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Article

Odds stacked against workers: datafied gamification on Chinese and American food delivery platforms

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Abstract

This article presents a cross-national comparative study examining how American and Chinese platform companies approach the gamification of on-demand food delivery. The study, based on ethnographic fieldwork in New York City and Beijing, shows how couriers in these cities negotiate the gamified app-based systems designed to convince them to log in and keep working. We argue that such systems are not only a salient form of ‘algorithmic management’—as has been argued before—but also demonstrate the central importance of datafication within the organizational strategies of food delivery companies operating under conditions of financialized platform capitalism. Indeed, the deeply financialized nature of the on-demand food delivery industry creates conditions in which companies experiment with data-driven gamification techniques in an effort to manipulate their flexible labor supply in an agile and cost-effective way—to thereby elicit higher productivity and meet expectations of investors and shareholders. Our comparative analysis challenges assumptions of a universal mode of gamification and highlights the differences between such situated techniques and their impacts on workers, identifying two distinct design approaches that we term ‘Deal or No Deal’ in New York and ‘Grab-and-Stack’ in Beijing.

Key words: capitalism, varieties of China, USA, technology, technological change, service sector

JEL classification: J2 Demand and Supply of Labor

1. Introduction

The impacts of labor market manipulation on the working conditions and livelihoods of platform workers have been a topic of growing concern within the critical social sciences. In the emerging cross-disciplinary literature on ‘algorithmic management’, for example, the design and deployment of dynamic pricing algorithms, automated incentive and evaluation schemes, and information asymmetries has drawn extensive scrutiny globally (e.g. Rosenblat and Stark, 2016; Ivanova *et al.*, 2018; Shapiro, 2018; Griesbach *et al.*, 2019; Veen *et al.*, 2020; Lei, 2021). This literature has produced ground-breaking evidence of how labor platforms are constantly experimenting with ways to manage a contingent and dispersed workforce of independent contractors who, in principle at least, can decide when and how much they work. Building on this evidence, it has offered a convincing argument against popular narratives that herald the freedom and flexibility of gig work, highlighting instead the various techniques through which platform companies seek to control the labor process and outcome at scale.

What is still largely missing from this field of research, however, are studies that (a) compare platform strategies and their impacts on workers across urban and national markets and (b) examine specific techniques of labor control in relation to the broader institutional logics of financialized platform capitalism (for exceptions, see Chen and Sun, 2020; Van Doorn and Badger 2020). Responding to the first knowledge gap, we present a cross-national comparative study that examines how couriers in New York City and Beijing negotiate the workforce management strategies deployed by on-demand food delivery platforms seeking to regulate their flexible labor supply. Drawing on ethnographic fieldwork, we survey the differences and similarities between American and Chinese platforms with respect to how they mobilize gamification techniques, demonstrating how these techniques impact the daily work patterns, income opportunities and well-being of couriers in these cities. Regarding the second knowledge gap, while scholars have noted the crucial role of datafication in platform capitalism (Srnicke, 2016) and the intimate relations between finance capital and the platform business model (Khan, 2018), few studies have so far investigated how processes of datafication and financialization interact in the daily operations of platform companies. In this article, we fill this knowledge gap by developing our theoretical contribution, which is to posit *gamification as one critical pivot connecting processes of datafication and financialization*. As we discuss below, it is through datafied gamification techniques that platform companies seek to expand, maintain and regulate their labor supply while managing their labor costs in response to (potential) investors’ expectations regarding their long-term financial performance.

The notion of gamification designates ‘the design approach of implementing elements (affordances, mechanics, technologies) familiar from games to contexts where they are not commonly encountered’ (Warmelink *et al.*, 2020, p. 1108). Crucially, the implementation of game-like elements (e.g. competition, rule-following, point-scoring, tracking accomplishments, advancement measured in levels) in the governance of logistical labor has been facilitated by the proliferation of Internet-connected, data-intensive sensor technologies, including those integrated into contemporary smartphones (Deterding, 2019; Warmelink *et al.*, 2020). The data generated by couriers’ smartphones forms a condition of possibility for on-demand food delivery and drives platform companies’ attempts to optimize their services and thereby achieve growth—if not eventual profitability. While existing research on

gamification has already established how such techniques can be leveraged for purposes of exploitation and commodification (Rey, 2015; Woodcock and Johnson, 2017), we contribute to this literature by investigating ‘how the [datafied gamification of the] labor process is implicated in value creation and extraction under financialization’ (Cushen and Thompson, 2016, p. 353). We argue that, in the food delivery market, gamification should be understood not just as a mode of labor management but also as a specific set of datafied control techniques that translate the logics and objectives of global finance capital into locally situated platform strategies.

While the literature on algorithmic management tends to take for granted the construction of the sociotechnical environments in which algorithms become operative in the first place (e.g. Rosenblat and Stark, 2016), we start Section 2 by taking a closer look at how food delivery has been ‘platformized’—i.e. configured into a datafied on-demand service orchestrated by a platform. After sketching the material conditions of possibility in which data-driven gamification techniques can be designed and implemented, we zoom in on how couriers’ wages have been reconfigured and rendered susceptible to gamification. Section 3 discusses our methodology and the local particularities of the New York and Beijing food delivery markets. We then present our research in Sections 4 and 5, providing a comparative analysis of labor process gamification that draws out connections across markets while also illuminating the different processes of negotiation and struggle taking place among couriers in each city. Section 4 shows how, after experiencing an initial period of abundance with respect to work and remuneration, couriers in both cities faced deteriorating wages and labor conditions. In an attempt to retain existing couriers and keep expanding the labor supply, food delivery firms experimented with various gamified payment schemes that obfuscated the job’s gradual degradation and pay reductions. Subsequently, Section 5 highlights the deployment of distinct gamification models in each city, which we term ‘Deal or No Deal’ in New York and ‘Grab-and-Stack’ in Beijing. The discussion section first situates our findings within the broader logics and dynamics of financialized platform capitalism, before offering some tentative explanations for the different models of labor gamification we observed in the two cities. Finally, our conclusion summarizes our findings and contributions to the study of platform labor, while reflecting on remaining questions and research gaps.

2. The platformization and gamification of food delivery

In a highly prescient article, Philip Agre (1994) offers a useful diagram for understanding the dynamics of workplace control in the age of networked information processing, thereby giving us a conceptual lens through which to examine and denaturalize the gamification of on-demand food delivery. Following Agre, we understand food delivery as an ‘activity system’ that has to be methodically deconstructed, mapped, and modeled in order to become susceptible to a process of platform-mediated *capture*. Agre’s capture model ‘describes the situation that results when grammars of action are imposed upon human activities, and when the newly reorganized activities are represented [i.e. tracked] by computers in real time’ (1994, p. 109). Here, we briefly apply the five recursive stages of Agre’s model to food delivery, in order to sketch the conditions under which gamification techniques can be designed and elaborated.

