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Putting Precarity Back to Production: A Case Study of Didi Kuaiche Drivers in the City of Nanjing, China

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Abstract

This article addresses the questions of why and how precarity should be conceptualized in a Marxian framework on labor. We argue that precarity should be put back to production, which has a twofold meaning: first, we emphasize that the labor process is of crucial importance for conceptualizing precarity, and precarity in the labor process is interrelated with precarity in the labor market and labor reproduction. Second, precarity should be understood through the relationships of production, particularly through capital-labor conflict. Using one case study on Didi Kuaiche drivers in the city of Nanjing, China, we examine the nature of precarity in the flexible labor of the digital economy and present a more nuanced micronarrative of precarious work in the ride-hailing service.

JEL Classification: B51, J46, J53, J80

Keywords

precarity, relations of production, labor process, Didi drivers

1. Introduction

The rise and prevalence of precarious work is a worldwide phenomenon that has triggered a spate of scholarly interest and political protest. According to a recent International Labor Organization (ILO 2016) report, the defining characteristic of precariousness is that the worker bears the risks associated with the job rather than the business that employs said worker. Precarious work is typically understood as being low paying and insecure, affording minimal worker control, and being unprotected by law or collective agreements (ILO 2016). Scholarship has largely attributed the emergence and expansion of precarious work to the major economic and regulatory changes under neoliberalism, particularly in the labor market. The notion of precarity has been used to

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describe not only the material conditions of life-making, including the work arrangement and labor employment, but also the social and existential conditions of living as a source of "political subjection, of economic exploitation, and of opportunities to be grasped" (Lazzarato 2004: para. 10). The precariat is deemed by some scholars as a new and "dangerous class" replacing the role of the traditional proletarian (Standing 2013).

Nevertheless, how to conceptualize precarity and precarious work is still controversial. The current literature tends to conceptualize precarity as a set of insecurities in various aspects of jobs, workers, and workers' lives due to informalization, casualization, and flexibilization of work and employment. For example, precarity can be defined as a work regime of "non-self-determined insecurity" (Raunig 2004: para. 5) that results in increasing dependence on capital for survival (Mitropoulos 2005) and a "hell of the absence of guarantees" (Guattari and Negri 1990: 76). However, it is still unclear what the notion of precarity can contribute to our understanding of these insecurities or what its specific and concrete connection is with the capital-labor relationship.

In this article, we examine the nature of precarity in the flexible labor of the digital economy by investigating the case of Didi Kuaiche (or Didi Express). Ride hailing is the core business of Didi, and it is the dominant ride-hailing company in China and the largest global sharing platform. Our survey and analysis of the ride-hailing drivers in the city of Nanjing, China, provides an empirical lens to explore and discuss how precarity is simultaneously shaping and shaped by the capital-labor relationship in the workplace. Thus, this study is driven by both empirical and theoretical inquiry. We focus on the largest ride-hailing platform in China and a sample of typical precarious workers and identify precarity in various aspects of the drivers' work. More importantly, we attempt to explain precarity from the perspective of production, particularly the capital-labor relationship in the labor process in which laborers produce goods or services by expending labor effort and using means of production. In typical capitalist production, the labor process involves conflicts between workers and capitalists (or managers) given that capitalists acquire surplus value through monitoring workers' labor process. The production of services is distinct in that it occurs as the consumption of the service proceeds. We demonstrate that by controlling market access, building up information hegemony, and undertaking the stratification of labor, capital has succeeded in establishing the subordination of drivers to the platform, which crucially constitutes the precarious nature of the drivers' work.

This paper contributes to the current literature in two ways. First, it provides an understanding of precarity by emphasizing the labor process and the capital-labor relationship where precarity is formed and intensified at the micro level under the influence of macroeconomic and regulatory changes. Second, it uses a case study of a ride-hailing company in China as an empirical lens to illustrate and suggest how precarity should be conceptualized.

The paper is organized into four remaining sections. Section 2 reviews two paths of conceptualizing precarity in the literature. Section 3 introduces the background of the survey used in this study and discusses the specific context and the precarious conditions of the drivers. Section 4 explores the subordination of Didi drivers to the capital and explains the dynamic relationship between precarity and subordination in a context where the supply and demand of work is mediated by a digital platform. We analyze in order of appearance the three aspects that we have identified as most useful to the study of precarity in the case of Didi drivers: market access, information hegemony, and labor stratification. Section 5 concludes.

2. Literature Review: How to Conceptualize Precarity

The notion of precarity is typically associated with the attributes of the job: low pay, insecurity, risk, uncertainty, lack of regulation, lack of protection and benefits, and so forth. Scholars have conceptualized precarity and precarious work from different dimensions (e.g., Kalleberg 2011;

Standing 2013). The way these notions are conceptualized largely reflects the focus of the scholar, as well as his or her understanding of what has caused the rise of precarity, which tends to center on globalization, neoliberalism, deregulation, financialization, shifts in capital-labor power relationships, and more. Some historical or empirical studies have tried to address the question of whether precarity and precarious work should be regarded as a new phenomenon or merely a reemergence of what happened or even persisted in history (Neilson and Rossiter 2008); meanwhile, other studies have suggested that precarity has to be contextualized in incorporating different work experience across the global north and the global south (Breman 2013; Vosko 2009; Munck 2013; Pradella 2015). Many studies have discussed the status of precarious work across different groups of people from the perspectives of gender, race, education, and so on, addressing questions such as who are more likely to be exposed to precarity (Chatterjee 2012; Branch and Hanley 2017; Sapkal and Sundar 2017). Moreover, some studies have connected the issue of precarity with the gig economy, in terms of a digital platform with the double capacity of market intermediary and shadow employer (Friedman 2014). Stanford (2017) further argues that the current digital platform is comparable to the "putting-out" system in the early history of merchant capitalism, and monopolizing the platform puts labor in subordination to capital.[1] Simultaneously, Srnicek (2017) contends that the digital platform reveals historical simple continuities of outsourcing (with fixed assets and labor training now being outsourced) and flexible labor arrangement as a cost-cutting strategy that has been in use since the 1970s.

