platform and drivers violate government regulations and risk being penalized. Under such circumstances, Didi has adopted different strategies in Nanjing and Beijing to accommodate different regulatory environments.

As noted above, the regulations stipulated by the Nanjing municipal government regarding drivers' qualifications are relatively loose. The main obstacle to entering the market lies in the regulation of vehicles. Pressured by mounting discontent in the deeply-affected traditional taxi industry, Nanjing since April 2018 has suspended the issuance of commercial-use vehicle licenses to individuals. The stated aim was to “purify the environment of the taxi industry” and alleviate the “pressure on urban transportation management caused by rapid growth of the ride-hailing sector”.²⁹ This suspension has effectively increased the difficulty of fulfilling the “double-licenses” requirement.

To retain drivers on the platform, Didi in Nanjing has closely cooperated with third-party car rental companies that can provide vehicles with the required licenses. The rental companies invest in qualified vehicles and obtain licenses from the government. Didi promises to prioritize the drivers enrolled by rental companies in dispatching orders; in some cases, Didi holds shares of the rental company. The rental companies maintain no employment relations with rentee-drivers; rather, they are bound together by a leasing or debt contract. In essence, these rental companies are the third party of the third party; that is, they are an intermediary layer that sits atop the ride-hailing platform, which is itself the intermediary between drivers and passengers. In this arrangement, the strategic alliance of the platform and car rental companies has to a great extent replicated the operation of the traditional taxi industry: the platform-rental company nexus provides licensed taxi vehicles, while individual rentee-drivers provide taxi services and share a significant percentage of the gross fares with platforms and rental companies. The principal difference is that the traditional mode usually involves standard employment relations, while the new one does not. The

²⁷ Armstrong and Wang 2018.

²⁸ Rochet and Tirole 2003.

²⁹ Municipal government of Nanjing 2018; Hersey 2018.

platform, in other words, has circumvented the statutory obligations of employers, which challenges labour welfare.

The participation of third-party car rental companies in the Chinese ride-hailing industry is unique. According to our survey, in 2019, up to about 40 per cent of ride-hailing drivers in Nanjing acquired vehicles from rental companies. Nanjing's rental companies offer two options to drivers: renting or rent-to-own. The latter is equivalent to a mortgage loan: once a down payment is made, the driver becomes entitled to immediate possession of a vehicle that has a ride-hailing license. On the one hand, the involvement of rental companies enables unqualified drivers (those lacking a ride-hailing car license) in Nanjing to obtain legal status in the market. These drivers no longer need to worry about being punished for illegal operation. Thanks to the entry barriers set by the regulations, legal drivers' precarity in the marketplace is alleviated. On the other hand, their precarity in the workplace has been significantly intensified: our survey shows that because they struggle with mortgage or rental payments,³⁰ drivers with rental or rental-to-own contracts must significantly extend their work time. Just as the platform takes advantage of their intermediary position to control drivers' access to the ride-hailing market, the rental companies use rental or rent-to-own contracts to manipulate drivers' exit from the market, despite the fact that there are no formal employment relations between drivers and the platform or drivers and car rental companies.³¹

Ensuring effective control over labour supply by lease or debt relationship is not new. During the 1970s, the debt-bondage mechanism was used in Peru to compete for labour: debt-bonded semi-proletarians were compelled to sell both their own labour-power and that of their kinsfolk to rich and middle-class peasants.³² Under global capitalism, wage labour has been increasingly replaced by debt-bonded labour to improve profits; in particular, scholars have noted the important role that labour contractors or intermediaries play in recruiting and retaining forced labour, trapping workers in debt bondage and exploitation.³³ As various cases show, market discipline imposed by debt exacerbates the systematic vulnerability of workers and creates pressure to remain at work.³⁴ In the case of the ride-hailing industry, while the leasing or rent-to-own contracts offered by third-party companies lower the barrier to entry, they increase the barrier to exiting. Drivers encumbered by debt or lease payments have experienced a decline in their bargaining power. As a result, they have to work longer hours and take greater risks, such as accepting the platform's constant

³⁰ Our survey shows that in 2019, the monthly rent for a renting contract in Nanjing and in Beijing on average was 3,800 RMB and 4,700 RMB, respectively.

³¹ Yibencaijing (2019) reports that some rental companies have deployed financial manoeuvres to trap drivers, such as setting a very low initial down payment and later charging high interest rates.

³² Brass 1983.

³³ Barrientos 2013; Brass 2009.

³⁴ LeBaron 2014.

changes in payment/rewards policies.

Regulations stipulated by the Beijing municipal government are more stringent. That is to say, unlike their counterparts in Nanjing, car rental companies in Beijing cannot help the platforms by providing ride-hailing vehicle licenses. Consequently, the alliance between Didi and rental companies in Beijing is less developed than in Nanjing. Nevertheless, rental companies in Beijing are indispensable because they supply vehicles with a Beijing-registered license plate to drivers who do not own a car or have an eligible license plate. In our sample, about one-fourth of Beijing drivers rely on rented vehicles. In contrast to Nanjing, few rental companies in Beijing offer rent-to-own contracts.³⁵

Because ride-hailing licenses for drivers and those for vehicles are both difficult to obtain, Didi in Beijing has chosen to operate in the “grey area”: the platform continues to dispatch orders to unlicensed drivers and vehicles. To retain drivers, Didi has promised, although informally, to reimburse the fines paid by drivers who have been caught.³⁶ Nonetheless, this situation is unfavourable to drivers because Didi's promise is never written in a formal contract and the platform can always modify or cancel the promise.

