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Taxi apps, regulation, and the market for taxi journeys

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ABSTRACT

This paper attempts to provide a starting point for discussion on how smartphone-based taxi applications ('apps') have changed the market for taxi journeys and the resulting implications for taxi market regulation. The paper focuses on the taxi apps and their impact on taxi markets. It provides a brief history of taxi regulation before outlining the underlying economic rationales of its current form in many parts of the world, characterised as the "QQE" framework (quantity, quality and economic controls on operators). It argues that current regulation assumes that taxi markets are subject to three sets of problems that require correction by regulatory intervention, namely: those associated with credence goods, problems related to open access and those resulting from transactions occurring in a thin market. It is then proposed that taxi apps solve both the credence good and thin market problems whilst largely mitigating the problems associated with open access. The paper then presents some potential problems for taxi apps, namely the potential for instability on supply and demand sides, collusion and monopoly. It also discusses concerns about driver background checks and safety. The paper concludes by arguing that instead of restricting the growth of the taxi market, regulators should focus on reducing the likelihood of monopoly and collusion in a taxi market led by apps.

1. Introduction

By early 2013, 61% of cellphone subscribers in the US were using smartphones (Nielsen, 2013). Similar trends of rapid growth are apparent worldwide (IDS, 2014). The growth of the global smartphone market has been accompanied by an increasingly diverse and sophisticated market for smartphone applications (henceforth "apps"): pieces of software that are downloaded onto personal devices for free or for a small charge in order to perform a specific niche task, typically related to entertainment, communication, mapping or locating services and retailers. There are a number of transport apps which aim to connect smartphone users seeking a ride with users in the locality who are prepared to provide one. The supplier can operate in a similar manner to a taxi: using the app to locate passengers, drive them to their destinations and charge them according to a fare structure based on the time and distance of the trip (as measured by the app) set by the app provider. Similarly, the passenger can use the app like a taxi service in order to request a ride. The app sends the request to the nearest available driver who then either accepts or declines the trip. In recent years, taxi apps have become well established: Uber, the market leader, reports 1.1 m ride requests per week generated by its 3.8 m users (Tiku, 2013). As of December 2014, it was operating in 230 cities across fifty countries (Uber, 2014a). Competitor, Lyft operates in thirty US states (Lyft, 2014) and Hailo is present in a dozen major cities across Europe, the US and Asia (Hailo, 2014). In China, Didi Dache and Kuaidi Dache

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combined have 150 m users (Russell, 2015); Ola Cabs and TaxiForSure are major aggregators present in multiple Indian cities (Shrivastava, 2015).

Despite their popularity and wide geographical spread, "taxi" apps are the subject of fierce public debate. The surge pricing models used by leading apps, under which price discrimination occurs according to a pricing algorithm based on local supply and demand, have sparked much public and media discussion (Economist, 2014), as has valuation of the app firms (Bloomberg, 2014) and their occasionally haphazard public relations (Griswold, 2014). However, the most consequential controversy centres on the legal issues arising from their ability to circumvent the regulations in force in established taxi markets (Daus, 2012). Uber, in particular, has faced legal challenges from incumbent taxi operators in a number of cities who claim that its drivers offer unfair competition as they do not carry the same regulatory burden as incumbents (Eskenazi, 2014; Diamandis, 2014). Entry controls are at the centre of this debate. Almost all North American and European cities cap the number of taxis using a permit, or medallion, system. As supply is capped, operating permits appreciate and thus represent good investments (Cummings, 2009; Ecetin and Eryigit, 2011), whose value is threatened by the additional supply added by "taxi" apps (Washington Post, 2014; New York Times, 2014; Wall Street Journal, 2014). For this reason, this paper will focus on apps which allow drivers to circumvent existing regulation (taking Uber as a case study), rather than app which make existing taxi supply more efficient (such as Ola and Didi).

However, although the debate continues between pro-regulation incumbents and the advocates of taxi apps, there is little recognition of several key questions that are central to this discussion. Namely, what are the underlying rationales for regulating taxi markets? How are they currently regulated? How are taxi apps changing the market for taxi journeys? And what implications does this have for the current regulatory framework?

The literature on public transport has paid little attention to these questions. There are studies which think through the potential of smartphone technology to change the way in which public transport systems are managed (Goldwyn, 2014). There are also numerous technical studies on the application of smartphone technology to the existing licensed taxi sector (Chen, 2014; Ruyuan and Yan, 2012) and a few opinion pieces which lay out points of contention associated with taxi apps and the entrance of unlicensed providers into the taxi market (see Walton, 2014). There is also legal research which deals with the legal implications of smartphone technologies in the taxi market (Daus, 2012). There is, however, no work on the impact of this growing technology on the market for taxi trips and its implications for regulation, taking into account the rationale for its current form.

Taxi apps are a recent phenomenon, which have the potential for positive impacts on urban transportation. It is likely that that taxi apps would not greatly impact mass transit as the price difference between bus and urban rail systems and taxis means that the latter would not generally substitute for the former, although it may in exceptional circumstances (i.e. journeys with luggage, tight time constraints, etc.) Taxi apps would have a greater impact on private motor vehicle use. Lower fares and lower transaction costs may lead to the substitution of private motor vehicle trips for taxi trips. This has implications for levels of car ownership and the use of public space.

This paper aims to provide an opening for discussion on these questions. The following section (Section 2) outlines the history of taxi regulations and gives a brief overview of its current form. Section 3 reviews the rationale underpinning current taxi regulation. In order to maintain a manageable scope, this paper will restrict itself largely to US and Canadian taxi markets, although cases from other countries are flagged. It argues that current regulation is based on the view that the taxi market suffers from several problems: the "credence good" problem, the open access problem and the thin market problem. The following section (Section 4) describes how taxi apps have changed the market for taxi journeys. It claims that taxi apps turn a historically thin market into a thick one whilst simultaneously solving the resulting problems (such as congestion) by acting as efficient clearing houses. Section 4 focuses on the example of Uber, the market leader in terms of trip volumes. The penultimate section (Section 5) then suggests some possible difficulties for "taxi" apps, drawing on "core theory". It also discusses concerns about background checks and passenger safety. The paper concludes by arguing that current taxi market regulations should not attempt to restrict the growth of taxi apps, but should instead focus on the possibility of future monopoly and collusion.

2. Taxi market regulation: history and current forms

The roots of modern taxi market regulation lie in the Great Depression of 1929 in US cities. The global economic downturn created mass unemployment. Many newly unemployed workers entered the taxi industry illegally, circumventing quality regulations by purchasing and running cheap vehicles as taxis, most of which were in a poor, often dangerous, state of repair. As unemployment rose and average incomes fell, demand for taxi trips plummeted just as supply surged. This mismatch of supply and demand led to disputes between drivers (both legal and illegal) over fares; turf wars began between existing firms; and "bandit firms" emerged, operating outside legislation. Anger at the proliferation of "bandit cabs", perceived as illegal and unfair competition, led to a major taxi driver strike in New York City in 1934. The Washington Post (1933) sums up the public attitude towards the turmoil in the taxi industry:

> Cut-throat competition in a business of this kind always produces chaos. Drivers are working as long as sixteen hours per day, in their desperate efforts to eke out a living. Cabs are allowed to go unrepaired. ... Together with the rise in the accident rate there has been a sharp decline in the financial responsibility of taxicab operators. Too frequently the victims of taxicab accidents must bear the loss because the operator has no resources of his own and no liability insurance. There is