To compare the different theoretical paths in conceptualizing precarity and precarious work in the scholarship, we borrow Marx's (1976) theoretical framework that traces labor power during the process of creation, exchange, function, and replenishment by focusing on the three concepts of the *labor market* (where labor power as a commodity is traded), *labor reproduction* (where labor power is reproduced), and *labor process* (where labor power is used for production as working capital to generate surplus value). The paths to conceptualize precarity in the literature can thus be categorized according to which of these three fields, or combination of fields, they focus on.

Generally, the literature conceptualizing precarity has drawn dimensions from all three fields, although it tends to highlight insecure employment status and livelihood and pay more attention to the labor market and labor reproduction than the labor process. For instance, according to Standing (2013), the people belonging to the precariat lack seven forms of security, among which only one form (work security) explicitly concerns the labor process, while the other six forms are all associated with either the labor market or labor reproduction.[2] Rodgers (1989) identifies four dimensions of precarious work: the degree of certainty of continuing work; the control over work (working conditions, wages, or the pace of work); protection by law or collective organization; and income. Vosko (2009) extends Rodgers' dimensions by incorporating self-employed workers. Some studies conceptualize precarity from the perspective of job quality (Kalleberg 2009). In addition, precarity is conceptualized as the insecurity and instability in one's social life regarding housing, welfare provision, and personal relationships (Ross 2010; Arnold and Bongiovi 2013), which can be considered as an extension of the focus on labor reproduction. These studies

[1]In the case of platform and putting-out system, producers provide the key means of production, while the platform provides drivers with software, brands, and calculation ability, as the old merchants provide producers with raw materials and market access. The power of both the platform and the old merchants depends on the control of market access (Stanford 2017).

[2]The seven forms are labor market security, employment security, job security, work security, skill reproduction security, income security, and representation security. It is noteworthy that what Standing calls *job security* concerns "the ability and opportunity to retain a niche in employment," which is mostly associated with the labor market but also weakly with the employee's position in the labor process. The "representation security," as Standing explains, means "possessing a collective voice in the labor market" (Standing 2013: 10).

emphasize that the laborer who participates in precarious work lacks protection and unemployment subsidies from the state, works on a part-time or temporary basis, and is unable to earn a living wage. Because of a lack of emphasis on the labor process, the notion of precarious work in these studies is largely interchangeable with precarious employment or precarious jobs. The scholarly emphasis on the labor market and reproduction is understandable, given that the notions of precarity and precarious work initially have broader implications than other notions such as informal work. As Siegmann and Schiphorst (2016: 116) point out, "Informality centers around the workplace, while precarity transcends the workplace and interacts with workers' livelihoods and social locations" (see also Rogan et al. 2017).

What should be problematized, however, is the pattern to separate precarity in the labor market and reproduction from the precarity in the labor process. Put differently, the gap that needs to be filled is how to treat precarity in different fields as interconnected parts of a whole, rather than separated symptoms of particular jobs. Filling the gap demands addressing the following questions: how is precarity in the labor process related to the capital-labor relationship in the workplace? and, how is precarity in the labor process connected with precarity in the labor market and reproduction? These questions in turn require analysis of the determinants of precarity on the micro level (i.e., in the arena of production), which may serve as a complement to the analysis of the major macroeconomic, structural, and institutional forces that have aligned to drive the precarization of work, workers, and workers' lives.

A few studies have centered on precarity in the labor process that have both empirical and theoretical implications for conceptualizing precarity. For instance, Mezzadri (2016) discusses how contractors (arguably informal capitalists) in the home-based embroidery sector in Bareilly, India, deployed interlocking strategies through advances or debt to ensure labor flexibility, generating precariousness in the work and livelihoods of workers. Similarly, by tracing the experiences of female geoscientists who lost jobs in the oil price downturn, Williams (2017) investigates how three mechanisms (teamwork, career maps, and networking) that are built into professional careers have enhanced women's vulnerability to layoffs. That case study illustrates how precarity in the labor process affects labor market insecurity. Moore and Robinson (2016), in exploring the increasing quantification in the labor process in Amazon and Tesco warehouses, such as the adoption of wearable and other self-tracking devices, argue that digital technologies introduce a heightened Taylorist influence, by monopolizing information about the labor process, and separating it from workers on precarious contracts who have weak bargaining power in the labor market and declining welfare in labor reproduction.

