

Codagnone, Cristiano; Martens, Bertin

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Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues

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Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues

Cristiano Codagnone and Bertin Martens

2016

Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues

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Table of Contents

Abstract.....	3
1. Introduction	4
2. Conceptual, empirical, and normative themes	6
2.1 Conceptual issues	6
2.1.1 Definitions	6
2.1.2 Are sharing platforms just a case of two-sided markets?.....	7
2.1.3 Selective overview of sharing platforms.....	10
2.1.4 Tentative conceptual mapping of sharing platforms	11
2.2 Empirical evidence	13
2.2.1 Economics of P2P sharing platforms.....	13
2.2.2 Evidence on impacts.....	15
2.2.3 Labour impact	17
2.3 The normative and rhetorical dimensions of the sharing economy	18
2.3.1 A value and vision loaded domain.....	18
2.3.2 From movement to lobby?.....	19
2.3.3 Participation and social capital	19
2.4 Regulatory issues.....	20
2.4.1 The general terms of the debate on regulations	20
2.4.2 Trust and reputational ratings.....	22
2.4.3 Other consumer protection concerns.....	22
3. Discussion and conclusions	23
Cited References	25

Abstract

This report selectively draws on the systematic review of a large set of data sources, which is presented elsewhere, and comprises 430 secondary sources (Codagnone, 2016). The report also provides a critical overview of key analytical, empirical, and normative dimensions of the '*sharing economy*'. It reviews both the rhetorical and controversial debates currently surrounding the topics and the available empirical evidence in order to sharpen our understanding of relevant policy and regulatory issues. The broad umbrella term 'sharing economy' is critically assessed and a typology developed that identifies the commercial 'peer to peer' sharing economy as the main focus of both controversies and policy-relevant issues. Empirical evidence of the benefits and costs of the sharing economy and its implications for sustainability and employment is very limited and inconclusive, particularly as regards the European landscape. This critical review, hence, shows that, as yet, there are no unambiguous answers to some of the fundamental questions about the '*sharing economy*'. The available research is too limited and patchy to give us a comprehensive and coherent picture. This report's main contribution is to clear some of the conceptual and empirical fog around the '*sharing economy*' and to identify where possible answers might be found in the future. It is suggested that the definition of sharing platforms should focus on P2P activities, as most of the policy concerns are found there. These include regulatory and consumer protection issues resulting from the informal production of services, potentially unfair competition with formal B2C service providers, and questions related to dominance and market power of P2P platform operators as commercial businesses.

1. Introduction

Citizens have found ways to organize resource sharing for millennia. Car sharing was actually launched for the first time in 1948 in Zurich and was very popular especially in Northern Europe in the 1980s and operated by many small and community-based not-for-profit cooperatives (Shaheen *et al.*, 1999). In the analogue age, information costs were high and initiatives of this kind did not scale up but remained limited to small and tightly knit communities. With the rise of digital technology and the Internet, information costs fell sharply and coordination costs for sharing activities dropped correspondingly. This triggered a boom in online sharing activities, lifting them out of the community and into the realm of big business. This led to concerns about their impact, sometimes highlighted by newspaper headlines emphasising conflictual aspects. Peer-to-peer (P2P) sharing activities may compete with more formally organized economic transactions, create challenges for existing regulatory provisions and affect the welfare of consumers and service workers in various ways. This puts pressure on platform services providers and policy makers to provide an appropriate response to these challenges.

The self-defined 'sharing' platforms increasingly cover important sectors of the economy such as transportation, accommodation and rental, retail, office space and logistics, finance and consumer credit, and the labour market. They operate on factor markets (capital, labour) and on product markets (goods and services), and therefore affect the entire economy (Codagnone, forthcoming 2016)¹. The current public debate is split between supporters and opponents, and both groups harness conflicting rhetoric, recently fuelled also by the bans imposed by judges in various cities and the violent protests of taxi drivers. Actual evidence, however, is very limited and inconclusive. Platforms do not disclose important metrics or make them available to selected researchers. For instance, the Uber study by Hall & Krueger (2015) has fuelled more controversies rather than providing evidence for a more balanced debate. At the same time, Uber and Airbnb are flooding the public debate with their own reports of the positive impacts they allegedly have on cities' economies in the US and in Europe. A review of media accounts (i.e. newspapers, magazines, etc.) conducted for the period 2012-2015 shows that in less than five years the 'honeymoon' with the 'sharing economy' has ended (Codagnone, forthcoming 2016). Optimistic and utopian narratives have been substituted by accounts of legal disputes and the 'dark side of the sharing economy' (Malhotra & Van Alstyne, 2014).