The drivers: making choices under socio-economic constraints

Given the regulations stipulated by the municipal government and the coping strategies developed by the platform, ride-hailing drivers make choices that are subject to their respective socio-economic constraints. The drivers, who comprise a heterogeneous group, can be divided according to three criteria. First, in terms of car ownership, there are both drivers who steer their own cars and drivers who acquire access to vehicles through third-party car rental companies (by rent or rent-to-own). Second, in terms of the conformity to local government regulations, there are both legal and illegal drivers, depending on whether or not they have the required “double-licenses”. Third, in terms of socio-economic constraints, some drivers have access to complementary income sources or less economic burdens, while others have no such access or have more economic burdens.

These inter-related categories mutually determine a driver's mode of work. In Table 1 we show drivers' most-likely work mode under respective types of car ownership, legal status, and socio-economic constraints. In Nanjing, because the municipal government suspended the issuance of new ride-hailing licenses on April 2018, only ride-hailing drivers who steer their private cars and obtained their license prior to that date can operate legally. These drivers can choose the length of their work time according to their

³⁵ To sign a rent-to-own contract, the driver must own a license plate. Of course, drivers who have a license plate would not have to rely on a rental company that offers nothing but the lease of a license plate.

³⁶ Rao 2018. Some drivers we interviewed confirmed this information.

own economic needs. Other drivers who operate privately-owned vehicles on the platform drive unlicensed vehicles and operate illegally. Another scenario in the Nanjing setting is drivers who rent or rent-to-own vehicles; their vehicles most likely are licensed and operate legally. Most of these rentee-drivers work overtime because, in addition to operational expenses, they have to pay rent or mortgage loans.

(Table 1 is about here.)

In the Beijing setting, because “double-licenses” are especially difficult to obtain, the overwhelmingly majority of ride-hailing drivers work illegally. In contrast to Nanjing, third-part rental companies are only able to provide vehicles that have a Beijing-registered license plate. Therefore, only those who own a private vehicle with a Beijing-registered license plate and, at the same time, hold a Beijing *hukou* can operate legally. These drivers, however, tend to have better job options, including driving a traditional taxi; as a result, they are rarely seen among ride-hailing drivers. The vast majority of ride-hailing drivers in Beijing drive illegally whether they operate their own vehicles or rent vehicles from rental companies. In Beijing, a driver is more likely to work overtime if her/his vehicle is subject to a rent contract.

Quantitative Analysis

In this section, we quantitatively estimate the extent to which a rental or rent-to-own contract can aggravate labour precarity in the workplace. By applying multiple regression analysis and controlling for confounding factors such as demographic characteristics and economic status, this exercise could offer a more accurate and rigorous evaluation of the impacts of regulatory policies on precarity.

Data

Using a questionnaire survey, we conducted multiple rounds of interviews on more than 600 Didi Express drivers.³⁷ The 2018 round of survey was conducted in Nanjing in July 2018 with about 160 respondents; the 2019 round was conducted in Nanjing in June 2019 with about 250 respondents and in Beijing in July 2019 with about 230 respondents. We paid two visits to Nanjing primarily because a couple of months after our first Nanjing survey, a female passenger in Yueqing, Zhejiang province, was murdered by a Didi driver, after which the enforcement of government regulations in Nanjing was significantly strengthened.³⁸

To find ride-hailing drivers, each interviewer randomly selected a route and hailed vehicles through the

³⁷ Five hundred and forty valid observations are used in the regression.

³⁸ Yang and Liu 2018.

Didi App between 9 am and 5 pm. Prior to the interview, each respondent was informed that the survey was for research purposes only and anonymity was guaranteed; consent was obtained from each respondent. The questionnaire sought information on drivers' demographic details, social and economic status, how drivers acquired their vehicles, and work conditions, such as work hours and work schedule.

Figure 2 presents drivers' work time by vehicle ownership and survey cohort. Our pooled data show that ride-hailing drivers worked 64.5 hours per week on average; the 2019 Nanjing cohort worked the longest (67.1 hours). For all cohorts, drivers who had either a rental or a rent-to-own contract worked significantly longer hours than those who did not. For example, in both the 2019 Nanjing cohort and 2019 Beijing cohort, drivers who worked with a rented vehicle worked more than 80 hours per week, or significantly longer than drivers who steered their own private cars (less than 60 hours per week). Our data also show that drivers who had a rental or rent-to-own contract accounted for 47 per cent of the total labour supply in terms of hours. These statistics largely disapprove the claim that the ride-hailing industry is a sharing economy in which each driver provides services only with his/her own underutilized resources.

(Figure 2 is about here.)