This focus on precarity in the labor process largely echoes an emerging research agenda that advocates a relational conceptualization of precarity. Lee (2017) argues that to specify the meaning of precarious labor is to specify the kinds of relationships among workers, employers, and the state. In addition, Lee suggests that precarity as a relationship or relationships is always context dependent, involving struggles and negotiations in response to changing political, economic, and ideological conditions. Through the same lens, Pang (2019) investigates how the precarity of construction workers is shaped and reproduced by the state through the law, in contrast with studies that attribute the rise of precarity to the lack of state regulation and protection on the macro level.[3]

In a more recent article, Smith and Pun (2018) respond to Standing's (2017: 165) comment on China's precariat, where Standing conceptualizes "precarious" as a lack of rights within the state and a person's status "depending on others doing them favors, in response to requests." Smith and Pun (2018) argue that Standing creates the precariat not out of capital-labor conflicts but out of *presumed* labor-labor conflicts. In other words, Standing has omitted the point of production:

[3]Pang (2019), adopting Agarwala's (2009) methodology, suggests precarity can be disaggregated as workers' relationships respectively with the state, the market, and the civil society.

there is only "an ideal type secure working class set against ideal type precariat with a sevenfold set of insecurities" (Smith and Pun 2018: 602). Workers are not put in the relationship of production—that is, in the set context of the workplace where surplus value is created and where the social relations between capital and labor as "structurally antagonistic" can be unpacked and explored in great detail.

In summary, the literature review presents two paths to conceptualize precarity. One path highlights various insecurities in the status of particular groups of workers, with more attention being paid to the fields of the labor market and labor reproduction and less to the labor process, which tends to explain the causes of precarity with major macroeconomic, structural, and institutional shifts. The other path tends to understand precarity within particular relationships, especially relationships of production or capital-labor relationships, and tends to underscore the power relationships in the production arena, which may shape and reproduce precarity.

In this article, we argue that precarity should be put back to production, which has a twofold meaning. First, we emphasize that the labor process is of crucial importance for conceptualizing precarity, and precarity in the labor process is interrelated with precarity in the labor market and labor reproduction; hence, defining precarity by examining only the labor market and labor reproduction is insufficient. Second, precarity should be understood through the relationship of production, in particular, through the capital-labor conflict. Under capitalist production, the labor process is simultaneously the process of valorization (Marx 1976); the emphasis on the labor process must lead to the emphasis on the capital-labor relationship, where autonomy, consent, and resistance at work are the focus (Smith and Thompson 1998; Thompson and Vincent 2010; Gandini 2019). Therefore, our approach largely echoes what Lee (2017), Smith and Pun (2018), and Pang (2019) suggest. Thus far, there is scant elaboration in the literature on the relational aspect of precarity. The case study illustrated in the next three sections aims to engage with the debate and contribute to the literature by providing more nuanced narratives and analysis of the precarious work in the ride-hailing service in China.

3. Case and Context: Didi Kuaiche Drivers' Precarity in the Labor Market, Labor Reproduction, and the Labor Process

3.1 Background of the survey

Founded in 2012, Didi Chuxing is the largest ride-hailing platform in China. Kuaiche (or Express) is the core service of Didi Chuxing. It helped Didi obtain market dominance through its mass-market appeal that undercut the use of taxis. In 2016, Didi acquired Uber's China business and became the dominant company in the industry in China and paved the way to expand beyond China and into new markets. About 31 million drivers across more than 400 cities in China use private cars or rental cars to offer transportation services through the platform, making Didi the largest ride-hailing platform in the world in terms of the number of people it claims to serve: 550 million registered users—more than half of China's mobile Internet users (*Financial Times* 2018a).

Nanjing is the capital city of Jiangsu Province and at one time served as the capital city of the Republic of China. With an urban population of 6.9 million and a total population of 8.3 million, it is one of the most developed cities in China—GDP per capita reached $20,000 in 2017 (Nanjing Statistical Bureau 2018). We chose Nanjing as the site of the survey because Meituan, a major competitor of Didi, entered the Nanjing market in early 2017. The competition between Meituan and Didi may produce variations in the experiences of the drivers.

The survey was conducted in July 2018 by randomly choosing trips and placing orders on the phone app. The drivers we met were asked for permission to answer the questions on the questionnaire. In this manner, we were able to interview 166 anonymous Didi Kuaiche drivers and get them to fill out a questionnaire.

Table 1. Four types of Didi Kuaiche drivers.

	Full-time or part-time	Rental or self-owned car	Strong or weak reliance†	Shares in the survey (%)
Type 1	Full-time	Rental	Strong	27.1
Type 2	Full-time	Self-owned	Strong	34.9
Type 3	Part-time	Self-owned	Strong	22.3
Type 4	Part-time	Self-owned	Weak	15.7

†We define the driver as strongly relying on the job if the driver is full-time or if the driver is part-time but the net income from the part-time job accounts for more than 30 percent of the total income. There are missing observations about part-time drivers' total income; in that case, we define a part-time driver as belonging to Type 3 if the driver responded with "for raising the family" or a similar expression when asked the reason for taking the job.

Male drivers made up the majority (96 percent) of the survey sample. Drivers who were born in the 1970s or 1980s accounted for 72 percent of all the drivers. Most of the drivers had only a high-school (48 percent) or a middle school (28 percent) education. The majority of the drivers were married (90 percent) and raising one (56 percent) or two (29 percent) children. More than half of the drivers did not have a local urban *hukou* (household registration record), which means they were migrants from either rural areas (27 percent) or other urban areas (35 percent). These characteristics depict the image of a typical male breadwinner in China's social context: the driver faces the burden of supporting the family and raising children, but meanwhile the driver is unable to find a stable job as college graduates do; moreover, as a migrant without a local urban *hukou*, the driver has limited local social resources and access to government benefits.

