

GOVERNANCE AND REGULATION OF RIDE-SOURCING SERVICES IN EMERGING MARKETS: CHALLENGES, EXPERIENCES AND IMPLICATIONS

Daniel Oviedo¹, Mariajosé Nieto²

Abstract

The development, expansion and operation of urban mobility start-ups in the sharing economy suggest that, in one form or another, emerging innovations for urban mobility such as ride-sourcing are here to stay. The process in emerging markets has outpaced the ability of decision- and law-makers to produce guidelines and regulations for the operation and control of ride-sourcing. In Latin America, apart from Mexico and Brazil, ride-sourcing has yet to be regulated on a national scale. Currently, the window of opportunity to regulate ride-sourcing services shaping their evolution instead of just responding to it is rapidly closing as new large-scale competitors such as DiDi enter emerging markets and new forms of app-based ride hailing services emerge from local and international players alike.

This paper seeks to shed some light into the different considerations for regulation and governance of ride-sourcing platforms in emerging markets, highlighting the main regulatory challenges they bring about. Building on an extensive review of the literature and secondary sources, we develop a framework the identified and potential effects of ride-sourcing on users (providers and consumers), incumbents and society. Based on the structure of the welfare impacts we identify the major challenges that regulators face in understanding, monitoring, evaluating and regulating this type of transportation innovations. In a context of exponential growth in research and innovation in urban mobility in general and ride-sourcing in particular, a rigorous review of literature and a critical framework for understanding governance and regulation in of such services in rapidly changing contexts is a timely contribution. The paper finalises by proposing general governance and regulation guidelines applicable in Latin America and relevant to explore in other rapidly growing urban contexts in the global south. With this, we seek to contribute to a southern debate about the role of disruptions in more sustainable and inclusive transport system for cities in transition.

Keywords: Ride-sourcing, Ride-hailing, Governance, Regulation, Disruptions

¹ Development Planning Unit, University College London, Gower Street, WC1E 6BT, London, UK., daniel.oviedo@ucl.ac.uk

² Development Planning Unit, University College London, Gower Street, WC1E 6BT, London, UK., maria.nieto.19@ucl.ac.uk

1. Introduction

Between 2010 and 2019, the *e-hailing* industry -understood as digitally enabled transport services that connect spare capacity or idle goods with demand for transportation- has seen a total disclosed investment of USD\$56.2 billion, with an increase of average annual investment from USD\$0.2 billion to USD\$11.4 billion by February 2019 (Holland-Letz *et al.*, 2019). Some forecasts suggest an expected growth of 25% by 2025 (considering business areas such as bike-sharing, ride-sharing, car-sharing and ride-sourcing), with most investment concentrating in companies originating in the United States, China and Europe” (Wolff, Possnig & Petersen, 2019). According to a 2017 report by Goldman Sachs, the ride hailing industry was going to grow eightfold to USD\$285 billion by 2030. Moreover, within the mobility start-up sector in 2019, large investments in e-hailing are closely related with other technological innovations such as electric and autonomous vehicles, with many investors betting on both markets as ways of pushing the boundaries of e-hailing in the near future (Holland-Letz *et al.*, 2019). Such large investments and growing interest from stakeholders at all levels – investors, operators, users, incumbents and decision makers – make ride-sourcing a topical concern that is re-defining urban mobility and what it may mean in the future.

In Latin America, a fertile ecosystem for start-up investments and entrepreneurship has given rise to homegrown companies seeking to fill gaps in the urban mobility market through data-driven innovations and adapted versions of services in various sectors for the local conditions (Remes and Kharas, 2019). Ride-sourcing companies and other players in the industry have quickly expanded their operations to cities across the globe, including large investments in cities in Latin America and the Caribbean, India, South-east Asia and, increasingly, Africa (*ibid*). These large levels of investment and growing interest from stakeholders at all levels make e-hailing and other forms of innovation a topical concern that is re-defining urban mobility and what it may mean in the future. Moreover, the development, expansion and operation of urban mobility start-ups in the sharing economy suggest that, in one form or another, emerging innovations for urban mobility such as ride-sourcing are here to stay.

Since its foundation in 2010 as UberCab and the beginning of its operations in San Francisco its home town, Uber has become the most renowned ride-sourcing service globally being available now in around 633 cities across the world. By the first half 2018 the app registered 10 Bn trips and in July 2019, the Uber platform reached over 100m monthly active platform consumers for the first time. Such rapid expansion has not always been without resistance in some specific contexts, which has led to its complete or partial ban in nine European countries and the Northern territory of Australia (Shead, 2019). In this landscape Latin America is the fastest growing and most profitable region with the highest number of simultaneous trips, more than 25 million monthly active riders across 15 countries (Moed, 2018). In 2017 Uber was working in 26 cities in 11 countries in the region: Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, México, Panamá, Perú, Dominican Republic, and Uruguay. Brazil is Uber’s second largest market in the world with 500,000 drivers and according to the company, more than 17 million users (Darlington and Londoño, 2017) while

just in Central America there were an estimated 1.3 million users in 2018 first semester. The top-three cities in demand are Rio de Janeiro, Mexico and Sao Paulo. Furthermore, Uber has developed tailored products for specific market needs in the region: Uber Lite is a less data demanding version of the Uber app – downloads use under 5 MB and can operate with less than 20MB of data – for areas where internet connection is more costly or slower. The company also launched UberMoto in Dominican Republic and Uber Angel based on the high percentage of drunk driving related accidents in Colombia. The company has two regional offices: i) Andean, Central America and the Caribbean based in Costa Rica and ii) South Cone located in Buenos Aires. Additionally, the firm has excellence centers in San José and Sao Paulo and one about planned for Bogotá with 40 million dollars of investment in the next five years and projected to create 600 new jobs by the end of 2023. Uber has recently made the headlines of regional news by also leaving for the first time a country in Latin America, after a lengthy legal process with the Colombian courts declared the company's services were not legal and ordered the cease of operations by 31st January 2020.

Apart from Uber's major competitor's Lyft (launched in 2012), a myriad other ride-sourcing apps have emerged - Gett founded in Israel in 2010 is available in 120 cities and three countries, Bolt (Taxify) launched in 2013 in Estonia and now has more than 25 million costumers operating in 50 cities in 30 countries and Kabee, Wheely, Ola, Mytaxi, among others (Shed, 2019) – leading to a rapidly expanding market in cities across the globe. In Latin America, Beat, Cabify and Didi are the main ride-sourcing services alternative from Uber after the merger of Cabify and Easy (See Figure 1). A Didi associated industrial tech media and investment research company reports that as of May 2019 the ride-sourcing and food delivery services in the region covered 200 million users and its expanding quickly. Starting in Mexico and Brazil — where it acquired local player 99 for \$1 billion — in February 2019 the company was recruiting managers in Chile, Peru and Colombia, according to job postings and a company official (Laing and Jourdan, 2019).

Figure 1 Ride-sourcing companies self-reported presence in Latin American cities in 2019



Source: authors building on each ride-sourcing websites

The introduction of ride-sourcing providers into emerging markets has outpaced the ability of decision- and lawmakers to produce guidelines and regulations for the operation and control of ride-sourcing and other similar services. Such a challenge is not foreign to cities in Latin America and the Caribbean (LAC), where apart from Mexico and Brazil, ride-hailing has yet to be regulated on a national scale. However, the window of opportunity to regulate ride-sourcing services to shape their evolution instead of just responding to it becomes more precising as Uber and its competitors expend rapidly in the region and banning operations from one company seems to only spark the expansion of another.

2. Methodology

The process to further understand ride-sourcing services from a governance and regulatory perspective in order to define preliminary guidelines to policy making is based first on a

systematic review of the existing literature about the sharing economy in general and ride-sourcing services in particular. Second, a series of short case studies was developed to exemplify and ground in the Latin-American and the Caribbean context the findings in the relevant literature about the main ride-sourcing regulatory challenges. Finally, following the analytical framework structured from the literature review, we developed a brief review of the current state of ride-sourcing governance in LAC, we propose a set of preliminary policy and practice guidelines.

As the sharing economy is still an emerging phenomenon -and within it, so are ride-sourcing services³ (Avital *et al.*, 2014), research about its dynamics, effects and even further, its governance and regulation is still limited if also rapidly growing. Accordingly, the literature review for this document started by finding the seminal works about the sharing economy to structure a clear and encompassing definition of the concept to frame ride-sourcing services. Seminal works were selected based on both Scopus metrics and Google scholar citation track of result of key words “sharing economy”, “peer to peer economy”, “platform economy” and “access economy” and a backward snowball process. Following the framing using Google scholar a systematic search was done using the previously mentioned keywords and “regulation”, “governance” and “governance” with Boolean operator AND. An additional exploration was conducted by mixing keywords related to regulatory issues and terms used in the literature to refer to digitally-enabled transport services that connect spare capacity or idle goods with demand: “ride-sourcing” and “ride hailing”. The review of the results from these two processes was limited to those papers that had the highest citation numbers or were published in the last two years. During the review process, some forms of forward and backward snowballing broadened the set of papers reviewed. Building on the review an analytical framework was structured to divide the issue into regulatory requirements and the main challenges these entail. Finally, another round of search was done to complete those areas of the analytical framework that had limited content.

A set of preliminary policy guidelines was developed based on the analytical framework complemented by a brief review of the current state of ride-sourcing governance in LAC’s countries where there is ride-sourcing presence. These preliminary guidelines were circulated to be peer reviewed by experts in the field to incorporate their comments into the final policy brief. The experts were selected from the pool of authors recurrently found during the literature review as well as researchers that have focus on LAC countries.