Table 2 presents summary statistics of key variables related to worktime. Our data show that about 70 per cent of ride-hailing drivers in the two cities worked with their own vehicles; the remaining 30 per cent acquired vehicles from rental companies. Compared to 2018, Nanjing in 2019 saw significant increases in the percentages of drivers who accessed vehicles through rental (from 9 per cent to 20 per cent) and who were bound by a rent-to-own contract (from 12 per cent to 19 per cent). From 2018 to 2019, the share of drivers with a rental contract almost doubled, increasing from less than 20 per cent to 38 per cent. As noted above, this change very likely resulted from the "Yueqing incident", after which the Nanjing municipal government strengthened the enforcement of the "double-license" regulation and suspended the issuance of ride-hailing vehicle licenses. In the Beijing cohort, about 76 per cent of drivers worked with their own private vehicles and 24 per cent rented vehicles.

(Table 2 is about here.)

The demographic component of our data shows that a typical Didi driver was about 40 years old, male, married, and had about 1.3 kids on average. In Nanjing, about 40 per cent of drivers came from the rural area, while in Beijing, 68 per cent had rural origins. Overall, 61 per cent of drivers were migrants; in Beijing, this figure was 79 per cent. About 42 per cent of drivers had a junior high education or less, 38 per cent had a senior high school or secondary vocational education, and 20 per cent had a college or tertiary vocational education. About 57 per cent of Didi ride-hailing drives had no access to social security; in the Beijing

cohort, this figure was 64 per cent.

Methodology

We measure labour precarity in the production process by the length of the driver's worktime. Longer worktime may indicate that drivers have weaker bargaining power when negotiating work conditions. Particularly in the case of a platform-rental company nexus, extending work hours is the only way to achieve the income needed to make ends meet. Longer worktime is also indicative of greater economic insecurity, which is determined, on the one hand, by a driver's financial burden and, on the other hand, by the availability of other sources of income. Thus, we develop two hypotheses as follows:

Hypothesis 1: *Drivers who rely on vehicles from rental companies would work longer hours than those who bring their own vehicles to the ride-hailing platform.*

Hypothesis 2: *Drivers who are in a worse economic situation would work longer hours.*

Based on the hypotheses, we specify the following regression model in semi-log form:

$$\begin{aligned}
 & \text{LNWORKHOUR}_i \\
 &= \beta_0 + \beta_j \sum_{j=1}^2 \text{VEHICLE}_i \\
 &+ \beta_3 \text{AGE}_i + \beta_4 \text{GENDER}_i + \beta_5 \text{MARRIED}_i + \beta_6 \text{URBAN}_i + \beta_7 \text{MIGRANT}_i \\
 &+ \beta_8 \text{KIDS}_i + \beta_j \sum_{j=9}^{10} \text{EDUCATION}_i + \beta_{11} \text{INSURED}_i \\
 &+ \beta_j \sum_{j=12}^{13} \text{COHORT}_i + \varepsilon_i \tag{1}
 \end{aligned}$$

where the outcome variable, LNWORKHOUR, denotes the logarithmic form of drivers' weekly work hours and the subscript i denotes the surveyed individuals. We specify the model in semi-log form to facilitate interpretation: when the outcome variable is log transformed, the estimated coefficient value corresponds to the percentage change in the outcome variable for a one-unit change in the explanatory variable. Among the explanatory variables, VEHICLE denotes that drivers' vehicles are acquired in one of the following ways: privately-owned, rented, or rent-to-own. In the regression, we set privately-owned vehicles as the reference group; thus, the coefficients of VEHICLE, β_1 to β_2 , measure the percentage difference in work hours between drivers who rent (or rent-to-own) vehicles and those who steer their own cars. Based on our

qualitative analyses, we expect the signs of β_1 and β_2 to be both positive, implying that driving vehicles acquired from a rental company is associated with longer working hours.

Our model also includes variables that measure the economic status of drivers: we use the number of kids (KIDS) to proxy a driver's economic burden, which we expect to be positively associated with work hours. We use education (EDUCATION) and access (or lack thereof) to social security (INSURED) as proxies for the availability of a driver's other sources of income. We expect that both education level, which is indicative of the likelihood of acquiring additional resources, and having social security are negatively associated with work hours. In the model, we also control for drivers' demographic information, including age (AGE), gender (GENDER), marital status (MARRIED), urban or rural origin (URBAN), and local or migrant background (MIGRANT). COHORT indicates whether the driver belongs to the 2018 Nanjing sample, the 2019 Nanjing sample, or the 2019 Beijing sample.

Results

Table 3 presents the regression results for the relationship between the means of vehicle acquisition (vehicle ownership) and Didi drivers' work hours. In Model (1), we pool all data together, controlling for demographic characteristics and survey cohorts. Our first hypothesis is supported: acquiring vehicles from the rental companies was associated with significantly longer work hours. Specifically, a driver who rented a vehicle worked 48.8 per cent more hours than a driver who worked with his/her own vehicle. Similarly, the rent-to-own arrangement increased work hours by 27.4 per cent. Age was positively associated with work hours, while having an urban origin was negatively associated with work hours. Didi drivers in Beijing worked 17.9 per cent fewer hours than their Nanjing counterparts.

(Table 3 is about here.)