There has been some debate as to why people participate in the 'sharing economy' and whether these activities generate social capital and generalized trust. According to some critics of current developments, large companies such as Uber and Airbnb have adopted the values of the traditional community-based sharing movement to pursue economic self-interest. There has been much speculation about the socio-economic and environmental benefits produced by the 'sharing' platforms, and about their impact on labour rights and distributional issues. The regulatory debate has been polarised between the libertarian slogan 'hacking the regulatory state' and moderate proposals to introduce innovative and smart forms of regulation. Exchange among strangers – as opposed to local community-based exchange – is one of the salient characteristics of contemporary online 'sharing economy' platforms. Building trust to get both sides of a market on board has been a key challenge and driver of success, even for the biggest players. Some claim that review ratings reduce information asymmetry and are a reliable form of self-regulation that ensures consumer protection and security and should not be altered by any form of regulatory intervention.

Regulatory questions affect the welfare of all the stakeholder groups involved. Users/consumers supposedly benefit from cheaper and more convenient choices as a result of more competition but face risks due to the lack of consumer protection and liability rules. Users/providers, i.e. the 'micro-entrepreneurs' who drive the cars, rent their homes, or run errands using the various platforms earn revenue from this activity but may face erosion of their rights as workers. The platform owners have much to gain or lose from regulatory

1 Codagnone, C. (2016, forthcoming), The Passions' or 'The Interests'? The 'sharing economy' between conflicting rhetoric and uncertain facts, Institute for Perspective Technological Studies, Science and Policy Report.

decisions. Established formal business operators stand to lose if the '*sharing economy*' competes with them in an unregulated market. Last but not least, the '*sharing economy*' can have positive or negative spill-over effects for society as a whole in terms of innovation, security risks, or the alleged erosion of labour contracts and the tax base. Opinions and rhetoric on the above issues abound but solid evidence is lacking.

Policy makers and regulators face the challenging task of tackling entirely new activities without stifling potentially beneficial innovation. At the same time, they must ensure consumer protection, preserve labour rights, and avoid the erosion of the tax base (Ranchordas, 2015; Sunil & Noah, 2015). In the US, the Federal Trade Commission (FTC) has announced it will launch a probe into the '*sharing economy*' in order to adopt regulation that protects consumers without hindering innovation (Jopson & Bradshaw, 2015). In June 2015, high-level workshops on the topic were organised both by the FTC (FTC, 2015a, 2015b, 2015c)² and the OECD (2015b).

The EU Economic and Social Committee (EESC, 2014, p. 2 and 9), and the European Parliament (European Parliament, 2014) called on the European Commission to take action in this matter. The European Commission's Digital Single Market (DSM) Strategy paper³ has taken up this challenge and has committed to undertaking an assessment of online platforms in general and sharing economy platforms in particular. As a first step, the Commission launched a public consultation on online platforms and the sharing economy at the end of 2015. The key policy question is whether or not there is a need for regulatory intervention, at EU level or elsewhere. No decision on whether an initiative of this kind is needed has been taken yet. The welfare impact of sharing platforms on consumers and producers of these services should be examined, including the question of whether existing regulations are still pertinent and/or should be adapted to the market failures that new sharing economy business models might generate.

This essay selectively draws on the systematic review of a large set of data sources (Codagnone, forthcoming 2016)⁴ and presents a critical overview of key analytical, empirical, and normative dimensions of the '*sharing economy*'.

One of the key findings is that there is little empirical literature on the subject though there are many conceptual-theoretical and normative essays, and also controversies and legal disputes. Limiting the analysis presented in this essay to the scant empirical evidence available would not only restrict the scope of the essay but would also leave out an important part of the current state of the art. Hence, both the normative debate and the limited empirical evidence available on the '*sharing economy*' will be considered in order to identify some preliminary implications both for policy making and for applied policy research.

Several labels are used interchangeably and sometimes inconsistently as synonyms: '*sharing economy*', '*collaborative consumption*', '*access-based consumption*', '*collaborative economy*', and '*circular economy*'. In this paper, we mostly use '*sharing economy*' although in paragraph 2.1 we discuss these labels.