3.2 Four types of drivers and their precarity

Despite the homogenous image of a male breadwinner, the drivers were heterogeneous regarding their ways of market participation and the degree of reliance on the income from the job. We categorized drivers in the study into four types, as shown in table 1. Driver types were classified on the basis of whether the job was full-time or part-time, whether the driver owned the car or leased it from a car-leasing company, and to which extent the driver relied on income from the job. The first two criteria concern the status of employment, which is shaped by the role of car-leasing companies and government regulations. The last criterion concerns the role of income from the job in labor reproduction. Table 2 presents the basic characteristics of the four types of drivers.

Type 1 refers to the full-time drivers with a leased car. In the survey, this type of driver accounted for 27.1 percent of participants. These car-leasing companies cooperate with Didi to recruit new drivers, thus as a third-party in the relationship between Didi and drivers. Specifically, there are two types of relationships between the driver and the third party. First, the driver can sign a lease contract for a car with the company, usually for a three-year period, operate with the car to provide ride-hailing services, and make a monthly payment to the company of around 4,000 yuan (roughly US$580). Second, the driver can choose to sign a mortgage contract to purchase a new car from the company by making a down payment; in that case, the monthly payment will be around 3,000 yuan (roughly US$435). The arrangement with the car-leasing company as a third party is attractive to a driver as the municipal government licenses the company to enter the app-based ride-hailing industry so that the driver is guaranteed a legal status. In a way, involving the car rental company has revived the old custom of taxi companies, in which self-employed drivers acquire licenses from the taxi company by paying a commission. The only difference is that Type 1 drivers are permitted to provide only the app-based service, while traditional taxies are permitted to provide both app-based and traditional taxi services. This difference is minimal, however, given that most customers have become used to the app-based services.

Table 2. Basic characteristics of Didi Kuaiche drivers.

	Without local urban *hukou* (%)	Mean age	Married (%)	Mean number of children	Mean education years
Type 1	71.1	36.3	90.0	1.18	11.4
Type 2	63.2	37.3	93.1	1.27	11.7
Type 3	52.8	38.8	86.1	1.11	12.5
Type 4	57.7	39.0	88.5	1.25	12.4

Type 2 refers to the full-time drivers who operate their own cars, which amount to 34.9 percent of drivers in the survey. Contrary to the Type 1 drivers, Type 2 drivers have the ownership of their cars. Full-time drivers—both Type 1 and 2 drivers—account for more than 60 percent of all the drivers in the survey. Since this is the only job that full-time drivers have, both Type 1 and Type 2 drivers rely heavily on the income from the job for labor reproduction.

Type 3 drivers, 22.3 percent of the total surveyed, are part-time drivers who operate their own cars; however, this part-time job was crucial for labor reproduction, so these drivers still rely heavily on this income source, just as Type 1 and 2 drivers do. This is because their main jobs face dismal prospects, or their living costs are rising so rapidly that their main jobs are not able to offer sufficient income. For example, when we asked why the driver decided to take this part-time job, one driver told us, "I have my own grocery store. Now the business is not good, so I take this part-time job." Another answered, "I take this job because I am poor. I have a family to raise. Life has to continue." The emphasis on the burden of living in these responses also exists in the responses of Type 1 and 2 drivers to the same question. Type 3 drivers are as committed to the job as Type 1 and 2 drivers are.

Type 4 refers to the part-time drivers who operate with self-owned cars but only weakly rely on the income from the part-time job. This part-time job for Type 4 drivers was only a way to "earn some pocket money" or "just for fun." They take advantage of the flexibility of this part-time job. They appreciate being able to decide their working schedule and not having to meet the attendance requirement of a traditional job. They do not need anyone's permission when they want to take a break. For them, this job provides freedom and extra money. This type of driver takes the smallest share (15.7 percent) of all the drivers in the survey.

There are some stylized facts about the precarity of the drivers' work. First, regarding the labor market, Didi drivers do not have a labor contract with the Didi Company. They are not regarded as employees by law and are thereby not protected by labor laws. Because it is a new form of work, whether to define the relationship between a driver and the platform as an employment relationship is a widespread question.[4] Table 3 presents three indicators concerning precarity in the labor market. The second column in table 3 shows that only Type 1 drivers are mostly licensed. Type 2 drivers are not all licensed drivers. Compared to Type 2 drivers, it is less likely for Type 3 drivers to acquire a license because of the higher insurance cost associated with the license, which is more difficult to cover through part-time driving. Most Type 4 drivers are not licensed. The unlicensed status means the drivers, if caught, would be punished at any time by the regulator and forbidden to remain in the industry. The third column reveals that 60.5 percent of Type 1 drivers and 50.0 percent of Type 4 drivers entered the industry within the past six months, implying a high turnover rate and instability associated with the job. The last column shows a significant proportion of drivers planning to quit the job.

Second, regarding labor reproduction, the survey data show a large proportion of the drivers do not have access to social security, especially the full-time drivers, as shown in table 4. The

[4]A similar discussion is in the literature on Uber (Zwick 2018).

Table 3. Precarity in labor market and labor reproduction.

	Licensed or not	Work experience less than six months (%)	Planning to continue to be a Didi driver (%)
Type 1	Licensed	60.5	25.0
Type 2	Mixed	28.8	58.9
Type 3	Mostly not licensed	28.6	29.0
Type 4	Mostly not licensed	50.0	52.2

Table 4. Precarity in labor reproduction.

