Data as a common in the sharing economy: a general policy proposal

Bruno Carballa Smichowski

CEPN Centre d'économie
de l'Université Paris Nord
CNRS UMR n° 7234

Document de travail du CEPN

Data as a common in the sharing economy: a general policy proposal[*]

Bruno Carballa Smichowski[†]

Data as a common in the sharing economy: a general policy proposal[‡]

Bruno Carballa Smichowski[§]

August 2016

ABSTRACT

It is nowadays a common place to say that the sharing economy is not really about sharing but about making profits and benefiting a few much more than others. A movement that takes the best of the technologies of sharing economy platforms but orients it to benefiting all, platform cooperativism, is on the rise. Nonetheless, it is far from being popular and nothing indicates that it will. This paper investigates the reasons why dominant platforms remain dominant and proposes a policy that aims at curtailing their dominance, fostering platform cooperativism and maximizing the beneficial societal effects that can be derived from exploiting the data generated in platforms. The paper is structured as follows. Section 1 reviews current definitions of the sharing economy, points out their contributions and limitations and offers a novel and more accurate definition. Section 2 briefly introduces platform cooperativism to show why it can be a tool to fix many of the problems of the sharing economy. Section 3 explains and discusses market power mechanisms specific to the sharing economy that help dominant platforms to remain dominant. Some already existing and proposed solutions to counter these market power mechanisms such as reputation passports, a market for personal data and antitrust remedies are evaluated. Section 4 presents a general policy proposal based on making data a common in the sharing economy using reciprocity licenses. Section 5 offers some clarifications regarding the proposal and sketches some of its shortcomings and open questions that arise from it.

KEYWORDS: sharing economy, platform cooperativism, data, commons, market power, reciprocity licenses

---

RÉSUMÉ

Il est devenu de nos jours un lieu commun de dire que l'économie collaborative n'a pas vraiment pour objet le partage mais plutôt les profits et le bénéfice de quelques-uns. Un mouvement qui prend le bon côté des technologies des plateformes de l'économie collaborative tout en les orientant pour le bénéfice de tous, le coopérativisme de plateforme, commence à monter en puissance. Cependant, il est loin d'être populaire et rien n'indique qu'il le deviendra. Cet article s'intéresse aux raisons pour lesquelles les plateformes dominantes restent dominantes et propose une politique qui a pour buts de limiter leur dominance, encourager les coopératives de plateforme et maximiser les effets sociaux vertueux qui peuvent en résulter de l'exploitation des données générées dans des plateformes. L'article est organisé comme suit. La Section 1 passe en revue les définitions existantes de l'économie collaborative, signale leurs apports et leurs points faibles et propose une définition originale et plus précise. La Section 2 introduit brièvement les coopératives de plateforme pour montrer pourquoi elles peuvent être un outil pour répondre à plusieurs des problèmes de l'économie collaborative. La Section 3 discute les mécanismes de pouvoir de marché spécifiques à l'économie collaborative qui contribuent à que les plateformes dominantes restent dominantes. Quelques mesures déjà en marche et proposées pour combattre ces mécanismes de pouvoir de marché tels que les « passeports de réputation », un marché des données personnelles et des remèdes antitrust sont évalués. La Section 4 présente une proposition de politique générale basée dans la gestion des données personnelles dans l'économie collaborative comme un commun à travers des licences à réciprocité. La Section 5 offre quelques clarifications concernant la proposition et ébauche certaines de ses faiblesses et les questions qu'elle laisse ouvertes.

MOTS-CLÉS : économie collaborative, coopératives de plateforme, données personnelles, communs, pouvoir de marché, licences à réciprocité

Introduction

"It is not enough to set up new forms of common productivity, [forms] of new cooperative platforms just to be better than what we have. We will not pervade just by being better – that's not how it works in the economy. We will have to change the framework around us, make up new rules, and new institutionalized rules, to make this more than a niche – to make this the dominant form of production."

The so-called sharing economy has flown out of its nest. Far from being seen as the novel phenomenon society and regulators used to look almost unanimously favorably upon, it has sparked many debates in terms of competition, distribution of value, taxation and labor rights, to name a few. There is a growing tendency to analyze dominant sharing economy platforms with a critical eye and to support more socially oriented platforms. In this line, there has been a rise of platform cooperativism, a movement of alternative sharing economy platforms where users are in control and the distribution of power and value is considerably more symmetrical than in dominant platforms. Nevertheless, platform cooperativism remains marginal. We believe this is not only due to its youth, but mainly to the fact that dominant sharing economy platforms hold market power, which hampers the expansion of alternative platforms. The aim of this paper is to propose a general policy that, based on a diagnosis on why dominant platforms remain dominant, intends to fulfill three objectives: limiting dominant platforms' market power, fostering the development of platform cooperatives in such a way that they will become competitive in face of today's dominant platforms and maximizing the beneficial societal effects that can be derived from exploiting the data generated in platforms. The proposal is based on managing (some) personal data from sharing economy platforms as a common using reciprocity licenses.

In order to do so, we need to first define in a rigorous way what the sharing economy is. Although much ink has been spilled over the sharing economy, its definitions are neither consensual nor rigorous. Therefore, Section 1 opens by reviewing the current definitions of the sharing economy and pointing out their contributions and limitations. We then offer a novel and more rigorous definition. Section 2 briefly introduces platform cooperativism to show why it can be a tool to fix many of the problems of the sharing economy. Section 3 explains and discusses market power mechanisms specific to the sharing economy that help dominant platforms to remain dominant. Some already existing and proposed solutions to

counter these market power mechanisms such as reputation passports, a market for personal data and antitrust remedies are evaluated. Section 4 presents a general policy proposal based on making data a common in the sharing economy. Section 5 offers some clarifications regarding the proposal and sketches some of its shortcomings and open questions that arise from it.

1   A rigorous definition of the sharing economy

Many terms have been used in recent years to define the same phenomena: "sharing economy", "collaborative economy", "gig economy", "on-demand economy", "collaborative commons", "peer-to-peer economy", "access economy", "the mesh"… Among these terms, "sharing economy" stands out as the one with the most widespread use[1]. Nevertheless, its definition is neither consensual nor rigorous. Therefore, it is necessary to begin by defining precisely what we mean by "sharing economy" if we want to have a rigorous discussion on how it should be regulated. There are currently two widespread families of definitions of the sharing economy: definitions based on the idea of "access over ownership" and/or peer-to-peer interactions channeled through a digital platform and the sharing economy defined as a two-sided market. Although these two families of definitions capture some key features, we will show they are not sufficient to characterize the "sharing economy" thoroughly.

Let us begin with the first family of definitions. Novel and Riot define the sharing economy as an economy "based on network pooling of resources owned by each person"[2] (Novel and Riot, 2012: 35). Gansky uses the term "mesh" to designate organizations where "in sum, it is about going from a world where we own everything that we use to a world where access is imposed over property" (Sillicon Maniacs, 2011). According to Jeremy Rifkin, "collaborative commons" are "a digitalized space where providers and users share goods and services" (Rifkin, 2014). Benjamin Tincq, co-founder of Ouishare, defines the sharing economy as "the set of social practices and business models based on horizontal structures and members contributions of a community" (Tincq, 2014)[3]. Rachel Botsman, in turn, speaks of "an economic model based on sharing underutilized assets from spaces to skills to stuff for monetary or non-monetary benefits. It is currently largely talked about in relation to P2P marketplaces but equal opportunity lies in the B2C models" (Botsman, 2014). On the same line, the European Commission

---

[1] *Fortune* magazine conducted a study (Roberts, 2015) that revealed that the usage of the term "sharing economy" in the New York Times, the Washington Post and the Wall Street Journal had been used five times more than "on-demand economy" and "gig economy" during the first six months of 2015.

[2] The translation is ours.

[3] Ibid.

defined the collaborative economy in a recent guideline as "business models where activities are facilitated by collaborative platforms that create an open market for the temporary use of goods and services, often provided by private individuals" (European Commission, 2016a). OuiShare takes another of Botsman's definitions to define the "collaborative economy" as "initiatives based on horizontal networks and participation of a community. It is built on 'distributed power and trust within communities as opposed to centralized institutions' (R. Botsman), blurring the lines between producer and consumer. These communities meet and interact on online networks and peer-to-peer platforms, as well as in shared spaces such as fablabs and coworking spaces" (Ouishare, 2016). Benita Matofska, founder of The People Who Share, defines the sharing economy as "a socio-economic ecosystem built around the sharing of human, physical and intellectual resources. It includes the shared creation, production, distribution, trade and consumption of goods and services by different people and organisations" (Matofska, 2016). Laure Wagner, spokesperson of BlaBlaCar, defines the sharing economy as "the optimization of under-exploited resources thanks to a digital system that allows approaching supply to demand, to create a community of suppliers and demanders" (Wagner, 2014)[4]. It is important to stress that Wagner highlights along with Valérie Peugeot that "if there is not a technical online device it is not sharing economy" (Peugeot, 2014)[5]. Arun Sundararajan, an economist specialized in the sharing economy, defines it as an "economic system" that has five characteristics: largely market-based (i.e. the creation of markets and enabling of exchanging of goods and emergence of new services); high-impact capital (it allows "everything, from assets and skills to time and money, to be used at levels closer to their full capacity"); "crowd-based 'networks' rather than centralized institutions or 'hierarchies'"; blurring lines between the personal and the professional" and "blurring lines fully employed and casual labor, between independent and dependent employment, between work and leisure" (Sundararajan, 2016).

Three main characteristics of the sharing economy emerge from these definitions:

- The existence of a netw ork of interconnected individuals at the core of the activity
- The existence of a digital device that allows networked interactions
- Access over ownership: underused goods owned by some individuals are accessed by others than do not need to buy them to use them

The second family of definitions of the sharing economy identifies it as multi-sided markets that use a digital platform. According to Rochet and Tirole, the fathers of the economic concept of multi-sided these "are roughly defined as markets in which one or several platforms enable interactions between end-users,

---

[4] Ibid.
[5] Ibid.

and try to get the two (or multiple) sides 'on board' by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall" (Rochet and Tirole, 2006). A condition for multi-sided markets to exist is the existence of distinct and complementary types of users that the platform puts in touch (those who need a ride and those who offer it, those who want to rent or share a spare room and those who are looking for one, etc.) and the existence of network externalities between the groups (Rysman, 2009). The latter means that the more a type of users there is in a platform, the more useful the platform becomes to other complementarian types of users. For example, the more people there is offering a spare room in a platform (first side of the market), the more useful it becomes for those who are looking to occupy a spare room (second side of the market) to use the platform, and the more useful it becomes to advertisers who want to reach the biggest possible audience (third side of the market).

It is important to point out that when the literature on multi-sided markets uses the term "platform" it does not necessarily refer to digital platforms. For example, a speed-dating center can be a platform that, without using any digital tool, puts in touch two complementarian groups of people that create network effects between them. Some authors (Hagiu & Wright, 2013; Hagiu & Wright, 2015a; Hagiu & Wright, 2015b, Evans and Schmalensee, 2013; Lougher and Kalmanowicz, 2016; Demary, 2014) have taken this definition of multi-sided markets to define the sharing economy as multi-sided markets where the platform is digital.