3. Ride-sourcing governance: within a smart mobility transition and the sharing economy

This document investigates ride-sourcing governance issues in the context of the broader challenges of the sharing economy and of the transition to a model of mobility as a service.

³ Uber, the first ride-sourcing transportation network company was founded less than a decade ago, in 2009.

Although there have been discussions about ride-sourcing services like Uber not being part of the sharing economy (Frenken and Schor, 2017), more narrow definitions restrain the complexity of the analysis and could exclude useful insights for the regulatory and governance issues of this type services (Acquier, Daudigeos, & Pinkse, 2017). However, we acknowledge the differences between ride sharing and ride-sourcing. While the ride-sourcing ride is mainly motivated by profit, in ride-sharing there is an independent transport requirement that also includes an offer for some else to use the spare capacity (Aarhaug & Olsen, 2018; Rayle, Dai, Chan, Cervero, & Shaheen, 2016).

The sharing economy remains a rapidly evolving, elusive concept (Miller, 2015) that has come to encompass other neighboring concepts such as platform capitalism, on-demand (Cockayne, 2016) or gig economy (Friedman, 2014; Sundararajan, 2013), peer-to-peer economy (Bauwens, 2005), connected consumption (Schor, 2014) collaborative consumption (Botsman & Rogers, 2010), and access economy or access-based consumption (Bardhi & Eckhardt, 2012; Belk, 2014). Similarly, when talking about the sharing economy it is possible to find a broad spectrum of economic organizations, from for-profit to non-profit initiatives (Acquier, Carbone & Massé, 2016; Schor, 2014; Sundararajan, 2013).

Outside the research landscape the sharing economy concept is used in national regulatory agencies such as the US Federal Trade Commission, multilateral organizations like the OECD, in official documents of the European Commission, the European Economic and Social Committee, and the European Parliament (Codagnone and Martens, 2016) as well as by a major brand council of corporations that are trying to understand ways how to participate in this new economic dynamic (Catalyst Companies 2017). Bringing together the most common references, the sharing economy can be defined as the use of digital platforms that allow interaction between the owner of an under-utilized asset or service and a temporary user without the transference of ownership (Benkler, 2004; Cockayne, 2016; Eckhardt and Bardhi, 2016; Frenken & Schor, 2017; Botsman & Rogers, 2010; Rauch and Schleicher, 2015; Vaughan & Hawksworth, 2014).

In the transportation sector, new business models have started to shift consumer preferences towards mobility as a service instead of vehicles as products (Schulze, MacDuffie and Täube, 2015; Watanabe *et al.*, 2017). Such an interpretation of mobility emphasizes on exchanges of capital, assets and services between individuals in a system that enables sharing of otherwise underutilized resources while decreasing transaction costs (Avital *et al.*, 2014). As part of the model of mobility as a service, ride-sourcing or ride-hailing describe app-based, on-demand ride services that are provided commercially by matching supply and demand dynamically using smartphone apps to request and accept trips with private vehicles. These services are in between individual transit and mass transit, without fitting well in either category, and as such, face general challenges associated with the governance of the sharing economy (Dowling, 2018).

The introduction of information and communication technologies in mobility services has rapidly changed the rules of how transport systems work, transforming established processes

and societal practices. This included the position of the state within the transport system. Accordingly, ride-sourcing platforms are part of what can be understood as a smart mobility transition a component of a much broader transition that is affecting large aspects of society fundamentally transforming how we access goods and services and how we travel (Marsden and Reardon, 2018). While there is still high uncertainty about the new configurations it would bring, how it will happen and where, the structural change it brings about is inevitable and how it will unfold is contingent on its governance (Marsden & Reardon, 2018). The transition indeed could bring a society beyond congestion, automobility and its environmental consequences, but steering the new networks of actors towards this societal goals is fundamental to achieve them (Bakker, Maat & van Wee, 2014; Marsden & Reardon, 2018; Fagnant & Kockelman, 2015). Therefore, governance analysis of the transition “is of parallel importance to research into the technological questions which exist about how to make it possible to happen.” (Marsden & Reardon, 2018 p.165).

As a social process of coordination and collective solution of issues by implementing binding rules (Treib, Bähr, & Falkner, 2007;(Börzel and Risse, 2010; Knill, Schulze and Tosun, 2011) governance goes beyond the power of the state to include a diverse array of networks, in space and functions that can be formed by public, voluntary, and private agents with which the state interacts. The boundaries between these different kinds of organizations can be opaque and the sustained interaction of members of networks is necessary due to interdependence for resources. Such interactions include reaching shared goals through negotiations that are rooted in trust and regulated by guiding rules that result from common purposes. These dynamics have a significant degree of autonomy from the state, whose role is limited to steer these interactions (Rhodes, 2011) and enable and/or stimulate others to action to ensure that the desired goal is acquired (Giddens 1991). Within this process of coordination there are diverse modes of governing that encompass sets of rules that steer interaction based on general principles about how actors are best motivated (Evans, 2011). Such set of rules can be understood as regulation, a way to deal with market failures or achieve important genuine policy objectives (Edelman and Geradin, 2018).

Governance and regulation of ride-sourcing is particularly important in the context of combined disruptions from the sharing economy and from the initial stages of transition to a smart mobility system. First, because transport markets tend to produce bespoke and disintegrated systems while small-scale changes are frequent in transport policy, making it a regulatory field that is more easily adaptable (Dowling 2018). Second, a positive result of the transition to a smart mobility system and a peer-to-peer economy requires a high level of collaboration and cooperation of multiple successful innovations and actors (Marsden and Reardon, 2018).

Identifying and understanding the choices that technological change brings in terms of multi-generational welfare, distributional matters, public value and environmental sustainability is fundamental to steer such changes towards agreed societal goals. Such understanding also fundamental so that minor incremental decisions does not lock processes of change into undesired trajectories for years to come (Docherty, 2018). On the one hand, the current

dominant automobility system is already shaping priorities and ways to govern new mobility services (Dowling, 2018). On the other hand, private agents whose fundamental goal is to maximize profit by increasing consumption of their service (mobility), are those that provide most mobility services transforming behaviors and practices. As Docherty (2018) highlights, smart mobility innovations are usually associated with a brighter and better future. However, the private, profitability-based nature of most new mobility providers requires considering carefully other potential pathways with widespread negative environmental externalities and distributional concerns (Docherty 2018). Even more when in lack of regulation such organizations have yet no incentives not to reduce costs by externalizing them (Docherty 2018; Acquier, Daudigeos, & Pinkse, 2017)). It is then fundamental to better comprehend the dynamics of the decentralized choices of the actors of these new networks for the state, stakeholders and society to be part of structuring how the transformation is going to evolve.

The current early stage of these services is an opportunity for the state to adopt its steering role in a proactive manner, seeking not to lose institutional capacity to engage later on the transition and avoiding a responsive role to events instead of shaping development (Marsden & Reardon, 2018). Einav et al. (2015) argue that the rapid scalability of platforms in the sharing economy requires early regulatory intervention given that once they become big regulating them becomes problematic. However, regulating and governing new forms of mobility services entails challenges such as the defiance of the business-as-usual mobility landscape, and the complexity and uncertainty of its development and interaction with other multiple new actors.

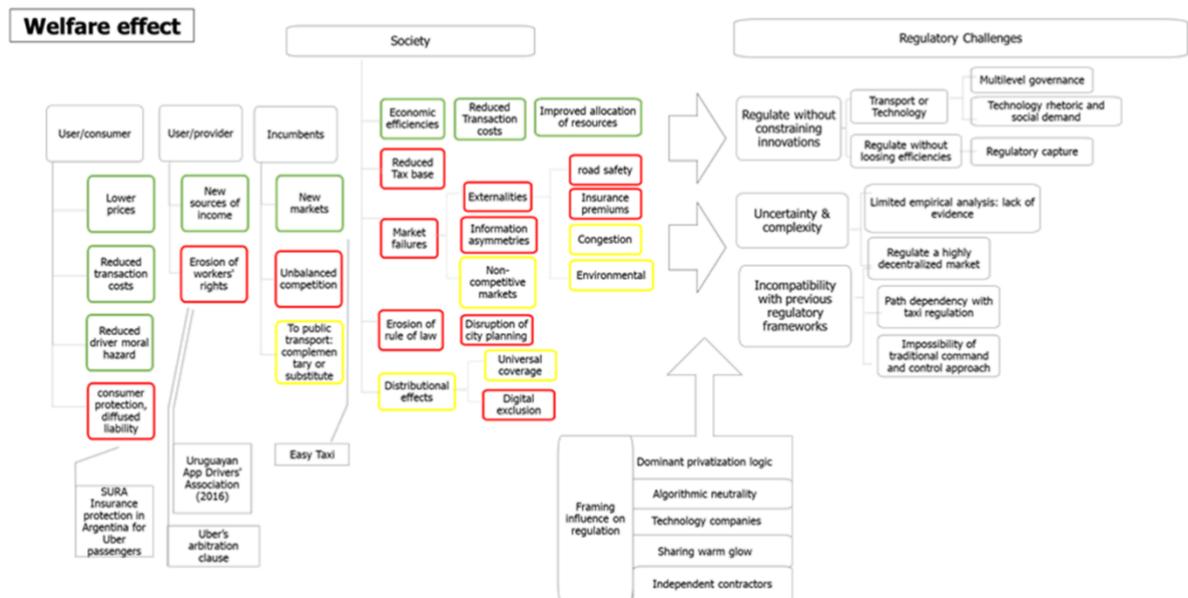
The sharing economy services in general and ride-sharing in particular, works by challenging incumbent providers in order to give consumers something new and ‘better’, which is why smart mobility innovations are often referred to as ‘disruptive’ (Miller, 2015; Marsden and Reardon, 2018). These new business models and mobility services question institutional arrangements for transport supply (Cohen & Kietzmann, 2014) particularly those of incumbents and the state (Badger 2014) but also those of users’ and providers (Koopman et al., 2015; Shaheen, 2014; (Zha, Yin and Yang, 2016). Reduced transaction costs using digital platforms and new institutional arrangements based on rating systems and algorithmic pricing are reshaping the interactions of users, providers and what the state needs to oversee and regulate to achieve societal goals and the highest possible welfare effect. According to Davis (2018), smart mobility innovations, such as ride-sourcing platforms will produce a collective action problem. As such its positive outcome depends largely on the steering role of the state to coordinate and oversight the network of competing private firms and users of smart technology guided by their singular priorities.