Critical (pessimistic) or positive (optimistic) normative perspectives on the '*sharing economy*' are attributed to specific sources as far as possible, although for the sake of brevity this is not always possible. This essay maintains an impartial position and considers most of the issues raised as the potential object of empirical research on which no conclusive judgement is formulated.

² See workshop agenda at: https://www.ftc.gov/system/files/documents/public_events/636241/sharing-economy-agenda.pdf; see also the opening speech by Commissioner Maureen K. Ohlhausen at: https://www.ftc.gov/system/files/documents/public_statements/671141/150609sharingeconomy.pdf

³ See <http://ec.europa.eu/priorities/digital-single-market/>

⁴ This evidence comprises 430 unique secondary (literature and media accounts) and primary (platforms analysis) sources that include: a) 120 literature sources formally reviewed; b) 165 literature sources used as context or as indirectly relevant to the analysis; c) 70 media accounts (newspapers, magazines, webzines, etc.); and d) 70 sharing economy platforms analysed through the contents and self-descriptions found in their websites and blogs and complemented with additional sources from the business press and industry data.

In Section 2, the main dimensions of the current debate extracted from the findings reported in Codagnone (forthcoming, 2016) are presented, and then discussed in terms of their policy and research implications in Section 3.

2. Conceptual, empirical, and normative themes

2.1 Conceptual issues

2.1.1 Definitions

There is no 'shared' consensus on what activities comprise the '*sharing economy*'. Leaving aside for a moment the literature on the economics of platforms and considering works originating in other disciplinary fields (sociology, anthropology, business and management, as well as policy reports), the activities and organisations that are today commonly referred to as the '*sharing economy*' have also been labelled as '*collaborative consumption*' (Botsman, 2013; Botsman & Rogers, 2010a; Botsman & Rogers, 2010b), '*access-based consumption*' (Bardhi & Eckhardt, 2012; Belk, 2014b), '*the mesh*' (Gansky, 2010), '*connected consumption*' (Dubois et al., 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015). They are seen as closely related to the '*circular economy*' and/or the '*collaborative economy*' with no clear distinction between consumption and production activities (Vaughan & Hawksworth, 2014; WEF, 2013, 2014). The label '*sharing economy*' is used in the US Federal Trade Commission (FTC, 2015a, 2015b, 2015c); the OECD (OECD, 2015a, 2015b); and in official documents of the European Commission (European Commission, 2015a, 2015b), the European Economic and Social Committee (EESC, 2014) and the European Parliament (European Parliament, 2014). In the European Commission's document prepared in the summer of 2015 for the public consultation on platforms, however, the labels '*sharing economy*' and '*collaborative economy*' are used interchangeably. The Business Observatory reports published by DG GROW originally used the label '*sharing economy*' (Dervojeda et al., 2013) but now use '*collaborative economy*' (Probst et al., 2015a, 2015b; Probst et al., 2015c).

The expression '*collaborative consumption*' as popularised by Botsman & Roger (2010, p. xv; but see also Botsman 2013) includes activities such as '*bartering, lending, renting, gifting, and swapping*' in three broad categories: '*product service systems*' (access to products or services without need for owning the underlying assets), '*redistribution markets*' (i.e. re-allocation of goods), and '*collaborative lifestyles*' (i.e. exchange of intangible assets). Belk criticizes this definition (Belk, 2014b) and makes a distinction between 'true' and 'pseudo-sharing' (Belk, 2014a). Belk defines collaborative consumption as '*people coordinating the acquisition and distribution of a resource for a fee or other compensation*'. He defines '*true sharing*' as entailing temporary access rather than ownership, no fees or compensation, and use of digital platforms. In his view, the majority of commercial platforms included in the '*sharing economy*' do not belong there. Another expression used is '*access-based consumption*' defined as "*transactions that can be market mediated but where no transfer of ownership takes place and differ from both ownership and sharing*" (Bardhi & Eckhardt, 2012). A similar approach is used to define the '*sharing economy*' as "*consumers (or firms) granting each other temporary access to their under-utilized physical assets ("idle capacity"), possibly for money*" (Frenken et al., 2015; Meelen & Frenken, 2015). Collaborative consumption has also been defined as "*a peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services*" (Hamari et al., Forthcoming 2015). In the work of Schor and associates (Dubois, et al., 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015; Schor et al., 2014), the '*sharing economy*' is defined as '*digitally connected*'⁵ economic activities including the following possible categories (examples in parentheses are those made by these authors for some of the categories): *recirculation of goods* (i.e. Craigslist, eBay); *increased utilization of durable assets* (i.e. Zipcar, Relay Rides,

⁵ The key distinguishing elements according to these authors are: a) the ability of facilitating exchange among strangers rather than among kin or within community; b) the strong reliance on technology that may also favour offline activities; and c) the participation of high cultural capital consumers rather than being limited to a survival mechanisms among the most disadvantaged (as was mostly the case for older forms of sharing and collaborative consumption, as it remains for some socially oriented current not for profit initiatives.