Although these families of definitions capture some of the main characteristics of the sharing economy they have shortcomings. In some cases their shortcomings are proper to the family of definitions itself; while in some other cases they are common to both families of definitions. Regarding the first family ("access over ownership" and/or peer-to-peer interactions channeled through a platform), its two first characteristics, although accurate, are not sufficient to characterize the organization of labor and exchange in the sharing economy. They both describe the way in which the *technical* division of labor and its organization takes place, namely through peer-to-peer interactions channeled through a digital platform. Yet, the social form that the organization of labor and exchange takes is absent in these definitions, as we will see further on. Let us also point out that while the first two characteristics are general to all sharing economy organizations, the last one (access over ownership) refers only to the most popular type of sharing economy platforms, collaborative consumption platforms (e.g. car-sharing platforms, home-sharing platforms, etc.), where individuals own physical assets they rent or let other individuals use for free under certain conditions. Therefore, the "access over ownership" characteristic does not contemplate gig-work platforms, for example. The problem proper to the multi-sided market definition is that it does

not see any specificity in sharing economy platforms in respect to digital platforms in general. It simply puts them as an example of multi-sided platforms that also includes, for example, online market places, social networks or dating apps.

There are also two shortcomings common to both of these definitions. First, they omit the social form that the organization of labor and exchange takes[6]. In the sharing economy labor and exchange, contrary to what happens in traditional firms, is not driven by employment relationships. Second, as we will show in the following lines, these definitions omit the role platforms play as a node of power relationships that embed the structure of the organization of production and exchange and governance rules. The latter affects, among other things, outcomes in terms of labor conditions and value distribution.

Taking into account the virtues and the shortcomings of the existing definitions of the sharing economy, we propose our own definition which we will adopt for the rest of this paper. **We define the sharing economy as a way of producing and/or distributing exchange value and/or use value based on peer-to-peer interactions channeled through digital platforms and where most of the peers' participation is not driven by wage relationships**. **Platforms in the sharing economy have the following characteristics:**

a) **They embed the conditions of peer-to-peer exchange and/or production (which includes labor conditions and value distribution)**

b) **They embed the governance rules of the community**

c) **They create a digital support that not only allows the community to exist *stricto sensu*, but also makes its functioning workable through mechanisms such as reputational systems or third-party identity verification that make peer-to-peer transactions viable.**

Platforms' characteristics show that they are both a source of organizational efficiency[7] and the node of power relationships within the community, since they organize production and exchange and they embed governance rules, which results in outcomes in terms of labor conditions and value

---

[6] Sundararajan's definition approximates the issue

[7] The meaning of "efficiency" depends of course on the goals of the platform. Platforms can have many different goals that would translate in different levels of efficiency such as maximizing exchanges, maximizing the use or certain resources, maximizing profit, etc.

distribution. We will see in the following pages that these characteristics are not only a source of power within the community that participates in a platform, but can also be a source of market power that may be exerted by platform controllers within and outside the scope of platform's users.

We would like to make two important remarks regarding our definition. First, it includes what is commonly referred to as sharing economy platforms (e.g. Uber, Airbnb, TaskRabbit) but it is not circumscribed to it. It also includes other platforms such as Wikipedia or Sharelex that are not commonly referred to as part of the "sharing economy". We have chosen the term "sharing economy" because it is the most widespread although we find the term "platform-based peer-to-peer models" more accurate. Second, let us note that the definition describes the sharing economy strictly as a form of organization of labor. The latter can be done following a variety of governance (traditional capitalist firms, cooperatives, mutual societies, commons, etc.) and business models (charging a fee per transaction, revenues through advertisement, revenues through the use of personal data, financing through members' contributions, crowdfunding, etc.) Moreover, property rights over physical and intellectual property in the community can take many forms. We shall come back to these points later.

2   Platform cooperativism as an alternative to dominant platforms

The analysis of the characteristics of the sharing economy we did in the previous section shows that the balance of power between users and, more importantly, between users and owners of the platform can take any form. Power unbalances are important because they have concrete economic and social outcomes. When platforms' owners have most of the power, one is to expect that income distribution and labor conditions (in the cases of platforms where some users perform tasks for others) will favor them. This is the case in most of the mainstream sharing economy platforms that dominate their respective markets. The case of biggest players in the most developed sharing economy markets, ride-hailing and accommodation, serves as a good illustration.

In the case of ride-hailing platforms, Uber is the biggest player among competing platforms in every market except China[8] and, in some cities like San Francisco or Dallas it even also surpasses all taxis companies' market shares combined (Rideshare Owl, 2016). In this platform, drivers have no control whatsoever of the fares charged, of the commission that Uber takes from each ride or of the rules they have to follow to avoid being "deactivated" from the platform (i.e. fired). Uber even tells drivers how to

---

[8] Uber has recently sold its business in China to the biggest Chinese ride-hailing company, Didi.

behave in the presence of clients. The only choice drivers have is when to work. This shows that the power is clearly on Uber's side. Not surprisingly, the evidence shows that once drivers' work-related expenses (gas, insurance, maintenance costs and depreciation of the vehicles) are taken into account, revenues are virtually equal to minimum wages (Tech Insider, 2016). And this does not seem to being improving. Uber has repeatedly cut fares to expel competitors out of the market, resulting in drivers having to work more hours to make the same revenue (O'Donovan and Singer-Vine, 2016). The social rights that come even with a minimum wage employment contract, though, are non-existent. Since workers are considered independent contractors, they do not have a legal status that allows them to acquire these rights. It is for this reason that Uber faced two class actions by drivers who demanded to be re-categorized as workers instead of as independent contractors that ended-up in a settlement and workers still being considered as independent contractors.

In the case of accommodation, an empirical study based on 59 United States cities (Lane and Woodworth, 2016) shows that Airbnb, which dwarfs competing platforms, has a share of *all* hotels accommodated demand that, although small (which is understandable when calculating one firm's demand as a share of hundreds'), "has grown significantly [between October 2014 and September 2015] and that this share becomes more or less relevant to hotels depending upon the time of the year". The analysis concludes that "Airbnb has and will continue to encroach on the business of the traditional lodging". Not surprisingly, Airbnb charges a 6-12% commission to guests and a 3% commission to hosts while non-for-profit sites that manage to offer a similar service such as CouchSurfing do not charge anything[9]. In addition, in Airbnb while guests' payments are processed to Airbnb when the booking is made, the host only gets the money 24 hours after check-in. This means that Airbnb not only gets a commission, but also improves its cash-flow by getting 0% interest loans from guests. Another example of power imbalance between Airbnb and its users is the introduction of instant booking. This feature of the platform allows guests who meet certain requirements regarding the verifiability of their profiles to instantly book a house without the host needing to accept it as long as the dates are free in the guest's calendar. Although hosts can choose or not to use instant booking, Airbnb warns users that listings with instant booking get more visibility and hosts' reputation, which forces users to relax their acceptancy so that transactions in the platform will increase.

Some questions arise from looking at these dominant platforms functioning. **Why do platform owners have so much power to take the biggest slices of the sharing pie? How can we have a sharing economy where value and governance are distributed? The two questions are evidently related.**

---

[9] Couch Surfing does not charge clients. Its only revenue comes from offering member verification for the cost of 25 US dollars.

Alternatives' feasibility will depend on the quality of the diagnosis on the sources of platform owners' power.

There is an immediate answer to the first question: ownership. Because platform owners **have full intellectual property rights over the immaterial assets that constitute platforms (software and databases), they can set the rules of the game, which includes designing the features of the platform that make it attractive and valuable to users, but also unilaterally deciding on important subjects such as labor rights and income distribution**.

The alternative follows from the diagnosis: regaining ownership. As Nathan Schneider puts it, "owning is the new sharing" (Schneider, 2014). If users own platforms, they can have collective governance and the subsequent fair outcomes in terms of labor rights and income distribution that come with it. This is exactly what has been happening. Displeased by the conditions of some dominant platforms, independent users, cities and unions have started to create their own and fairer Ubers, Airbnbs, Task Rabbits and so on. These alternative platforms are usually called "platform cooperatives"[10]. Scholtz (2016) defines them with three characteristics:

- They "clone" the "technological heart of Uber, Task Rabbit, Airbnb or UpWork" but under a different ownership model

- They "can be owned and operated by inventive unions, cities, and various other forms of cooperatives, everything from multi-stake-holder and worker-owned co-ops to produser-owned platform cooperatives"

- They are built on the "reframing of concepts like innovation and efficiency with an eye on benefiting all, not just sucking up profits for the few"

As expected, they benefit users more than dominant platforms. Although not perfect, they are superior to dominant platforms in terms of income distribution, security, transparence, democratic governance and labor conditions (Scholtz, 2016). We believe this is part of the solution in fixing the sharing economy, the other part of the solution being implementing smart regulation in various areas where sharing economy platforms create new challenges that need the State to step in by implementing traditional and innovative regulation. Problems like tax avoidance (both from users and, most importantly, by platform owners),

---

[10] Trebor Scholtz and Nathan Schneider have done a great job in documenting and analyzing this phenomenon. We will not develop on the differences between them and many other interesting features they have. We encourage the reader interested in the topic to read Scholtz's and Schneider's contributions.

assuring labor rights for workers who do not fall into any of the traditional working statuses, making sure that platforms do not reproduce discrimination, liability grey zones or stopping rents from going up as a result of the introduction of home-sharing platforms can be solved through governmental regulation[11]. We will not enter into details regarding this point. Each problem requires a thorough discussion and solutions may vary on a case-by-case basis.

We want to focus on the other part of the solution: platform cooperatives. Despite their attractive features, they are very marginal in terms of number of users/transactions and nothing leads to believe they will ever pose a real challenge to dominant platforms. **In plain English: platform cooperatives are great, they are one of the best tools we have to fix the sharing economy, but they are not popular and they will never be if something doesn't change. Better regulation can help platform cooperatives become more popular by rendering dominant platforms less attractive (e.g. Uber would not be that popular if it had to raise prices as a consequence of having to pay for workers' benefits and stop practicing tax elusion [12]) but that would not be enough to make platform cooperativism mainstream.**

The *immediate* reason why dominant platforms are dominant, as we pointed out before, is that they control all the intellectual property that constitutes the platform and therefore they can set the rules they embed in it. Yet, alternatives in the form of platform cooperatives appear they do not go mainstream. This indicates that **there is another reason why dominant platforms are dominant, why they are more competitive and can manage to remain being more competitive. The reason, as we will show in the next section, is that they hold and reproduce market power. If we want to make platform**

---

[11] Some scholars have argued that platforms' self-regulation is the most effective approach towards the sharing economy because it is in the best interest of platforms to self-regulate in order to attract and retain users. According to this view, the best approach would consist in introducing "some form of transparency and governmental oversight" and third-party watchdogs that would provide accountability, so organizations would protect the public interest in their decision-making (Cohen and Sundararajan, 2015). It is evident nonetheless that the success of such an approach is limited to only a few issues such as safety where platforms do have an incentive to self-regulate in a way that goes along with the public interest. The narrow scope of the examples of successful self-regulation put forward by the proponents of self-regulation reveals it. When it comes to issues where there might be clear conflicts of interests such as labor rights or tax avoidance it is not in the interest of many platforms to self-regulate in a way that will, for example, make them to stop avoiding taxes or giving social rights and a higher rate of profits to users. Transparency and accountability are necessary but not enough in these cases. Only government regulation can be an appropriate answer to these kinds of side-effects of the sharing economy.

