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# Quasi-Slack in Food Delivery and Ride-Hailing Platforms

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***Abstract:*** *This study aimed to address behaviors of food delivery and ride-hailing platforms, two local gig platforms. It argues that generating cross-network externality between demand and supply sides by imposing different price structures on them (two-sided market theory) may not be enough for understanding local gig platforms. Due to their local nature of service delivery operations, it is argued that to generate externality, these platforms should practically integrate the supply side and operate as if a firm, hence quasi-firm. By doing so, these platforms can utilize their service providers as if their own slack resources, hence quasi-slack. As quasi-slack, service providers exist outside these platforms. However, they can be called upon and committed to these platforms' service delivery operations. Quasi-slack is made possible because these platforms can induce information asymmetry and truncate a range of decision choices available to their service providers, which can lead to more service deliveries and streams of data for enhancing their algorithms. These platforms get the demand side actively involved in the process by letting it generate customer ratings critical for nudging the supply side to accept more service requests from the demand side.*

**Keywords:** Platforms; Quasi-Slack; Two-Sided Market Theory; Information Asymmetry

## 1. Introduction

Digital platforms such as Uber, DoorDash, or AirBnB have become a fixture in our daily lives that provide ride-hailing service, food delivery service, and lodging service, respectively. These digital platforms basically work as an intermediary between the demand side and the supply side of the service in question: [1, 2]. According to two-market theory: [3, 4], these platforms create cross-network externality by imposing different price structures between the two sides. By leveraging the increased presence of supply on the supply side, digital platforms can charge higher prices on the demand side (or the other way around). The stronger the cross-network externality, the greater the profits.

However, imposing different price structure alone may not generate cross-network externality that is strong enough to affect the other side of the market. For example, Uber's reliance on surge pricing has some positive impact on the supply side of the market by drawing more drivers and consequently the overall firm performance to some extent: [5, 6]. But the impact is rather geographically limited, and the duration of price surge is short, and more importantly drivers are doubtful of the authenticity of this type of price discrimination: [7]. Similar problems seem to happen in the food delivery platforms: [8]. If different price structure alone is not enough for the generation of cross-network externality, what do these platforms do to generate meaningful level of externality that is not limited, either geographically or temporally?

In addition to imposing different price structures, we argue that food delivery and ride-hailing platforms generate cross-network externality by integrating their service providers (hereafter shoppers and drivers, respectively, following the industry convention) as if their own slack resources. For these platforms, once shoppers/drivers are connected to their apps, they become their own slack resources that exist in the external environment and are ready to be absorbed for service delivery. We call these shoppers/drivers as quasi-slack because they are utilized as if slack resources even though they are not part of the platforms. In so doing the platforms and their shoppers/drivers operate as if a firm, hence a quasi-firm where a platform and its many

service providers have repeated and stable relationships as long as app connections are in place. We further argue that this is possible due to some common characteristics of these two types of platforms, and their intentional efforts to create information asymmetry favoring themselves and truncate a range of decision choices available to their shoppers/drivers.

In the following, we first examine two-sided market theory and some key common characteristics of food delivery and ride-hailing platforms. And we introduce the idea of quasi-slack and quasi-firm. Then, we argue that the utilization of shoppers/drivers as quasi-slack is possible because of information asymmetry and truncated options that work for the platforms. Finally, we conclude by discussing the implications of the arguments.

## 2. Two-sided Market Theory and Local Gig Platforms

### 2.1 Two-sided Market Theory and Cross-network Externality

Platforms facilitate the transaction between two groups of market participants by matching the needs of these groups: one side supplies a type of service that the other side demands. For this kind of transaction, two-sided market theory focuses on the relative price structures of the two sides and posits that pricing in one side of the market can influence the performance of the other side through cross-network externalities: [1, 2]. Charging lower prices in one side of the market (relative to the other side) will help increase the number of participants (i.e., membership) and the number of uses of the platform (i.e., usage) in this side of the market. This in turn results in the increase of sales and profits in the other side of the market: externalities occur across the two networks of market participants. Thus, a platform's overall profitability depends on the strength of cross-network externalities.