Uber, CouchSurfing, Airbnb); *exchange of services* (i.e. Time banking⁶, TaskRabbit, Zaarly); *sharing of productive assets*; and *building of social connections* (i.e. Mama Bake, Soup Sharing, and EatWithMe). The OECD (2015) does not present a definition, apart from referring to a variety of online platforms specialised in '*matching demand and supply in specific markets, enabling peer-to-peer (P2P) sales and rentals*'. It identifies three types: a) P2P selling (examples: eBay and Etsy); b) P2P sharing (examples: Airbnb, Uber, TaskRabbit); and c) crowdsourcing (examples: Mechanical Turks, Kickstarter, Angellist). According to PriceWaterhouseCoopers (PwC) the "*sharing economy uses digital platforms to allow customers to have access to, rather than ownership of, tangible and intangible assets*" (Vaughan & Hawksworth, 2014). Besides typical examples such as Uber and Airbnb, the definition also includes collaboration geared toward productive activity, as well as models for subscribing to content and musical entertainment (i.e. Spotify).

The definitions briefly presented above are just some examples of those reviewed more systematically elsewhere (Codagnone, forthcoming 2016), where it is shown that (a) there is no consensual definition and (b) the overwhelming majority of the available definitions are 'ostensive' rather than 'intensional'⁷. Definitions by exemplification tend to be all-encompassing and 'trivial' as they often group together items that are similar with regard to few characteristics and dissimilar with regard to many others. They are over-inclusive to the point that it is difficult to identify digital platforms that should not be considered part of the 'sharing economy'. In a few cases, on the other hand, under-inclusive definitions either stressing access over ownership or distinguishing between '*sharing*' and '*pseudo-sharing*', leave out platforms that are in practice considered part of the '*sharing economy*' (i.e. Belk 2014a, 2014b; Bardhi & Eckhardt, 2012).

2.1.2 Are sharing platforms just a case of two-sided markets?

Should/could '*sharing economy*' platforms be analysed as two-sided and multi-sided markets? Or do they present features that set them apart from others (digital or analogic) commonly studied as two-side markets or Multi-Sided Platforms (MSPs)⁸? If '*sharing economy*' platforms could unequivocally be defined as MSPs, this would warrant the application of both established

⁶ Time banks are initiatives that emerged in the 1980s involved community based trading of services on the basis of the time spent and following the principle that every member's time is valued equally (Cahn & Gray, 2015; Cahn & Rowe, 1992; Collom et al., 2012).

⁷ Stated simply, definitions can either be 'intensional' (i.e., 'connotative') or 'ostensive' (i.e. definition by exemplification or by pointing). Intensional (i.e. 'connotative') definitions are clear-cut in that they establish the necessary and sufficient conditions for a 'thing' being a member of a specific set. Ostensive definitions (i.e. definition by exemplification or by pointing) more pragmatically denote just a few key features and complement them with exemplifications.