[12] See Fortune magazine's article "How Uber plays the tax shell game". Available at: http://fortune.com/2015/10/22/uber-tax-shell/. The same goes for Airbnb. See Marianne's article "Airbnb: des millions de chiffre d'affaires et (seulement) 69.168 euros d'impôts en France en 2015" on the the case of Airbnb's tax elusion in France. Available at: http://www.marianne.net/airbnb-millions-chiffre-affaires-seulement-69168-euros-impots-france-2015-100244966.html

cooperativism mainstream we need to understand market power mechanisms in the sharing economy and to design a way of dismantling them. The next two sections go in that direction.

3   Market power in the sharing economy as corset to platform cooperativism: going beyond the "incumbents vs new entrants" story

In this section we will analyze the market power mechanisms that assure that dominant platforms remain dominant. This diagnosis will lead us to the next section, where we will propose a policy oriented to dismantling these mechanisms and fostering platform cooeprativism while maximizing the beneficial societal effects that can be derived from exploiting the data generated in platforms.

The literature on competition issues in the sharing economy covers many different problems that go from new and challenging topics like algorithmic collusion (Ezrachi and Stucke, 2015) to more traditional discussions on barriers to entry. Nevertheless, when it comes to competition issues in the sharing economy, most of the attention of scholars, antitrust agencies and the media has been devoted to competition issues that arise between new entrant sharing economy platforms and traditional firms in some markets (e.g. Airbnb vs hotels, Uber vs taxis, etc.). Incumbents argue that sharing economy platforms practice unfair competition by recurring to business models that allow them to bypass the constraining regulations and economic costs they have to bear. In some cases they have also accused sharing economy platforms to practice dumping. Sharing economy platforms, on the other side, respond that regulation is outdated and that it should be adapted to fit their innovating business models which introduce competition by offering a better service at a lower price. In their analysis of this conflict, competition authorities have unanimously sided with sharing economy platforms. When referring to the D.C. taxi commission's argument on unfair competition being practiced by ride-sharing platforms, the U.S. Federal Trade Commission stated:

"The staff comments recommend that DCTC avoid unwarranted regulatory restrictions on competition, and that any regulations should be no broader than necessary to address legitimate public safety and consumer protection concerns. … [T]he comments recommend that DCTC allow for flexibility and experimentation and avoid unnecessarily limiting how consumers can obtain taxis." (Federal Trade Commision, 2013a)

The other most important antitrust agency, the European Commission, defends the very same position as the FTC. Commission Vice-President Jyrki Katainen, responsible for Jobs, Growth, Investment and Competitiveness, said: "A competitive European economy requires innovation, be it in the area of

products or services. Europe's next unicorn could stem from the collaborative economy. Our role is to encourage a regulatory environment that allows new business models to develop while protecting consumers and ensuring fair taxation and employment conditions." (European Commission, 2016b)

On the same line, the German Antimonopoly Commission called to fix existing regulation in the transport and the accommodation industries to eliminate "regulatory restrictions   for   market   entry" to   new entrants that include sharing economy platforms (Monopolies Commission, 2015).

The Spanish antitrust agency, CNMC, argues in its preliminary findings of its upcoming report on the sharing economy that "a number of unnecessary and/or disproportionate restrictions on competition were found in sectorial and horizontal regulations, in particular, in the markets for transport and tourist accommodation. These restrictions impede the users to fully benefit from the potential benefits that would be derived from the new entries in the market" (CNMC, 2016).

We believe that the "incumbent vs new entrants" conflict, although relevant, is becoming outdated. Other competition issues are arising in the sharing economy that governments should start paying attention to. In Balaram's words, "in allowing sharing platforms free rein, governments turn a blind eye to both the monopoly power of incumbents and of emerging competitors in mainstream markets" (Balaram, 2016). In other words, **some sharing economy platforms are no longer new entrants introducing competition but established actors that are gaining market power and tend to dominate markets, making it more difficult for alternative platforms to compete and grow**. Although antitrust agencies have so far overlooked this issue, some scholars have been discussing it. Four market power creation mechanisms in the sharing economy are found in the literature:

1. Network effects
2. Switching costs
3. Data collection and storing fixed costs as a barrier to entry
4. A large enough amount of personal data as an essential facility

In the rest of this section we will explain these mechanisms[13] and discuss their validity and possible measures to counter some of them.

---

[13] We agree with Balaram (2016) in that users' support of dominant platforms against legislation aiming at banning them or restrict their services is a mechanism through which these platforms "exercise control over the market's terms and conditions (for example, barriers to entry)". Nonetheless, we will only address the purely economic arguments for market power creation mechanisms in the sharing economy.

3.1.   Network effects

Two kinds of network effects exist in the sharing economy. The first one is direct network effects, which occur when "a product or service becomes more valuable to an individual user as more people use that particular product or service" (Sokol and Comerford, 2016). For example, regardless of its distinctive features, Airbnb is more attractive to users than other competing platforms because it has a larger user-base, which makes it more likely for users to quickly find the kind of accommodation they are looking for. This effect would create a tendency for users to converge to a single platform where the individual experience will be more valuable than if users were split between many platforms with smaller communities of users. The second kind of network effect is the indirect network effect described by Graef (2015). In this case, the more users a platform has, the more attractive the platform becomes for users, but not because of their direct interaction but to a "user feedback loop" where "as a platform gains more users, it can collect more user data, leading to better insights into consumers and their needs, which can be used to improve quality, attracting even more users" (Sokol and Comerford, 2016). On the same line, a report commanded by the French government on taxation of the digital economy (which includes what we defined as the sharing economy) points out that "all digital economy firms use data to improve their supply, obtain productivity gains, diversify their activities or reinforce their position on the different faces of the business model"[14] (Collin and Collin, 2013).

Lerner (2015) argues against the indirect network effect of the user feedback loop. The arguments, in Sokol's and Comerford words, are that "online providers can gain scale in users in ways that do not involve user data, and that access to data alone is not enough to improve quality and gain scale in users. Additionally, firms can gather data from other sources than users (e.g. data brokers), and can gain scale in data in alternative ways, such as entering into strategic distribution arrangements (Sokol and Comerford, 2016). The first argument is reasonable: innovative platforms can conquer a market share even without having any data if their product is good enough to attract new users. Nevertheless, this does not imply that the user feedback loop does not exist and that, as a consequence, only very superior platforms in terms of the quality/price of the services offered are able to overcome it. The second argument is difficult to hold in the sharing economy at its current state. To our knowledge, there are no data brokers that could sell relevant data to new entrants in the sharing economy. Moreover, we have to be careful on what data we are talking about (we will come back to this point later). The most relevant data for a new entrant in the sharing economy is relational data on how users interact within a competing incumbent platform, which is a main source of innovation for the latter. Contrary to non-sharing economy data-driven businesses such

---

[14] The translation is ours

as search engines, the data collected is highly valuable to perform the core business of sharing economy platforms and not very valuable to third parties outside the sharing economy. Therefore, it is difficult to imagine why an incumbent sharing economy platform would sell that valuable data to third parties that could only make a profit by selling it to current or potential competitors.

A partial solution to the anti-competitive consequences of the direct network effects would be the development of metasearch platforms. Meta-search platforms are platforms that retrieve information from other platforms that offer similar services and provide users with a comparison between them in a single platform. If metasearch platforms existed to compare sharing economy platforms that offer similar services (transportation, accommodation, gig-work, etc.), even platforms with small user bases could get visibility and the direct network effect would be smaller since user would not need to be members of a platform to be able to find offerings in it[15]. Nevertheless, the development of metasearch platform is under danger today due to legal obstacles. In January 2015, the European Court of Justice ruled in the Ryanair vs PR Aviation case against the latter, a metasearch platform that used screen-scraping on Ryanair's website. This ruling set jurisprudence in the European Union to permit platforms to deny access to its unprotected databases to third parties through contract law by specifying it in the terms of use. In the United States, screen-scraping has been condemned in some cases where databases where protected and others where they were unprotected alleging copyright infringement and breach of contract (Care and Snell, 2013).

3.2.   Switching costs

Switching cost exist when users of a platform, when offered a more attractive competing platform, refrain from switching because of the many (usually non-monetary) costs it implies. In the sharing economy, this comes down to learning costs (learning how a platform works), bureaucracy-related costs (in the case of platforms that require previous paperwork such as background checks or proof of insurance) and the cost of losing the reputation that has been accumulated in another platform. The latter are the consequence of users not enjoying data portability. Then, it follows that "switching costs would be reduced further if consumers were assured data portability between platforms." (Perzanowski and Schultz, 2010). Several scholars argue for this solution (Yoo, 2012; Geradin and Kuschewsky, 2013; Alumnia 2012).

---

[15] A metasearch platform for transportation and accommodation in the sharing economy called *Compare and Share* existed but then closed. Currently, *Rideguru* allows users to compare the fares of different ride-hailing platforms and taxis for a ride. There is also a similar French platform, *Mon p'ti voisinage*, which focuses on different kinds of sharing available in a neighborhood, some of which are retrieved from third-party sharing economy platforms.

Learning and bureaucracy related costs are negligible. Current generations are used to a dynamic market of applications and platforms and can adapt without much inconvenience if an attractive new platform appears. In the ride-sharing sector, which is probably one of the sectors with higher bureaucracy-related costs, it is common for drivers to be on Uber and Lyft, which shows the smallness of those costs. But this is not the case when it comes to reputational switching costs. Reputation plays a big role for users in sharing economy platforms. A good digital reputation opens the door to peer-to-peer relations with other users that may be harder or impossible to achieve if the reputation is bad. Reputation systems' role is to create trust. And they do it in a very effective way[16]. Because they create trust, they are a condition for many sharing economy business models to work (Sundararajan, 2016): people would not trust strangers with their apartments of their cars if they could not have a reliable platform telling them their reputation makes them trustable[17].