The significance of cross-network externalities can be observed in the credit card industry, among others: [2]. Visa or MasterCard users are typically charged no sign-up fees but receive various benefits for their repeated uses of the cards. The more card users out there, the more merchants would also sign up for and accept the cards for transactions, which ultimately helps increase the overall profitability of Visa or MasterCard. In other words, credit card companies charge their card users lower prices to initiate cross-network externalities in this side of the credit card market. And they charge their merchant side users higher prices that more than compensate for the losses due to the lower prices charged on the card user side of the market.

In consistent with two-sided market theory, food delivery and ride-hailing platforms charge their (potential) shoppers/drivers lower prices to join the service on the supply side so that more customers/passengers on the demand side will join and use the service: [9-11]. Shoppers/drivers are practically charged no sign-up fees to connect with the platforms and start their respective services. They only need to download the apps and bring in their own means of transportation or delivery. And ride-hailing drivers are not required to have an equivalent of taxi medallion as taxi drivers are, which would have cost them a significant sum of money and time.

However, unlike the credit card market, food delivery and ride-hailing platforms operate in a quite different environment. Credit cards are used either at fixed locations (i.e., physical merchant stores) during fixed working hours or on the internet. In contrast, food delivery and ride-hailing services are rendered in a variety of locations. Shoppers/drivers should deliver foods or transport passengers from one location to another, and these locations change all the time, especially for drivers. It's not just locations that vary, but time of service delivery also fluctuates. So, it is not just about increasing the number of shoppers/drivers per se, but about how to make them be physically present at specific locations at specific times. Without this, the overall number of service deliveries will not increase.

Since shoppers/drivers should be physically present, their schedules and behaviors at or around the delivery of service are much more critical in determining the quality of service and consequently the growth of demand. Thus, it is an imperative for these platforms to efficiently manage service providers' schedules and behaviors to maximize their profits, preferably without triggering significant sum of related costs. Two-sided market theory doesn't provide a full explanation on this issue. In other words, relative price structure differences between the two sides of the local gig platforms are not sufficient in understanding the behaviors of these platforms and their shoppers/drivers. Before we discuss the platforms' behaviors to generate cross-network externalities, we need to better understand some unique characteristics of these platforms.

## 2.2 Characteristics of Food Delivery and Ride-hailing Platforms

Food delivery and ride-hailing platforms share some common features with each other that are distinct from other types of platforms. First, for both types of platforms, service is transacted via platforms but should be delivered locally. While connected to the app, ride-hailing platform drivers transport a passenger from one location to another, whereas food delivery platform shoppers deliver food from the restaurant or shop that it is prepared to where it is consumed. And the locations can change all the time, especially for the ride-hailing platform business. In this sense they can be classified as platforms operating in local gig economy: [12]. In contrast, for platforms offering services such as data entry, copyediting, or game development, these services are transacted and can be delivered remotely. i.e., physical locations of the service providers are irrelevant. Or for AirBnB, the service location is fixed.

This 'local' nature of these types of service has several implications both for shoppers/drivers and the platforms. First, each service is rendered in a relatively short duration. Unlike other kinds of gig work that require days or even months of working period, the duration of each service is relatively short: food delivery or ride may last less than 10 minutes or at most an hour or two, but not typically a day or two. And, both services require personal contact with varying degrees and durations: ride-hailing service is characterized with a close contact with rather a longer duration, whereas food delivery is involved with a casual contact with rather a shorter duration. Lastly, delivery distance and duration matter for shoppers/drivers, but not necessarily for their platform. For example, food delivery with a longer distance is not desirable under a piece-rate pricing scheme since it takes more time for a shopper to get back to a location to take next orders if food delivery has been completed at a distant location: [13]. But distance does not matter for food delivery platforms in so far as the service request is fulfilled.

Second, related to the local nature of the service delivery for both types of platforms, food delivery shoppers and ride-hailing drivers keep connected to their apps while waiting for and/or delivering service. While shoppers/drivers are connected, they generate a constant stream of data. The type of data includes geo-spatial and temporal data of shoppers/drivers (e.g., driver locations; driver speed, acceleration, and motion); app-shoppers/drivers interactions data like acceptance ratings and cancellations of orders; and ratings plugged in by shoppers/drivers, passengers, or food delivery customers: [11], [14, 15].