⁸ Starting in 2002 a growing body of mostly conceptual-theoretical economic literature has analysed situations where one economic operator (originally referred to as intermediary and later increasingly as platform) brings together at least two different groups of users as instances of 'two-sided' or 'multisided' (when there are more than two groups) markets. Whereas they did not use the expression 'two-sided markets', the first to look at firms serving two different types of customers and facing the 'chicken and egg problem' were Gawer & Cusumano (Gawer & Cusumano, 2002) and Caillaud & Julien (Caillaud & Jullien, 2003), who referred to 'intermediary markets' serving two distinct groups of customers. The expression 'two-sided markets' was first introduced by Rochet & Tirole (Rochet & Tirole, 2003, 2006) and was used later by Wright (Wright, 2004) and Armstrong (Armstrong, 2006), while in parallel Evans used the expression 'two-sided platforms' (Evans, 2003a, 2003b) and was one of the first to systematically apply this perspective to what he called the web economy (Evans, 2008a, 2008b, 2009). On the other hand, Parker & Van Alstyne (Parker & Van Alstyne, 2000; Parker & Alstyne, 2005) were converging on 'two-sidedness' coming from network and information theory, and with Eisenmann were the first to talk about two-sided 'strategies' rather than 'markets' (Eisenmann et al., 2006). Rysman (Rysman, 2009) also used the expression 'two-sided strategies' to convey the idea that there are choices made by agents rather than an imposed endogenous industry structure; Hagiu & Wright also look at multisided platforms as a matter of firms' strategic choices and, building on the theory of the firm, frame such choices as a trade-off between 'being a MSP or a vertical integrated firm' (Hagiu & Wright, 2015c) or between 'controlling versus enabling' (Hagiu & Wright, 2015a). Whereas in the initial phase the main focus of such perspective were payment systems, auctions, operating systems, and media markets, lately it has been increasingly applied to digital platforms under the slightly different headings of Multi-Sided Platforms (henceforth MSPs). In particular digital platforms, including some commonly considered as example of the 'sharing economy', are discussed in the most recent work by Hagiu & Wright (2013, 2015a, 2015b, 2015c); some digital platforms are also the object of controversy over whether or not they can be considered two-sided (Li, 2015; Luchetta, 2014).

analytical and theoretical approaches, and the corresponding policy 'tool box'⁹. In the literature on two-sided markets and MSPs, only Hagiu & Wright explicitly use - in passing - the expression '*sharing economy*' and/or in their analysis consider as examples platforms commonly seen as the champions of 'digital sharing' such as Uber, Airbnb, oDesk (today Upwork), and TaskRabbit (Hagiu & Wright, 2013; Hagiu & Wright, 2015a; Hagiu & Wright, 2015b, 2015c). Another strand of emerging theoretical and empirical economic literature (see Section 2.2.1) specifically focussing on Airbnb, oDesk, and TaskRabbit (Cullen & Farronato, 2015; Farronato & Fradkin, 2015; Fradkin, 2014; Fradkin et al., 2015; Horton, 2014; Horton & Golden, 2015) consider them simply as peer-to-peer marketplaces for the exchange of underutilized goods and services, without devoting too much attention to the fact that they are seen as part of the '*sharing economy*'¹⁰.

Two-sided or multi-sided markets are situations where a platform enables two or more groups of users to transact or at least interact¹¹ and where at least one group (if we take the less strict definition, see *infra*) and usually all groups benefit directly or indirectly from having a growing number of users on the other side(s). In technical terms, and platforms internalise these network externalities, by facilitating the matching between sides and reducing transaction costs. Matching can be search-based with fixed prices and still involve considerable search costs for consumers; or it can be a variable price auction mechanism (entailing lower search costs), or a variety of in-between mechanisms. The economics of MSPs provide important insights into the functioning of digital platforms and into the policy concerns that they raise. Digital platforms can generate strong network effects: the value of a platform and the number of transactions increases more than proportionally with the number of participants. The higher the number of participants already on the platform, the more others will want to join because it increases consumer choice and boosts markets for service suppliers. This may trigger competition policy questions, although scaling up to dominance (size) and industry concentration are constrained by several factors¹².

The literature on two-sided markets and MSPs is theoretically more solid and coherent than the fragmented literature which focuses more broadly on the '*sharing economy*'. However, it has not as yet produced a clear cut and consensual definition of the necessary conditions for a platform to qualify as two- or multi-sided. In the first stocktaking exercise, Roche & Tirole noted that the literature "*had much of a 'you know a two-sided market when you see it' flavour*" (2006, pp. 645-646) - in other words, definitions were ostensive (extensional, that is definition by pointing) rather than intensional (connotative). Two-way network effects (Roche & Tirole, 2003; Caillaud and Jullien, 2003; Rysman, 2009), only one way network effects

⁹ Whether or not a particular activity qualifies as a two-sided or multi-sided platform is not just a matter of academic interest. Its relevance, in fact, has to do with competition policy implications that have been addressed by several authors (Evans, 2003a; Evans & Noel, 2005; Evans & Schmalensee, 2007; Wright, 2004); some economic principles routinely used in competition policy do not hold when markets are two-sided or multi-sided. For instance, pricing to one side below marginal cost is not a predatory behaviour but rather a common profit maximising strategy in two-sided markets. Defining the relevant market for antitrust purposes and looking at only one side can lead to a market definition that is too narrow. Furthermore, network effects can lead to tip toward a single dominant platform (Rysman, 2009). As reviewed in Li (2015, p. 100 and pp. 103-105), the two-sided perspective has been used by European Commission (EC) and the EU courts, i.e. the General Court (GC) and the European Court of Justice (ECJ), when applying EU competition law. Hence, the question of which markets are two-sided has become increasingly relevant (Filistrucchi et al., 2013).