Systems and networks of transport governance that are already weak are being further disrupted by several new and powerful players, such as the global computing giants and agile service providers whose business models depend on creative destruction of existing regulatory frameworks (Marsden & Reardon, 2018). Uber’s outmaneuvering of governments and regulators is a good example of the challenges that regulating ride-sourcing services entail if the full range of impacts is considered and the benefits of the disruption are to be

cropped (Dudley, Banister and Schwanen, 2017; Edelman and Geradin, 2018). Issues that emerge with the disrupting operation of unregulated ride-sourcing platforms go from market failures to broader societal concerns such as environmental sustainability, congestion and the rule of law (Aarhaug & Olsen, 2018; Edelman & Geradin, 2018).

In sum, appropriate regulation of ride-sourcing is fundamental. First, considering the size and rapid expansion of these services. Second, because of the economic efficiencies' losses -such as higher consumer surplus, improved allocation of resources and reduced transaction costs—that banning ride-sourcing would entail. Third, because regulation allows ride-sourcing services to operate legally and provide economic efficiency benefits while competing fairly with existing providers (Edelman & Geradin, 2018; Witt, Suzor, & Wikström, 2015). Furthermore, the importance of regulation beyond prohibition becomes even more apparent when incumbents are industries with high regulatory overheads and barriers to enter that are competing on an uneven plain while users (both consumers and providers) may not be well protected and can also embrace efficiencies related to the operation of business through software platforms (Witt et al., 2015).

Figure 2 Ride-sourcing effects on stakeholders and society and its regulatory challenges



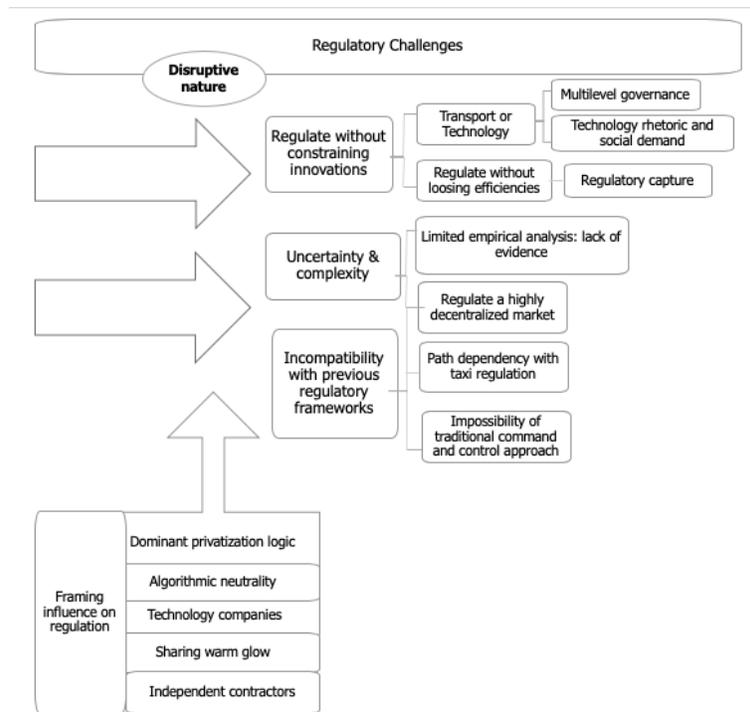
Source: Own elaboration

4. Regulatory challenges

Three features of Ride-sourcing services pose challenges to regulators: i) their novelty and disruptive nature, ii) the aspiration to preserve their advantages while avoiding their negative effects and iii) their level of uncertainty and complexity. Ride-sourcing represents a new way of unscheduled, pre-booked hailing services mainly differentiated from traditional services because of the use of communication technologies. This fundamental difference allows to connect independent drivers with passengers including geolocation information, dynamic pricing and user based quality ratings. In turn as explained in the *user consumers* and *economic efficiency* sections increased access to information reduces transaction costs and at the very least improves resource allocation. Low cost communication also creates a much more decentralized market which is hard to control and surveil without access to information whilst it is full of user's and operators' incentives to not be intervened by centrally generated regulation. Although the transportation service in itself is quite similar to traditional taxis and pre-booked services these new characteristics are incompatible with previous regulatory frameworks, entail higher levels of complexity and uncertainty and empirical evidence is still inconclusive.

The decentralized nature of ridesourcing services and how fast technology and business practices can change are at the center of these challenges. As illustration, enforcing licenses or codes for traditional taxi services in most cities does not require too much effort given that the vehicles are easy to identify. Similarly, the decentralized nature of user-providers and user-riders that are connected through platforms that generally are internationally based, makes the process to monitor and enforce regulations more intricate, particularly regarding access to information. The private nature of the vehicles that are used to provide the services further complicates the design of efficient regulations. Lack of information, the novelty of digital services and its intrinsic flexibility entails that government regulators are working under unknown and not definite conditions.

Figure 3 Regulatory challenges of ride-sourcing



The following sections present these three challenges based on the current scholarship in order to first identify its key characteristics and potential means for regulators to deal with them. There is need to clarify how can ride-sourcing be regulated to avoid its negative effects without limiting the potential for innovation and the associated efficiencies of these new transport services. Second, the uncertainty and complexity of ride-sourcing related to the inconclusive empirical evidence and the highly decentralized nature of its market will be analyzed. Finally, as ride-sourcing works fundamentally as a pre-booked or traditional taxi service whilst entailing substantial differences in its operation it is necessary to analyze how and why previous regulatory frameworks are incompatible to govern the new.

4.1. Regulating disruptive innovations

Considered an innovation with inherent economic efficiencies, regulating ride-sourcing entry to the market of private transport services creates a regulatory dilemma. On the one hand, commonly innovations are associated with positive value and support of the service from ride-sourcing users – both providers and consumers – points to the same direction. On the other, in general not regulating innovations leaves society exposed to the undesired risks (Ashford & Hall 2011) and in particular in the case of ride-sourcing work rights, consumer protection, unbalanced competition, market failures, fiscal income and distributional effects require action from regulators to achieve the best possible welfare result for society as a whole (Oviedo & Nieto, *forthcoming*). In the context of transport, set out how this task needs to shape up is even more important given that, as argued by Docherty (2018), its governance

has tended to be ineffective even during periods with few substantial changes in modes and infrastructures.

Regulating ride-sourcing is a challenge even when the process is informed by precedent regulations about innovation given that it is unclear if these services can be framed by existing rules that apply to similar commercial practices (Ranchordas, 2015). In order to regulate ride-sourcing platforms and services without hampering their benefits and in particular their innovative dimension it is needed to first identify what it is that is innovative about these practices. According to Fagerberg et al. (2006) innovations are more than ideas, an innovation needs to be carried to practice and materialized in the market or society. There can be incremental innovations or the Schumpeterian destructive innovations that brake paradigms and have generalized societal level impacts. Regarding ride-sourcing, what is innovative is the creation of an online platform that connects users in a simple way (Ranchordas, 2015). Accordingly, the design of regulation of ride-sourcing platforms needs to be guided by this fundamental difference with traditional taxi and pre-booked transport services if the potential of innovation to improve service quality is to be recognized.

In sum, what is innovative about ride-sourcing is the use of ICT to connect drivers and riders (Baron, 2018), and as such it is also at the core of the tensions to regulate it. The technology rhetoric puts emphasize on the role of ride-sourcing companies as technical facilitators through communication services and the liberation and empowerment they bring to users (Witt et al., 2015). Users, both providers and their clients are independent from the company and technology brings them more freedom and the capacity to do more (Witt et al., 2015). At the same time, as technology is generally connected to positive economic outcomes, these companies are a welcome addition to most national economies. Indeed, as stated before, a fundamental part of the economic efficiencies these services bring are the result of lower communication costs. The regulatory challenges result from first, the use of the status as technology platform to avoid claims (e.g. responsibility for safety or labor issues) and regulations regarding operations as a transport providers (Dudley, Banister and Schwanen, 2017) Elliot, 2014).

Second, by framing and actual legal status as technology platforms ride-sourcing companies legitimize transport services that in most cities are not legitimate by law. Functioning as a platforms instead of a transportation services ridesourcing companies are able to avoid regulatory frameworks meant to govern taxis and other pre-booked services (Baron, 2018). Uber fast scale up was indeed favored by its legal status as technology platform allowing it to be subject to the strong protection of US Federal law of online intermediaries and its hometown light taxi regulation and strong support for technological firms (Witt et al., 2015). Similarly, prior taxi market deregulation gave Uber in Sweden the space to stablish a considerable consumer base (Thelen, 2018). Furthermore, in California pressure from incumbents for a balanced competition was negligible compared to what happened in other cities, it was not necessary to reform existing industry regulation which enabled the platform to quickly grow without regulatory constraints (Witt et al., 2015). Once the platform expanded to other geographies it had the advantage of being a market disruptive innovator

with the political opportunity to function informally, between the fringes of rules framed in another era and almost impossible to enforce on a highly decentralized market.