Model (2) also accounts for the driver's economic status, including number of kids, driver education, and whether or not the driver had access to social insurance. Although slightly reduced by this exercise, the estimated coefficients of acquiring vehicles from rental companies remained significant and substantial: compared to working with a privately-owned vehicle, car rental increased work hours by 46.5 per cent, and acquiring vehicles by means of rent-to-own increased work hours by 22.5 per cent.

Both Model (1) and Model (2) show that, controlling for other variables, Beijing drivers worked significantly fewer hours (16-18 per cent) than their counterparts in Nanjing. This can be explained by the higher hourly earnings in Beijing: according to our 2019 survey, for a driver using his/her own car, the hourly revenue was 47 RMB in Nanjing and 53 RMB in Beijing. The earning premium could indicate that

competition among drivers was less intense in Beijing, thanks to the city's comparatively more stringent regulations and undeveloped platform-rental company nexus.

With regards to proxies for drivers' economic status, number of kids was positively associated with work hours: having one more child (and hence a heavier economic burden) would increase drivers' work hours by 9.9 per cent. Education level was negatively associated with work hours: compared to those with a junior high school education or less, attending senior high or secondary vocational school was associated with 10.8 per cent fewer work hours, while attending college or tertiary vocational school was associated with 15.3 per cent fewer hours (at the 0.10 significance level). Having access to social security would reduce work hours by 34.3 per cent. Both of our hypotheses, in other words, were confirmed.

Finally, we test robustness in Models (3)-(5), which replicate the specification of Model (2) but run regression separately for three survey cohorts. Our results show that, for each cohort, regardless of location and survey year, acquiring vehicles from rental companies was always associated with remarkably longer work hours. In other words, relying on rental companies significantly increased workplace precarity.

Discussion and Conclusion

This study has explored how the "tolerant and prudent" policy and corresponding regulations stipulated by municipal governments have shaped labour precarity in China's rapidly growing ride-hailing sector. The regulations, which aim to stimulate job creation, have created a generally favourable institutional environment for development of the ride-hailing sector. Under the regulatory framework, platform capital in alliance with third-party car rental companies has played an active role in shaping drivers' labour precarity. The market-focused regulations have reduced licensed drivers' marketplace precarity by granting them legal status, yet they also have intensified workplace precarity: relying on car rental companies to obtain a qualification has trapped drivers in longer work hours and higher uncertainties.

The dynamic between regulators and capital has shaped and intensified the precarious conditions that ride-hailing drivers face. Rather than simply attributing labour precarity to regulation or the lack of it, our study presents a more nuanced analysis. We argue that the extent to which regulation helps reduce precarity largely depends on the nature of regulation. In the case of the ride-hailing industry, our analysis shows that regulations that exclusively focus on the marketplace and neglect the workplace can only encourage more rental or debt arrangements. These arrangements favour capital at the expense of workers' welfare. This observation does not contradict the finding in the literature that the deregulation associated with the rise of neoliberalism since the mid-1970s has increased labour precarity. The complexity of the platform economy

has raised new challenges to regulators. Effective policies to protect labour welfare should also focus on workplace labour relations.

Thus, our study also sheds light on the political economy of labour legislation in the Chinese context. The evolving conflicts in labour relations have prompted regulators to respond. Both China's *Labour Law* of 1995 and the *Labour Contract Law of 2008* were born in an institutional environment where regulations largely lagged behind. For instance, as the market economy burgeoned in the 1980s, the labour force of China's state-owned enterprises (SOEs) diversified: the proportion of informal workers—who were mostly rural-to-urban migrant workers—grew rapidly. By the early 1990s, conflicts between informal workers and their work units had intensified in the form of explosive strikes and labour disputes.³⁹ It was under these circumstances that China's *Labour Law* of 1995 was stipulated to cope with new challenges that threatened the market economy.⁴⁰ What followed in the next decade was the increasing use of “dispatch labour” (labour outsourcing that featured separated employment and managerial relations)⁴¹ and student interns in new informal, non-standard employment arrangements. These arrangements led to escalating labour conflicts over problems such as wage arrears and substandard working conditions. This time, the regulators reacted with the *Labour Contract Law of 2008* and its 2012 amendment to, once again, encapsulate all forms of employment under the rule of law.⁴²

By and large, the regulation of labour relations in contemporary China has developed through a repetitive and ongoing process. Informal employment—usually characterized by a lack of job security and benefits—first develops beyond the existing regulatory framework, at which point the state steps in and institutionalizes new developments so as to maintain social stability. This process tends to be contentious and conflictual. Then, with social, economic, and technological changes, a new form of informal, non-standard employment emerges, blooms, and, after a period of time, becomes incorporated by the state into a uniform legal framework through another conflictual institutionalization process. As the platform economy today increasingly produces precarious labour and reframes the nature of work, momentum towards another stage of (re-)regulating work in the near future should increase.

³⁹ Warner 1996.

⁴⁰ Lee 2002.

⁴¹ Friedman 2014.

⁴² Lan and Pickles 2011; Wang et al. 2009; Friedman and Lee 2010; Feng 2019.