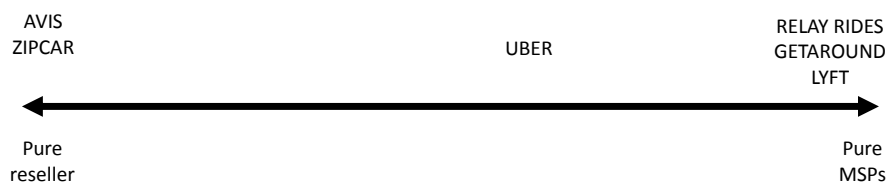
¹⁰ Fradkin et al, for instance, observe that "Airbnb (along with Uber, TaskRabbit, Postmates, and others) is a part of a new sector, often referred to as the "Sharing Economy", which facilitates the exchange of services and underutilized assets between buyers and semi-professional sellers" (2015, p. 5); Cullen & Farronato, in a footnote, explain that "The sharing economy (or collaborative consumption) is the term often used to refer to online peer-to-peer marketplaces like Airbnb, Uber, or TaskRabbit. In the sharing economy, owners rent or share something they are not using (e.g., a car, house) or provide a service themselves to a stranger using peer-to-peer platforms" (2015, p. 22, footnote 20).

¹¹ In the case of broadly defined media platforms users and advertisers interact only, whereas the transaction occurs solely between the advertisers and the platforms operators.

¹² As illustrated by Evans (2003b) network externalities and economies of scale may favour a situations with larger and fewer platforms but several factors may offset them such as congestion, heterogeneity, and multi-homing. Unless solved (improving search and matching algorithm in digital platforms), congestion increase search and transaction costs and limits growth and concentration. Heterogeneity of users and/or the object of exchange make matching more difficult and reduce the potential for scalability and concentration in matching platforms. When one or more sides can and do use different platforms (i.e. multi-homing) the potential for scalability and dominance are also greatly reduce.

(Armstrong, 2006; Evans, 2003b; Evans & Schmalensee, 2007; Filistrucchi et al., 2013), just price non-neutrality with no need of network effects (Roche & Tirole, 2006), and lately direct interactions and affiliation to platforms on all sides with no need of network effect (Hagiu & Wright, 2015c), have been alternatively proposed as necessary conditions of two or multi-sidedness. Almost a decade after the 2006 article by Roche & Tirole, the situation does not seem to have improved as no consensus has been formed on a clear-cut definition (Li, 2015). Definitions in this domain are over-inclusive or under-inclusive, or too vague to be of use (Hagiu & Wright, 2015c)¹³. In a way, two-sidedness (or multi-sidedness) remains an empirical matter to be ascertained case by case (Filistrucchi, et al., 2013; Filistrucchi et al., 2014).

So, to some extent it is not possible to borrow from this literature to answer conclusively whether sharing platforms are MSPs and if so, which ones. On the other hand, some insights can be derived from the only authors who explicitly considered a few sharing platforms in their analysis (Hagiu & Wright, 2013, 2015a, 2015b, 2015c). According to these authors, it is the direct interaction among sides that sets MSPs apart from resellers and fully vertically integrated firms. This direct interaction is defined mostly in terms of the degree of control that platform users retain on some of the key terms of this interaction such as 'pricing, bundling, delivery, marketing, quality of the goods or service offered, terms and conditions' (2015c). In this way, a continuum between pure resellers and pure MSPs can be defined, as exemplified below for ride services/sharing and car rental/sharing:



Source: adaptation¹⁴ from Hagiu & Wright (2013, p. 106)