	Social security coverage (%)	Net earnings per month (yuan)	Living costs/net income (%)††	Satisfaction of income†††
Type 1	19.5	7,921†	65.2	3.62
Type 2	23.6	8,090	80.1	3.15
Type 3	58.8	4,803	144.8 (64.3)	3.12
Type 4	50.0	2,347	289.4 (101.5)	3.35

†This number is likely to be overestimated because Type 1 drivers may have failed to subtract the rental payment, but is also likely to be underestimated because Type 1 drivers are more likely to use electric cars (thus inducing less gas cost), and/or benefit from surging prices for long hours (thus higher earnings).
††Numbers in parentheses are the ratios of living costs to aggregate income from both the part-time job and the main job.
†††The survey asked the driver to evaluate the satisfaction of income with discrete numbers: 1 is *very satisfied*; 2 is *satisfied*; 3 is *just-so-so*; 4 is *unsatisfied*; 5 is *very unsatisfied*.

third column in table 4 gives the ratio of living costs to net income from driving, which shows that living costs account for 65.2 percent and 80.1 percent of the net income of Type 1 and Type 2 drivers, respectively. Comparatively, household consumption on average accounts for 59.5 percent of household disposable income in Nanjing as of 2016 (Nanjing Statistical Yearbook 2017).[5] In terms of income satisfaction, most drivers responded that the income was either "just-so-so" or that they were "unsatisfied" with the income.

Third, regarding the labor process, working long hours is a crucial feature. As shown in table 5, Type 1 and Type 2 drivers work 79.8 hours and 73.2 hours per week, respectively. Even Type 3 drivers on a part-time basis work 42.0 hours per week. The issues of surveillance, pay structure, employment perception, evaluation, and restrictions are discussed in detail in the next section.

These precarity features are undoubtedly associated with the macro, structural, and institutional context. In China, since the 1980s, the share of the state sector that used to provide guaranteed job security, steady income, and social benefits (the "iron rice bowls") has fallen significantly throughout the economy, and informal employment has taken the dominant role of total employment (Huang 2017). Even for many standard jobs, most rural-urban migrant workers do not have labor contracts or access to social security. While we agree that China's market reform and deregulation is crucially important in explaining the rise of precarious work in recent decades at the macro and historical level (Kuruvilla, Lee, and Gallagher 2011), we argue that various aspects of the precarity of Didi drivers are also deeply rooted in the subordination of drivers to the platform in the labor process at the micro level.

[5]Considering the dependents within the household, the breadwinner's consumption/income ratio should be lower than 59.5 percent.

Table 5. Precarity in labor process.

	Mean working week (hours)†	Suggesting having an employment relation with Didi (%)	Bonuses as share of net income (%)	Didi has imposed work duty (%)	Customers' complaints have an impact on the business (%)
Type 1	79.8	29.7	47.4	41.0	75.6
Type 2	73.2	20.0	51.2	46.2	73.2
Type 3	42.0	6.3	44.6	3.1	70.6
Type 4	26.3	8.3	48.3	14.3	63.6

†The numbers for Type 3 and 4 drivers are the working week for the part-time job.

4. Subordination in the Capital-labor Relationship

We argue that precarity should be put back to production—in particular, it should be understood through the capital-labor relationship in the labor process. Given the stylized facts revealed by our survey, the question becomes this: how did the precarity come into being? Analyzing the capital-labor relationship in the app-based ride-hailing industry, we find that precarity derives from a particular form of subordination of the drivers to the platform that is rooted in the lopsided power relationship between capital and labor. This form of subordination is shaped by the interactions between the platform and the drivers (in some cases, interactions among the platform, the drivers, and the local government) in the macro context of economic slowdown, surplus capital, and high living costs in labor reproduction. Next, we discuss what the subordination of the drivers is to the platform in the production arena and how it came into being.

4.1 Market access

The first aspect of the subordination relationship is that Didi controls the drivers' access to the market through the platform since customers mostly place orders through the platform. Didi is the largest platform for app-based ride-hailing services and has established multiple channels for customers to place orders. The product of the driver is a kind of service whose production and consumption takes place simultaneously; thus, the control over access to the market is in fact a control over production. The platform thereby acquires the power of determining when the driver's labor process begins and ends, and thus determines how the driver's production time is divided into what Marx (1976) called the *working period* and *non-working period*.

Didi built up control over access to the market through heavily subsidizing its customers with competitive prices and coupons. On the supply side, Didi, at the early stage of its development, offered drivers generous bonuses to attract new entrants; however, these supply-side subsidies have not persisted.[6] Despite the fact that the platform per se has the economy of scale and thus the tendency of monopoly, Didi achieved the dominant role of the market mainly through massive investment in a short period. In the past six years (up to July 2018), Didi successfully collected US$20.6 billion over seventeen rounds of fundraising. The largest investors include China's Internet titans Tencent and Alibaba. Nevertheless, Didi has invested so much on recruiting new drivers in order to expand the market that the Kuaiche business already suffered a loss of 4 billion yuan (around US$580 million) in the first half of 2018 (*Financial Times* 2018b).[7]

[6]In the survey, some drivers with more than two years' work experience recalled that they were doing much better when Didi started its business and when it faced competition from other platforms.

[7]Srnicek (2017) argues that the platform economy has not proven the capability for profits. Its expansion has been more reliant on surplus financial capital since the 2008 financial crisis.