During the first stage, Analysis, startups study food delivery as ‘an existing form of activity’ and identify ‘its fundamental units in terms of some ontology’ (Agre, 1994, p. 109). In

this case, the ontology describes: the basic *entities* (e.g. restaurants, customers, couriers, orders); the *relations* between these entities; the *functions* of each entity and the *primitive actions* (e.g. order processing, cooking, packaging, biking or driving, money transaction, tipping, etc.). In the second stage, Articulation, operations and product managers work together with engineers to ‘articulate a grammar’ for these units and actions, producing a model that represents ‘a complete, closed, formally specified picture of the activity’ (Agre, 1994, p. 109). This grammar ‘is then given a normative force’ during stage three, Imposition, when ‘people who engage in the articulated activity are somehow induced to organize their actions’ according to the grammar’s rules (Agre, 1994, p. 109). For example, couriers are generally expected to notify the platform via their app each time they (a) accept an order, (b) arrive at the restaurant, (c) pick up the food, (d) arrive at the customer’s address and (e) drop off the food and complete the order. This process of Imposition would not be possible without the fourth, largely parallel stage of Instrumentation, during which the ‘[s]ocial and technical means are provided [...] for maintaining a running parse of the ongoing activity’ (Agre, 1994, p. 109). Once a food delivery platform has equipped restaurants, customers, and couriers with their respective user applications and has instructed them on how to deploy these instruments, they begin ‘to orient their activities toward the capture machinery and its institutional consequences’ (Agre, 1994, p. 109).

The final stage in the capture cycle is Elaboration: ‘captured activity records [i.e. data], which are in economic terms among the products of the reorganized activity, can now be stored, inspected, audited, merged with other records, subjected to statistical analysis [or predictive analytics]’ (ibid., emphasis ours). It is this process of continuous elaboration that provides platform companies with such granular algorithmic control over their activity systems and thus over the tracked work patterns of their courier fleets, which are translated into data inputs informing the ongoing adjustments to food delivery’s labor process. The grammar constitutive of this labor process includes game-like elements. Deterding (2019, p. 1) highlights the importance of data-intensive digital platforms to contemporary processes of gamification¹:

[A]ll games (and gamified systems) require a reliable way of tracking player actions, while any tracked behavior is a game in waiting: just add goals and feedback. So as human work and everyday life are shifting onto digital platforms and sensors are increasingly pervading our physical world, more and more human behavior can be digitally tracked – and gamified.

Akin to Agre’s Elaboration stage, platform-mediated gamification operates through cybernetic procedures insofar as it does not hinge on immutable grammars of action, but requires feedback loops that ‘drive desired behaviors’ in a dynamic manner (ibid.). Because the capture model ‘permits efficiency and control to be treated separately’, captured workers enjoy a higher degree of freedom, which is however always circumscribed precisely because this operational separation enables ‘work activities to be [iteratively] disciplined through aggregate measures derived from captured information’ (Agre, 1994, p. 117). In other words, ‘captured information’—i.e. data—enables food delivery platforms to ‘govern through contingency’ (Dillon, 2007), by continually recalibrating of the rules of their games based on

1 Following Werbach (2014, p. 267), we conceive of gamification as a process, which allows for ‘talk about activities being more or less game-like, without needing to define a point where the designed system crosses over into gamification’.

courier behaviors as well as their own economic performance vis-à-vis investors' expectations.

Notwithstanding food delivery platforms' aspirations of data-driven control, actually achieving an optimal service capacity in volatile on-demand markets remains challenging—especially when the stakes are high due to the heavy influx of finance capital into these markets. In both New York and Beijing, food delivery platforms have attracted numerous rounds of private funding and some have also gone public. Increasingly, investments are conditioned with the expectation that these companies strive to grow not just their market share but also their productivity rates, while minimizing their operational costs (Beckett, 2020). Accordingly, they have made efforts to transform the notion of a wage and gamify how it is paid out (Woodcock and Johnson, 2017). Whereas, traditionally, couriers worked directly for a restaurant that paid them a set hourly or daily wage, or remunerates them only with tips (Lee, 2018), most food delivery platforms have switched to a piece-rate model in which couriers are paid per delivery. Paying couriers per delivery allows companies to 'redefine elements of the working day as "non-productive" time' beyond the scope of paid work (Moore and Newsome, 2019, p. 4). Moreover, gamified delivery-based payment schemes come with particular 'reward schedules' whose irregular 'hit frequency' can have a powerful effect on the behavior of couriers who can no longer count on the security of an hourly wage (Dow Schüll, 2012).

Bonus pay schemes, meanwhile, can be understood as 'secondary incentives' that function as a 'game-within-a-game', operating 'in dynamic concert with the payout schedule of the base game, serving as a second layer of reinforcement' (Dow Schüll, 2012, p. 133). Such schemes are often represented in the visual language of a video game, turning an incentive into 'an ongoing challenge' (Munn, 2017, p. 10). As Munn argues, '[t]he combination of responsive data and real-time messaging thus transforms a dry offer into a gamified mission, harnessing the kind of level-up logic and micro dopamine hits that are well understood in the gaming and gambling industries' (Munn, 2017, p. 10). Likewise drawing comparisons to gaming and gambling, Mason (2018) reflects on her own experiences as a Lyft driver to highlight how such gamified missions afford worker-players sense of relative autonomy and control over the labor process. Gamified incentive schemes turn what may otherwise feel like a succession of repetitive tasks into a series of challenges that offer drivers choices and opportunities to win money by 'hitting' various bonus targets. Echoing Burawoy (1979), Mason notes how hitting these targets subsequently tends to reproduce drivers' 'commitment to playing, and their consent to the rules of the game', even when the value of bonus incentives and base pay decreases (Mason, 2018, n.p., see also Rosenblat and Stark, 2016). While this resonates with our findings, we will also show how couriers in New York City (NYC) and Beijing are increasingly questioning platforms' rules of the game as well as their own commitment to playing.

3. Methodology and comparative market overview

This article draws together ethnographic data from our respective research projects for a cross-national comparative study of labor process gamification in platform-mediated food delivery markets. As is well established, cross-national comparative analysis comes with an array of methodological challenges and pitfalls (Livingstone, 2003), such as the risk of assessing 'incomparable units belonging to different contexts' (Azarian, 2011, p. 121). At

the same time, a comparative approach enables researchers to discover broad trends across national settings while highlighting their particularities, thereby ‘challenging claims to universality’ (Livingstone, 2003, p. 479). The account we present in the next section highlights two parallel yet divergent approaches to labor process gamification, complicating existing understandings of algorithmic control that implicitly take the operations of Western platforms as the universal standard (for exceptions, see Chen, 2018; Sun, 2019; Lei, 2021).

The fieldwork in NYC was conducted over a 7-month period between February and August 2018. Van Doorn conducted 33 semi-structured interviews (40–150 min) with couriers operating primarily in Manhattan. Couriers were between 19 and 48 years of age, the majority being in their mid/late 20s. Thirty couriers identified as male. Most participants were African American (13) or first- and second-generation immigrants, primarily Latino (9), three of whom were undocumented. The sample also included three Asian American and six White American couriers.

The fieldwork in Beijing lasted 7 months, from March to late August 2018, and covered four city districts. In total, Chen conducted 46 semi-structured interviews (60–90 min) with riders working for the 3 leading platforms in China. The sample contains 15 riders working as independent contractors and 31 riders working in other arrangements. Participants were all male migrant workers (ages 18 to mid-40s) from outside Beijing.