References

- Armstrong, Paul, and Yue Wang. 2018. "Didi Chuxing faces stiff competition in race to dominate China's ride-sharing market." *forbes.com*, 11 April. <https://www.forbes.com/sites/ywang/2018/04/11/didi-chuxing-faces-stiff-competition-in-race-to-dominate-chinas-ride-sharing-market/#e6354214a1e5>. Accessed 25 March, 2020.
- Barrientos, Stephanie W. 2013. "'Labour chains': analysing the role of labour contractors in global production networks." *The Journal of Development Studies*, 49(8), 1058-1071.
- Balding, M., Whinery, T., Leshner, E., & Womerldorff, E. 2019. "Estimated TNC share of VMT in six US metropolitan regions (revision 1)." *Fehr and Peers*. <https://drive.google.com/file/d/1FIUskVkj9lsAnWJQ6kLhAhNoVLjFdx3/view>. Accessed 5 April, 2020.
- Beijing Municipal Commission of Transport. 2016. "Detailed regulations for implementing the Beijing online ride-hailing service management measures." *beijing.gov.cn*, 21 December. http://jtw.beijing.gov.cn/xxgk/flfg/zcfg/201912/t20191231_1547511.html. Accessed 25 March, 2020.
- Bloomberg News. 2019. "In Beijing, you have to win a license lottery to buy a new car." *bloomberg.com*, 28 February. <https://www.bloomberg.com/news/articles/2019-02-27/in-beijing-you-have-to-win-a-license-lottery-to-buy-a-new-car>. Accessed 25 March, 2020.
- Brass, Tom. 1983. "Agrarian reform and the struggle for labour - power: A Peruvian case study." *The Journal of Development Studies*, 19(3), 368-389.
- Brass, Tom. 2009. "Capitalist unfree labour: A contradiction?." *Critical Sociology*, 35(6), 743-765.
- Cao, Li. 2016. "Forcing out-of-towners off the road." *The New York Times*, Dec. 22, Section B, 1.
- Chen, Bin, Tao Liu and Yignqi Wang. 2020. "Volatile fragility: new employment forms and disrupted employment protection in the new economy." *International Journal of Environmental Research and Public Health*, 17(5), 1531.
- Chen, Julie Y. 2018. "Technologies of control, communication, and calculation: taxi drivers' labour in the platform economy." In Phoebe Moore et al. (eds), *Humans and Machines at Work: Monitoring, Surveillance and Automation in Contemporary Capitalism*. Cham: Palgrave Macmillan, 231-252.
- Chen, Julie Y. 2020. "The mirage and politics of participation in china's platform economy." *Javnost - The Public*, 1-27.
- Cho, Mun Young. 2017. "Unveiling neoliberal dynamics: Government purchase (goumai) of social work services in Shenzhen's urban periphery." *The China Quarterly*, 230, 269-288.
- Clover, Charles, and Fangjing Ma. 2016. "China legalises Uber and Didi car-hailing apps." *Financial Times*, 28 July, <https://www.ft.com/content/dc63e5ce-54ab-11e6-9664-e0bdc13c3bef>. Accessed 15