What attracts the investments to Didi is the logic of financialization: the investors regard the future stock market value induced by the monopoly as more important than the current profitability. Thus, the more successful that Didi is in controlling the market, the more investments that it can continue to attract. Obviously, this is not a sustainable way for an enterprise to develop.[8]

Therefore, the drivers face the precarity or contingency that they do not control their livelihood since the drivers' access to the market could be terminated by the platform. This is not an open-access platform that everyone can plug into without permission from the owner. The temporary suspension of access happens in the daily production. In the survey, many drivers complained about "the last job during rush hour." Didi established incentives for rush hour: the driver would receive a bonus for finishing a certain amount of rides during rush hour.[9] However, drivers found that the platform would suspend dispatching jobs when they needed only one more to reach the requirement. In September 2018, Didi imposed stricter restraints on the qualifications of drivers in response to the criticism against its safety measures after a Didi driver committed a serious crime against a female customer. These restraints include that a driver must have no criminal record or drug-related record. In fact, this restraint existed even before the criminal incident, but excluded drivers could borrow someone else's identification to plug into the platform; however, Didi now requires the driver to pass a facial recognition test through the app, which makes borrowing others' identification impossible. While conducting the survey, we met a driver who used someone else's identification. He explained:

> I made a mistake more than ten years ago, and I was detained by law for a week. I did not make mistakes after, but Didi does not allow me to work. Right now I am using my friend's name to apply for the driver's account. I want to work. I want to earn some money to raise my family, but Didi forbids me from working. I become the risk that Didi wants to control. When Meituan came into the market, I applied on its platform and worked for a while. But Meituan has fewer jobs. It is not worth it for a part-time driver. Then I borrowed my friend's name.

What we emphasize in this example is not that the platform imposes restraints on the qualifications of drivers but rather the discretional power the platform has in imposing such restraints to enforce compliance with the labor terms set by the firm and the ambiguity in how the platform utilizes this power. Although Didi stipulated the restraints before the crime happened, it obviously offered access to unqualified drivers, as did its competitors' platform. The only difference is that the unqualified driver had to borrow an identification to plug into the Didi platform. However, Didi immediately withdrew the access for those drivers when criticism arose. This deprivable access creates a disposable pool of drivers and gives rise to the subordination of labor to the platform.

In addition, control over access to the market has enabled control over how the money flows from customers to producers—all transactions must take place via the platform. The drivers are not allowed to directly accept the customers' payments. The platform receives customers' payments, retains the commission (about 25 percent of a payment), and then transfers the rest to the balance of the driver's platform account; all these events happen swiftly without any intervention from the driver. Thus, controlling the money flow ensures the extraction of surplus value. It is noteworthy that nowadays a customer can also order a traditional taxi through the platform, but the customer makes a payment directly to the taxi driver, and the latter is not required to pay any commission to the platform. This difference arises because traditional taxi drivers have

[8]Khan (2017) has analyzed the similar cases of Uber and Amazon regarding predatory growth and the immense interest from investors.

[9]In the United States, Uber has adopted the surge-pricing mechanism to stimulate labor supply (Chen, Mislove, and Wilson 2015).

alternative kinds of access to the market, although those alternatives are shrinking due to the expansion of app-based services: they can pick up hand-waving customers by the road or accept orders that customers place through the hotlines of taxi companies. Comparatively, Didi drivers are allowed by law to take orders only through the platform; other forms of access to the market will deem them to be illegal taxi drivers. Before the era of app-based services, illegal taxis, or *heiche* (black cars), were commonly seen in China's large cities; nowadays, they still widely exist in small cities but have become rare in large cities. Some illegal taxi drivers were infamous for cheating customers by taking advantage of information asymmetry. Platform-based transactions have rooted out the problem of cheating, which significantly expands the market. What is ironic, however, is the customer-driver conspiracy called *Tiaodan* ("drop the transaction"): after a customer and a Didi driver find each other via the platform, they skip the platform in order to avoid paying the commission and instead agree on a mutually beneficial fare (higher than what the driver can earn but lower than what the customer must pay via the platform). Thus, platform-based transactions have both an income effect that expands the market and a power effect that enables the platform to extract surplus value.

4.2 Information hegemony

The second aspect of the subordination relationship is concerned with the information and data that the labor process generates, which is almost transparent to the platform and can be used by the platform to set up incentives for producers. The transparency is unilateral since the rules of the platform are ambiguous to the drivers, especially the way in which the platform designs incentives and dispatches jobs, thus leaving the drivers with little bargaining power in production and distribution. In addition, the work of Didi drivers is so individualized that a driver has little knowledge about other drivers' reactions to the rules, which creates the prisoners' dilemma among the drivers and largely, if not entirely, eliminates the possibility of collective action. If control over access to the market generates precarity in maintaining livelihoods, then unilateral transparency gives rise to precarity in earning a decent wage.

The current literature about the on-demand economy has largely recognized the crucial importance of algorithmic management and information asymmetry in controlling the labor process (Rosenblat and Stark 2016; Shapiro 2018; Chen 2018). Here, what we underscore is the basis upon which algorithmic management is built—in other words, the all-dimensional collection of data that puts the labor process in an almost transparent environment only to the management, who have significantly squeezed the tactic knowledge of producers and established what we call *information hegemony*. The information of a driver that the platform collects includes daily and weekly working periods, spots, running routes, speed, number of orders, order cancellation, customers' evaluations, and so on. Once the app is turned on, the driver is constantly surveilled and evaluated. With the data, Didi is able to forecast the labor supply with high precision—specifically, the use of the labor power of individual producers—given the incentives that it offers to the drivers. More importantly, it can largely control the use of labor power by designing the incentives. The statisticians who work for Didi can calculate the elasticity of labor supply for each type of driver and set up bonuses accordingly to ensure that supply meets demand. Meeting the demand is crucial for Didi because it is currently focused on maintaining its monopoly; further, a monopoly is a prerequisite for control over market access. Therefore, Didi must flatter customers and cultivate consumption habits by ensuring abundant supply, which actually indicates some degree of oversupply, in order to limit the waiting time for customers.