Platforms use the collected data either for improving internal efficiency or for increasing its bargaining power over external stakeholders. For example, food delivery platforms send out calls and texts if their shoppers are in the wrong direction or are running late than expected estimate; food delivery platforms send their shoppers individualized prices based on these shoppers' previous history of acceptance/rejection decisions at certain prices [8]. For Uber, the collected data is used both for internal efficiency and external bargaining leverage: routing of vehicles and calculating estimated time of arrival contingent on traffics or figuring out if a driver is working for competing platforms; entering into data sharing agreements with local governments in the U.S. as a means to work around the legal hurdles to operate in the areas; even for advancing autonomous car research, among others: [9].

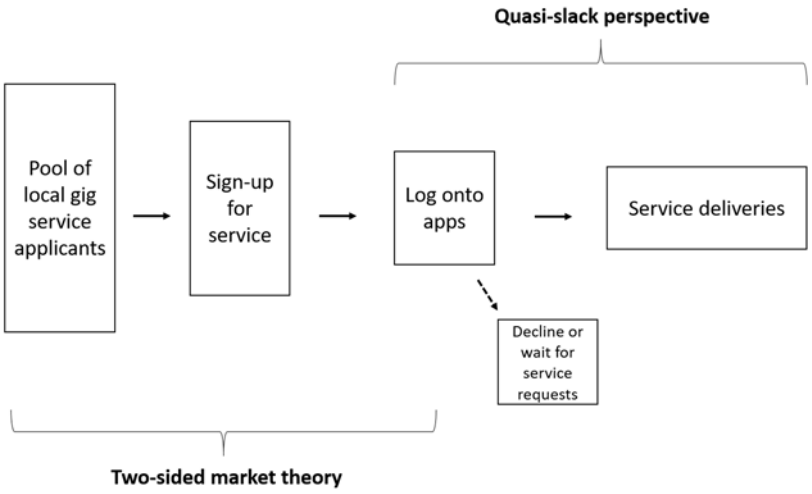


**Figure 1.** Process of local gig service and two perspectives

Figure 1 depicts the typical process of local gig platform services discussed in the above. For the first half of the process, two-sided market theory provides good explanations about why local gig platforms are trying to attract more applicants and make them to sign up for service. And then these shoppers/drivers log onto the apps because showing up for work does not cost them much because the platforms don't charge. But once shoppers/drivers have been connected to the apps, we may need another perspective to better explain the relationship in the second-half of the process: quasi-slack perspective.

The local nature of the food delivery and ride-hailing platforms makes it hard to generate cross-network externality by simply imposing a different price structure on the supply side: service delivery location is not homogeneous and costly to move around for shoppers/drivers. But the very nature of app-based connection with the platforms may allow these platforms to overcome this difficulty. Here we argue that these platforms have been successful in integrating their shoppers/drivers under their influence and operating as if a firm, and in so doing these platforms have been utilizing their shoppers/drivers in the external environment as if their own employees not-yet-fully-absorbed. In other words, the platforms and their shoppers/drivers have been operating as a quasi-firm and the latter was utilized as quasi-slack for the former.

Unlike a quasi-firm that can be found in the construction industry that is formed between contractor and subcontractor: [16], this kind of quasi-firm of the local gig platforms has some distinct features. First, unlike in the construction industry where a contractor has a long and stable relationship with a small number of subcontractors, we can observe local gig platforms have repeated relationships with a large number of shoppers/drivers, characterized with a relatively short duration for each relationship. Second, unlike in the construction industry where you need to expect some level of human involvement and consequently bureaucratic costs to maintain the relationship, food delivery and ride-hailing platforms keep human involvement to its minimum and consequently keep any bureaucratic costs as low as possible by seamless, real-time connection with their shoppers/drivers.

In sum, food delivery and ride-hailing platforms try to generate cross-network externality, in addition to imposing different price structures, by practically integrating the supply side of the market with themselves. And in so doing, they utilize their shoppers/drivers as their own slack resources that are readily available from outside the platforms, partly due to the constant app connections between them and their shoppers/drivers. Further discussion on the notion of quasi-slack and the factors that allow these platforms to take advantage of quasi-slack is warranted.