Exploiting gaps in existing regulatory frameworks Uber starts functioning on regulatory grey zones (Baron, 2018) and rapidly establishes a robust operating ground, creating a large and exited consumer base (Thelen, 2018). When the platform has achieved a certain critical mass restricting their operation becomes politically sensitive as it is seen as against public demand (Dudley, Banister and Schwanen, 2017; Thelen, 2018). Similar to other sharing economy firms, this resistance to regulatory pushes partially grounded on their ability to rally consumers as political advocate, has given Uber a consistent advantage (Rauch and Schleicher, 2015; Dudley, Banister and Schwanen, 2017). Indeed, the major challenge to ban sharing economy services such as ride-sourcing is consumers keep demanding them even when they become illegal or are informal (Miller, 2015). Consumer interest in sharing economy products, and the desire to monetize under-utilized existing uses does not disappear when the app is banned. Ridesourcing markets in particular have shown to have a pent-up demand (Baron, 2018), particularly in cities where traditional taxi services and public transport has low quality.

Third, national and local levels and transport and technology branches of the government tend to adopt contradictory positions towards such companies given their diverse agendas, incentives and how susceptible they are to incumbent's pressure. The latter can variate from a taxi industry organized as an effective cartel or a competitive market with easy entry (Baron, 2018). Whilst a cartelized market is more attractive to new ridesourcing services given the limited supply, it also presents higher incentives for incumbents to oppose ridesourcing services although the nature of the opposition depends on the how the rents are distributed between taxi companies and drivers (Baron, 2018). Multilevel governance⁴ of ride-sourcing entails a clear contrast between local governments incentives and approaches towards ride-sourcing markets and National State necessities: namely taxes and services that are framed as solutions to trans local problems i.e. climate change mitigation, economic growth. Local taxation vs workers' rights are clear examples of the contrasting jurisdictions and incentives from different governmental levels to regulate sharing economy participants in general and ride-sourcing companies in particularly (Baron, 2018). As an illustration, Thelen (2018) points out the difference between regulatory outcomes in the United States and Germany given that conflicts about Uber operation were resolved mainly through decentralized battles in the former and a nationalized conflict in the latter. Nationally coordinate action by the association of taxi's in Germany limited the space for competition across cities and limiting the formation of substantial user base (Thelen, 2018). There are also several examples of national bills that have override local ride-sourcing regulation: Boise in Idaho, Texas bill contradicts Austin and Huston previous regulation among others

⁴ Multi-level governance: "how policy makers and interest groups in liberal democracies find themselves discussing, persuading and negotiating across multiple levels" (Hague and Harrop 2007)

⁵ Dovey, R. (2017, May 31). Texas bill overrides local ride-hailing regulation. Next City.Org, Retrieved from <https://search.proquest.com/docview/1904309705?accountid=14511>

(Miller, 2015). In Colombia for example, before Uber was banned from operating, national and local authorities had been in conflict regarding the legal and formality status of the ride-sourcing company. The contradictory arguments emerged from on one side Colombian law protection of platform's and web-based businesses right to operate. On the other, pressure from interest groups – mainly taxi's companies – and a national goal to reduce informal supply of urban transport (Revista Semana, 2018). In the case of Brazil, local governments have had different takes on the national legislation about mobility - quality and safety requirements for the vehicle and driver of taxis are determined at national level, while local governments negotiate tariffs – resulting in complete prohibition or stringent conditions for operation (de Souza Silva, Oliveira de Andrade and Alves Maia, 2018). As soon as June 2015 two of Brazil's major cities already had bills to ban Uber (Esteves, 2015). Rio de Janeiro's bill got the approval of the city's council that included fines as high as \$500 for vehicles found using the platform. Later on these prohibitions were lifted and the Senate amended national law to eliminate the most strict requirements, such as drivers being the owner of the vehicle and the need of a particular license plate (de Souza Silva et al. 2018)

Finally, another challenge – less subject to political pressure but not less complicated – emerges when regulations are established or adapted and need to be enforced in a highly decentralized market. Sharing platforms enable a much larger number of individuals to contract directly for goods and services, and this decentralization fundamentally alters the regulatory landscape (Witt et al. 2015). On one hand, the scale of the internet, its transnational nature, and the anonymity of users make it extremely costly to target the individuals who breach national civil or criminal laws (Witt et al. 2015). On the other, the use of private cars and app technology by ride-sourcing calls into the question the definition of private and commercial transport and consequently the question about its regulation and control (Aarhaug & Olsen, 2018) while the nature and scale of the internet make it costly if not impossible to control individuals (Witt et al. 2015).

4.2. Uncertainty & complexity

Although regulating and deregulating the transport industry has been a common practice in response to diverse market failures and to achieve societal goals, the particular case of ride-sourcing poses the necessity for new methods, as well as the challenge of limited information and empirical evidence to design appropriate regulations. Whilst platforms are very flexible and prone to change rapidly or adapt particular characteristics, regulation design, approval and implementation is a lengthy process and it is difficult to reverse (Einav et al., 2015). Services anchored on fast moving technology allow its providers to work in the gaps of existing regulatory frameworks with slow moving regulation always lagging a step behind of the new technologies and business practices (Hacker, Pierson & Thelen, 2015).

Regulation also needs to consider the impacts of ride-sourcing on patterns of accessibility, that in turn influences complex issues such as land use planning and social inclusion (Docherty, 2018). In this context, regulatory control entails a series of trade-offs that have not yet been indisputably conceptualized or modelled (Witt et al., 2015) and governance of

complex systems depends fundamentally on information that also needs to be congruent in scale and acknowledge the relative uncertainty (Dietz et al., 2004). As argued by Ranchordas (2015) regulating social and technological innovation with little information on the novelties in question and their effects and side effects, represents a significant challenge for regulators.

Moreover, common strategic responses of dominant digital platforms – chiefly Uber in the ride-sourcing scenario – to avoid direct interference by law is to appeal to the efficiency of its own sociotechnical governance system to regulate its users in order to meet the targets required by regulators (Witt et al., 2015). However, this poses an additional alternative that state regulators cannot properly evaluate because they do not have yet the procedures or the information to be able to do so (Witt et al., 2015). Although the claim is similar to previous free-market liberal appeals to deregulation, Uber's is not about deregulation in general bringing better outcomes. It represents a new form of argument for better outcomes at lower regulatory costs: technologies allowing a scale-free mechanism based fundamentally on consumer rating systems for quality and algorithms to set prices (Witt et al., 2015, p. 181).

As stated before, the empirical evidence about ride-sourcing services effects on incumbents, users, providers and societal welfare in general is limited and inconclusive (Oviedo & Nieto, *forthcoming*). Similarly, scholarship focusing specifically on policy response to these services is still sparse and highly concentrated in law journals (Dupuis, 2018). The evidence about changes in regulation for traditional pre-booked and taxi services is also equivocal (Moore & Balaker, 2006; Witt et al., 2015) highly polarized (Dempsey, 1996) and context specific (OECD, 2007) subsequently reducing references to address the new services.

Ideally, the regulatory response would start by controlling the entry of ridesourcing platforms into the existing market and then regulating based on sound understanding of the complexity of the changes brought by the technology to existing and new markets (Miller, 2015). Accordingly, Einav et al. (2015) argue that to cope with the high flexibility and scalability of ride-sourcing platforms the strategy should be early but lenient regulatory intervention. Additionally, to deal with uncertainty and complexity information sharing and data disclosure have been proposed as a solution to the lack of information. Witt et al. (2015) argue that regulators should use the large sets of data now available from market actors and intermediaries in order to ground regulation design on quantifiable results and market based outcomes. Uber Movement an Uber's data sharing platform about travel times and new mobility is an incipient step towards more information sharing and disclosure. In LAC Sao Paulo, Santiago and Bogotá travel times data are already accessible. The platform in Sao Paulo allows for more than 267 thousand trips 'combinations between 517 areas in the 39 municipal districts of the metropolitan area (Diogenes, News paper: Estadão, 24 April 2019).

4.3. Incompatibility with previous regulatory frameworks

In general, industries sharing economy firms participate in – e.g., taxi transport, housing, hotels, and restaurants – have long been subject to extensive local-level policymaking (Rauch

& Schleicher, 2015). In particular, the history of regulation of unscheduled transport services, or vehicle-for-hire industry mainly represented by taxi services is global and tracks back to the XVII century (Gilbert & Samuels, 1982). Since then, regulations have been motivated either on its characterization as public service in order to reduce externalities (e.g. tap entrance of vehicles to avoid congestion) or on the necessity to reach equilibrium of demand and supply (Cairns & Liston-Heyes, 1996; (Collier, Dubal and Carter, 2017)). The latter received more attention during the 1960s until 1990 focusing on the properties of taxi market segments (Aarhaug and Olsen, 2018) and more recently in connection to the need for regulation for the new ride-sourcing services (Farren, Koopman, & Mitchell, 2016; Rienstra, Baker, & Visser, 2015). However these new services have particularities that make traditional regulatory approaches to similar transport services inconducive (Cannon & Chung 2015, Baron, 2018) and being an innovation its regulation should be focus on the need to tackle its newness, uncertainty, and inherent risks (Ranchordas, 2015). As was mention before, central to this incompatibility is the issue of defining ridesourcing firms as technology platforms or transportation service providers that should fall under the jurisdiction of existing regulatory frameworks (Baron, 2018).