While the ‘post-hoc’ nature of our comparative study prevented us from producing a perfectly balanced comparative study in which our research questions and fieldwork strategies would have been coordinated in advance, it has nevertheless yielded valuable new insights into the ‘convergence and deviations’ (Azarian, 2011, p. 118) of gamified food delivery as a global phenomenon that is locally articulated. We started with an open discussion comparing our ethnographic research in NYC and Beijing, from which a number of issues related to the platform-mediated labor process and financial incentives emerged. We then conducted a thematic analysis of the ethnographic data. Five interviews from each site were selected and analyzed by both authors to identify initial themes, which led to a focus on gamification techniques, couriers’ perception and experience of dynamic wages, and the overall labor process. As we expanded the coding to all of our interviews, we continued to compare, contrast, and refine our perspectives and contextualize our findings. This collaborative analytical process thus allowed us to ‘grasp the context-specific meanings attached to the phenomena’ constitutive of on-demand food delivery in each city (Azarian, 2011, p. 122). Moreover, it pushed us to consider how such context-specific meanings are informed by national as well as local (labor) market developments and dynamics. We take these factors into account in the following comparative market overview.

3.1 New York City

New York City’s food delivery history reaches back as far as the post-WWII economic boom. Food delivery has historically been the work of immigrant men—many of them undocumented—who are often informally employed by restaurants, exposing this already vulnerable population to a lack of labor protections, underpayment and recurring wage theft (Lee, 2018). In 2012, this informal sector was estimated to precariously employ about 50 000 workers, making New York the nation’s largest food delivery market (Miller, 2017, quoted in Lee, 2018, p. 85). This enormous growth in demand was boosted by popular on-line food ordering platforms such as Seamless and Grubhub (merged in 2013), which in the early/mid-2000s started aggregating the menus of partnered restaurants and—in exchange

for a commission—handled their order and payment processing. This was also the time when investors became interested in the food delivery business. Until about the mid-2010s, however, it was the restaurant's responsibility to arrange the costly (due to it being highly labor-intensive) business of delivery, which limited the growth potential of this emerging industry.

The next wave of American food delivery startups took advantage of the widespread adoption of smartphones as well as the persistent under-regulation of food delivery work in the USA, offering outsourced delivery solutions to (sit-down) restaurants for whom this service had previously been cost-inhibitive due to the notoriously low margins of the restaurant business. With the arrival of startups like Postmates (founded in 2011, acquired by Uber in 2020), Caviar (founded in 2011, acquired by payment company Square in 2014, then bought by DoorDash in 2019), DoorDash (2013), and Uber Eats (2015), food delivery transformed from an informal and economically marginal sector into a highly competitive industry where the problem of low margins could (at least temporarily) be ignored during a series of venture capital-infused growth spurts (Haddon and Jargon, 2018).

In New York City, the abovementioned companies have been locked in a battle over market share while the overall food delivery industry has kept expanding (Yeo, 2021). This battle of attrition only recently resulted in major acquisitions and market concentration. Following the acquisitions of Caviar and Postmates, Grubhub—the publicly traded incumbent firm that launched its own delivery fleet in 2015 (Shah, 2015)—was bought by Anglo-Dutch industry giant Just Eat Takeaway in 2020 (Conger *et al.*, 2020). This promises to consolidate its leading yet increasingly fragile position in the city: leveraging its dominant online presence and extensive network of partnered restaurants, it still boasts a 50% market share (Yeo, 2021). Particularly, the company has been losing ground to Softbank-backed DoorDash, whose recent rounds of funding has skyrocketed the company's valuation and allowed it to purchase Caviar, strengthening its NYC position while gaining the largest market share nationwide (Cheng, 2019; Yeo, 2021). Meanwhile, Uber Eats—also backed by Softbank—is not relenting, knowing that customers are increasingly less loyal and can be won with promotional discounts.

Couriers in NYC are even less loyal than customers, likewise benefiting from the promotional incentives offered by the competing companies. Many couriers—who usually find their way to food delivery platforms via friends or through online ads—are signed up with multiple companies and alternate between different apps. While each company runs its app-mediated 'activity system' slight differently, they all build on a basic dispatch model whose lineage can be traced back to the bike messenger and taxi businesses. Because couriers are signed up as independent contractors, however, what would otherwise be if an order becomes an 'offer' that couriers—officially, at least—may ignore or reject. As will be further explained below, we have therefore named the particular model of gamification implemented by NYC-based delivery platforms 'Deal or No Deal'. To be sure, this is not just a label but should rather be understood as a heuristic for distinguishing different approaches to gamification design.

Couriers' decision to work with an app depends on which company in their view offers the best payouts and bonus incentives on any given day or week, which means they effectively

treat their apps like slot machines (cf. Dow Schüll, 2012).² For most of the interviewed couriers who depend on food delivery for their livelihood, their entire work flow is geared toward the maximization of their various income streams, which are in turn greatly impacted by the gamified incentive schemes each platform rolls out via its app. Table 1 provides a short comparative overview of the pay incentives deployed by Uber Eats, Postmates and Caviar, as couriers' experiences with these platforms featured most prominently in the interviews.³

3.2 Beijing

The rise of online platforms has integrated food delivery into the urban eating habits of Chinese city dwellers. Statistics show that in 2018, the daily average of platform-orchestrated food deliveries in Beijing reached more than 1.8 million (Xinhua News, 2018). As of 2018, two companies—Ele.me and Meituan Waimai (hereafter Meituan) jointly control over 90% of the platform-organized food delivery market in China. Ele.me is now a subsidiary company of the e-commerce giant Alibaba and Meituan belongs to Meituan Dianping, which went public in 2018. According to statistics released by the two leading food delivery platform companies, the estimated number of food delivery riders was 6 million in early 2020 (Ele.me, 2018; Xu, 2020).⁴ The outbreak of the COVID-19 pandemic in 2020 has contributed to a further expansion of the work force for food delivery in China, the size of which is reported to have reached 7 million (China Catering Takeaway Expo, 2021).

Table 1. Incentive schemes in NYC market

Platform	Multipliers (Increase the value of each order; time- and location-contingent)	Gamified incentive schemes (Bonus or guaranteed payouts upon completing × number of orders within set time frame)
Uber eats	Boost Pay	Quests
Postmates	Blitz Pay	Bonus per delivery Guaranteed earnings Crushers (high-volume bonus) Tiered guaranteed earnings (based on tiered order volumes)
Caviar	Peak hour pay	One day milestones Ongoing milestones

- 2 Most apps—except those operated by Grubhub and a local company called Relay—allow for ‘free login’, meaning that they do not use performance metrics to grant couriers tiered access to a self-scheduling tool. Instead, couriers can log in and start working whenever they want.
- 3 Although Grubhub has the largest market share in NYC, many of the interviewed couriers claimed it was difficult to get on the platform due to the company’s relatively selective and infrequent hiring practice.
- 4 While we have so far referred to food delivery workers as ‘couriers’, in the European and Chinese context they are usually called ‘riders’. The Chinese character for ‘rider’ (骑手) shares the first word and the pronunciation with ‘Knight’ (骑士). See Baidu’s Knight system below. Throughout the article, we use different terms to best reflect their respective contexts.