## 3. Quasi-slack, Information Asymmetry and Truncated Options

### 3.1 Quasi-slack

Slack resources or simply slacks are actual or potential resources that allow a firm to undertake internal adjustments and strategic changes: [17]. Slacks could be further broken down into absorbed slack and unabsorbed slack: [18]. The former refers to resources that have already been absorbed in the current operation as costs, whereas the latter refers to excessive, uncommitted liquid resources. These uncommitted liquid resources include financial resources that firms can draw from the environment, among others: [19, 20].

Extended from this line of reasoning, we argue that drivers/shoppers of the ride-hailing and food delivery platforms constitute uncommitted liquid resources that can be drawn from the environment by these platforms. And because these drivers/shoppers are not fully employed by these platforms, but are used as if these platforms' own slacks, we call them quasi-slack resources or quasi-slack. In other words, shoppers/drivers are not governed by an employment contract or internal hierarchy such that the platforms tell them when and where to show up for work. However, the platforms somehow successfully nudge shoppers/drivers to show up for work for more locations and/or for a longer duration of time, as if these shoppers/drivers are their own employees who are not yet fully committed to their operations but readily available (i.e., liquid). Quasi-slack has its own features as well as some commonalities with traditional human slack.

Human slack is an engine of firm growth. Internal hierarchy makes it possible for the firm to fully utilize not-yet-committed employees or unabsorbed human slack for its own growth: [21]. Like human slack, quasi-slack has been indispensable for the phenomenal growth of food delivery and ride-hailing platforms. It is not just about the sheer number of services delivered by shoppers/drivers. It is also about the contributions for the enhancement of the underlying algorithms. Algorithms are as good as the data that they are fed to. For food delivery and ride-hailing algorithms, a huge chunk of data is constantly fed by shoppers/drivers who have no choice but to generate data while they are connected to the platforms.

Unlike conventional slack that is partly absorbed and partly unabsorbed, quasi-slack in the food delivery and ride-hailing platforms is either partly absorbed or fully absorbed at a given point in time. A shopper or driver is partly absorbed when she is connected and fully absorbed while she is in the middle of delivering service. So, a shopper or driver alternates between being partly absorbed and fully absorbed. She may not fulfill certain service requests, but in so far as she is connected to the platforms, she makes a meaningful contribution to the algorithms by automatically feeding data on her whereabouts, time of connection, etc. From the perspective of these platforms, some service providers are partly absorbed (i.e., connected and waiting for service request pings) whereas the others are fully absorbed (i.e., in the middle of service delivery). Thus, it may be argued that quasi-slack is much more productive than ordinary human slack that is governed by conventional hierarchy.


**Figure 2.** Shoppers/drivers as quasi-slack

Figure 2 shows which factors allow local gig platforms to utilize their shoppers/drivers as quasi-slack and indicates that this quasi-slack directly affects the number of service deliveries and streams of data that ultimately determine the profitability and growth of these local gig platforms. Here we argue that the utilization of shoppers/drivers as quasi-slack is made possible because the ride-hailing and food delivery platforms are successful in two fronts. First, they induce uncertainty on the side of shoppers/drivers by maintaining and increasing information asymmetry. Second, they further increase uncertainty by not offering a full range of options to their shoppers/drivers. Presented with truncated options under information asymmetry, shoppers/drivers are more likely to accept their service request pings: [22]. In other words, shoppers/drivers switch from partly absorbed slack to fully absorbed slack because of their lack of complete information with truncated set of options. We now turn to asymmetric information and truncated options that allow the platforms to utilize their shoppers/drivers as quasi-slack.

### 3.2 Induced Information Asymmetry

Information asymmetry typically happens when a party to a transaction or negotiation cannot figure out the intentions or hidden characteristics of the other party. The party that is at a disadvantage in terms of available information is more likely to make decisions that are not optimal: [22, 23]. Food delivery and ride-hailing platforms are not at a disadvantage in term of information asymmetry in the first place and they even withhold some critical information from their shoppers/drivers and induce information asymmetry for their own advantage. This induced information asymmetry in turn creates uncertainty for their shoppers/drivers and thereby interferes with their rational decision-making and ultimately their overall financial outcomes.