At the core of the ride-sourcing innovation is the use of information and communication technologies to connect drivers and passengers. Technology platforms are the mean to operationalize this connection and consequently should be the focus of regulation that aims to address the newness of this service. According to Goldsmith & Wu (2006) analysis, the only effective and scalable way to regulate the actions of people on the internet is through online intermediaries. In contrast, current taxi regulations respond to correct some unwanted results of the underlying characteristics of the street hail and rank taxi market⁶ such as a high number of vehicles, high or arbitrary prices, low salaries, low profits and consequent cost coting and poor quality. Arguments for regulation are then public safety and security, service quality standards and pricing, environmental concerns, congestion, working conditions, city image and competition, and so on. The regulations can come in the form of quantitative restriction (a limited number of licenses), qualitative entry restriction (like ‘the knowledge’ in London), price regulation (setting compulsory fares), or other forms of market intervention, such as safety and environmental minimum standards, and technical requirements such as colour schemes and taximeters (Zha et al., 2016; Aarhaug & Olsen, 2018).

The existence of a platform as intermediary changes drastically the possibilities to correct and control such unwanted results while it also points to the vulnerability of regulatory frames that were developed before technological innovations (Dudley et al. 2017). First, dynamic prices and the efficiency they bring might render strict price regulation less important while allowing to avoid arbitrary prices and to track high unjustified prices. For instance, the result of successive complaints over Uber’s surge pricing in several cities, particularly in times of emergency, led the platform to publicly limit the operation of its

⁶ Absence of a supply and demand curve, temporal monopolies, information asymmetries, few or no economies of scale and limited capital requirements for operating taxis in the street hailing segment.

algorithms in these cases. In New York a threat of direct regulation helped push Uber to include this limitations resulting in a negotiated agreement with public authorities (Witt, Suzor and Wikström, 2015)

Einav et al. (2015) argue that regulating platforms with the same strategies as incumbents have been regulated before, such as licensing and certifications may only serve the purpose to protect incumbents without really protecting consumers. This is particularly true when there are tendencies for regulatory capture⁷ (Stigler, 1971; Peltzman, 1976) and firms whose profit could change due to new regulation have strong incentives to try to curve such regulation (Baron, 2018). The result is that the beneficiary of the regulation is the firm and not the general public. In this context, banning software platforms has been perceived as a form of regulatory capture i.e. imposing limits to new entrants to avoid competition for existing providers (e.g. taxis and Uber) and not aiming at a clear policy objective or to correct a market failure. As an example, in Mexico, the antitrust authority recommended governors, legislators and the CMDX major to recognize and not ban ride-sourcing services (Esteves, 2015).

The theory of incumbency shows that established market participants might use existing regulatory structures – such as licenses and codes for taxis – to keep our competition or otherwise limit it to sort of oligopoly that works to maintain a high barrier to entry (Miller, 2105). Additionally, when regulations that limit entry to markets are poorly aligned toward consumer protection and not updated to reflect changes in those markets can impose substantial costs on job seekers, consumers and the economy in general (Miller, 2015). Theoretical studies discussing from an economics point of view the quantitative limits as form of taxi regulations were predominantly against stablishing restrictions to entrance. The studies related such regulations with rent-seeking behavior (Aarhaug & Olsen, 2018). For instance, in Rio de Janeiro, a judge rule in favor of an Uber driver sentencing that the state incentive to ban Uber was related to regulatory capture and was not address at highest public interest (Esteves, 2015).

Second, moving from the direct relation between passenger and driver to booking through an intermediary leads to quality controls that could be centralized on the intermediary. Although it can be argued that this is similar to the role of taxi companies, technology platforms increase traceability and have lower costs of control of quality if required. Indeed, most of the service quality standards that regulatory frameworks seek to codify have been already put in place by ride-sourcing firms (Hall & Krueguer, 2015) but there is still a void regarding issues such as fleet size or drivers salaries. Third, this central role of the intermediaries also means that they become more powerful in relation to users, both drivers and passengers. In sum, while low cost communication and data management might render inefficient to apply traditional restrictions on price and quality to ride-sourcing, the relation of the platforms with its users key in future regulation (Leiren and Aarhaug, 2016).

⁷ This tendency is more present when regulators are closely link to the firms they regulate, through extended discussions, career trajectories or a desire to maintain the status quo (Laffont & Pouyet, 2004)

The challenge is that controlling intermediaries is difficult when the nature of their operation -digital services – does not require to have a physical presence within a particular jurisdiction. On one hand, in a transnational environment national laws often have little effect (Witt et al. 2015). However, most platforms seek to provide some staff in each region where they operate – for example Uber country and city managers, along with supporting office space, local banks accounts, and other company assets in each city and country, provide a natural basis for jurisdiction as well as an immediate means to enforce judgement. France used this approach, including arresting Uber’s France CEO. On the other, this creates a new form of ‘race to the bottom’ in the market for regulatory schemes (Burk, 1997) fueled by increased competition of cities to attract innovative activities, given the predominant role such activities have had historically in local economic growth and competitiveness (Brail, 2017). In this context Mardsen & Reardon (2018) argue that it is key to first evaluate welcoming or resisting innovations based on clearly defined policy objectives that the government is seeking to achieve. The authors propose a series of question to this end: “what will a socially necessary level of provision look like in the next five years? Should we continue to regulate modes or should it be [Mobility as a] service providers? How is access to, and quality of, a basket of mixed services to be regulated to protect consumers?” (p. 164)

In terms of liability, the question is if platforms should be liable for activities their platforms coordinate or facilitate. Historically, there are few law that make third parties responsible for the actions of individuals unless there is a special especial relationship under which the actions have occurred (Witt et al., 2015, p. 177). First option is if platforms are taken as employers of their service providers, as several allegations have alleged and could be subject to the “worker classification test” to determine if ride-sourcing drivers are workers or not (Redfearn III, 2016). Then the platform will be responsible for the actions of its employees under the well established principle of *respondeat superior* (is a common-law doctrine that makes an employer liable for the actions of an employee when the actions take place within the scope of employment). Second, secondary liability could be used and there has not be any regulatory precedent about a jurisdiction declaring itself unable to oversee activity mediated by a software platform. Even more, with a comprehensive electronic record of who did what platforms create a virtual road map to users’ activities and indeed platforms’ records tend to be granular and well organized. Platforms also offer the opportunity for further control than offline intermediaries: a software platform can easily track were their drivers are to enforce a spatially base rule. Similarly, most online platforms are based on electronic transactions, that are easier to track and totalize than cash payments, particularly regarding tax evasion (Edelman & Geradin, 2018).

5. Conclusions

The evidence outlined in this paper bears witness to the path-dependency of transport governance, which is created by the categories through which governance is thought and enacted (Blomley 2014). The emergence of new forms of technology-assisted urban mobility can open the room to what Jensen et al. define as ‘Epistemic experimentation’, which is

defined as fostering new ways of governing a new phenomenon by testing new ways of understanding it (Jensen, Cashmore & Elle, 2017). Our paper represents an attempt to provide a multidimensional analytical lens to the understanding of the phenomenon of ride-sourcing in Latin America that enables both researchers and practitioners to ‘put all cards on the table’ when approaching regulations of new mobility services. By building on existing literature, our framework allows to consider both benefits and burdens associated with the introduction of urban ride-sourcing services, as well as the distribution of such benefits and burdens across stakeholders in the urban transport ecosystem.

Considering the scale and complexity of the problem as summarized in Figures 1 and 2, the authors suggest a collaborative approach to co-regulation to design mechanisms that enable regulators to effectively complement the inherent efficiencies of the sharing economy with an optimal level of protection of public interest over interest groups and cost-effective feasibility (Cannon et al. 2015). As Davis (2018) argued, the introduction of regulations for ‘Transportation Network Companies’ (TNCs) in California bears the mark of a complex set of trade-offs between leadership strategies and political understanding, as well of reciprocal recognition of not only the private and public sector, but also of the users of the disrupting services.

The introduction in 2013 of regulations to TNCs in California that imposed new “(..) obligations related to insurance, background checks for drivers and vehicle inspections but did not require substantial changes in existing business models” (Davis, 2018, p.111) have become an example that has sought to be replicated in various contexts with different levels of success. Our paper recommends not replication but evidence-base co-learning, allowing stakeholders at different levels of governance and with different degrees of availability of resources and capacity, to develop tailored solutions to their current priorities and conditions. Such a process entails the development of spaces for openly accessing, sharing and using information, as well as the construction of spaces of representation that enable regulators, operators, users and non-users alike to voice their concerns and expectations regarding the incoming services, as well as rethinking existing regulatory frameworks that may not fit the conditions under which new personal transport services operate. Furthermore, the development of regulations for new forms of urban mobility requires rethinking some of the tenets and methods for the understanding of transport behaviors and decision-making. This means also building on multiple perspectives for the re-design of current information and instruments for planning and control so they can better-reflect the features of new services as well as their potential risks and externalities.

In a context where regulators deal with informality and rapidly changing definitions of legality and illegality in transport services such as Latin American cities, the understanding of transport systems as a continuum rather than a dichotomy may contribute to the development of more comprehensive regulatory frameworks. The general attitude towards technology-driven innovations presents an opportunity for regulators and decision-makers to develop and deploy experimental regulations for ride-sourcing services instead of forcing new operators to adhere to frameworks that do not necessarily account for some of their main

benefits and risks (see Posen, 2015). For instance, Toronto city council's regulatory framework leveled the play field for traditional taxis and ridesourcing services by allowing more flexibility in pricing and operation for the former and applying a minimum price for the latter as well as more stringent background checks and special licenses for drivers, identifiers and twice a year inspections for vehicles and insurance (Baron, 2018).