Some scholars have tried to show that switching costs related to a lack of data portability are low (Edlin and Harris, 2013) but no arguments have been put forward to argue this in the specific content of the sharing economy, where reputation is widely recognized to be one of the main pillars of platforms' proper functioning. Then, without users being able to easily transport their reputation to competing platforms, incumbent platforms can exert market power by benefiting from reputational switching costs. In order to deal with this issue, the idea of a "reputation passport" has appeared and start-ups like Traity or Famust are trying to make it work. It is uncertain nevertheless that a purely private initiative of a reputation passport would have the result of lowering switching costs between *competing* sharing economy platforms. Indeed, leading platforms would have no incentive to participate in reputation passports that could lower the lock-in effects their users face, while the contrary is true for competing platforms with a small user base[18]. We could expect nonetheless private initiatives of platforms from non-competing industries. For example, as long as reputation is transferable from one industry to the other, we could think of a gig-work platform and a ridesharing platform agreeing to participate on a reputation passport that would increase both platforms' user bases without users switching from one to the other as a result.

---

[16] A recent study by the leading ridesharing platform Bla Bla Car shows that the level of trust Bla Bla Car users have in each other is close to the one they have in friends.

[17] In the PwC Report "The Sharing Economy", 89% of the respondents agree that the sharing economy is based on trust between providers and users.

[18] I had the opportunity to ask Frédéric Mazzella, CEO of BlaBlaCar, the world's largest ridesharing platform, what was the company's position on reputation passports. He confirmed that they see no advantage in participating in such a system.

In this case, we could expect dominant platforms of non-competing industries to participate in a reputation passport, which would have the effect of reinforcing their dominant position instead of increasing competition. Then, for reputation passports to succeed in their goal of lowering switching costs between competing platforms, governmental inference should not be discarded. Another solution would be users having a legal right to transfer their personal data to other platforms. The recent European regulation of personal data protection goes in that direction by assuring the right to data portability (Official Journal of the European Union, 2016), although one is to wonder if this would be enforceable in the form of a reputation passport when one user wants to join a different sharing economy platform than the one he/she is currently using.

3.3.   Data collection and storing fixed costs as a barrier to entry

Collecting and storing data implies high fixed costs, while marginal collecting and storing costs are small. This particularity of the cost structure of collecting and storing data creates scale and scope economies. (Competition & Markets Authority, 2015). Companies currently spend considerable amounts of money and effort to acquire and analyze data in order to maintain a data-related competitive advantage" (Stucke and Grunes, 2015). This can potentially become a barrier to entry that would allow only a few big firms to compete in the market and having chances to grow significantly. If this fixed cost is large enough, it could be the case that the only way to make a profit would be holding a large market share. In this case, we could be in presence of a "natural" oligopoly or even a "natural" monopoly that would assure that only one or a few companies would stay in the market. In line with this argument, United Kingdom's Competition & Markets Authority concluded in a recent report on the commercial use of consumer data:

"We received mixed evidence about barriers to entry across a range of data markets. However, where concerns were raised, the most common were whether firms could gain access to consumer data, and the difficulties experienced by small and potential new entrants in some markets that arise from the economies of scale and scope" (Competition & Markets Authority, 2015: 9).

This argument is plausible and should not be discarded, but it cannot be generalized. Ultimately, "the extent of scale economies may differ depending on the on-line service in question and needs to be assessed on a case-by-case basis" (Schepp and Wambach, 2015). Cost structures, revenues, business models, firms in place and regulation, among other things, need to be taken into account to decide if a certain amount of fixed costs are or not a barrier to entry. In any case, as we will show in the next section, a pooling of the costs of collecting and storing data can be in the sharing economy a way to foster innovation and the entrance of new firms.

3.4   A large enough amount of personal data as an essential facility

An essential facility is an infrastructure or input (be it material or immaterial) firms need to be able to access under reasonable conditions in order to be able to compete on a level playing field. In the case of data-based services like the ones most sharing economy firms provide, the essential input would not be data itself but a *large enough amount of data*. The reason for this has to do with technical properties of the use of big data. As we have shown, platforms are at the core of the sharing economy. They embed the intrinsic differences between them. The distinct features of every platform and their different performances in performing a task (finding the best match, suggesting users you might want to contact, predicting your needs, etc.) are the outcomes of the algorithms they are made of. These algorithms, in turn, work by processing large amounts of data and they improve due to it. Once an algorithm (or, more generally, a model) is correctly designed to fit its data (once the right questions are asked in the proper way)[19], the more data that an algorithm can work on, the more likely it will be that it will improve over time. Once the team of developers is good enough, the "algorithm race" becomes a matter of who has more data. As the famous quote by Google's Chief Scientist Peter Norvig goes, "we don't have better algorithms than anyone else; we just have more data." As a consequence, "the acquisition of large volumes of data by 'first mover' providers may, however, raise barriers to entry and thus deprive users from the benefits of competition" (Geradin and Kuschewsky). "Given the prevalence of network effects in many digital markets, if the information necessary to compete on equal footing is not readily available from alternative sources, the potential competitive harm from data-driven entry barriers raises a cognizable theory of competitive harm under the antitrust laws" (Kimmel and   Kestenbaum, 2014).

Data would then be "the new oil of the information economy" (Newman, 2014), as European Consumer Commissioner Meglena Kuneva had stated in a speech in 2009 (Kuneva, 2009). Nevertheless, not all scholars agree with this view. In a paper that surveys the literature on big data and antitrust, Sokol and Comerford (2016) provide the most comprehensive set of arguments against the idea that a large enough amount of data can be an essential facility. We will address their arguments in the following lines.

---

[19]For a more detailed explanation of under which conditions does more data improve a model, see Amatriain, X. , (2015), "Machine Learning, What is Better: More Data or better Algorithms." Available at http://www.kdnuggets.com/2015/06/machine-learning-more-data-better-algorithms.html

Following Tucker and Wellford (2014), Sokol and Comerford first argue that "data driven markets are typically characterized by low entry barriers" because "little, if any, user data is required as a starting point for most online services. Instead, firms may enter with innovative new products that skillfully address customer needs, and quickly collect data from users, which can then be used towards further product improvement and success" (Sokol and Comerford, 2016). The problem with this argument is that it dismisses the loop-effect nature of what it tries to deny. New comers are in a disadvantaged position to offer a better product that would give them large amounts of data precisely because that is one of the main things they need to develop a good product in the first place. It could be argued following Sokol and Comerford's logic that innovative new entrants can create a large customer base with a platform that proposes new services (for example, "inventing" the first Couchsurfing) without needing much data. Even if data could be of use to create a platform that proposes a new service, the fact that the data does not exist (precisely because no other platform of the kind has existed to produce the data in the first place) creates no anti-competitive effect that benefits a particular platform. But once that service already exists and product differentiation is only marginal (e.g. Lyft and Uber are similar services; while the first one allows to tip the driver, the latter does not), large amounts of data become essential for a new entrant to provide a similar service with a comparable efficiency. "Digital economy" can be a misnomer when one is to analyze competition between platforms. Platforms may "compete" for data collection, but they certainly do not compete in the same relevant market. Then, if the relevant market is defined by the service to be provided (as it should), it is not true that "data driven markets are typically characterized by low entry barriers".

The second counter-argument offered by Sokol and Comerford is that "data is ubiquitous, inexpensive, and easy to collect (Tucker 2013) because "customers "leave multiple digital footprints on the internet (Lambrecht and Tucker 2015)" (Sokol and Comerford, 2016). While this is true for data in general, as we said before, it is not the case for the specific data a new firm would need to challenge incumbents in the sharing economy. If, for example, a platform cooperative like Juno wants to capture a significant market share from Uber and Lyft in the United States, it will need large amounts of data of users' trips in those platforms, not any data. The exclusiveness of the intellectual property that is applied to that data (we will develop this in the next section) makes the relevant data for new entrants in the sharing economy neither ubiquitous nor easy to collect.

The third counter-argument is that data is non-exclusive and non-rivalrous. In other words, "collection of a piece of data by one firm does not occur at the expense of another firm". This is a common misconception from economists that confuse technical properties of data with the intellectual property rights applied to it, while in fact economic properties of data are the combined result of the two. Data

being non-exclusive and non-rivalrous depends on what data we are talking about. It is true in the case of personal information, for example. I can provide information about my birthplace to two competing platforms. But it is not true for most of the relevant data new entrants would need to compete in the sharing economy. Following on our previous example, if Uber has information about a certain amount of trips users did using that application, Juno will never be able to collect that same data to improve its algorithms because Uber's exclusive intellectual property over the database that contain that data allows it to exclude Juno from its use. In other words, intellectual property can create rivalrousness where technical conditions do not.

The fourth counter-argument is that "data has a limited lifespan – old data is not nearly as valuable as new data – and the value of data lessens considerably over time" (Sokol and Comerford, 2016). This assertion is taken from Chiou and Tucker's paper (2014), which investigate search engines. There is no reason to consider it is also the case in the sharing economy.

The fifth argument is that "the possession of data alone therefore, even in large volume, does not secure competitive success – that can only be achieved through engineering talent, quality of service, speed of innovation , and attention to consumer needs" (Sokol and Comerford, 2016). This is certainly true, but it does not imply that the lack of large amounts of data can be a barrier to entry for newcomers in the sharing economy. New entrants can effectively avoid this barrier by offering a very good product (the example of WhatsApp is a perfect illustration), but that does not mean the barrier does not exist.

The sixth and final counter-argument follows Schepp and Wamback (2015). It says that "online platforms are highly differentiated, even in the provision of the same type of service, and as each entrant carves out a niche, the most useful data to them differs more and more from the data most useful to their rivals" (Sokol and Comerford, 2016). This might be true in some cases but it cannot be generalized. In general terms it seems difficult nonetheless when we are thinking of two sharing economy platforms that provide similar services.

One could think of two solutions to overcome the essential facility problem in the sharing economy that have already been put forward in other digital markets. The first one consists in creating a market for data. The second one refers to traditional antitrust remedies. In the following sub-sections we will briefly present those solutions and we will show their shortcomings. The following sub-sections will introduce our proposed solution which, contrary to the two above-mentioned ones, does not rely on exclusive property rights.

3.4.1   A (new) market for personal data: a dead-end solution

If large enough pieces of data can be an essential facility, one possible solution could be to create a new market for personal data where people would own the information they offer (and create?) and sell it to platforms that would want to use it, as some scholars and commentators suggest (Sholtz, 2000; Samuelson, 2000) The economic arguments usually held to endorse this market for personal data have to do with an externalities problem[20] while non-economic arguments try to show that this gives people more control on their privacy. Nevertheless, the same mechanism can be thought as a remedy to the essential facility problem developed in sub-section 3.4 since private property rights could be designed in a way that would allow users to sell the same piece of data to more than one platform instead of the collecting platform having full and exclusive rights over the data collected by default.