When it comes to work-related contract, typically workers who provide services have private information about their level of expertise and efforts: information asymmetry favors service providers. But this may not hold for food delivery and ride-hailing platforms and their shoppers/drivers. Shoppers/drivers don't have information asymmetry for their own favor because their services are quite standardized and are monitored quite closely while rendered as described in the above.

Delivering food and driving a passenger is quite straightforward and standardized regardless of the context where it is rendered, which is why the quality of the services does not have any impact on the price charged in the first place. This is quite different from, for example, AirBnB where the platform cannot independently verify the quality of the asset, i.e., housing facility, and hence the price of the lodging service is determined by the asset owners or service providers, not the platform as is in the local gig platforms. And the quality of the services,

either delivery or ride-hailing, is also tightly monitored by the platforms through app connections while shoppers/drivers are delivering their services. Thus, these platforms don't suffer from any information asymmetry as typical employers do.

Information asymmetry sometimes is intentionally imposed by the platforms over their shoppers/drivers. For example, some food delivery platforms (e.g., Uber Eats, Deliveroo) don't inform the exact details of a delivery: they only provide pick-up locations (restaurants) without revealing the address of the customer. Once a shopper has picked up the food, she gets the address: [11], [24]. Uber also withholds the information about the final destination of a passenger until the driver has arrived at the passenger's location for a pick-up: [25, 26]. Without knowing the destination information, shoppers/riders have no idea about how much more they can earn by accepting a certain service request over the others. They have to make a decision without knowing the expected fares, which basically forces them – not the platforms – to absorb the risk: [14]. This induced information asymmetry creates uncertainty over the expected financial outcomes, which may force shoppers/drivers to accept more service requests since waiting does not guarantee better outcomes.

Withholding destination information is not the only way for local gig platforms to create information asymmetry for their own benefits. Unlike ride-hailing platforms that rely on very standardized uniform service, food delivery platforms can create information asymmetry in a variety of ways. For some type of food delivery like grocery shopping, shoppers are only presented with the number of food items in the order. Since they don't know the items, they don't have any idea how long it is going to take to complete the order: [8], which also hinders their ability to maximize their incomes. Some platforms (e.g., DoorDash) reveal the information regarding the distance to the final delivery location and the expected fares: [27], but their algorithmic pricing typically offers lower than actual pay, and if rejected, they are bidding up the fare. This is practically tantamount to withholding the information on fares from shoppers who are left to speculate and are nudged into accepting more service requests.

Some food delivery platforms in Korea provide information on distance and expected delivery time, but the information is not quite correct, which practically creates information asymmetry that puts their shoppers at a disadvantage. AI-based orders by Baemin (Baedal Minjok), Coupang Eats, and Yogiyo, the 3 largest food delivery platforms in the country, provide a linear distance, not the actual distance, and an expected delivery time that has not factored in traffic or weather conditions, or other conditions that drag delivery time: [28]. Should these shoppers have known the actual distance or a realistic delivery time, they would not accept the orders in the first place. Waiting for the elevator or walking into certain residential area without motorcycle, however short the duration is, substantially reduces the number of deliveries that shoppers can handle in an hour, which is about 5 deliveries: [29].

Information asymmetry does not have to be explicit or conspicuous to be effective, it may suffice to be indirect or subtle. The logic of algorithm is largely unknown and constantly changing with dramatic and uncertain implications such that drivers/shoppers are left to speculate about what is going on and why: [8], [11], [30]. For example, shoppers don't know how and why they get certain service request pings in the first place. They don't know exactly but they may speculate that preferential treatment is given to shoppers with high ratings, which consequently allows the platforms to promote the emotional engagement and psychological investment of their shoppers/drivers in the work: [30]. This may also lead to more acceptances.

### 3.3 Truncated Options

In combination with induced information asymmetry, food delivery and ride-hailing platforms try to make their shoppers/drivers accept more service requests by providing truncated options. The most important performance metrics are acceptance ratings and/or customer ratings, and the platforms typically send out the information on these metrics to shoppers/drivers on a regular basis. But what is more important than the metrics themselves is that the platforms try to present limited set of options that have huge implications for the making or application of these two metrics: [31].