Thelen (2018) argues that a fundamental entry point to understand regulatory process related to Uber are the differences in the specific points of contestation around which the regulatory politics centered. Multiple countries and cities in Latin America and the Caribbean are facing similar challenges with the disruptive arrival of ride sharing services but diverse institutional arrangements translate such challenges into different struggles based on which issue is more salient. The centrality of consumer protection or tax evasion or employees' rights requires the understanding of transport beyond traditional governance and government structures (e.g. ministries and departments of transport and mobility) needing to mobilize different actors in other sectors. This will lead to the creation of different coalitions and consequently opening spaces for regulations of the new services.

Bibliography

- Aarhaug, J. and Olsen, S. (2018) 'Implications of ride-sourcing and self-driving vehicles on the need for regulation in unscheduled passenger transport', *Research in Transportation Economics*. Elsevier, 69(July), pp. 573–582. doi: 10.1016/j.retrec.2018.07.026.
- Acquier, A., Carbone, V., Massé, D., 2016 Creating value in the Sharing Economy: Business models, scalability, and sustainability impacts. In: Paper Presented at the EGOS Conference, Sub-theme Organizing in the Shadow of Sharing, July 7–9, Naples.;
- Acquier, A., Daudigeos, T., & Pinkse, J. (2017). Promises and paradoxes of the sharing economy: An organizing framework. *Technological Forecasting and Social Change*, 125(July), 1–10. <https://doi.org/10.1016/j.techfore.2017.07.006>
- Aloisi, Antonio. 2016. "Commoditized Workers: Case Study Research on Labor Law Issues Arising from a Set of 'on-Demand/Gig Economy' Platforms." *Comparative Labor Law & Policy Journal* 37 (3): 653–90.
- Angrist, J.D., Caldwell, S., Hall, J.V., 2017. Uber vs. taxi: A driver's eye view (No. w23891). National Bureau of Economic Research.
- Ashford, N.A. & Hall, R.P., 2011. The Importance of Regulation- Induced Innovation for Sustainable Development, *Sustainability*, Vol. 3, No.1, pp. 270 - 292
- Avital, M. *et al.* (2014) 'The Collaborative Economy: A Disruptive Innovation or Much Ado about Nothing?', *35th International Conference on Information Systems*, pp. 1–7. Available at: <http://aisel.aisnet.org/icis2014/proceedings/Panels/5/>.
- Avital, M. *et al.* (2014) 'The Collaborative Economy: A Disruptive Innovation or Much Ado about Nothing?', *35th International Conference on Information Systems*, pp. 1–7. Available at: <http://aisel.aisnet.org/icis2014/proceedings/Panels/5/>.

- B. Cannon, H. Chung, A framework for designing Co-regulation models well- adapted to technology-facilitated sharing economies, *St. Clara High. Tech. L.J* 31 (2015) 23e97.
- Baccaro, Lucio and Chris Howell. 2011. "A Common Neoliberal Trajectory." *Politics & Society* 39(4): 521–63.
- Badger, E., 2014. Taxi Medallions have been the Best Investment in America for Years. Now Uber May be Changing that. *The Washington Post* <<http://www.washingtonpost.com/blogs/wonkblog/wp/2014/06/20/taxi-medallions-have-been-the-best-investment-in-america-for-years-now-uber-may-be-changing-that/>> (accessed January 4, 2015).
- Bakker, S., Maat, K. & van Wee, B. (2014). Stakeholders' interests, expectations, and strategies regarding the development and implementation of electric vehicles: The case of the Netherlands. *Transportation Research Part A: Policy and Practice*, 66,52?64. doi:10.1016/j.tra.2014.04.018
- Bardhi, F., Eckhardt, G.M., 2012. Access-based consumption: the case of car sharing. *J. Consum. Res.* 39 (4), 881–898.
- Baron DP (2016) Strategy beyond markets: A step back and a look forward. de Figueiredo JM, Lenox M, Oberholzer-Gee F, Bergh RGV, eds. *Advances in Strategic Management*, Vol. 34 (Emerald Group Publishing, Bingley, UK), 1–54.
- Baron, D. P. (2018) 'Disruptive Entrepreneurship and Dual Purpose Strategies: The Case of Uber', *Strategy Science*, 3(2), pp. 439–462. doi: 10.1287/stsc.2018.0059.
- Bauwens, M., 2005. The political economy of peer production. *CTheory* (1 December).
- Beard, R.T., Macher, J.T. and Mayo, J.W. (2015) 'Can You Hear Me Now?' Exit, Voice and Loyalty under Increasing Competition.
- Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and free- dom.* New Haven, CT: Yale University Press.
- Benkler, Y., 2004. Sharing nicely: on shareable goods and the emergence of sharing as a modality of economic production. *Yale Law J.* 273–358.
- Blomley, N. (2014). Disentangling law: The practice of bracketing. *Annual Review of Law and Social Science*, 10(1), 133?148. doi:10.1146/annurev- lawsocsci-110413-030719
- Börzel, T. A. and Risse, T. (2010) 'Governance without a state: Can it work?', *Regulation and Governance*, 4(2), pp. 113–134. doi: 10.1111/j.1748-5991.2010.01076.x.
- Botsman, R., Rogers, R., 2010. *What's Mine Is Yours: The Rise of Collaborative Consumption.* Harper Collins, New York.
- Brail, S. (2017) 'Promoting innovation locally: Municipal regulation as barrier or boost?', *Geography Compass*, 11(12), pp. 1–12. doi: 10.1111/gec3.12349.
- Brustein, J. (2016). Uber and Lyft want to replace public buses. Retrieved May 20, 2017,
- Burk, D. L. (1997). Virtual exit in the global information economy. *Chicago-Kent Law Review*, 73,943
- Cairns, R. D., & Liston-heytes, C. (1996). Competition and regulation in the taxi industry. *Journal of Public Economics*, 59, 1–15.

- Cairns, R.D., Liston-Heyes, C., 1996. Competition and regulation in the taxi industry. *J. Public Econ.* 59, 1–15.
- Cannon, B., and H. Chung. 2015. “A Framework for Designing Co-Regulation Models Well- Adapted to Technology-Facilitated Sharing Economies.” *Santa Clara High Technology Law Journal* 31 (1): 23–96.
- Carboni, M. (2016). A New Class of Worker for the Sharing Economy. *Richmond Journal of Law and Technology*, 22(4), 11.
- Catalyst Companies (2017) About Us. Retrieved from URL <http://www.catalystcompanies.co/about-catalyst-companies/>
- Catalyst Copanies, 2017. accessed: <http://www.catalystcompanies.co/>
- Cetin, T., & Eryigit, K. Y. (2013). The economic effects of government regulation: Evidence from the New York taxicab market. *Transport Policy*, 25, 169–177.
- Chang, H.H., 2017. The economic effects of Uber on taxi drivers in Taiwan. *J. Competition Law Econ.* 13 (3), 475–500. Christensen,
- Cheal, D., 1988. *The Gift Economy*. Routledge, London.
- Christian Denmon, Ride sharing vs. traditional taxis: how do injury insurance claims compare? *Huffington Post* (July 7, 2014)
- Clelow, R. R., & Mishra, G. S. (2017). *Disruptive Transportation: The Adoption, Utilization and Impacts of Ride-Hailing in the United States*. UC Davis ITS Research Report.
- Cockayne, D.G., 2016. Sharing and neoliberal discourse: the economic function of sharing in the digital on-demand economy. *Geoforum* 77, 73–82.
- Codagnone, C. and Martens, B. (2016) ‘Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues’, *JRC Technical Reports Institute for prospective technological studies digital economy working paper*, 01. doi: 10.2139/ssrn.2783662.
- Cohen, B. & Kietzmann, J. 2014. Ride On! Mobility Business Models for the Sharing Economy. *Organization and Environment*, Vol. 7, No. 3.
- Cohen, P., Hahn, R., Hall, J., Levitt, S., Metcalfe, R. (2016). Using big data to estimate consumer surplus: the case of Uber. Technical Report, National Bureau of Economic Research (2016)
- Collier, R. B., Dubal, V. and Carter, C. (2017) ‘The Regulation of Labor Platforms: The Politics of the Uber Economy’, *University of California*, (March), pp. 1–42. Available at: <http://www.brie.berkeley.edu/wp-content/uploads/2015/02/Reg-of-Labor-Platforms.pdf>.
- Cooper, J., Mundy, R., & Nelson, J. (2010). Taxi! Urban economies and the social and Cramer, Judd, and Alan B. Krueger. 2016. "Disruptive Change in the Taxi Business: The Case of Uber." *American Economic Review*, 106 (5): 177-82.
- Darlington, S. and Londoño, E. (2017) ‘Brazil Becomes Uber’s Latest Regulatory Battleground’, *The New York Times*.
- Davis, D. 2018. Governmental capacity and the smart mobility transition. In G. Marsden & L. Reardon (Eds.), *Governance of the smart mobility transition* (pp. 19–32). London: Emerald Group Publishing Limited. Chapter 7