We believe this mechanism would be a dead-end if the intention is to solve the essential facility problem. This is the case for two reasons, an economic one and, most importantly, a practical one. The economic reason is that, even if a person could sell the same piece of data to more than one platform, the value of a small piece of data is very limited. What makes data valuable depends on the complementary data that can be used to analyze the whole set of data. Therefore, for data to be useful to platforms, they would have to buy large amounts of data. Moreover, the more complementary data a platform would have, the more valuable the rest of the complementary data (which could be the same kind of data from the remaining users in the market) becomes. This would imply that platforms would not only need to undergo high fixed costs in collecting and storing data, but also in purchasing it. In addition, platforms with larger databases would be willing to pay more than others to obtain additional data since it would be more valuable to them than to competitors with smaller databases. Then, it would be expectable that the higher bidders would demand exclusive rights over the data when purchasing it. For these reasons, we can expect more dominant positions (and not less) by big companies that can bear huge investments in the sharing economy.

More importantly, this new market for data would be very difficult to implement and, even if that was possible, it would be of little use. Three types of data can be distinguished (World Economic Forum, and

---

[20] In a nutshell, the argument is that platforms take all the benefits of the use of personal data while people that generate it suffer from the disclosure of that information. Then, creating a market for personal data would make platforms internalize the cost and therefore disincentive excessive disclosure.

Bain & Company, 2011; Collin and Collin, 2013; Graef, 2015): "volunteered data" (data provided directly by a user such as profile information, photos, lists of contacts, etc.), "observed data" (data on how users behave when using a platform or a browser) and "metadata" (data generated through the analysis of volunteered or observed data; i.e. data about data). If a market for personal data was introduced, users would be able to sell volunteered and observed data. The problem is that, especially in the sharing economy, observed data is highly relational: if person X rents a house from person Y using a platform, that data refers to both X and Y. The link does not stop here. This can also be the case with some volunteered data like photos where more than one person appear or a contact list. There would be a practical problem with a market for data because virtually all the individual users would need to agree for the data to be exploited in a useful way (Prins, 2006; Bellanger, 2014). Data analysis does not involve only two people as in the example given above. Data analysis is only useful when huge amounts of data are analyzed jointly. What matters is the graph of data, which involves millions if not billions of pieces of data (e.g. knowing that X rented a house from Y *and* that Y, in turn had rented from Z, and so on). Then, following our example, millions of house-renting platform users should agree to sell their data to the same provider for it to be able to use their observed data. Since probably many would not agree, there would be incomplete datasets, which would limit the usefulness of data compared to the current situation. As a consequence, "a significant portion of modern commerce would no longer be possible or economically valuable" (Prins, 2006). Then, from both economic and practical reasons the creation of a new market for personal data would be a dead-end if the intention is to enhance competition or efficiency in the sharing economy.

3.4.2   Antitrust remedies

An alternative and more traditional solution to the essential facility problem would be an antitrust remedy that would consist in antitrust agencies forcing firms with large databases to share them with competitors. This has already been the case in merger remedies where the resulting pooling of databases threatened to foreclose competition. For example, in the Nielsen/Arbitron case (Federal Trade Commission, 2013b) the Federal Trade Commission required the merging parties to license Arbitron's demographic data to a new entrant capable of restoring competition in the cross-platform measurement market" (Kimmel and Kestenbaum, 2014). The European Commission acted in a similar way in the merger between Thomson and Reuters where the amount of financial data could create competition issues and, therefore, the merger was approved only after accepting "binding commitments that required the parties to divest copies of the competing data products as well as other related assets" (Kimmel and Kestenbaum, 2014).

It is plausible then (although not easy and certainly more difficult than in the case of mergers) to envisage the use of the notion of essential facility to be applied to a certain platform's database to force it to share it with competitors. In order for this to happen, antitrust agencies should first be able to show that an incumbent platform is dominant in the essential input market, which creates the additional problem of the inexistence of a primary market for data to being with. Second, they should prove the data is "indispensable" or "essential" for rivals to be able to compete in downstream markets (e.g. the market in which the sharing economy platform competes: transportation, accommodation, etc.). This can mean different things depending on the legal doctrines of the country (or union of countries in the case of the European Union) in which the antitrust agency has jurisdiction. We will not enter into details here. It is not the aim of this article to discuss this antitrust remedy. We shall only say that in some cases such an antitrust remedy could be beneficial to enhance competition by allowing new entrants (which includes platform cooperatives) to exploit the data needed to develop a competitive alternative to incumbent platforms. Nevertheless, we believe that a more effective approach to reach this objective and other desirable ones is possible. We will expose it in the next section.

We conclude that there are many competition issues in the sharing economy that hamper the development of new entrants, among which we find what we consider to be the most virtuous initiatives of the sharing economy: platform cooperatives. The particularities of the sharing economy and its current regulation make these competition issues stronger than in other data-driven business and, therefore, one has to be careful when analyzing the economics of big data in general. **In particular, reputational switching costs, large enough amounts of personal data being an essential facility, the "user feedback loop" and, in some cases, the high fixed costs of collecting and storing data are an important source of dominance by incumbent platforms in the sharing economy that hamper the development of competing platforms**. In the next section we will present a general policy proposal that aims at offseting the above-mentioned market power mechanisms in the sharing economy but also at fostering platform cooperativism as well as maximizing the beneficial societal effects that can be derived from exploiting the data generated in platforms

4   Data as a common in the sharing economy: a general policy proposal

In Section 2 we argued that many of the negative sides of the sharing economy can be solved by developing intelligent regulation in many areas (taxation, labor law, etc.) and by fostering platform cooperatives. In Section 3 we showed that there are several competition issues in the sharing economy that make it difficult for small players like platform cooperatives or new entrants to contest dominant

platform's position. Although traditional antitrust remedies would serve the purpose of limiting dominant platform's market power, we believe that that goal can be reached with an alternative approach that would also foster platform cooperatives in a more direct way and bring about beneficial societal effects derived from the exploitation of the data generated in the sharing economy. This section will describe a general policy proposal that goes in that direction. As we have just said, the proposal has three objectives:

a) Limiting dominant platforms' market power

b) Fostering the development of platform cooperatives in such a way that they will become competitive in face of today's dominant platforms

c) Maximizing the beneficial societal effects that can be derived from exploiting the data generated in platforms

Two important clarifications have to be made before presenting the proposal. **First, our proposal does not intend to substitute, but rather to complement necessary regulations of the sharing economy in different areas such as labor law and taxation. Second, the proposal is general in two senses. First, it can be applied to many sectors of the sharing economy (gig-work, accommodation, food, transportation, etc.) and it is not designed for any particular sector. The general framework we will present should be tailored on a case-by-case basis according to the specificities of the sectors, the platforms and the communities involved. Second, as we will explain in the following lines, it is not pertinent to apply it to every sector in what we have defined as the sharing economy or "platform-based peer-to-peer models".**

Most of the competition problems we detected in the sharing economy arise from the fact that platforms have private and exclusive property over the databases they create with users' information. It is for this reason that users cannot take with them their reputation to other platforms, that comparing alternative platforms through metasearch sites is not widespread, that the user feedback loop exists and that personal data can be an essential facility. A way to move forward would then be to breach the exclusiveness of property rights platforms have over the data they collect from users. This can be done in two ways: by making data a common or by putting data in the public domain. Our proposal is based on making data a common because of two reasons that will be clear to the reader after reading the proposal. One the one hand, using licenses (which, contrary to the public domain, implies having property rights) allows to reconceive property rights over data as a bundle of rights. This, as we will show, can be a mechanism to foster platform cooperatives, which is one of the

objectives of this proposal. On the other hand, being that the use of data implies many delicate issues regarding privacy, a properly designed co-property over data between stakeholders as the one we intend to set the basis for seems to be more appropriate to guarantee privacy than the public domain because it would offer a system of checks and balances and the power to exclude people from the use of the data, something that is not possible when data is in the public domain.

We need to clarify at this point what the term "common" means in order to avoid misunderstandings. Indeed, the terms has been used in many different ways. We rely here on Coriat's (2015) definition of a common. For a common to exist, there has to be:

- **A shared resource** (material or immaterial)

- **A bundle of rights** that specifies how the resource is shared between the commoners. The bundle of rights links the commoners through a system of reciprocal rights and obligations that can be rooted in a legal property regime (contract law, patent law, copyright law, etc.) or in customary law

- **A governance system** of the resource which purposes are to assure the respect of the rights and obligations of the commoners and the outsiders (those not having rights over the resource *a priori*) and to solve conflicts of interest

Then, a common is a management system that does not derive from the intrinsic properties of the resource but from a conscious decision of a community. The community is hence at the core of the notion of a common. Moreover, making a resource a common means that the property over it is shared and non-exclusive. The latter is what lies at the core of the concept of "bundle of rights". When a resource is made a common, although all the commoners own it, this does not mean that they all have the same rights over it. For example, some might have only the right access the resource but not to withdraw from it, while other might be able to access and withdraw from it but not to manage or exclude outsiders form using it (Ostrom and Schlager, 1996).

Our proposal is built on the idea of considering the data created in the sharing economy as a common. The idea of considering data as a common is not new although the work that has been done around it is scare. Pierre Bellanger (2014) was, to our knowledge, the first one to come up with the idea and offered a few hints on how it could be implemented. The subject has been then picked up by Valérie Peugeot (2014) and Lionel Maurel (2016), who offered some justifications to pursue that path. This paper

proposes, to our knowledge, the first proposal on how to implement a management system where data would be a common in a precise context which is that of the sharing economy as we defined it in Section 1. It is important to begin by clarifying which data would be considered a common. In our proposal, only volunteered data (data provided directly by a user such as profile information, photos, lists of contacts, etc.) and observed data (data on how users behave when using a platform or a browser) would be considered a common, leaving metadata (data generated through the analysis of volunteered or observed data; i.e. data about data) appropriation a decision of the organization(s) that carries on the analysis, except when it is done by an academic or a governmental institution, as we will explain.

Figure 1 summarizes our proposal. In this scheme, **all the databases that contain volunteered and observed data from sharing economy platforms[21] are legally considered to be the property of a council formed by the relevant stakeholders: platforms' owners and users of a certain sector (transportation, housing, etc.) and governments from the relevant level(s) (city, region, nation, etc.)**. The key point is determining who are the relevant stakeholders independently of the legal boundaries of platforms. All the individuals, organizations and institutions that are directly affected by the exploitation of volunteered and observed data should be represented in the council. The council has a governance system that can vary but that should ensure that all the stakeholders are equally represented. One of its attributions is to define the sectors and what platform belongs to which. In some cases a council may not be even necessary and the proposal would not be worth to be implemented. For example, for platforms of the kind of Wikipedia devoted to building and preserving open knowledge, a proposal like this would not make much sense. Most probably, collaborative consumption platforms sectors would be the ones where this proposal might be the most effective.