Acceptance ratings are a critical measure to evaluate the performance of a service provider. Shoppers/drivers should pay a close attention to acceptance ratings because low cumulative ratings may lead to de-activation. For example, if acceptance rating is below 80%, a Uber driver receives warnings. If the rating does not improve upon, then the driver is de-activated: [14], [30]. One long-time shopper who has worked for the Korean food platform Baemin succinctly describes why he has to accept, what they call, AI-based 'order assignments' that don't make any sense in terms of payment and safety: “If we refuse the assignments, we don't get orders, so we have no choice but to accept.”: [28].

Regarding acceptance, some food delivery platforms clearly present truncated options to their shoppers in order that these shoppers choose to accept a service request, one way or another: [8], [11]. For example, one food delivery platform has 'auto-acceptance function' that means shoppers have only one option – i.e., rejection - otherwise, they automatically accept the offer; whereas in another food delivery platform it is more tedious and time consuming to reject service requests. Some big food platforms like DoorDash allow their shoppers to reject orders with the push of a button, whereas Instacart practically has no rejection option: here shoppers decline by failing to respond to a delivery request within 4 minutes. And if a shopper doesn't respond - i.e., request declined – this platform frequently sends out the same declined order for several times in a row. So, if this shopper declines 3 times, she has already spent at least 12 minutes: these 12 minutes become unpaid 'on-call waiting time' and she has also accumulated 3 more rejections on the record.

For customer ratings, shoppers/drivers have practically no means to appeal the outcome and request for re-evaluation because customer rating process itself operates with very little human interventions: [10], [24]. They have no idea why their ratings are low and how to improve them since they don't receive any feedback. This lack of feedback or in-person appeal procedures limit the range of options available to shoppers/drivers. Then, the only known method to improve customer ratings would be to accept more service requests. In other words, truncated options may make shoppers/drivers accept more service requests by showing up in more locations and/or at more points of time.

Customer ratings not only affect shoppers but also restaurant owners. The three largest food delivery platforms in Korea, Baemin, Coupang Eats, and Yogiyo, all exploit customer ratings as a means to expand their market share and achieve growth by pushing their restaurant owners to the limit as if they are their own subcontractors: [32]. It doesn't matter whether the customer ratings of a restaurant are genuine or done in good faith. So restaurant owners are beholden to both the platforms and their customers with very little protections. Out of 5, anything less than 4.9 may make restaurant owners wake up in the middle of the night.

We have argued that food delivery and ride-hailing platforms have been successful in making their shoppers/drivers be physically present in more locations and for a longer duration or more points of time so that they can fulfill more service requests. It is further argued that this is made possible because the platforms create information asymmetry in combination with providing truncated options to their shoppers/drivers. In so doing, these platforms utilize their shoppers/drivers as if their own employees, without triggering any employment-related costs that are accrued to internal hierarchy. In this sense, we argue that the platforms may utilize shoppers/drivers as their own slack resources that could be pulled out from thin air whenever necessary. But they are not ordinary slack resources that have been typically addressed in the literature, which is why we call them quasi-slack resources. The governance relationship between these platforms and their shoppers/drivers may imply that this relationship is rather unique in the sense that it maximizes the benefits of internal hierarchy without entering any formal employment contract. So this governance relationship may work as *quasi-firm*.

## 4. Discussions and Conclusion

We have argued that food delivery and ride-hailing platforms, the representative of the fast-growing gig economy, have successfully initiated cross-network externality by utilizing their shoppers/drivers as quasi-slack as well as by imposing lower prices for their shoppers/drivers. And this is possible because of information asymmetry and truncated options that favor the platforms.

We believe that our notion of quasi-slack, information asymmetry, and truncated options have some important implications. First, the notion of quasi-slack and subsequent quasi-firm may shed some interesting implications on transaction cost theory or the theory of the firm: [33, 34]. Internal hierarchy may reduce transaction costs that otherwise would have occurred in market transactions, but it is supposed to incur bureaucratic costs to organize different elements of the firm to work together. This is also the case for a type of quasi-firm in the construction industry which is based on long-term relationship between a contractor and a small number of subcontractors: [16]. But this may not hold for the quasi-slack and quasi-firm in the food delivery and ride-hailing platforms where both transaction costs and bureaucratic costs are kept low because of the platforms' algorithms ensure asymmetric information and truncated options.