The survey found that the platform makes significant use of bonuses as a carrot to extract labor effort, as shown in table 5. Some of the bonuses are conditional on the actual workload, such as the number of orders that the driver finishes in one day or during rush hours, while others are dependent on the working days in a month available to the platform. Bonuses are

the instrument of the absentee supervisor, whose authority is built upon what the non-human quantification system loyally records in the labor process. The determination of the rules is a process in which the drivers have no say or control. The whole incentive system is a hegemony regime—the producer can only choose to stay or quit. To fulfill the requirements for bonuses, the drivers tend to work longer hours. In the survey, one driver told us:

> I participated in a bonus plan called *Jinying* (Golden Eagle). I have to work for 12 hours every day to fulfill its requirements. This makes me feel dizzy. Later I was kicked out. Why? The rules say I can receive the bonuses as long as I achieve some amount of gross revenue in five working days of a week. At weekends, I took a break because I could not work throughout the week. But the system refused giving me bonuses because I did not work on Saturdays. I did not notice this rule. It said I must have breaks less than six days every month. So I was kicked out of the plan.

The platform uses bonuses so widely that the drivers told us that they would "earn nothing" if there were no bonuses. One of the full-time drivers showed us the following calculation:

> For the whole day, my gross revenue is about 500 yuan. You need to cut 200 yuan for gasoline. There are about 100 yuan bonuses in the gross revenue. The car insurance is 1,000 yuan per month, so 30 yuan per day. And every day I spent 50 yuan for meals. I also have to consider the costs of car care and maintenance.

According to this calculation, if drivers were not paid bonuses, the daily net income would be as low as about 100 yuan (US$14.75), only slightly higher than the minimum wage.[10] Another driver reported the following experience:

> The platform often tries to find where our bottom line is. Now the gasoline price is so high, you will lose money if you drive without receiving bonuses. If the platform cancels bonuses, it would be difficult to order a Didi taxi. There was a time when Didi canceled bonuses on weekends. The result was many drivers did not work on weekends. If the gross revenue is only 300–400 yuan per day, considering gasoline and depreciation, I'd better stay at home.

In response to a decline in bonuses, what the drivers can do is either quit or voice their dissatisfaction. Nevertheless, both of these options are largely unfeasible. The majority of the drivers strongly rely on the income from Didi, especially within a macroeconomic context in which Chinese workers are in general facing a gap between actual wages and a living wage. Quitting is not always a feasible option. Moreover, as a new form of work, this job provides more flexibility than traditional jobs, making it a unique option available to many drivers in order to overcome the wage gap. On the other hand, complaining has limited effects. The flexibility has disguised the coerciveness and subordination in production, and the form of the work has disguised the existence of management; thus, complaints can hardly win social support.

Didi uses its collected information to ensure not only the quantity but also the quality of labor supply. The service score or rating is an instrument to monitor the service quality of the drivers, which is derived from the customers' evaluation of the service of the driver. As shown in table 5, more than 70 percent of the full-time drivers suggested that customers' complaints may have an impact on their business. Some drivers felt that low service scores may increase the proportion of "bad jobs" that the platform dispatches. For example, drivers with low service scores receive more jobs that require driving through traffic congestion or driving to remote suburban areas.

[10]The monthly minimum wage in Nanjing is 2020 yuan (about US$300). Divided by 21.75, the average working days in a month, the daily minimum wage is 93 yuan (US$13.79).

4.3 Labor stratification

The third aspect of subordination is that the drivers are stratified into groups, which explains why some drivers have no legal position when faced with precarity in the labor market. This labor stratification implies that different groups of drivers exhibit different patterns in the production process. These groups correspond to our four types of drivers. As shown in table 5, in terms of working time, both Type 1 and Type 2 drivers worked for more than seventy hours per week; they are the most stable labor suppliers in production. Type 3 drivers on average worked for forty-two hours per week, despite their part-time status. Given that the majority of Type 3 drivers have a normal full-time job, their labor supply mainly concentrates on rush hour before and after normal working hours. Type 4 drivers work much less than others, which implies that they are sensitive to incentives and tend to choose the most profitable periods to drive.

Table 5 also gives drivers' answers to the following question: does Didi assign the workload for you? In fact, Didi has no mandatory workload for the drivers, but bonuses are bound to workload. Thus, in effect Didi assigns the workload, which means the driver needs to fulfill the required workload in order to acquire bonuses. It is easy to see that a higher proportion of Type 1 and 2 drivers had workload requirements to meet. These drivers were more likely to participate in the various incentive plans. They tended to work longer hours to meet the workload requirements. Comparatively, Type 3 and 4 drivers had more autonomy in determining their workload.

Different types of drivers have different perceptions of the nature of their relationship with Didi, as shown in table 5. Comparatively, Type 1 and 2 drivers were more likely to regard their relationship with Didi as an employment relationship, although the proportions were less than 30 percent. When we asked a full-time driver who had experience working for a traditional taxi company whether the relationship with Didi was a cooperative relationship or an employment relationship, the driver said:

> It is definitely not cooperation. I am a worker of Didi, like I was a worker of the taxi company before. Then what's the difference between them? The taxi company required me to pay 7,500 yuan [about US$1,100] per month, which was fixed. But for Didi, I can choose. I work more if I want to earn more. There is no fixed payment.