The databases containing volunteered and observed data are protected by copyright law or sui generis database right and copyleft reciprocity licenses are applied to them. Furthermore, all the data to be shared with platforms other than the ones that collected the data is anonymized. Decentralized technologies based on blockchain that could assure both privacy and the ability to exploit

---

[21] An extended version of this scheme that would include non-sharing economy firms that create data could be envisaged. For example, one could include in the data common governed by the accommodation council firms like Hyatt who create data that could be of use for sharing-economy platforms in the accommodation industry and vice versa. Nevertheless, given that the nature of the data of non-sharing economy firms is different to that of sharing-economy platforms (the major difference being that the former are not business models based on peer to peer transactions), especial conditions for the former's participation in the data common should be contemplated. The conditions would certainly vary largely between industries.

the data such as MIT's Enigma could be used for that purpose. The role of anonymization is to protect users' privacy. This would assure that even if several platforms can access a user's volunteered or observed data, their identities would be kept secret. We will come back to privacy issues in sub-section 4.1.5. The role of the copyleft reciprocity license is to discriminate in favor of platform cooperatives. Reciprocity licenses are licenses that allow the use of a common by outsiders as long as they give something back to the common. The copyleft clause assures that all the derivative works that used content protected by the original license will be protected under the same license, which guarantees the survival of the common. In our proposal, **the council decides on different categories to discriminate platforms according to a set of criteria** such as the nature of their ownership (users-owned, privately owned, public owned or combinations of the three), its governance structure and what they offer to the community (e.g. open software, improving the environment, etc.). **Differentiated reciprocity clauses are contemplated in the copyleft reciprocity license for platforms to be able to use the data they collect (the common) based on the category to which they belong**. Categories can be multiple and vary from place to place, from sector to sector and evolve with the arrival of platforms that would present novel features that would require the reshaping of the categories. For the sake of simplicity, we will limit ourselves to a binary distinction between "non-platform cooperatives" and "platform cooperatives". Platform cooperatives can use the volunteered and the observed data (the common) originated in *every* platform of the sector defined by the council without having to give anything back. They only pay other platforms to contribute to the cost of collecting and storing the data to an extent decided by the council. On the contrary, in order to be able to use the data generated in every platform, non-platform cooperatives must contribute not only to data collection and storage costs to an extent defined by the council, but also to the commons to an extent defined by the council. This can take the form of opening the source code of their applications, financing commons and/or donating (paid) working hours of their employees to develop commons (Maurel, 2014).

Any platform, regardless of the category to which it belongs, has access to the data and can exploit it for commercial purposes that do not imply selling the data to third parties as long as they meet the reciprocity requirements and current legislation on the protection of personal data. Moreover, although a platform A can exploit the volunteered data that users provided to platform B, this does not mean that those users become users of platform A. This implies that platform A cannot do anything that would require users' consent to join platform A unless users from platform B consent to it. Governments (either local, regional or national) and researchers have access to the data so they can use it to serve the community (e.g.

improving transportation systems, providing public statistics[22], refining housing policy, etc.) and for academic purposes in the case of the latter. Anything produced by researchers or the government with that data is under an Attribution-NonCommercial license.

We believe the scheme we presented in this section will contribute to reach the three objectives enounced above. First, giving every platform access to most of the volunteered and observed data from all the platforms would seriously undermine dominant platform's market power (objective A) since enough amounts of personal data can never be an essential facility under this scheme. This would also indirectly foster the development of more platform cooperatives (objective B) that today have a difficulty growing because they possess very little data. The potential problem of the high fixed costs of collecting and storing data can also be solved by charging differential fees to cover other platforms' storage and collection costs according to the category they belong to. Platforms that are more far away from a platform cooperative model would pay more as a way of compensating society for the commons they use, which would also contribute to accomplish the objective of fostering platform cooperativism (objective B). Since platforms that are the most far away from platform cooperatives models are usually the ones that make more profits and have a larger access to finance, they could bear a relative pooling of the costs of collecting and storing data. Then, dominant platforms' market power arising from the high fixed costs of collection and storing data would be diminished (objective A) if these differential fees are properly set. Finally, given that the council can grant access to most of the data generated in sharing economy platforms to academics and governmental institutions, that data can be used to contribute to maximizing beneficial societal effects (objective C). Indeed, a lot of the data generated in sharing economy platforms can be of use for governments and academics that could contribute to the society by analyzing it in many ways, both for research and policy-making purposes. As the Mars Solution Lab (2016) concludes, "engaging and incentivizing platform operators and their users to share their data willingly will be important in gaining access to accurate data for an evidence based regulatory process". Imagine if not only some sharing economy platforms' pieces of data in some cases was shared, as it happens seldom today[23], but if *most* sharing economy platforms' data was constantly accessible to governments to design

---

[22] The need of data created in sharing economy platforms is increasingly becoming a necessity for regulators. A good example of this is Article 9 of the Italian bill No 3564 of January 27th 2016 on the "Regulation of digital platforms for the sharing of goods and services and provisions for the promotion of the sharing economy" (upcoming), in which it is written that "in order to ascertain developments and trends in the sharing economy and to assess the effectiveness of regulatory measures, platform operators entered in the register shall send the National Institute of Statistics (ISTAT) data on the number of users, the activities carried out and the amounts concerned, as well as on the types of goods and services used, aggregated by municipality".

[23] Uber has sporadically shared some data with some United States cities (see https://transparencyreport.uber.com/). In Moscow, ride-hailing platforms have been required to provide travel data in order to be able to operate.

regulation. Imagine how local governments' efficiency in solving transportation problems in a city could be improved if they could access transportation-related sharing economy platforms' data. Or how would decisions made on housing, rent controls or urban planning benefit from access to data from platforms that offer accommodation, not to say how fiscal authorities could benefit to enforce tax payment from both users and platform owners. Academics could obviously benefit from accessing this data by being able to empirically study in a much more robust way a wide variety of subjects that range from discrimination to labor markets dynamics.

Nevertheless, the proposal as it been presented so far does not solve the problem of the anti-competitive consequences of the indirect network effects and of reputational switching costs. This is why it has to be complemented with an expansion of metasearch platforms and of reputational passports respectively. The expansion of metasearch platforms in the sharing economy will require some changes in the current fragile legal situation these platforms face today, as we have mentioned above. This could happen as the result of a series of cases that could set a more favorable jurisprudence in favor of certain uses of scree-scraping or as an intervention of antitrust authorities that would decide that contract law or intellectual property are being used to foreclose competition. In the case of reputation passports, antitrust authorities could intervene in the same spirit to force sharing economy platforms to guarantee users the possibility of keeping their reputational data when they move to another platform or if they want to share it with a third-party platform that would act as a passport to other platforms. Or legislation on data portability could be amended to make sure it protects the practice of reputation passports. Nevertheless, in our proposal the data on which the reputation score is built would belong to the pertinent council. Then, using copyleft reciprocity licenses, councils could make that data accessible to third parties that would use it to calculate cross-platform reputation in alternative ways. The problem with this solution is that the data ownership being limited to a country, all the reputation accumulated by interacting with users in foreign countries would be lost. While in more locally-oriented sharing economy platforms such as short food supply chains this would not be a big problem, in other such as accommodation it would. Another problem with reputation passports is that it requires data standardization, which introduces financial and technical obstacles (Weber, 2014). Although this is the case, reputation passports are an important way to fight the anti-competitive effects of reputational switching costs and, therefore, these inconveniences should be seen as a price to pay for it. Moreover, since our proposal already implies data standardization (see sub-section 4.1.2), data standardization for reputation passports would not represent an extra cost. Regardless of the solution implemented to foster the development of reputation passports, the way in which reputation scores are calculated should be showed in a clear way to users.

Figure 1: A general policy proposal of data as a common in the sharing economy
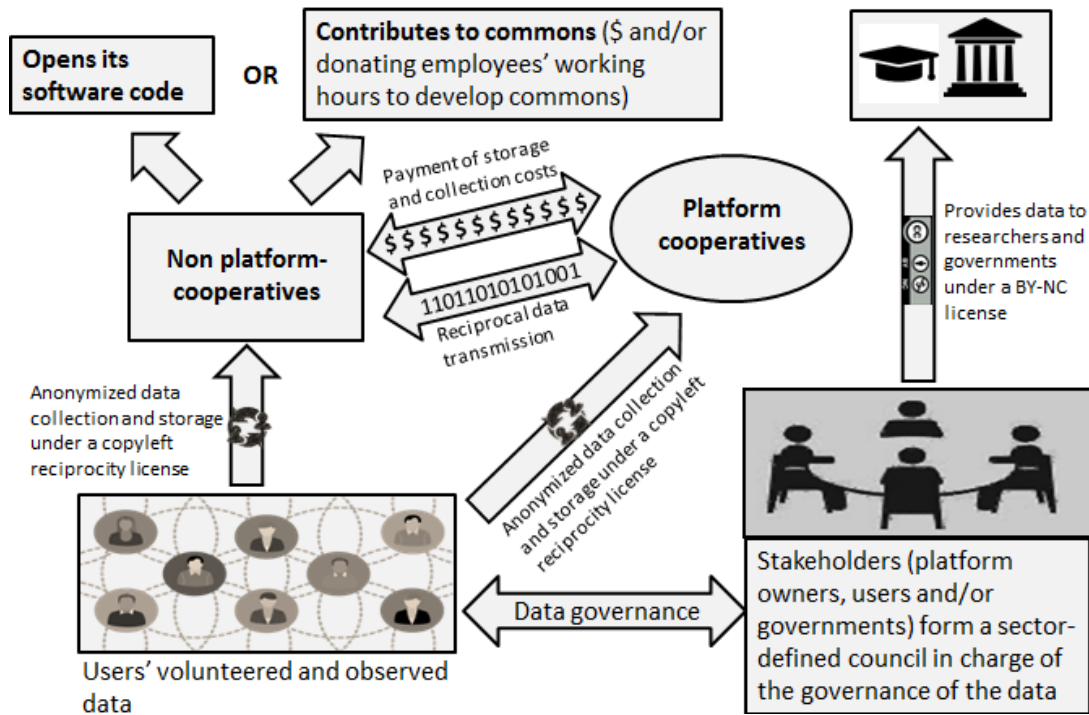
5   Clarifications, shortcomings and open questions

In this sub-section we will present a few clarifications on the implementation of the proposal as well as some of its shortcomings and open questions that arise from it.

5.1   *Viability of the proposal and strategies to attain its objectives*

The proposal presented in section 4 is certainly ambitious. It requires a strong change in legislation to which the main and most powerful sharing economy platforms would oppose. Nevertheless, one could think of some complementary strategies to attain the objectives set by the proposal, which should be seen as an ideal end-point.

The first strategy is awareness-raising regarding the importance and the impact for users of regaining control of their data. The significant role that users have played in the confrontation between, on the one side, Uber and, on the other side, some city governments and the taxi industry, shows that users' pressure can be leverage for a change in legislation in the sharing economy (Balaram, 2016). Nonetheless, the direct benefits for users of a change in legislation in the way proposed in section 4 are less evident than the convenience of Uber's service, although not less important. Civil society's awareness–raising needs therefore to play a big role.