- de Souza Silva, L. A., Oliveira de Andrade, M. and Alves Maia, M. L. (2018) 'How does the ride-hailing systems demand affect individual transport regulation?', *Research in Transportation Economics*, (June), pp. 1–0. doi: 10.1016/j.retrec.2018.06.010.
- De Stefano, Valerio. 2016. "The Rise of the 'Just-in-Time Workforce': On-Demand Work, Crowdfund and Labour Protection in the 'Gig-Economy.'" Working paper. http://www.ilo.org/travail/whatwedo/publications/WCMS_443267/lang-en/index.htm.
- Dempsey, P. S. (1996). Taxi industry regulation, deregulation & reregulation: The paradox of market failure. *Transportation Law Journal*, 24, 73.
- Dietz, Thomas & Ostrom, Elinor & C Stern, Paul. (2004). The Struggle to Govern the Commons. *Science* (New York, N.Y.). 302. 1907-12. 10.1126/science.1091015.
- Dills, A., & Mulholland, S. (2018). Ride-Sharing, Fatal Crashes, and Crime. *Southern Economic Journal*, 84(4), 965-991.
- Docherty, I. (2018). New governance challenges in the era of 'Smart' mobility. In G. Marsden & L. Reardon (Eds.), *Governance of the smart mobility transition* (pp. 19–32). London: Emerald Group Publishing Limited. Chapter 2.
- Dowling, R. 2018. Smart mobility: disrupting transport governance. In G. Marsden & L. Reardon (Eds.) *Governance of the Smart Mobility Transition* (pp. 51 - 64). London, UK: Emerald Publishing
- Dudley, G., Banister, D. and Schwanen, T. (2017) 'The Rise of Uber and Regulating the Disruptive Innovator', *Political Quarterly*, 88(3), pp. 492–499. doi: 10.1111/1467-923X.12373.
- Dupuis, N. (2018) 'Stories of the sharing economy: Policy narratives surrounding the entry of transportation network companies into four mid-sized American cities', *Critical Policy Studies*. Routledge, 00(00), pp. 1–22. doi: 10.1080/19460171.2018.1437459.
- Eckhardt, G.M., Bardhi, F., 2016. The relationship between access practices and economic systems. *J. Assoc. Consum. Res.* 1 (2), 210–225.
- Edelman, B. G. and Geradin, D. (2018) 'Efficiencies and Regulatory Shortcuts: How Should We Regulate Companies like Airbnb and Uber?', *SSRN Electronic Journal*. doi: 10.2139/ssrn.2658603.
- Einav, L., Farronato, C., & Levin, J. (2015). Peer-to-Peer Markets. National Bureau of Economic Research Working Paper Series, No. 21496.
- Elliott, J. (2014, October 8). Uber ride share: Taxi or tech company? CTV News. Retrieved from <http://www.ctvnews.ca/business/uber-ride-share-taxi-or-tech-company-1.2044508>
- Esteves, L. A. (2015). *O Mercado de Transporte Individual de Passageiros: Regulação, Externalidades e Equilíbrio Urbano*, Vol. 1. Brasília: Departamento de Estudos Econômicos
- European Transport Safety Council [ETSC] (2016). Making Taxis Safer: Managing road risk for taxi driver, their passengers and other road users.
- Evans, J. P. (2011) 'Resilience, ecology and adaptation in the experimental city', *Transactions of the Institute of British Geographers*, 36(2), pp. 223–237. doi: 10.1111/j.1475-5661.2010.00420.x.

- Fagerberg, J. (2006). Innovation: A Guide to the Literature. The Oxford Handbook of Innovation, The Oxford Handbook of Innovation.
- Fagerberg, J., Mowery, D., Nelson, R., & Nelson, Dick. (2006). The Oxford handbook of innovation / edited by Jan Fagerberg, David Mowery and Richard Nelson. (Oxford handbooks online). Oxford: Oxford University Press.
- Fagnant, D., & Kockelman, K. (2015). Preparing a nation for autonomous vehicles: Opportunities, barriers and policy recommendations. *Transportation Research Part A: Policy and Practice*, 77, 167-181.
- Farrell, D. & Greig, F. (2016). Paychecks, paydays, and the online platform economy: Big data on income volatility. JP Morgan Chase Institute
- Farrell, Diana and Fiona Greig (2016). The online platform economy: What is the growth trajectory? JPMorgan Chase & Company Institute. Accessed at <https://www.jpmorganchase.com/corporate/institute/institute-insights.htm> (January 2017).
- Farren, M., Koopman, C., & Mitchell, M. (2016). Rethinking taxi Regulations: The case for fundamental Reform. Washington
- Frenken, K. and Schor, J. (2017) 'Putting the sharing economy into perspective', *Environmental Innovation and Societal Transitions*. Elsevier B.V., 23, pp. 3–10. doi: 10.1016/j.eist.2017.01.003.
- Friedman, G., 2014. Workers without employers: shadow corporations and the rise of the gig economy. *Rev. Keynesian Econ.* 2 (2), 171–188.
- Ge, Y., Knittel, G.R., MacKenzie, D., Zoepf, S., 2016. Racial and gender discrimination in transportation network companies. NBER Working Paper No. 22776, October, <http://www.nber.org/papers/w22776>, Retrieved November 1, 2016.
- Giddens, A. (1991) *Modernity and self-identity: self and society in the late modern age*. Polity, Cambridge. Goldthorpe,
- Giddy, Julia Kathryn. "The Influence of E-hailing Apps on Urban Mobilities in South Africa." *African Geographical Review* 38.3 (2019): 227-39. Web.
- Gilbert, G., Samuels, R.E., 1982. *The Taxicab: An Urban Transportation Survivor*. University of North Carolina Press, Chapel Hill.
- Hacker, J. Pierson, P. & Thelen, K. (2015). Drift and Conversion. In *Advances in Comparative Historical Analysis*, ed. J. Mahoney & K. Thelen. New York: Cambridge University Press.
- Haddad, E. A., Vieira, R. S., Jacob, M. S., Guerrini, A. W., Germani, E., Barreto, F., ... Sayon, P. L. (2019). A socioeconomic analysis of ride-hailing emergence and expansion in São Paulo, Brazil. *Transportation Research Interdisciplinary Perspectives*, 1, 100016. <https://doi.org/10.1016/j.trip.2019.100016>
- Hall, J.V., Krueger, A.B., 2015. An Analysis of The labor Market for Uber's Driver-Partners in the United States, Princeton University Industrial Relations Section Working Paper No. 587, Princeton University Industrial Relations Section.
- Henao, A., Marshall, and National Renewable Energy Lab. "The Impact of Ride Hailing on Parking (and Vice Versa)." *Journal of Transport and Land Use* 12.1 (2019): 127-147. Web.

- Hill, Steven. 2015. *Raw Deal: How the “Uber Economy” and Runaway Capitalism Are Screwing American Workers*. First edition. New York: St. Martin’s Press.
- Hirsch, P.M., Levin, D.Z., 1999. Umbrella advocates versus validity police: a life-cycle model. *Organ. Sci.* 10 (2), 199–212.
- Holland-Letz, D., Kloss, B., Kässer, M., & Müller, T. (2019). Start me up : Where mobility investments are going. Retrieved from [https://www.mckinsey.com/~media/McKinsey/Industries/Automotive and Assembly/Our Insights/Start me up Where mobility investments are going/Start-me-up-where-mobility-investments-are-going-vF.ashx](https://www.mckinsey.com/~media/McKinsey/Industries/Automotive%20and%20Assembly/Our%20Insights/Start%20me%20up%20Where%20mobility%20investments%20are%20going/Start-me-up-where-mobility-investments-are-going-vF.ashx)
- Infobae (2018) <https://www.infobae.com/tecnologia/2018/04/12/dos-anos-de-uber-en-la-argentina-numeros-de-un-fenomeno-que-aun-enfrenta-resistencia/>
- Jean-Jacques Laffont & Jerome Pouyet, The Subsidiarity Bias in Regulation, 88 *JOURNAL OF PUBLIC ECONOMICS*, 255 (2004)
- Jensen, J. S., Cashmore, M., & Elle, M. (2017). Reinventing the bicycle: How calculative practices shape urban environmental governance. *Environmental Politics*, 26(3), 459–479. doi:10.1080/09644016.2017.1311089
- Kim, J., Rasouli, S., Timmermans, H., 2017. Satisfaction and uncertainty in car-sharing decisions: An integration of hybrid choice and random regret-based models. *Transp. Res. Part A Policy Pract.* <https://doi.org/10.1016/j.tra.2016.11.005>
- Knill, C., Schulze, K. and Tosun, J. (2011) ‘Measuring environmental policy change: Conceptual alternatives and research implications’, *Institute for Advanced Studies (Vienna): Reihe Politikwissenschaft Political Science Series*, (125), p. 38.
- Komanduri, A., Wafa, Z., Prousaloglou, K., 2018. Assessing the impact of app-based ride share systems in an urban context: Findings from Austin. Presented at the 97th Annual Meeting of the Transportation Research Board, Washington, D.C., January, Paper No. 18-01356. Kooti, F., Grbovic, M., Aiello, L.M., Djuric, N., Radosavljevic, V., Lerman, K., 2017. Analyzing Uber's ride-sharing economy. *Proceedings of the 26th International Conference on World Wide Web Companion*, pp. 574-582. International World Wide Web Conferences Steering Committee.
- Koopman, C., Mitchell, M., Thierer, A., 2015. *The Sharing Economy and Consumer Protection Regulation: The Case for Policy Change*. Mercatus Center at George Mason University
- Kuttner, Robert. 2013. “The Task Rabbit Economy.” *The American Prospect*, October 10, 2013. <http://prospect.org/article/task-rabbit-economy>.
- Laing, A. and Jourdan, A. (2019) ‘Exclusive : China ride-hailing giant Didi plans Chile , Peru launches to take on Uber’, *Reuters - Business News*, 15 February, pp. 1–4. Available at: <https://uk.reuters.com/article/uk-didi-chuxing-chile-exclusive/exclusive-china-ride-hailing-giant-didi-plans-chile-peru-launches-to-take-on-uber-idUKKCN1Q42K7>.
- Leiren, M. D., & Aarhaug, J. (2016). Taxis and crowd-taxis: Sharing as a private activity and public concern. *Internet Policy Review*, 5(2) 2016
- M. Arvind, V.A. Marshall, The dark side of the sharing economy and how to lighten it, *Commun. ACM Assoc. Comput. Mach.* 57 (11) (2014) 24e27.