Table 2. Different types of riders in China

Rider type	Employer	Labor contract	Base salary
Platform-hired rider	Platform company	Yes	Yes
Subcontracting rider	Third-party labor agency	Mostly no	Mostly no
Crowdsourced rider	Self-employed	No	No

The platform-mediated food delivery industry is characterized by a diversity of rider types (Table 2), which corresponds to the historical dominance of informal labor practices in China. Using third-party labor dispatch agencies in particular, common in manufacturing and service industries, has existed in China long before the rise of digital platforms, pointing to long-term loopholes in labor market regulation (Huang, 2017). The loopholes in labor market regulation persist in platform-mediated services such as food delivery and ride-hailing services (Chen *et al.*, 2020).

The three types of riders face different working conditions and are managed differently (Table 2). The first two types of riders wait for orders to be dispatched and usually work within specific districts, on a relatively fixed weekly schedule of 40 h or more. Freelance, the so-called ‘crowdsourced’ riders face no distance restrictions on the orders they can take.⁵ They can also choose between the dispatch mode and the ‘grab’ mode (抢单, *qiangdan*). While the dispatch mode works no differently for crowdsourced riders than the platform-hired or subcontracting riders, the ‘grab’ mode allows crowdsourced riders to see a list of multiple delivery requests, from which they can choose which orders they wish to deliver. This ‘grab’ mode design was previously introduced on Chinese ride-hailing platforms such as DiDi. While it describes the riders’ particular activity during the labor process, the term also inspired us to use ‘Grab-and-Stack’ as a heuristic device to understand and distinguish the particular approach to labor process gamification in Beijing.

Due to this diversity of working arrangements, the deployment of gamified incentives is more varied and elaborate on Chinese platforms compared to the US context. All riders are hierarchically ranked into different levels, each of which corresponds to a minimum requirement gained through proper service fulfillment, which is determined by a number of factors including the number of fulfilled orders, points gained, on-time rate and five-star customer reviews. Sometimes, a five-star customer review means an extra bonus (¥2). When riders reach a higher level in the gamified rank hierarchy, they would get a higher piece rate for each delivery and presumably higher earnings if they maintain the workload (Sun, 2019, see also Lei, 2021). Given that hired full time riders earn their wage based on a fixed payout per completed order, each level effectively functions like a multiplier applied to this set piecework rate.

However, the payment schemes for crowdsourced riders are more complex and their wages are more volatile. First, because there is no distance restriction, payments for each order that shows up on the crowdsourced rider’s screen include the rate for the order as well as several

5 Lei (2021) also observed the differences in work arrangements and platform interfaces for ‘crowdsourced’ riders and hired riders. She made a distinction between gig platforms and service platforms from a perspective of technological design (Lei, 2021). However, given our focus on worker experiences, the term crowdsourced rider was used to describe the couriers who are independent contractors.

Table 3. An example of a weekly promotion scheme for Ele.me crowdsourced riders

	Gold	Silver	Bronze
The criteria for participation			
Completed orders	≥190	≥85	≥14
On-time rate	≥95%	≥90%	≥85%
Level privileges			
Limits of stacking orders	11	9	6
Extra bonus for each order	Yes	Yes	Yes
Weekly lucky money	Yes	Yes	No

bonuses contingent on variables like distance, difficulty, weather, and peak times. The rate fluctuates from ¥5 to over ¥10. Second, crowdsourced riders participate in a weekly open competition and their completed number of orders is reset every week, meaning that they are prompted to maintain a similar output to retain their level. If they fail to do so they can be demoted—and the further they are demoted, the fewer bonuses are available. Third, a crowdsourced rider's level is also associated with a number of level privileges (Voorhees, 2009) and the eligibility to participate in particular promotion schemes (Table 3). As will be demonstrated in the sections below, the gamification of wages cultivates a constant calculative attitude among crowdsourced riders regarding the value of leveling up.

Having provided an overview of the NYC and Beijing food delivery markets, we now turn to the comparative analysis of our ethnographic data. We start with a discussion of the short-lived 'golden days' during which couriers in both cities could make a lot of money.

4. The bygone golden days

One salient theme among the more experienced couriers in both cities was how things used to be much better. In the early days of platform-orchestrated food delivery in NYC, for instance, companies loaded with venture capital and eager to gain market share were generating a buzz by offering high wages and free perks. As Danny, a 28-year-old Latino man born and raised in Staten Island, remembers:

When Uber started their thing, they broke in[to the market], they said "We need messengers, we need people on bikes." They gave us iPhones, they gave us batteries, they gave us bike racks, they gave us bags. They had us interview, we came in for an interview, and they said, "Boom, take this," because the app only worked with iPhones, so they just gave us an iPhone. It was pretty much locked to only the Uber app, but still, they just handed out all this money to us. The base rate, if you were online and accepted an order it was guaranteed \$30 an hour.

This was UberRUSH's promotional strategy back in 2015,⁶ around the same time that Grubhub began contracting its own courier fleet, likewise offering high hourly guarantees in an effort to compete with existing platforms such as Postmates, Caviar and Doordash. Whereas Danny initially signed up to all the companies and navigated between their apps to

6 UberRUSH is a precursor of Uber Eats. For a brief period, both services operated simultaneously in NYC.

take advantage of the large payouts, Eric—a 28-year-old White New Yorker—started out by focusing most of his time on Postmates:

Oh god, I did a lot. Probably 10 to 12 hour days, six/seven days a week. From September [2015] to May [2016] I was killing it, the amount of money I was making and freedom - I was making, on a Friday, on a good Friday, a good Saturday, like 275-\$300. I'd only have to do about 15 orders.

These high earnings were possible because, according to Eric, Postmates would add large Blitz multipliers (between 1.5 and 2) to every order during the lunch and dinner rush, while also guaranteeing a minimum payout of \$5 per delivery. Then he was introduced to Caviar by some fellow couriers and not long after signing up he 'had \$1,400 pay weeks'. While these were great earnings for him at the time, he also realizes now that he 'got into the loop with Caviar a little bit too late, right when they just started pay cutting. Listen, all these guys who were dedicated to Caviar before, these guys man, they experienced prosperity in this city. Yes, they did'. One of these guys is his buddy Ed, who has been working with Caviar for 4 years. Ed, a Puerto Rican man in his late thirties with two kids, used to make between \$2100 and \$2400 per week, but those days are long gone and he gets upset when explaining what happened:

Let me tell you something, Caviar, when I started with Caviar [late 2014], the pay that I mentioned earlier to go from here [West Village] to [inaudible] street, \$18. Beautiful. On top of that you get 18% of the total of the order as your automatic tip no matter what. Then they start lowering the pay, then they take that [automatic tip] off...

To make matters worse, Caviar also started decreasing its Peak Pay, leading to a further deflation of earnings over time. Eric and Ed agree that it was toward the end of 2016 that the golden days were over in NYC and things started going south. Ed thinks it's because 'they got popular'. He continues: 'They got more people in the platform, so now they feel that they got more options, that they can do whatever they want to do with the pay. Like play with the pay, lower it to see who's willing to take it. You see what I'm saying?'

Akin to Eric and Ed's experience in NYC, Qi offers the following account of the transition he witnessed while working for Ele.me in Beijing:

I earned a hefty wage in 2017...in April or May, I made about ¥10,000 (\$1,455) a month [the median monthly wage in Beijing in 2017 was \$983]... There were few riders then and many subsidies. After people heard the stories about how good food delivery was paid, they all came. The more workers are available, the less subsidies are offered. The pay is just average now.