The second strategy consist in implementing intermediate steps in the direction proposed in section 4 that do not require a drastic change in legislation like the one we argue for. One of the possible ways of pursuing this strategy (but there are certainly others to envisage) would consist in platform cooperatives of a same industry creating a data cooperative. This could replicate the virtuous dynamics of shared data described above, although obviously to a lesser extent. An initiative that goes along this line is in fact already taking place in the agriculture sector with the Agricultural Data Coalition. In a similar manner, some platform cooperatives in the mobility sector in France are starting to think about data sharing[24]. Platform cooperatives could manage their pooled data using reciprocity licenses in the way we have described. If their dataset became large enough, they could lure other platforms to join the data cooperative or to use their data under certain conditions established in the reciprocity license. One could also think of alliances between non-sharing-economy incumbents (Hyatt, taxis, etc.) that collect data and whose businesses are threatened by the dominant sharing economy platforms (Airbnb, Uber, etc.), on the one side, and platform cooperatives, on the other side. United by the need to face dominant sharing economy platforms, both groups could have an interest in participating in a data cooperative. This intermediate solution presents nonetheless the problem of not including the government and users in the management of data. This is why a third strategy based in government's intervention would be suitable.

The third strategy consists in government intervention to foster data commons in the sharing economy without changing legislation on data as proposed above. One could think of different incentives such as tax breaks to that the government could set to reward platforms that share the governance of their data with users and the government itself. At the beginning, the governance structures could be less empowering for users and the government than the one we proposed in order to gradually create data commons in the sharing economy. In order for this to happen, politicization of the importance of data is required. In other words, civil society would have to pressure governments to foster data commons in the sharing economy. In this sense, the first and the third strategies are connected.

5.2   *Geographical scope of the council and the protection*

Databases would be physically stored in the servers of the platforms that collected the data, but the property of those databases would be of the council. Intellectual property rights have a national scope. Therefore, the protection would be limited to a single country. Since the servers might be located in foreign countries with different legal systems and also contain data created in countries outside of the jurisdiction of the council, the latter could ask platforms to provide copies of the databases that only

---

[24] See
http://wiki.lafabriquedesmobilites.fr/wiki/Interop%C3%A9rabilit%C3%A9_des_donn%C3%A9es_de_demande_et_d%E2%80%99offre_de_covoiturage_entre_acteurs_du_covoiturage

contain the data created in the country in which they have jurisdiction and to store it servers located in that country.

Moreover, since data can be created by users interacting from different countries in a platform, a rule should be established to determine to which country's council the data belongs to. The simplest way to determine this would be a rule of the "country of origin" or "country of destination" kind. The problem that arises with the national boundaries of the intellectual property rights a council can have over the data is that the joint databases would have some blind spots when interactions between users of different countries when the country of origin/country of destination rule does not apply.

5.3 Technical issues

The council would be in charge of deciding the technical standards on how to constitute the databases so that they can be analyzed jointly. It could be argued that setting these standards could slow down innovation by locking a certain way of exploiting the data, but at the same time it would foster its exploitation to such a level that it would that would certainly more than compensate the locking effect in terms of innovation.

5.4 Users' representation in the council

Given that people use platforms with different intensities, it would be unfair that someone who uses a platform very sporadically (for example, once a year) would get a saying in the council or that his/her opinion would count as much as that of a person who uses it on a daily basis. Councils could establish usage thresholds of the platforms that constitute a sector for users to have a vote. Or they could create a series of thresholds of users depending on the frequency of their use that would give users more voting rights in a council (either regarding any issue or regarding only certain issues) if they are more engaged in the use of platforms of the sector it represents. Since platforms can have millions of users, users would have to elect representatives to make decisions on their behalf. When important decisions are to be made, online referendums among the users that can elect representatives can be envisioned.

5.5 Conflicts with competition policy and law

At first glance, it could seem that our proposal goes against competition policy and law. In a sense it does because it intends to expand, to a certain extent, the realm of really collaborative solutions in detriment of competition-based solutions. It could be objected that under the proposed scheme competing firms would

have access to confidential data on competitors, which would foster anti-competitive behaviors such as cartelization. Although that possibility cannot be excluded, the fact that that data would also be available to the council might give it the possibility to share it with antitrust agencies that would have real-time data to surveil and detect cartelization. The shared data by competing firms should be seen here as equivalent to the case of a traditional fruit market where everybody can see who bought what, what the products offered are, their quality and at which price.

Our proposal would not actually restrain competition but redefine its scope in a way that, for the reasons explained above, it would actually reduce the possibility of abuse of a dominant position. Competition would be exclusively on offering a better service to users by being able to access the common resource that makes that feasible. Given that all the competing platforms would have access to that data, their success in the market would be given by the quality of the service they offer based on it and would not be influenced by uneven distributions of data that could hamper competition on innovation and quality.

Moreover, it could be argued that discriminatory input prices for the data or differentiated contributions to storing and collection costs are an anti-competitive tool aimed at favoring platform cooperatives. Although our proposed scheme of differential fees to access the data according to the nature of the platform does explicitly aim at favoring platform cooperatives, this is not anti-competitive in that the data is not the private and exclusive property of an economic agent who produced it. The data being a common, the discrimination proposed would not be anti-competitive. On the contrary, if two firms use a common to the same extent without equally contributing to it to a comparable extent (either by paying the same for its use or by one paying less but also producing a common) this would put them on different level playing fields to compete.

5.6   Privacy

Given that platforms have heterogeneous privacy policies, users should agree to different terms and conditions for different platforms to be able to use their data. This could be solved with an electronic consent by users registered in the council that would click on "opt-in" "opt-out" clauses. A platform would then not be able to use the data that a user created in another platform if he/she has not consented to.

An expectable concern with our proposal would be the fear of giving away too much data to private companies and governments which could use it for bad purposes such as identification of personal identities through metadata. This would actually not be plausible under our scheme because a person's data would be split between different councils' joint databases with different independent owners that

would not share information by default. In case they needed to do it, this decision would have to go through the correspondent councils in which users have a saying. When considering the privacy implications of our proposal one should always bear in mind what the current situation regarding the control of the data in the sharing economy is. Today a few companies own people's data and have all the legal power to exploit it as long as they respect data protection legislation. Our proposal, by giving all the stakeholders property rights over that data and an equal voting power in the council, would democratize its use and establish a system of checks and balances between them that today does not exist. Users would have a saying on how their data is used and neither governments nor private companies would be able to change the way in which they can use it without their consent.

5.7 Financial asymmetries

There is another barrier to the development of platform cooperatives that we have not mentioned so far: financing. Platform cooperatives have usually very little financial resources compared to big multinational companies that can raise funds in international money markets, especially when the former are not for-profit organizations. Although platform cooperatives do not intend to become big multinationals that dominate markets, and therefore do not require the same amount of investment, they do certainly face financial constraints. Our proposal does not offer any solution to this problem that should certainly be addressed to foster platform cooperativism. One possible clue is creating alliances of platform cooperatives that could pool resources, including financial resources. Another possible clue is crowdfunding, although it is important to point out that "while crowdfunding is an increasingly popular alternative to venture capital, even equity crowdfunding has yet to match venture capitalists in offering a level of finance needed to scale" (Balaram, 2016

5.8 Cooperation between councils

Some data sharing between councils could be beneficial. For example, the council dealing with accommodation could share data with the council dealing with transportation so governments and academics can have a better understanding of tourism flows in cities. As long as the two councils agree on it, there should be no reason to oppose it. In any case, councils would not be allowed to keep the data other councils have share with them.

Conclusion

The sharing economy has brought about many benefits and still has under-exploited potential. But there is not a single way of organizing it. While some dominant platforms are characterized by an uneven distribution of power and income between users and owners, platform cooperatives make users the owners and promote democratic governance, a fairer distribution of value and good working conditions, among other things. Nevertheless, platform cooperatives will never become mainstream if the reasons why dominant platforms remain dominant are not understood and changes in the way the sharing economy is regulated are not made.

Good regulation of the sharing economy in many fields such as labor rights or taxation is much needed. We have argued that these regulations, although very important, are not enough to make platform cooperativism the dominant form of the sharing economy. We have identified several market power mechanisms that act in a way that assure that dominant platforms remain dominant: reputational switching costs, large enough amounts of personal data being an essential facility, the "user feedback loop" and, in some cases, the high fixed costs of collecting and storing data. We then proposed a general policy based on managing volunteered and relational data form sharing economy platforms a common using reciprocity licenses. We have shown that this policy, coupled with the development of metasearch platforms and reputation passports, would not only contribute to offset the identified market power mechanisms; it would also foster platform cooperatives in direct and indirect ways, making them competitive in face of dominant platforms. In addition, it would allow governments and scholars to access precious data needed to contribute to policy design and research. In this sense, our proposal is a general framework to obtain a fairer sharing economy that works for everyone and to multiply the positive societal effects such form of peer-to-peer organization of labor and exchanges can offer.

The proposal is general in the sense that it can be applied to any sharing economy sector, while it might not be suitable for some. It is also a general framework in the sense that it should be tailored on a case-by-case basis according to the specificities of the sectors, the platforms and the communities involved. As Section 5 shows, we consider this proposal to be a first step in an undergoing research line with a potential scope that exceeds the sharing economy. We hope other researchers of diverse disciplines, activists and policy-makers will join it.

References

Alumnia, J. (2012). Speech at the Privacy Platform event: Competition and Privacy in Markets of Data. November 26th 2012. Available at: http://europa.eu/rapid/press-release_SPEECH-12-860_en.htm

Balaram, B. (2016). "Fair Share. Reclaiming power in the sharing economy". *RSA Report*. Available at: https://www.thersa.org/discover/publications-and-articles/reports/fair-share-reclaiming-power-in-the-sharing-economy

Bellanger (2014), " Principes et pratiques des données personnelles en réseau" Available at: http://pierrebellanger.skyrock.com/3231110655-Principes-et-pratiques-des-donnees-personnelles-en-reseau.html

Botsman, R. (2014). "The sharing economy lacks a shared definition". Available at: http://www.fastcoexist.com/3022028/the-sharing-economy-lacks-a-shared-definition

Care, D. and Snell, J. (2013). "Use of Online Data in the Big Data Era: Legal Issues Raised by the Use of Web Crawling and Scraping Tools For Analytics Purposes". Available at: http://www.bna.com/legal-issues-raised-by-the-use-of-web-crawling-and-scraping-tools-for-analytics-purposes/

Chiou, L. and Tucker, C.E. (2014)."Search Engines and Data Retention: Implications for Privacy and Antitrust". MIT Sloan Research Paper No. 5094-14. Available at: http://ssrn.com/abstract=2441333 or http://dx.doi.org/10.2139/ssrn.2441333

Collin, P. and Collin, N. (2013). "Mission d'expertise sur la fiscalité de l'économie numérique". Available at: www.economie.gouv.fr/files/rapport-fiscalite-du-numerique_2013.pdf

Competition &Markets Authority (2015). "The commercial use of consumer data. Report on the CMA's call for information". Available at https://www.gov.uk/.../uploads/...data/.../The_commercial_use_of_consumer_data.pdf