Some of the digital platforms that currently present themselves as part of the '*sharing economy*' are evidently two-sided markets by all standards: network effects, price non-neutrality, direct interaction (retaining control over key terms of exchange), and platform affiliation. If we take Airbnb as an example: a) more hosts (suppliers) will attract more guests (consumers) and vice versa; b) hosts and guests are charged different transaction fees (3% the former and between 6% and 12% the latter; c) hosts retain full control over when their room or apartment is available and over the price and other aspects (the platform only makes recommendations); d) both hosts and guests make the necessary 'investments' to be affiliated with the platform (though multi-homing is widely practiced on both sides). However, not all '*sharing economy*' platforms are necessarily MSPs. Following the visual exemplification above adapted from Hagiu & Wright (2013, p. 106), it can be said that an early champion of the sharing economy such as Zipcar is a pure reseller and not an MSP. It owns the fleets of cars that it rents to customers, albeit digitally and following an innovative business model, unlike platforms that only facilitate transactions between car owners and car users. It has been argued (Shaughnessy, 2014) that in collaborative production and/or innovation platforms (i.e. Quirky, GrabCad, etc.), network effects, price non-neutrality, and all the other parameters are not necessary conditions for their functioning. It is hard to conceive of them as MSPs both from a conceptual-theoretical perspective and from that of the possible policy implications. Some digital innovation platforms are commercial but there are many that are publicly funded (Holzmann et al., 2014, p. 105) and, by definition, are not part of the 'market' in the purest sense of this word. Furthermore, clear differences can be identified with respect to control and the object of 'sharing' among platforms that are apparently all MSPs, such as Airbnb, Uber,

¹³ Whereas it is by now generally recognized that operating systems, payment cards, media markets, and auction houses are two-sided, whether a variety of other markets are two-sided or multi-sided is subject to debate; for instance Li has cast doubt over whether advertising-supported media should be considered as an example of two-sided markets (2015), whereas Lucchetta contends that Google search engine is not a two-sided market (2014).

¹⁴ We moved Uber more to the left compared to the original graph because this platform leaves little control to the drivers.

Relay Rides, and TaskRabbit before and after the abandonment of the auction model, which we discuss in more detail at the end of Section 2.1.4.

2.1.3 Selective overview of sharing platforms

To sum up, neither the more specific '*sharing economy*' literature, nor the insights that can be indirectly taken and applied from the literature on two- and multi-sidedness, help to pin down a clear-cut definition and conceptualisation. Below, we selectively draw on the empirical analysis of 70 functioning sharing platforms presented by Codagnone (Forthcoming, 2016).

In order to sift through the very different instances of sharing platforms that are currently active, we systematised several similar but largely inconsistently framed and applied categorisations found in the literature¹⁵ into a useful (though very imperfect) heuristic tool. We used this tool to identify three broad categories and matched them to a traditional economic classification as follows: a) recirculation of goods (second-hand and surplus goods markets); b) increased asset utilization (production factors markets); and c) service and labour exchanges (labour market).

Under recirculation of goods it is possible to place commercial market exchanges such as eBay and Etsy and also a myriad of non-commercial (mostly small-scale and community-based) platforms for swapping and free exchanges (Freecycle, Freegive, Yerdle, Swapstyle).

Commercial and non-commercial platforms as diverse as Airbnb, CouchSurfing, Zipcar, Uber, Lyft, BlaBlaCar, Relay Rides, Getaround, and many others are often considered to be examples of increased utilization of idle assets. On the other hand, Uber and Lyft are sometimes seen as part of an exchange of services and placed with TaskRabbit (i.e. for instance in Hagiu & Wright, 2015c). This focuses on the labour component rather than the physical idle asset that is leveraged - indeed, one could also consider idle labour as an (intangible) asset. Furthermore, under this category one could also place all the initiatives of crowdfunding on the grounds that money can also be an idle asset. Sharing of space for collaborative productive activities can also go under this category (i.e. Wework, Sharedesk, etc.).

The platforms considered so far mostly concern interaction between peers, who are natural persons (with the exception of Zipcar). However, new platforms are emerging that allow peer organisations to leverage assets and facilities and that could be seen as the B2B or G2G part of the sharing economy, for instance:

- a) Cohealo, which is an asset mobilization and analytics platform for the healthcare industry. It helps hospitals use their non-emergency medical equipment more efficiently and save money on their future equipment purchases;
- b) MuniRent targets local governments and facilitates the sharing of heavy duty equipment: Directors of Public Works or Fleet Managers can access an online catalogue of equipment owned by neighbouring jurisdictions;
- c) Cargomatic connects shippers with qualified carriers who have unutilized capacity on their trucks.