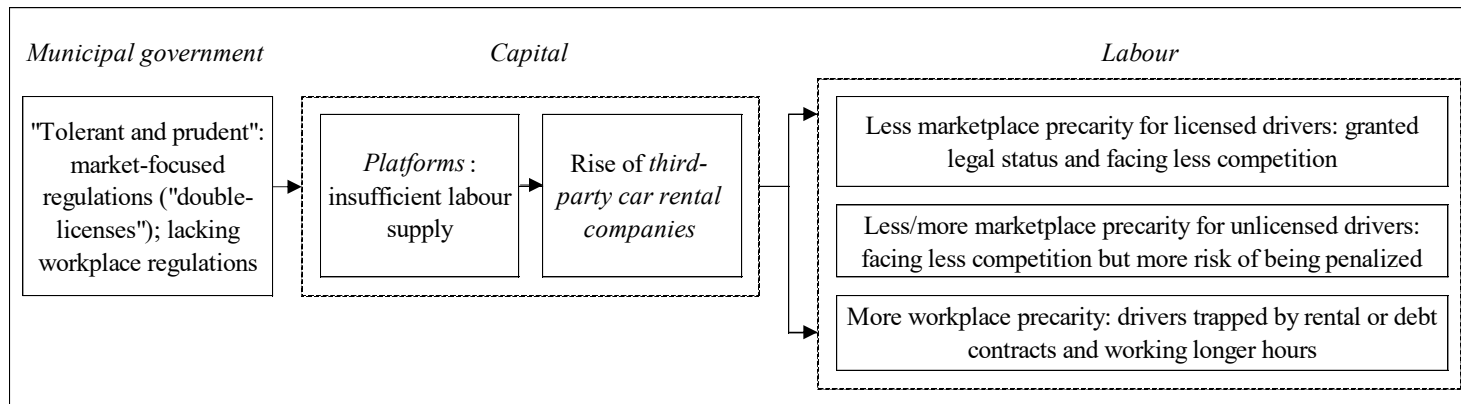
- March, 2020.
- Crunchbase. 2020. "Didi Chuxing." <https://www.crunchbase.com/organization/didi-dache#section-funding-rounds>. Accessed 15 March, 2020.
- Doyle, J. K. 2014. "Face-to-face surveys." *Wiley StatsRef: Statistics Reference Online*.
- Edelman, Benjamin G, and Damien Geradin. 2016. "Efficiencies and regulatory shortcuts: How should we regulate companies like Airbnb and Uber." *Stanford Technology Law Review*, 19(2), 293-328.
- Erhardt, Gregory D., Sneha Roy, Drew Cooper, et al. 2019. "Do transportation network companies decrease or increase congestion?." *Science Advances*, 5(5), eaau2670.
- Feng, Xiaojun. 2019. "Trapped in precariousness: migrant agency workers in China's state-owned enterprises," *The China Quarterly*, 238, 396-417.
- Friedman, Eli, and Ching Kwan Lee. "Remaking the world of Chinese labour: A 30-year retrospective." *British Journal of Industrial Relations*, 2010, 48.3: 507-533.
- Friedman, Eli. 2014. "Alienated politics: Labour insurgency and the paternalistic state in China." *Development and Change*, 45(5), 1001-1018.
- Gong, Jing, Brad N. Greenwood, and Yiping Song. 2017. "Uber might buy me a Mercedes Benz: An empirical investigation of the sharing economy and durable goods purchase. Available at SSRN: <https://ssrn.com/abstract=2971072>.
- Hawkins, Andrew. "Uber and Lyft are the 'biggest contributors' to San Francisco's traffic congestion, study says." *theverge.com*, <https://www.theverge.com/2019/5/8/18535627/uber-lyft-sf-traffic-congestion-increase-study>. Accessed 5 April, 2020.
- Hersey, Frank. 2018. "Nanjing becomes first Chinese city to ban new ride-hailing vehicles." *technode.com*, 18 April. <https://technode.com/2018/04/18/nanjing-no-new-vehicles/>. Accessed 25 March, 2020.
- International Labour Organization (ILO). 2016. *Non-Standard Employment Around the World*. Geneva: International Labour Office.)
- Kemp, John. 2019. China's Car Sales Slump as Top Urban Markets Saturate. Reuters. 25 October, 2019. <https://www.reuters.com/article/uk-china-autos-kemp/column-chinas-car-sales-slump-as-top-urban-markets-saturate-idUKKBN1X40OY> Access on 31 May 2020.
- LeBaron, Genevieve. 2014. Reconceptualizing Debt Bondage: Debt as a Class-Based Form of Labour Discipline. *Critical Sociology*, 2014, Vol. 40(5) 763–780.
- Lee, Ching Kwan. 2002. "From the specter of Mao to the spirit of the law: Labor insurgency in China." *Theory and Society*, 31(2), 189-228.
- Li, Keqiang. 2018. "Li Keqiang Explains the Reason for the 'Tolerant and Prudent' Policy on New Forms of Businesses." http://www.gov.cn/guowuyuan/2018-09/12/content_5321209.htm. Accessed 20

- March, 2020.
- Liu, Rong. 2015. "700 Taxi Drivers on Strike to Protest against China's Uber-like Car Services." *People's Daily Online*, 11 August. <http://en.people.cn/n/2015/0811/c90000-8933971.html>. Accessed 15 March, 2020.
- Liu, Tao, and Qiujie Shi, Q. 2019. "Acquiring a Beijing hukou: who is eligible and who is successful?." *The China Quarterly*, 1-14. doi:10.1017/S0305741019001541
- Ma, Liang, and Yanwei Li. 2018. "How governments regulate the sharing economy: A practical study on the policies of the ride-hailing industry in Chinese cities." *E-Government*, (4): 9-20.
- Meng, Jing, and Wangshu Luo. 2016. "New rules clear way for ride-hailing services." *gov.cn*, 29 July, http://english.www.gov.cn/policies/policy_watch/2016/07/29/content_281475404181510.htm. Accessed 15 March, 2020.
- Municipal government of Nanjing. 2018. "From tomorrow, putting a temporary end to the increase of taxi transport capacity." *nanjing.gov.cn*, 20 April. http://www.nanjing.gov.cn/mszx/201811/t20181102_1076713.html. Accessed 25 March, 2020.
- Jiang, Jie. 2016. "Car-hailing service provides employment for laid-off workers in steel, coal industries." *People's Daily Online*, 19 July. <http://en.people.cn/n3/2016/0719/c90000-9088261.html>. Accessed 15 March, 2020.
- People's Government of Nanjing Municipality. 2017. *Nanjing Municipality's Temporary Measures on the Management of Online Ride-hailing Services*. *nanjing.gov.cn*, 19 January, 2017. http://www.nanjing.gov.cn/xxgkn/zfgb/201812/t20181207_1290398.html. Accessed 15 March 2020.
- Parkes, Roderick. 2016. "App and coming: An 'Uber migration'?" *European Union Institute for Security Studies (EUISS)*, Alert No. 37. <https://www.iss.europa.eu/sites/default/files/EUISSFiles/Alert%2037%20Uber%20migration.pdf>. Accessed 5 April, 2020.
- Prassl, Jeremias, and Martin Risak. 2016. "Uber, taskrabbit, and co.: Platforms as employers-rethinking the legal analysis of crowdwork." *Comparative Labor Law & Policy Journal*, 37(3), 619-652.
- Qi, Hao, and Zhongjin Li. 2019. "Putting precarity back to production: a case study of Didi Kuaiche drivers in the city of Nanjing, China." *Review of Radical Political Economics*, <https://doi.org/10.1177/0486613419859030>, 1-17.
- Rao, Xiangyu. 2018. Ride-hailing drivers in Beijing: Becoming "grey drivers" overnight. *guanchna.cn*, 20 August. https://www.guanchna.cn/car/2018_08_20_468815.shtml. Accessed 5 April, 2020.
- Rosenblat, Alex, and Luke Stark. 2016. "Algorithmic labor and information asymmetries: A case study of Uber's drivers." *International Journal of Communication*, 10, 3758-3784.
- Sharif, Naubahar, and Jack Linzhou Xing. 2019. "Restricted generalizability of city innovation policies:

- The case of E-hailing in China.” *Science and Public Policy*, 46(6), 805-819.
- Srnicek, Nick. 2017. *Platform Capitalism*. Cambridge: Polity Press.
- Sun, Ping. 2019. “Your order, their labor: An exploration of algorithms and laboring on food delivery platforms in China.” *Chinese Journal of Communication*, 12(3), 308-323.
- Lan, Tu, and John Pickles. 2011. “China’s new labour contract law: state regulation and worker rights in global production networks.” *Capturing the Gains Working Paper*, No. 5. Available at SSRN: <https://ssrn.com/abstract=1987685> or <http://dx.doi.org/10.2139/ssrn.1987685>.
- Vosko, Leah F. 2010. *Managing the Margins: Gender, Citizenship, and the International Regulation of Precarious Employment*. Oxford: Oxford University Press.
- Wang, Haiyan, Richard P. Appelbaum, Francesca Degiuli, and Nelson Lichtenstein. 2009. “China's New Labour Contract Law: is China moving towards increased power for workers?.” *Third World Quarterly*, 30(3), 485-501.
- Warner, Malcolm. 1996. "Chinese enterprise reform, human resources and the 1994 Labour Law." *The International Journal of Human Resource Management*, 7(4), 779-796.
- Xinhua. 2019. “Shanghai fines Didi, Meituan for illegal ride-hailing practices.” *xinhuanet.com*, http://www.xinhuanet.com/english/2019-08/14/c_138309099.htm. Accessed 25 March, 2020.
- Yibencaijing, 2019. “Uncovering the secret of the ‘grey drivers’ chain of production: Millions of Didi drivers are being reaped by a financial scythe.” *sina.com*, 31 May. <https://tech.sina.com.cn/cs/2019-05-31/doc-ihvhiqay2648642.shtml>. Accessed 2 April, 2020.
- Yang, Yuan, and Xinning Liu. 2018. “China puts squeeze on Didi Chuxing after murders.” *ft.com*, 30 August. <https://www.ft.com/content/8fd8b85a-aa9f-11e8-94bd-cba20d67390c>. Accessed 2 April, 2020.
- Yu, Rose. 2016. “Beijing Official Blames Traffic on Popular Ride-Hailing Apps.” *wsj.com*, 26 January. <https://blogs.wsj.com/chinarealtime/2016/01/26/beijing-official-blames-traffic-on-popular-ride-sharing-apps/>. Accessed 25 March, 2020.
- Zwick, Austin. 2018. “Welcome to the gig economy: Neoliberal industrial relations and the case of Uber.” *Geojournal* 83 (4), 679–91.

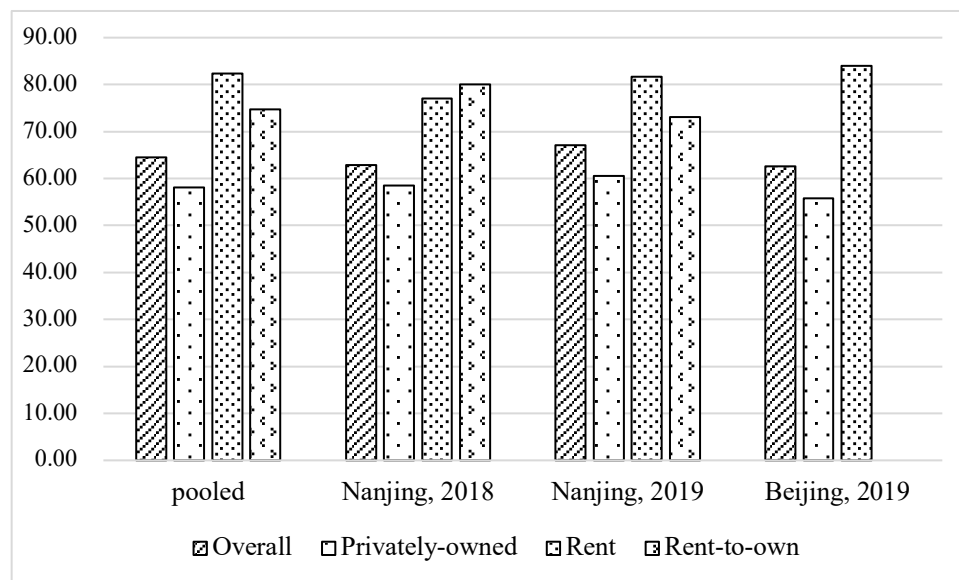
Figures and Tables

Figure 1: **A Tripartite Framework: The Municipal Government, Capital (Platform and Rental Companies), and Labour**



Source: The authors.