'Senior' riders like Qi, in his 20s and a migrant worker from a village in the Henan province, likewise experienced a brief period of prosperity marked by decent wages, generous incentives and other kinds of rewards like extra money for five-star customer reviews. During this period, which lasted from 2015 until late 2017, Beijing's food delivery market quickly expanded and companies were dealing with a shortage of labor supply. Qi's coworker and fellow villager Zou also joined Ele.me as a platform-hired rider during the golden days of 2015. Zou is in his 40s and has a 10-year-old daughter who stays with his wife in their hometown. When Zou started out with Ele.me, he enjoyed a guaranteed minimum wage of ¥4500 per month and 'many kinds of subsidies'. At that

time, the company subsidized their riders' phone bills, data plans, and costs for meals and battery-charging, which amounted to about ¥400 per month. Additionally, there was an 'extra allowance for working during hot weather' and Zou found bonuses easy to collect as well. After all deductions and taxes, Zou usually took home ¥6000–8000 per month and, echoing Qi's experience, it 'was not difficult' to earn ¥10 000. The golden days were short-lived, however, and the subsequent changes to the wage were dramatic. By the end of 2016, Zou's monthly guarantee minimum wage had dropped to ¥3000 and then in April 2018 it further decreased to ¥1560. The declining wages did not stop there:

Most of the subsidies were gone. You know, it costs me ¥6 per hour to charge my e-bike, which means a cost of ¥400–500 that is uncovered now. The reward system for five-star customer reviews was also changed into a three-smiley face rating system. Only when customers clicked the far right smiley face, I would be rewarded ¥2. This makes it more difficult for me to earn the rewards. For this category alone, my bonus dropped to less than ¥100.

In both cities, couriers were thus faced with significantly deteriorating payouts and working conditions (cf. Shapiro, 2018). At the same time, they also encountered changed bonus schemes and other gamified labor management techniques that sought to expand the labor force while obfuscating the downward trend in wages. As we will see in the next section, the gamification of food delivery in New York and Beijing is characterized by similar logics and (platform and courier) strategies. Nevertheless, we can also identify two distinct design approaches to gamification on Chinese and American platforms.

5. Gamifying food delivery: two design approaches

5.1 NYC: deal or no deal

When waiting for incoming delivery offers, which is often referred to as receiving a 'ping', couriers in NYC are faced with questions like 'When will I get my next ping?', 'When I don't get one for a while, what may be the reason?' and 'When I do get one, what happens if I reject the offer—how will it affect my future income opportunities?' Such questions reflect the uncertainty generated by the irregular 'hit frequency' of the dispatch system's algorithmic 'reward schedule' (Dow Schüll, 2012). This uncertainty is exacerbated by dynamic delivery pricing schemes, which reconfigure the piece-rate wage into a hyper-contingent variable. In addition to the previous questions, couriers also ask themselves 'When I get my next ping, *how much will they offer me?*' and 'If I reject the offer, will the next offer be *better or worse?*' As Dow Schüll notes about machine gambling, the most potent behavioral reinforcement can be achieved through schemes 'in which subjects never know when they will be rewarded, or how much' (2012, p. 108). Loosely resembling the game show Deal or No Deal, which also comes in a slot machine format, platform-orchestrated food delivery in NYC consequently becomes a game-like experience in which couriers are constantly evaluating variable offers—substituting for set wages. As noted earlier, bonus incentives and guaranteed pay schemes form a gamified 'second layer of reinforcement' designed to smoothen the deal and get/keep couriers on the road (Dow Schüll, 2012, p. 133).

Danny has noticed how Postmates 'has gotten a little smarter' these days and has 'dropped the money' significantly. Besides discontinuing the high Blitz pricing on orders during busy periods, Postmates also started offering 'stacked' deliveries for pickup at the same

restaurant. While this expedites the delivery process it also decreases the payout per order because, as Danny explains it, ‘[a batch of three deliveries] has turned into one delivery now and so your base payout is still \$4: you get three drop offs, \$3 for this, you get \$1 for the pickup, now you have \$4. You’ve already made your minimum and then you get paid on whatever else [e.g. distance fees]. That’s how they’ve cut down’. Danny usually justifies his acceptance of stacked orders by reasoning that they increase his tips, but he also points out how Postmates’ Guarantee scheme plays a crucial role in his decision-making process:

This is another thing, right? Look, I complete nine deliveries between five and nine to earn at least \$80, so now they have these guarantees, right? That’s where that batch thing comes into play. Where it’s like, [...] ‘I’ll take a fucking batch. I don’t care what the payout is. I don’t care what the tips are, if I hit nine, I’m gonna be guaranteed 80 bucks [...] It’s a way for them to guarantee that they have you working for those hours’.

Yet, with more people out there pursuing what appears like a guaranteed minimum income, Danny has come up short on multiple occasions and—as he suggests above—at one point this scheme seems to function more like a labor supply guarantee for Postmates than an income guarantee for its ‘delivery partners’. His experience resonated during an interview with José, a 26-year-old Latino man born and raised in the city’s northern suburbs, who claims to make most of his money by participating in incentive schemes like Postmates’ Guarantees. Without these schemes, he reasons, food delivery work just would not provide a viable livelihood these days:

If you’re only going to get \$4 for a delivery that’s been prepped for half an hour, then you’re going to make less than minimum wage at the end of the day. You have to rely on the good graces of someone who’s going to tip you. In the end, it’s unsustainable unless there’s a fixed aspect of the whole job, and that’s the bonuses. That’s the guarantees.

While José appreciates how guarantees add a ‘fixed aspect’ to an otherwise unpredictable income stream highly contingent on tips, he has also noticed that guarantees are ultimately less ‘fixed’ than they seem: ‘They’ll tell you, ‘If you’re out there and you make the deliveries, we’ll give you the money.’ But if you’re out there and you don’t make seven [deliveries], you’re not going to get any of the promise, you’ll just get whatever you got’. There were several instances when he was waiting for his seventh delivery, monitoring his progress on his app, but nothing came in during the last minutes of the guarantee’s runtime—a phenomenon reminiscent of contrived ‘near-miss-effects’ in the gambling industry (Dow Schüll, 2012, p. 95). ‘Then I make \$25 as opposed to \$70, and that adds up. Over the course of two days that means I’m going to make \$100, \$200 less’. After about 3 years of depending on food delivery as his main source of income, he is getting tired of platforms acting shifty with respect to the rules of their games, and he has been reconsidering his options—which are limited due to his lack of a college diploma and a car. The more he thinks about it, the idea of a steady job that earns a ‘real wage’ is growing increasingly appealing:

I thought I could just hustle for it and it would work out. I’m realizing there’s too many variables involved for me to rely on Postmates. There’s too much arbitrary shit that they impose on you as a company for you to make any goals that are based on Postmates.

The problem of unreliability, which has increased over time, likewise pertains to Caviar according to Ed and Eric. Ed, who also works from home as a day trader and claims that this business taught him a lot about psychology, runs it down as follows:

Let me explain you this; shiny object syndrome is they show you what they want you to see. Let's say this key here, they show you this key, they dangle it in front of you and then they go right into your pocket [...] Now what Caviar does is they show you, for example, \$10 for every three orders. Right? [...] But what they do is, a trip pays \$7 and they're going to give it to you for \$5, they lower the price [...] Because basically what I see them doing is they cutting up your own money they was supposed to pay you, to make up for the bonus that they're giving you.