Coriat, B. (2015), "Qu'est-ce qu'un commun ? Quelles perspectives le mouvement des communs ouvre-t-il à l'alternative sociale ? Available at: https://france.attac.org/nos-publications/les-possibles/numero-5-hiver-2015/dossier-les-biens-communs/article/qu-est-ce-qu-un-commun

CNMC (2016)". Press release. Available at*:* https://www.cnmc.es/Portals/0/.../160311_PressRelease_consultaestudioEC_EN.pd

Cohen, M., and Sundararajan, A. (2015). "Self-Regulation and Innovation in the Peer-to-Peer Sharing Economy". *The University of Chicago Law Review Dialogue*, vol 82, pp. 116-133x

Demary, V. (2014). "Competition in the sharing economy". IW Policy Paper 19/2015. Available at: https://www.iwkoeln.de/_storage/.../Sharing%20Economy%20Policy%20Paper.pdf

Edlin, A.S. and Harris, R.G. (2013). "The role of switching costs in antitrust analysis: a comparison of Microsoft and Google". *Yale Journal of Law and Technology*, vol 15, no 2

European Commission (2016a). "A European agenda for the collaborative economy" COM(2016) 356 final. Available at: https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-356-EN-F1-1.PDF

European Commission (2016b). "A European agenda for the collaborative economy". Press release. June 2th 2016. Available at: http://europa.eu/rapid/press-release_IP-16-2001_en.htm

Evans, D.S. and Schmalensee, R. (2013). "The antitrust analysis of multi-sided platform business". *Oxford Handbook on International Antitrust Economics (*Roger Blair and Daniel Sokol, eds.). Oxford: Oxford University Press, Forthcoming; University of Chicago Institute for Law & Economics Olin Research Paper No. 623. Available at SSRN: http://ssrn.com/abstract=2185373

Ezrachi, A. and Stucke, ME. "Artificial Intelligence & Collusion: When Computers Inhibit Competition". Oxford Legal Studies Research Paper No. 18/2015; University of Tennessee Legal Studies Research Paper No. 267. Available at http://ssrn.com/abstract=2591874 or http://dx.doi.org/10.2139/ssrn.2591874

Federal Trade Commission (2013a). Letter to the General Counsel of the District of Columbia Taxicab Commission entitled "Re: Second Proposed Rulemakings Regarding Chapters 12, 14, and 16 of Title 3". Available at https://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-comments-district-columbia-taxicab-commission-concerning-proposed-rulemakings-passenger/130612dctaxicab.pdf

Federal Trade Commission (2013b). "Statement of the Federal Trade Commission, Nielson Holdings N.V. and Arbitron Inc", FTC File No. 131-0058 (Sept. 20, 2013). Available at http://www.ftc.gov/system/files/documents/cases/140228nielsenholdingstatement.pdf

Geradin, D. and Kuschewsky, M. (2013). "Competition Law and Personal Data: Preliminary Thoughts on a Complex Issue". Available at SSRN: http://ssrn.com/abstract=2216088 or http://dx.doi.org/10.2139/ssrn.2216088

Graef, I. (2015). "Market Definition and Market Power in Data: The Case of Online Platforms". *World Competition: Law and Economics Review*, vol. 38, no. 4 (forthcoming). Available at SSRN: http://ssrn.com/abstract=2657732 or http://dx.doi.org/10.2139/ssrn.2657732

Hagiu, A., and Wright, J. (2013). "Do You Really Want to Be an eBay?". *Harvard Business Review*, vol 91, no 3, pp. 102-108.

Hagiu, A., and Wright, J. (2015a). "Enabling Versus Controlling". Harvard Business School Strategy Unit Working Paper No. 16-002. Available at: http://ssrn.com/abstract=2627843

Hagiu, A., and Wright, J. (2015b). "Marketplace or Reseller?". *Management Science*, vol 61, no 1, pp. 184-203.

Kimmel, L. and Kestenbaum, J. (2014). "What's Up with Whatsapp? A Transatlantic View on Privacy and Merger Enforcement in Digital Markets". *Antitrust*, vol 29, no 48

Kuneva, M. (2009). Keynote speech at the Roundtable on Online Data Collection, Targeting and Profiling, 31 March 2009, Brussels. Available at http://europa.eu/rapid/press-release_SPEECH-09-156_en.htm

Lane and Woodworth (2016), "The Sharing Economy Checks In: An Analysis of Airbnb in the United States". CBRE Hotel's America Research. Executive summary available at: http://www.cbrehotels.com/EN/Research/Pages/An-Analysis-of-Airbnb-in-the-United-States.aspx

Lougher, G. and Kalmanowicz, S. (2015). "EU Competition Law in the Sharing Economy". *Journal of European Competition Law & Practice*, vol 7, no 2

Matofska, B. (2016), "What is the sharing economy?". Available at: http://www.thepeoplewhoshare.com/blog/what-is-the-sharing-economy/

Maurel, L. (2014), "Les licences à réciprocité: une piste pour la « transformation numérique » de l'économie ? ". Available at: https://scinfolex.com/2014/11/14/les-licences-a-reciprocite-une-piste-pour-la-transformation-numerique-de-leconomie/

Monopolies Commission (2015). "Competition policy: The challenge of digital markets". Special Report by the Monopolies Commission pursuant to Section 44(1)(4) ARC, 1 June 2015. Available at: http://www.monopolkommission.de/index.php/en/home/84-pressemitteilungen/285-competition-policy-the-challenge-of-digital-markets

Newman, N. (2014), "Search, Antitrust, and the Economics of the Control of User Data". *Yale Journal on Regulation*, vol. 30, no. Available at: http://ssrn.com/abstract=2309547 or http://dx.doi.org/10.2139/ssrn.2309547

Novel, A.S. and Riot, S. (2012). *Vive la co-révoluton!: Pour une société collaborative.* Paris: Alternatives.

O'Donovan, C. and Singer-Vine, J. (2016), "Here's What Uber Doesn't Say About Price Cuts ", BuzzFeed News, June 24th 2016. Available at: https://www.buzzfeed.com/carolineodonovan/uber-documents-suggest-price-cuts-dont-always-raise-driver-w?utm_term=.gj0Qnqgyx#.eqGyMzNqY

Official Journal of the European Union (2016). "Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data", L 119, vol. 59.

Ostrom, E. and Schlager, E. (1996), "The formation of property rights", in Hanna, S., Folke, C. and Maler, K.G. (eds) *Rights to Nature*, pp. 127-156, Washington, D.C.: Island Press

OuiShare (2016), "The collaborative economy". Available at: http://ouishare.net/en/about/collaborative_economy

Perzanowski, A. and Schultz, J. "Digital Exhaustion". *UCLA Law Review*, vol 58; Wayne State University Law School Research Paper No. 10-10; UC Berkeley Public Law Research Paper No. 1669562. Available at: http://ssrn.com/abstract=1669562

Peugeot, V. (2014). Interview by Bruno Carballa Smichowski.

Prins, C. (2006), "When personal data, behavior and virtual identities become a commodity: Would a property rights approach matter?"

Roberts, J.J. (2015). "As 'Sharing Economy' Fades, These 2 Phrases Are Likely to Replace It ". *Fortune*, July 29, 2015. Available at: http://fortune. co m/2015/07/29/ sharing-economy-char t.

Rideshare Owl (2016). "Uber and Lyft market share infographic". Available at: http://rideshareowl.com/uber-infographic/

Rifkin, J. (2014). "Uber and the Zero Marginal Cost Revolution". *The Huffington Post*. Available at : http://www.huffingtonpost.com/jeremy-rifkin/uber-german-court_b_5758422.html

Rochet, J.C. and Tirole, J. (2006). "Two-sided markets: a progress report". *The RAND Journal of Economics,* vol 37,n 3, pp. 645-667

Rysman, M. (2009). "The Economics of Two-Sided Markets". *Journal of Economic Perspectives*, no. 3, 125, pp. 125-143

Samuelson, P. (2000). "Privacy as Intellectual Property?". *Stanford Law Review*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=239412

Schepp, N.P. and Wambach, A. (2015), "On Big Data and Its Relevance for Market Power Assessment". *Journal of European Competition Law & Practice,* vol 7, no 2

Schneider, N. (2014), "Owning is the new sharing". Article published on 12/21/2014 in *Sharable*. Available at: http://www.shareable.net/blog/owning-is-the-new-sharing

Scholtz, T. (2016), "Platform Cooperativism. Challenging the Corporate Sharing Economy". Rosa Luxemburg Stiftung New York Office. Available at: www.rosalux-nyc.org/wp-content/files_mf/scholz_platformcooperativism_2016.pdf

Sephr, C. (2015), "Platform Cooperativism: The Internet, Ownership, Democracy', Vimeo, [video] posted by The Politics of Digital Culture, 2:37, 18 December. Available at: https://vimeo.com/149470862?

Sholtz, P. (2000). "The Economics of Personal Information Exchange". *FirstMonday*, vol 5, no 9. Available at: firstmonday.org/issues/issue5_9/sholtz/

Sillicon   Maniacs   (2011).   "The   Mesh: de   la   propriété   à   l'accès".   Available   at: http://www.siliconmaniacs.org/the-mesh-de-la-propriete-a-lacces/

Sokol, D.D. and Comerford, R.E. (2016). "Does Antitrust Have a Role to Play in Regulating Big Data?". *Cambridge Handbook of Antitrust, Intellectual Property and High Tech* (Roger D. Blair and D. Daniel Sokol editors). Cambridge University Press, Forthcoming. Available at: http://ssrn.com/abstract=2723693

Stucke, M.E. and Grunes, A.P (2015). "Debunking the Myths Over Big Data and Antitrust". *CPI Antitrust Chronicle*, May 2015; University of Tennessee Legal Studies Research Paper No. 276. Available at: http://ssrn.com/abstract=2612562

Sundararajan, A. (2016). *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*. Cambridge: MIT Press.

Tech Insider (2016). "Uber drivers make a lot less than you think". Available at: http://www.techinsider.io/uber-drivers-make-close-to-minimum-wage-2016-6

Tincq, B. (2014). Interview by Bruno Carballa Smichowski.

Tucker, C. (2013). "The Implications of Improved Attribution and Measurability for Antitrust and Privacy in Online Advertising Markets". *George Mason Law Review*, vol 20, pp. 1015-1054

Tucker, D.S. and Wellford, H.B. (2014). "Big Mistakes Regarding Big Data". *The Antitrust Source.* Available at: *som.yale.edu/sites/default/files/SSRN-id2723693.pdf*

Wagner, L (2014). Interview by Bruno Carballa Smichowski

Weber, R.H. (2014). "Information at the crossroads of competition and data protection law". *Journal of Competition Law*, vol 12, no 2, pp. 169-183

Yoo, C. S. (2012). "When Antitrust Met Facebook". *George Mason Law Review*, vol. 19, p. 1147; University of Penn, Institute for Law & Econ Research Paper No. 12-31. Available at: http://ssrn.com/abstract=2160519