- M.A. Cusumano, How traditional firms must compete in the sharing economy? *Commun. ACM* 58 (1) (2015) 32e34.
- Manfredi, M. (Jul 2019) Uber y Cabify podrán contratar seguros de responsabilidad civil para sus conductores. *EL Cronista*. URL: <https://www.cronista.com/finanzasmercados/Uber-y-Cabify-podran-contratar-seguros-de-responsabilidad-civil-para-su-conductores-20190717-0051.html>
- Manrique Chavez, W. (2018) Caso Uber Peru 2017 - 2021 http://repositorio.up.edu.pe/bitstream/handle/11354/2197/Wendy_Tesis_Maestria_208.pdf?sequence=4&isAllowed=y
- Marsden, G. and Reardon, L. (2018) *Governance of the Smart Mobility Transition*. Edited by E. P. Limited.
- Meelen, T., Frenken, K., 2015. Stop Saying Uber Is Part of the Sharing Economy. *Fast Company*.
- Miller, S. R. (2015). First principles for regulating the sharing economy. Retrieved from <http://papers.ssrn.com/abstract=2568016>
- Moed, J. (2018, December). Uber’s Wild Ride To Make Latin America Its Fastest Growing Region. *Forbes*, 1–14. Retrieved from <https://www.forbes.com/sites/jonathanmoed/2018/12/20/is-uber-operating-illegally-in-its-fastest-growing-region/#488e79d19251>
- Moore, A., & Balaker, T. (2006). Do economists reach a conclusion on taxi deregulation? *Econ Journal Watch*, 3(3), 109–132
- Nicholas A. Ashford & Ralph P. Hall, The Importance of Regulation- Induced Innovation for SustainableDevelopment, 3 *SUSTAINABILITY* 270, 273 (2011).
- OECD. (2007). Taxi services: Competition and regulation (No. DAF/COMP(2007)42). Retrieved from <http://www.oecd.org/regreform/sectors/41472612.pdf>
- Posen, H. A. 2015. “Ridesharing in the Sharing Economy: Should Regulators Impose Über Regulations on Uber?” *Iowa Law Review* 101 (1): 405–433.
- Ranchordas, S. (2015) ‘Does Sharing Mean Caring? Regulating Innovation in the Sharing Economy’, *Minnesota Journal of Law, Science and Technology*, 16(1), pp. 413–476.
- Raszewski, E., Cohen, L., & Rochabrun, M. (2018, September 24). Uber ’ s strongest growth comes in depressed Argentina -- minus commissions. *Reuters*, pp. 1–6. Retrieved from <https://www.reuters.com/article/us-argentina-uber/ubers-strongest-growth-comes-in-depressed-argentina-minus-commissions-idUSKCN1M41I7>
- Rauch, D. E. and Schleicher, D. (2015) ‘Like Uber, But for Local Governmental Policy: The Future of Local Regulation of the “Sharing Economy”’, *SSRN Electronic Journal*. doi: 10.2139/ssrn.2549919.
- Rayle, L., Dai, D., Chan, N., Cervero, R., & Shaheen, S. (2016). Just a better taxi? A survey-based comparison of taxis, transit, and ride-sourcing services in San Francisco. *Transport Policy*, 45, 168–178.
- Redfean III, R. L. (2016) ‘Sharing Economy Misclassification: Employees and Independent Contractors in Transportation Network Companies’, *Berkeley Technology Law Journal*, 31, pp. 1023–1056. Available at:

- <http://10.0.61.163/Z38JR9M%0Ahttp://search.ebscohost.com/login.aspx?direct=true&db=bsh&AN=120485594&site=ehost-live>.
- Remes, J. and Kharas, H. (2019) *What happened to Latin America 's ' missing middle ' .* Available at: <https://www.weforum.org/agenda/2019/08/latin-america-fill-missing-middle-economy-digital-tech/>.
- Revista Semana, December 2018. Conductores de Uber y Cabify podrían ser sancionados con 25 años sin licencia. URL: <https://www.semana.com/tecnologia/articulo/conductores-de-uber-y-cabify-podrian-ser-sancionados-con-25-anos-sin-licencia/594804>
- Rhodes, R. (2011). Policy network analysis. In D. Levi-Faur (Eds.), *The Oxford handbook of governance* (pp. 425-447). Oxford: Oxford University Press.
- Rosenau,
- Richardson, L., 2015. Performing the sharing economy. *Geoforum* 67, 121–129.
- Rienstra, S., Baker, P., & Visser, J. (2015). International comparison of taxi regulations and Uber.
- Rogers, Brishen. 2015. “The Social Costs of Uber.” SSRN Scholarly Paper ID 2608017. Rochester, NY: Social Science Research Network.
- Roose, Kevin (Sept. 18, 2014) Does Silicon Valley Have a Contract-WorkerProblem?.NYMAG.COM, <http://nymag.com/daily/intelligencer/2014/09/silicon-valleys-contract-worker-problem.html> [<http://perma.cc/2KTU-FRLH>].”
- Rosanna Smart, Brad Rowe, Angela Hawken, Mark Kleiman, Nate Mladenovic, Peter Gehred, Clarissa Manning Faster and cheaper: how ride-sourcing fills a gap in low-income Los Angeles neighborhoods, BOTEC Analysis Corp. 4 (July 2015)
- Sadowsky, N., & Nelson, E. (2017). The impact of ride-hailing services on public transportation use: A discontinuity regression analysis. Bowdoin working paper 5-26-2017.
- Sam Peltzman, Toward a More General Theory of Regulation, 19 J. L. & ECON. 211 (1976).
- Schaller, B. (2007). Entry controls in taxi regulation: Implications of US and Canadian experience for taxi regulation and deregulation. *Transport Policy*, 14, 490–506.
- Schettino, 2019 <https://elfinanciero.com.mx/opinion/macario-schettino/automotriz>
- Scholz, Trebor. 2017. *Uberworked and Underpaid: How Workers Are Disrupting the Digital Economy*. Cambridge: Polity Press.
- Schulze, A., MacDuffie, J. P. and Täube, F. A. (2015) ‘Introduction: Knowledge generation and innovation diffusion in the global automotive industry-change and stability during turbulent times’, *Industrial and Corporate Change*, 24(3), pp. 603–611. doi: 10.1093/icc/dtv015.
- Shaheen, S., 2014. Transportation Network Companies and Ridesourcing. California Public Utilities Commission (CPUC) En Banc <http://www.cpuc.ca.gov/NR/rdonlyres/5C961222-B9C8-4E53-A54D-FC2A89C0A30C/0/RidesourcingCPUCShaheen_Final_v2.pdf> (accessed August 7, 2019).

- Shead, S. (2019) 'Uber's Rocky Road To Growth In Europe: Regulators, Rivals And Riots', *Forbes*. Available at: <https://www.forbes.com/sites/samshead/2019/05/10/ubers-rocky-road-to-growth-in-europe-regulators-rivals-and-riots/#1984051f5c67>.
- Stigler, G. (1971). The Theory of Economic Regulation. *The Bell Journal of Economics and Management Science*, 2(1), 3-21.
- Streeck, Wolfgang. 2008. *Reforming Capitalism*. Oxford: Oxford University Press.
- Sundararajan, A., 2013. From Zipcar to the Sharing Economy. *Harvard Business Review*, Online edition.
- Thelen, K. (2018) 'Regulating uber: The politics of the platform economy in Europe and the United States', *Perspectives on Politics*, 16(4), pp. 938–953. doi: 10.1017/S1537592718001081.
- Treib, O., Bähr, H. & Falkner, G. (2007). Modes of governance: Towards a conceptual clarification. *Journal of European Public Policy*, 14(1) 1?20. doi:10.1080/135017606061071406
- Uber. 2015. "MEXICO CITY: A Mobility Case Study."
- Vaughan, A. (Sep 2017) Uber: London drivers must use hybrid or fully electric cars from 2020, *The Guardian*. URL: <https://www.theguardian.com/technology/2017/sep/08/uber-london-hybrid-fully-electric-cars-2020-vehicles>
- Watanabe, C. *et al.* (2017) 'Consolidated challenge to social demand for resilient platforms - Lessons from Uber's global expansion', *Technology in Society*, 48, pp. 33–53. doi: 10.1016/j.techsoc.2016.10.006.
- Williamson, O.E., 2000. The new institutional economics: taking stock, looking ahead. *J. Econ. Lit.* 38, 595–613 (September).
- Witt, A., Suzor, N. and Wikström, P. (2015) 'Regulating ride-sharing in the peer economy', *Communication Research and Practice*. Routledge, 1(2), pp. 174–190. doi: 10.1080/22041451.2015.1048041.
- Wolff, H., Possnig, C., Petersen, G. An Open Data Framework for the New Mobility Industry. Presented at 54th Annual Canadian Transportation Research Forum, Vancouver, Canada, May 2019
- Yochai Benkler, *Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production*, 114 *YALE L.J.* 273, 276, 288 (2004).
- Zha, L., Yin, Y. and Yang, H. (2016) 'Economic analysis of ride-sourcing markets', *Transportation Research Part C: Emerging Technologies*. Elsevier Ltd, 71, pp. 249–266. doi: 10.1016/j.trc.2016.07.010.