Figure 2: **Drivers' Weekly Work Hours by Vehicle Ownership and Survey Cohort**



Source: The authors.

Table 1: **Driver Groups and Their Most-Likely Mode of Work**

City	Car ownership	Conformity to regulations (whether or not they have “double-licenses”)	Whether or not they work overtime
Nanjing	Privately-own	Legal	Depends*
		Illegal	Depends
	Rent or rent-to-own	Legal	Yes
Beijing	Privately-own	Legal (Rare)	Depends
		Illegal	Depends
	Rent or rent-to-own	Illegal	Yes
<i>Source:</i> The authors.			
* It depends on individual socio-economic conditions.			

Table 2: **Summary Statistics of Key Variables**

Variable	Pooled	Stratified by survey cohorts		
	(N=540) Mean or pct.	Nanjing, 2018 (N=108) Mean or pct.	Nanjing, 2019 (N=221) Mean or pct.	Beijing 2019 (N=211) Mean or pct.
Vehicle ownership				
Privately-owned	70.37	78.7	61.09	75.83
Rent	19.44	9.26	19.91	24.17
Rent-to-own	10.19	12.04	19	N/A
<i>Demographic characteristics</i>				
Age (years)	40.60	38.46	41.81	40.48
Gender				
Female	4.44	4.63	4.98	2.37
Male	96.11	95.37	95.02	97.63
Marriage				
Unmarried	6.31	7.41	3.17	4.27
Married	95.56	92.59	96.83	95.73
Region of origin				
Rural	50.00	40.74	37.1	68.25
Urban	50.00	59.26	62.9	31.75
Habitat				
Local	39.26	43.52	54.75	20.85
Migrant	60.74	56.48	45.25	79.15
<i>Proxies for economic status</i>				
Number of kids	1.31 (0.65)	1.23 (0.69)	1.32 (0.59)	1.36 (0.69)
Education level				
Junior high or lower	42.04	28.7	36.65	54.5
Senior high or secondary vocational	37.96	49	41.18	30.81
College or tertiary vocational	20.00	25.93	22.17	14.69
Access to social security				
Uninsured	57.04	62.04	47.51	64.45
Insured	42.96	37.96	52.49	35.55

Source:

Authors' survey data.

Notes:

For mean values, standard deviations in parentheses.

Table 3: **The impacts of means of vehicle acquisition on Didi drivers' work hours**

	Stratified by survey cohorts				
	Pooled (1)	Pooled (2)	Nanjing, 2018 (3)	Nanjing, 2019 (4)	Beijing 2019 (5)
<i>Vehicle ownership (ref.=privately-owned)</i>					
Rent	0.488*** (0.046)	0.465*** (0.047)	0.425*** (0.107)	0.432*** (0.081)	0.446*** (0.065)
Rent-to-own	0.274*** (0.075)	0.225*** (0.080)	0.227* (0.124)	0.237** (0.100)	
<i>Demographic characteristics</i>					
Age (years)	0.008** (0.003)	0.006* (0.003)	0.002 (0.007)	0.011** (0.005)	0.001 (0.005)
Male	0.047 (0.140)	0.017 (0.118)	0.270 (0.300)	-0.092 (0.142)	-0.239 (0.356)
Married	0.132 (0.095)	0.028 (0.094)	0.193 (0.196)	-0.019 (0.219)	-0.043 (0.131)
Urban	-0.209*** (0.070)	-0.074 (0.070)	-0.053 (0.157)	-0.084 (0.113)	-0.065 (0.117)
Migrant	0.147* (0.076)	0.025 (0.077)	-0.197 (0.161)	-0.036 (0.118)	0.374** (0.145)
<i>Proxies for economic status</i>					
Number of kids		0.099** (0.045)	0.060 (0.109)	0.157* (0.089)	0.063 (0.056)
Education (ref.=junior high or lower)					
Senior high or secondary vocational		-0.108* (0.058)	-0.176 (0.120)	0.083 (0.098)	-0.264*** (0.093)
College or tertiary vocational		-0.153* (0.084)	-0.215 (0.151)	0.093 (0.127)	-0.357** (0.155)
Insured		-0.343*** (0.060)	-0.290** (0.141)	-0.377*** (0.095)	-0.286*** (0.094)
<i>Cohort (ref.=2018 Nanjing)</i>					
2019 Nanjing	-0.002 (0.074)	0.017 (0.070)			
2019 Beijing	-0.179** (0.077)	-0.163** (0.072)			
N	540	540	108	221	211
Adj. R-sq	0.150	0.227	0.129	0.170	0.369

Source:

Authors' survey data.

Notes:

Results are presented as semi-log OLS estimation with robust standard errors in parentheses. For each result, significance levels are * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.