Another full-time driver strongly maintained that it was an employment relationship:

> It is definitely employment. This is a trap. Before, we were just drivers. There was no requirement at all. But now Didi lets you participate in the incentive plans. There are too many requirements. I will be exhausted.

It is noteworthy that labor stratification induces tension among drivers, which blocks the formation of solidarity. For example, full-time drivers and part-time drivers compete for jobs during rush hour when there are bonuses for the number of jobs. Some full-time drivers felt part-time drivers were not committed to providing good services. As a full-time driver explained:

> Those part-time drivers are irresponsible. If they cannot do it well, then they just quit. But in this way they will ruin the image of full-time drivers. As the old saying goes, "A little mouse shit in the pot spoils the whole soup." For example, on a raining day, the customer requests the driver to drive into the compound and wait at the gate of the building. The driver happens to be a part-time driver. But the driver rudely rejects it. The customer will think low of Didi drivers. But this is the problem of part-time drivers. There is no problem with the service of full-time drivers.

The labor stratification persists while Didi seeks to realize both stable and flexible labor supply. Although the app-based ride-hailing service claims to feature the flexibility of producers, the

flexibility of producers, in fact, also indicates strong autonomy for the producers, which is usually problematic for the platform. External shocks to the costs of producers (such as an increase in gasoline price) may frequently reduce labor supply, leaving the demand unsatisfied. Incentivizing the producers with bonuses is both expensive and unsustainable because the producers may get used to the current bonuses and expend less and less effort. Therefore, Didi, though an innovative enterprise, ironically has to learn from traditional firms to stratify the labor forces, utilizing both permanent and temporary laborers in order to harmonize subordination and flexibility.

Thus, Didi cooperates with the car-leasing companies to recruit Type 1 drivers and ensure their legal position. These drivers are disciplined not only by the various incentive plans but also by the rent or mortgage they have to pay.

In addition to Type 1 drivers, Didi also seeks to stabilize the labor supply of the other types of drivers; however, many of these drivers are unlicensed for various reasons. Some are unlicensed because their vehicles do not meet the technical criteria; some are unlicensed because the license requires the vehicle to be registered as a business vehicle instead of a self-use vehicle, which means the owner has to pay more for car insurance and scrap the car within a shorter period; and others are unlicensed because the government rations the number of app-based ride-hailing vehicles. We learned from our interviews with local regulators that the government was in general concerned about two problems. First, the influx of drivers into the ride-hailing industry has jeopardized the market order, which means it induces overly harsh competition among drivers, in particular between Didi Kuaiche drivers and traditional taxi drivers. Second, the expansion of the industry has imposed an extra burden on traffic levels by mobilizing self-owned vehicles to more frequently run on the road. In 2017, the government required all the ride-hailing drivers to apply for licenses; however, as the number of issued licenses rapidly grew, the government suspended issuing new licenses in early 2018. Consequently, all the drivers who have entered the industry since then, in addition to the drivers who entered the industry before then but intentionally avoided applying for a license, are operating illegally.

Didi's response to the illegal position of the drivers is to challenge the regulator. Didi promises to reimburse the fine that the driver has to pay if caught by the Road Administration. Although the drivers still have no legal position, they will not be economically punished for not having a license. More importantly, this promise has strengthened the subordination of the drivers to the platform since only the economic power of the platform can cover the potential loss from being punished. To a large extent, the economic power has become a source of legitimacy, and Didi thus has acquired the discretionary power of determining the legitimacy of individual drivers.

5. Discussion and Conclusion

In the previous sections, we discussed why and how precarity should be conceptualized in a Marxian framework of labor process, labor market, and labor reproduction. Using Didi as an empirical case study, we presented how control in market access, building up of information hegemony, and undertaking of labor stratification has subtly manipulated an independent workforce to intensify the precarity that workers have to endure while the firm's efficiency is maximized. Putting precarity back to production allows us to unpack the social relations between capital and labor in the labor process as structurally antagonistic, thus leading to a return to focusing on autonomy, consent, and resistance at work. The Marxian approach to the process of labor power as a commodity being created, traded, used, and reproduced for capital accumulation offers one appropriate thought process to demystify the contemporary arrangement of work and life.

In addition, we contend that precarity should neither be taken as an end phenomenon that is subject to a grand scheme or simple rational trends (globalization, modernization, etc.) nor as a macro-institutional layer (neoliberalism, deregulation, etc.) imposed on the local set of capital

and labor. It depends more "on the contingent turns of history" (Munck 2013: 748) as well as the context-specific variation in the economic processes that "give rise to precarity and how precarity is engaged" (Ettlinger 2007: 321). Putting precarity back to production reveals a dynamic process in which labor process as a contested terrain is shaped by and shaping capital accumulation.

In this era of rising digital and financial capital, introducing the wave of flexibilization and selling it as liberation has produced new rounds of labor control, surveillance, manipulation, and stratification that, as we have analyzed in the case of Didi, reflect the intrinsic nature of capital-labor conflicts in all three aspects of a labor regime. The approach we suggest here, putting precarity back to production—which is certainly not the only one—emphasizes that the different aspects of precarity are interconnected as a whole. In our view, relations in production contribute to our understanding of precarity in labor markets and reproduction. The fact that drivers are subordinated to the platform in production explains why the platform is able to disembed itself from the standard labor relation, as well as why drivers tend to quit rather than complain in response to the dismal prospects of the job.

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