This bait-and-switch was a prevalent source of frustration. While many couriers were initially excited about pursuing the 'shiny objects' designed to persuade them to play, they gradually grew more sensitive to the 'purposive obfuscation' that gamified incentive schemes accomplish (Dow Schüll, 2012, p. 78; Rosenblat and Stark, 2016; Griesbach *et al.*, 2019). Eric was upset about the trick that Caviar pulled as he was working toward his monthly Milestone, which had recently become 'easier to hit' with an order completion target of 275 (instead of 315) for an extra \$150 at the end of the month. While he was happy that Caviar lowered the target, he also worried about having earned about \$30 less on the first day this new Milestone went live: 'So is it really easier to earn to get the same amount of [bonus] money when they're cutting \$3 on every job? [...] You don't actually get extra money'. Not every courier might notice this, however, especially the newcomers. Platform companies are increasingly leveraging behavioral data in their design of activity systems and incentives that can be optimized during the recurring stage that Agre (1994) called Elaboration, in which grammars of action are adjusted based on captured data in order to—in this case—better exploit cognitive biases or limitations (Calo and Rosenblat, 2017; Deterding, 2019). Caviar, for example, can gauge what Milestones particular groups of couriers will accept under certain circumstances and at specific times, based on their previous activity on the app. The company's objective is to then modulate the terms and conditions associated with this incentive scheme and thereby achieve reduce labor costs.

Eric acknowledged that you could occasionally still make good money with these companies, but—echoing José—he nonetheless insisted that incentive schemes have become too inconsistent to provide a reliable income stream: 'They're telling you just come out on certain days, when you feel it's worth it. But I can't depend on that because I can't fucking tell that to my landlord. My landlord wants to see a fucking check for \$800'. The nine couriers hanging out on a West Village stoop one afternoon concurred that the city's food delivery market is likely to get more insecure as bonus targets become harder to hit and competition gets more 'cutthroat'. One of them shared his fears that eventually all good financial incentives will disappear:

At first they will give you a really good [...] bonus [...] But then what's going to happen? Probably a hundred of us are going to start doing Uber for like two weeks. We're probably going to get certain bonus. Some of us are going to manage to get good money out of it, but after that the app is going to take all those bonuses away and start taking certain stuff little by little.

In the face of such strategic corporate taking (Calo and Rosenblat, 2017), couriers feel powerless and this affects how they view themselves and their peers. Whereas some liked to

think of themselves as players, Eric now says: ‘I see myself as a pawn, just like everybody else. We’re all being used, but I have the ability to be a lone wolf and to me my performance shows in my pay’. He is proud of his performance and of the money he has been able to make by working hard at getting better at the game, but, like José, he is also getting tired of this work and realizes that it will not provide a sustainable income for much longer. This is why he is ‘learning to do something better on the side that I can turn into money’, having teamed up with a friend who is teaching him editing skills so he can work in audio engineering. At the moment, Eric is in the process of ‘diversifying’ his life and he hopes that new income opportunities will eventually offer ‘a way out’: ‘I slaved myself with this for about three and a half years. I’m going on my fourth winter now. This is the last full-time winter’.

If the design of gamified incentive schemes is intended to reproduce couriers’ commitment to playing the food delivery game (Mason, 2018), this approach to gamification clearly has its limits. Indeed, Deterding warns that ‘[w]hen play is made mandatory or has [...] serious concerns and consequences attached to it’, people experience it as ‘thwarting autonomy, motivation, enjoyment, and any sense of play’ (2019, p. 3). Most interviewed couriers no longer enjoyed the game that food delivery companies had engineered for them—if they ever did in the first place—and vowed to stop accepting any new deals as soon as better income opportunities materialized.

5.2 Beijing: grab-and-stack

In Beijing, crowdsourced riders working in the ‘grab’ mode do not wait around for orders to be dispatched but have to actively choose—i.e. ‘grab’—them from a list of available orders on their app. Once they have grabbed their orders, they work out a delivery strategy to maximize their income, taking into account the orders’ location and relative distance. They are allowed, or even encouraged by the system, to claim multiple orders and drop them one by one in a single trip—that is, a technique we call ‘to stack orders’. Therefore, we characterize the gamification model in Beijing as ‘Grab-and-Stack’.

Specifically, in the ‘grab’ mode, riders can see the full trip and price information for these requests and can also refresh the pool of orders to get new listings. They claim the jobs they want to take by clicking the button named ‘*grab the order*’. Couriers usually personalize the settings for incoming orders using sorting preferences (e.g. by distance or by price). The functionality of stacking multiple orders is gamified (see Table 3) in such a way that Chinese crowdsourced riders can decide which orders to take and how to combine multiple orders based on an assessment of order features and geographical knowledge. In contrast to NYC couriers, they face questions like ‘Will I get more rewards or reach a higher rank if I grab and stack more orders available to me?’, ‘If I stack as many orders as I can, can I deliver them on time?’ and ‘If I don’t stack orders, can I make enough money?’. Food delivery work is thus turned into a different kind of strategic game that valorizes constant calculation (cf. Shapiro, 2018), providing a more open choice architecture that invites courier behaviors focused on ‘using exploits and min/maxing strategies that optimize *measured* performance and individual payoff’ (Deterding, 2019, p. 3, emphasis in original). As crowdsourced riders belong to one of several different groups of riders on the Chinese food-delivery service market (Table 2), they are not just driven by the competition within their group but also compete against other types of riders. This makes the Grab-and-Stack model distinct from the more individualized Deal or No Deal model we have identified in NYC, where couriers have to

wait for the next offer to be dispatched and are less pre-occupied with peer competition because they lack the means to directly influence their competitive position.

Just like Danny would accept batched orders in the hope of receiving more tips, stacking multiple orders becomes nearly compulsory for Chinese crowdsourced riders faced with a base rate of about ¥5 for orders within a 1 km radius. Moreover, the open competition resets the completion number to zero each week and thereby intensifies the workload by repeatedly creating a blank slate for riders who seek to maintain or surpass their existing outputs. If they fail to do so, their capacity to stack orders will decrease, which directly impacts the extent to which they can make a living. Although, at first glance, the grab-and-stack arrangement may thus offer riders more freedom than the dispatch model, this freedom is ultimately deployed to drive them to achieve efficiency and productivity gains *for the platforms*. Treating efficiency and control separately allows Chinese platforms to ‘govern through contingency’, since the food delivery market is characterized by a fluid and heterogeneous workforce that also includes workers hired and managed by third-party intermediaries (Chen *et al.*, 2020; Lei, 2021). Using crowdsourced couriers’ behavioral data as input not only contributes to the ongoing recalibration of the grab-and-stack game (Agre, 1994; Dillon, 2007), it also complements platforms’ management of their overall workforce.