Second, the notion of quasi-slack may complement our understanding of slack resources in the age of digital platforms and make a meaningful contribution to the literature of organizational slack in general. First of all, we may argue that quasi-slack is what potential slack is oriented to exploit. Potential slack refers to an organization's ability to generate resources from the environment: [35]. So potential slack is a sort of pump primer of quasi-slack.

And the notion of quasi-slack may pose an interesting challenge for the relationship between slack resources and firm performance. Research has shown that slack resources in general positively affect firm performance until a certain point beyond which the effects either become plateau or turn negative: [18, 19], [36, 37]. Too much slack resources ironically mean that the firm does not deploy resources in an efficient manner in terms of cost/benefits, which is why the positive relationship turns non-positive beyond certain points. Unlike these ordinary slack resources, quasi-slack does not pose bureaucratic cost problems for the firm that wants to tap into it. So, for certain type of digital platforms may enhance their performance in proportion to the amount of quasi-slack they can mobilize. This may explain why some ride-hailing platforms keep fighting against legislation attempts for full employment status: [38], which is supposed to incur bureaucratic costs.

Third, our study may also provide some implications on the issue of employment status of shoppers/drivers. Those who are against the notion of bestowing employment status on shoppers/drivers argue that shoppers/drivers voluntarily choose to log onto the app whenever it best fits in with their interests and their working schedules are not controlled by the platforms: [39]. Our notion of quasi-slack suggests this is not quite so. Shoppers/drivers are not governed or controlled by internal hierarchy, but their working schedules or behaviors are heavily influenced by the controlling actions taken by the platforms such as withholding information and limiting available options.

Lastly, our arguments of quasi-slack, asymmetric information, and truncated options may help explain why many shoppers/drivers end up making far less than they expected or even less than minimum wages. Unlike the claims by food delivery and ride-hailing platforms that shoppers/drivers make nice sums of money in their free time, Uber drivers' incomes compared with comparable taxi drivers may not be as high as claimed by some ride-hailing platform: [40], and the shoppers of some food delivery platform don't seem to make even minimum wages: [27]. Our arguments suggest that shoppers/drivers don't make enough money out of their services because they are forced to make decisions over a limited set of truncated options under asymmetric information, which ultimately prevents them from making optimal decisions.

Our arguments presented here may not necessarily be applicable to all types of food delivery and ride-hailing platforms. The arguments of quasi-slack from asymmetric information and truncated options are applicable to traditional digital platforms in the food delivery and ride-hailing services where shoppers and drivers bring their own assets for the service: [3]. For such ride-hailing platforms where drivers are provided with vehicles to transport passengers, the information on the passengers' destination is not typically withheld from the drivers. This is because these drivers have different status and enter a contract that requires a mandatory pick-up regardless of the destination. In a similar vein, food delivery platforms have difficulties in grocery shopping and delivery segment: [41], because of the nature of grocery shopping. Unlike typical food delivery, grocery shopping itself is hard to become a standardized service since the quality of grocery itself and customers' preferences are not stable and uniform.

In conclusion, we have addressed the behaviors observed in food delivery and ride-hailing platforms. We have argued that two-sided market theory explanation for the generation of cross-network externality may not fully explain the behaviors in the local gig platforms. Because of the local nature of the service delivery, these local gig platforms have practically integrated their shoppers/drivers as quasi-slack and operated as a quasi-firm. These platforms have successfully utilized their shoppers/drivers as quasi-slack that exists outside the platforms but can be easily called upon and committed to the operations of the platforms: these shoppers/drivers show up in more locations and/or for a longer duration or more points of time so that they can fulfill more service requests from the demand side. Quasi-slack is made possible because these platforms can induce information asymmetry and truncate a range of decision choices available to their service providers, which leads to more service deliveries and streams of data. More service deliveries are critical for the growth of these platforms and constant streams of data enhance the algorithms, which in turn help the platforms generate more profits in the future. And these platforms get the demand side actively involved in the process by letting it generate customer ratings that are critical in nudging the supply side to accept more service requests.

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