Lu, in his early 30s, comes from a village of about 4000 people in a province adjacent to Beijing. He lives with his wife in Beijing but their child remains in their hometown. Lu used to work as a dispatcher in an express delivery warehouse for 10 years, but then he grew tired of earning a ‘fixed wage’ (‘死工资’, literally meaning ‘dead’ wage) of ¥4000 every month so, in 2016, he started to work as a Meituan crowdsourced rider. A self-imposed discipline geared toward stacking more orders is evident in Lu’s objective to always ‘combine eight or nine orders’ and in the organization of his work routine to pursue the targeted stacked number. According to Lu, who needs to complete at least 35 orders every day in order to maintain his level, grabbing and stacking just two or three orders is ‘not worth it’ because ‘wasting’ 45 min to an hour for ‘a bit more than ¥10 does not make ends meet’—especially when counting the cost of charging his e-bike. Yet only rush hours with a surge in demand and an associated surge pricing make it possible for Lu to stack the desired eight or nine orders. Accordingly, Lu organizes his schedule around rush hours. The surge pricing during the rush hours and the possibility to stack more orders coax Lu to attune his work performance to the fluctuations of market demand, in accordance with the top-down gamification design of the platform seeking to optimize its operations (Woodcock and Johnson, 2017).

Although Lu usually takes a break between 2 and 4 p.m., his work day is quite intensive and stressful, particularly because he has to ‘constantly refresh orders’ and ‘pay attention to [the ticking] clock’ even when he is on the road. One dilemma riders face when stacking orders is that the delivery time is not cumulative, meaning that the additional orders do not help extend the overall delivery time by a simple addition. For all orders, before they are posted, the requested delivery times are set by the algorithms. Once riders grab and stack the orders, they must be attentive to the time left for each order. The work stress is all the more intensified during the peak hours, when riders share the feeling of being pressed for time and are frequently forced to rush despite possible traffic hazards (Shepherd, 2017). To ensure customers’ on-demand need is fulfilled in a timely manner, platform companies all inflict financial penalties in response to delays. As Lu points out, ‘a deduction of ¥1 for one-minute-delay, ¥2 for two-minute delay, but if you have stacked orders the deduction is cumulative, meaning that a one-minute delay for the second order would be a fine of ¥2’. When taking into account the relatively low base rate, financial penalties for delays are ‘severe’ and a half

hour delay, as Lu puts it, ‘can easily cost you half a day’s worth of work. To make up the loss, you have to keep working and stacking more orders’.

Even someone like Zhu, who shows no interest in climbing the hierarchical ladder, finds himself ‘motivated’ by the weekly competition and thus always meets his self-imposed goals, which indicates a widespread ‘consent’ to the gamified labor process among riders (Burawoy, 1979). Zhu, once a factory worker who earned ¥1500 a month in Henan province, is currently a Silver rider on Meituan. He was talked into doing in food-delivery by his friend, who claimed that the job earns ‘a minimum ¥3000 and can be as high as over ¥10 000’. Compared to his previous factory job, Zhu likes the ‘freedom of working any time I want’, the idea that he has ‘no supervisor’, and knowing that he earns ‘an easy daily wage of ¥100 or ¥200’. He needs to complete 200 orders per week and keep at least a 95% on-time rate to maintain the Silver level, which gives him an extra ¥200 bonus. Zhu admits:

The Bonus motivates me. Look, if I have worked for five days in a given week – two days left, [my app] shows how many orders are needed to get the ¥200 bonus, say 20 orders., you must try your best to complete the goal, regardless of whether they are nearby or long-distance orders. With uplifting spirit. Get ¥200!

As Agre argues, ‘the ultimate use of [captured data] measurement is the establishment of bidding for services in real-time markets, whereby the control previously provided by bureaucracy is transferred to the inherent discipline of the market’ (Agre, 1994, p. 117). What the gamified apparatus of grab-and-stack achieves by leveraging open market competition in combination with financial penalties is to nudge riders to continually discipline themselves in order to maintain—if not improve—their work performance. Moreover, riders’ seeming control over which/how many orders to grab is further diminished when platforms start to automate the process of stacking, as Ele.me has done. This subjects riders to further opaque algorithmic controls in a gamified labor process engineered to serve the platform’s interests (Rosenblat and Stark, 2016). Ele.me’s operational adjustment—from allowing riders to manually stack orders to automatically stacking orders that algorithms have determined are ‘on your way’—is something that frustrates Ji, a crowdsourced rider in his 20s who joined the platform in the winter of 2017. Previously, the platform showed all orders to everyone whose settings match, so the competition is ‘open and only depends on [individual’s] ability. As long as one acts quickly enough, s/he will get those nicely-paid orders’. Especially during peak times, ‘a dozen or even two dozen new orders’ after one refresh, ‘are gone immediately’ if grabbed ‘slowly’. Ji continues:

But now once you grab an order in [say,] a school district, the system *simplifies* the [grab-and-stack] process by giving you the option to see the orders it determines to be on your way. But I will never see any orders to the school district if I did not successfully grab one in the first place. I felt it’s... *unfair* in spite of it being more automatic and *smarter*.

The new order-stacking algorithm effectively excludes riders whose routes are judged not to match the planned order trajectory from seeing the latest order, thus keeping them from entering grab-and-stack’s open competition. Ji believes this happens because the two platform companies that now control the market ‘do not care about fairness with respect to couriers [...] There are only benefits and no harms to platforms no matter who grabs the orders’. The increasing level of uncertainty over the rules of gamified labor process, as shown in these recent transformations on Ele.me, demotivates Ji’s participation. He cannot see

himself being a rider 5 years from now. What he wants is ‘to save some money in the next two or three years and open a restaurant offering food-delivery service’. Ji is not alone in perceiving food delivery as a transitory job. Zou, who experienced the golden days and saw his wage plummet over the past 2 years, has started to consult with friends about the possibility of becoming a driver on a ride-hailing platform.

6. Discussion

As we have shown, the incentives offered by food delivery platforms in NYC and Beijing have become more capricious and less rewarding over time. Whereas venture capital-funded payout and referral bonuses were initially mobilized without much reserve in order to quickly expand the labor supply, they are now being deployed in a more prudent and gamified manner to stop people from leaving, at a time when low profit margins are becoming a matter of concern for (public) investors (Van Doorn and Badger, 2020). For the companies operating in NYC, the problem of low margins could be ignored during the early ‘roll-out’ phase of their service due to the large influx of investment capital, whose objective was rapid market expansion. Yet, even as DoorDash continued to raise massive amounts of capital on its way to a successful IPO (Cai, 2020), the disappointing IPOs of Uber and Lyft (not to mention the WeWork debacle) have also led to growing worries regarding the long-term sustainability of this ‘growth at all cost’ model (Schulze, 2019; see also the recent Deliveroo IPO fiasco in the UK). Now that Grubhub is no longer the only publicly traded company, American food delivery platforms are increasingly faced with the pressure to improve their margins and show a convincing road to profitability.

On the Chinese market, meanwhile, Meituan attracted 3.3 trillion RMB (approximately \$513 million) in investments from Tencent and other investors between 2014 and its IPO in 2018. This enabled the company to heavily subsidize both sides of its food delivery market, offering riders relatively decent payouts and multiple incentives despite reported annual losses. After its IPO, however, Meituan prioritized its ability to increase profit margins. In its financial reports, it has identified riders’ wages as the major contributor to the operational costs of its food delivery business and provides evidence that it has successfully reduced the cost revenue ratio in 2018 (Meituan-Dianping, 2019). The company has reported profits from food delivery service since 2018.

Though previous studies on other types of gig work platforms show a similar downward trend with respect to wages, incentives, and working conditions (e.g. Ravenelle, 2019), they tend to overlook how these trends are connected to transformations in the institutional conditions of financialized platform capitalism. As indicated above, investors’ growing concern with financial sustainability and a prospect, if not proof, of profitability is changing the institutional mandate that initially pushed platform companies to focus solely on rapid growth. We should keep in mind here that the industry as a whole is maturing. For platform companies eyeing an IPO or those that already have gone public, market expansion is no longer the only goal since (soon-to-be) public companies are also expected to eventually generate a profit. To be sure, growth and financial sustainability are obviously not mutually exclusive *per se*. Yet, the imperative to scale rapidly did become an impediment to profitability under the conditions of intense competition that we have, over the last decade, seen in the American and Chinese food delivery industries. Such conditions have boosted the operational costs associated with growing a platform’s market share, in the form of customer

discounts and courier incentives. At this point in time, investors and shareholders want to see a reduction of these costs while nevertheless also expecting ongoing market growth.

We should likewise keep in mind that, for American as well as Chinese platform companies, the pursuit of shareholder interests still ‘drives forms of value extraction based on squeezing labor costs’ and, consequently, ‘it is within the labor process that interventions prompted by [...] speculative firm valuations confront “a moment of truth”’ (Cushen and Thompson, 2016, p. 358). This moment of truth pertains to platform companies’ ability to beat their competitors by deploying cost-efficient incentive schemes that sway couriers to stay logged in and complete deliveries despite diminishing returns. Our critical point here is that *data-driven gamification techniques are deployed as a strategic instrument that can be leveraged to achieve this business objective*, as they are designed to reproduce drivers’ ‘commitment to playing [the game of food delivery], and their consent to the rules of the game’ (Mason, 2018, n.p.).

Equally important, however, is the fact that the design of these techniques does not follow a uniform template across the globe. We have also shown how couriers in NYC and Beijing negotiate and struggle with two distinct design approaches to the gamification of food delivery. Each approach can be understood as an experimental response to the challenge of designing the most alluring activity system possible within the existing institutional and socio-economic frameworks of New York and Beijing. In NYC, the Deal or No Deal approach updates the dispatch model of logistical labor management—common among bike messenger and taxi companies—for the age of smartphone-equipped gig workers, closely emulating the design of app-based ride-hailing services. Compared to the Chinese institutional context, the market for on-demand service work is less segmented given that most labor platforms have adopted the ‘1099 model’, working exclusively with independent contractors. The Deal or No Deal approach can be understood as a design response to this legal arrangement, insofar as it draws on the labor control afforded by the dispatch model while turning orders into ‘offers’ that can be declined—nominally preserving the autonomy of the contractor. The challenge then becomes to design offers/deals that appear too good to be refused, for which platforms mobilize incentive gamification techniques.

The Grab-and-Stack approach has its origins in the Chinese ride-hailing industry, before being redesigned for food delivery platforms. Its popularity can be explained by the ostensibly higher level of autonomy granted to couriers and other types of on-demand service workers. While it is difficult to establish why this specific design approach has so far not been implemented in NYC, we can identify a reason for the diversification of contractual forms and labor management strategies in Beijing’s gig economy. The rise of the ‘1099 model’ has been emblematic of a wider trend of US labor market informalization in the aftermath of the Great Recession. In contrast, China’s labor market has been dominated by informal employment relations since the Economic Reform policies of the late 1970s. The Grab-and-Stack approach takes shape within the context of an expansion of rider categories on the Chinese market, rooted in the historical deployment of subcontracting systems to manage and divide informal workers (Xu, 2013). Work force heterogeneity, as it is observed in the American gig economy (Vallas and Schor, 2020), is also evident in the food delivery market in China, which is characterized by a distinctively segmented informal work force organized through subcontracting systems and a multiplication of work relation arrangements (Chen *et al.*, 2020). The need to retain market competitiveness and squeeze the costs associated with a highly segmented labor force has propelled Chinese food delivery platforms to adopt both

the dispatch and grab models, which allows them to experiment with a variety of labor management strategies complementary with gamifications (Lei, 2021). Under these circumstances, so-called crowdsourced riders are not only facing gamified forms of competition vis-à-vis their peers but also positioned to compete with other groups of riders. Beyond gamified financial incentives, which are common to both models, the Grab-and-Stack approach draws on a wider range of gamification techniques, such as the stacking function and level privileges, which induce forms of strategic and competitive courier behavior not found in NYC.

7. Conclusion

This article has contributed to the existing literature on platform labor by offering one of the first cross-national comparative studies of how American and Chinese food delivery platforms mobilize gamification techniques, highlighting how these modes of labor process control impact the daily work patterns, income opportunities, and wellbeing of couriers in New York City and Beijing. We have thereby demonstrated how the gamification of platform-mediated food delivery is an agile and heterogeneous practice that does not conform to a universal grammar of action, to use Agre's term, despite how platform capitalism's global strategies of accumulation and extraction mandate techniques of labor rationalization. Algorithms certainly play a crucial role here, yet the *datafication* of the labor process, as we explained in Section 2, forms a crucial pre-condition for algorithmic management and its push toward gamification. Given that the algorithmic management literature has largely glossed over the uses of data and datafication in the context of automated labor control, we have contributed to this body of scholarship by drawing on Agre's sophisticated capture model to highlight and account for these connections (cf. Van Doorn and Badger, 2020).

This article has also contributed to the broader literature on platform capitalism by analyzing how gamification can play a pivotal role in translating the evolving objectives of finance capital into concrete organizational efforts to control and squeeze labor. As Cushen and Thompson (2016, p. 359) note, 'financialized investment is a driver of perpetual restructuring that exacerbates work insecurity and intensification'. Focusing on food delivery, we have argued that platform companies seek to restructure their app-mediated activity systems to accommodate an expanding labor supply, existing labor market conditions and investor expectations that are shifting from a pre-occupation with scale and market share to a concern with some prospect of financial sustainability. Accordingly, the gamification techniques we have discussed express this institutional shift in platform capitalism's order of priorities, insofar as they allow platforms to both retain their workforce and gradually reduce their labor costs—intensifying the pre-carization of food delivery work. 'Deal or No Deal' and 'Grab-and-Stack' are our heuristic descriptions of two distinct design approaches to labor process gamification that ultimately function as divergent means to a common end: regulating the volatile labor supply of American and Chinese delivery platforms in the an agile and cost-effective manner, while convincing couriers that the odds of the game are stacked in their favor as long as they keep playing.

This comparative study also points to some remaining questions. For example, while algorithmic labor management is common on gig work platforms, datafied gamification is unevenly applied. It is beyond the scope of this article to determine why food delivery, as compared to for example crowd-work, becomes a particularly fertile field for platform companies to experiment with modes of datafied gamification for purposes of labor control and

value capture. Moreover, the connection between gamification and financialization regimes examined in this article raises the question of whether gamification could be deployed for purposes other than labor control or even for workers' activism within a different financial or governance structure (cf. Woodcock and Johnson, 2017). Future research on the conditions of possibility for platform companies to adopt alternative design approaches and gamified labor practices may lead to new insights in this area. Cross-national comparative studies of other types of on-demand service work, especially those informed by contextual knowledge about local institutional conditions, labor markets and platform histories, would be another strand of future research.

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