¹⁵ For instance, Botsman & Rogers identified three categories: '*product service systems*' (access to products or services without need for owning the underlying assets); '*redistribution markets*' (i.e. re-allocation of goods); and '*collaborative lifestyles*' (i.e. exchange of intangible assets); the World Economic Forum reports (WEF, 2013, 2014) talk of three systems: redistribution markets for items or services no longer required to someone or somewhere where they are needed (cited examples: eBay or Craigslist); product service systems that provide access without need for ownership (amongst cited examples: Zipcar, RelayRides); collaborative lifestyles platforms allow people to share and exchange less tangible assets such as time, skills, money, experience or space (amongst cited examples: Airbnb, TaskRabbit). The OECD (2015b) proposes three types: a) selling (examples: eBay and Etsy); b) sharing (examples: Airbnb, Uber, TaskRabbit); and c) crowdsourcing (examples: Mechanical Turks, Kickstarter, Angellist). In the work of Schor and associates (Dubois, et al., 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015; Schor et al., 2014) four categories are presented: *recirculation of goods* (i.e. Craigslist, eBay); *increased utilization of durable assets* (i.e. Zipcar, Relay Rides, Uber, CouchSurfing, Airbnb); *exchange of services* (i.e. Time banking, TaskRabbit, Zaaaly); *sharing of productive assets*; and *building of social connections* (i.e. Mama Bake, Soup Sharing, and EatWithMe). Fradkin et al, refer to exchange of services and underutilized assets between buyers and semi-professional sellers" (2015, p. 5). It is easy to see several inconsistencies among these categorisations by looking at the formulation and especially at the examples placed under each category.

Services and labour exchanges include both the non-commercial time-banking activities and the commercial generic and professional labour market places such as TaskRabbit, Mytaskangel, Freelancers, oDesk, etc.

In addition, there are many other 'sharing' platforms that do not fit the three categories above or overlap with them. Sharing of food and/or of meals (Leftoverswap, Soup Sharing, and EatWithMe) can be seen as non-commercial recirculation of goods, or exchange of services, or as examples of what has been called '*building social connections*' (see footnote 14). There are digital platforms for collaborative production and innovation that hardly fit any category. They do not involve the sharing of productive facility, nor do they presuppose the provision of labour services; instead they are based on collaboration of specialised professionals (i.e. Quirky, GrabCad, etc.) sharing knowledge. The ride sharing boom is creating satellite activities and vertically-specialised emulations. SherpaShare, for instance, helps drivers of ride sharing and ride services platforms track their earnings, expenses, taxes and working opportunities in one single online repository. Similarly in the accommodation sector, Smart Host provides recommendations for pricing short-term rental. It analyses listings in the surrounding marketplace to determine an optimal price, promising more bookings, more profit with less work. Innovative platforms have also emerged for utilities, such as Open Garden, Mosaic, and Yehola. Open Garden is a platform for the crowdsourcing of connectivity across 3G, 4G, Wi-Fi and Bluetooth. Mosaic is a peer-to-peer lending platform for solar power that provides borrowers with access to affordable solar loans, and investors with opportunities to invest in renewable power, and clean energy supporters the power to spread wealth from the sun to their communities. Yeloha is a platform that facilitates the sharing of solar energy between 'sun hosts' and 'sun partners': it enables users to purchase solar energy generated by their neighbours.

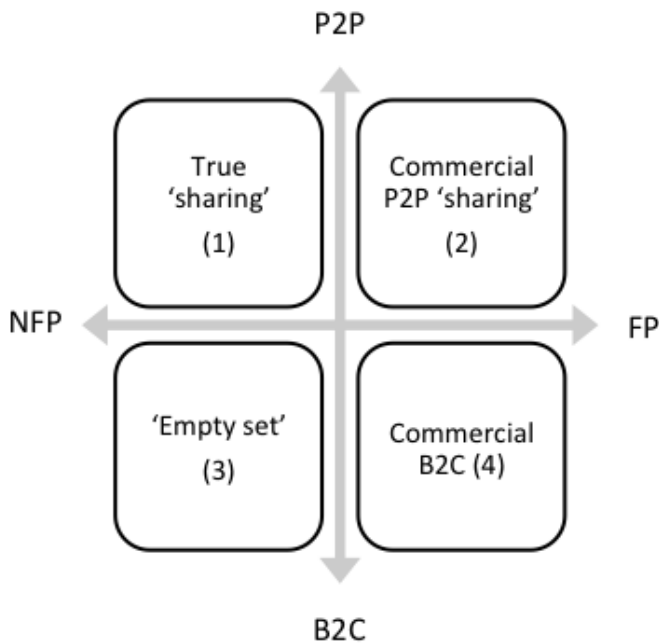
So, this broader categorisation does the job of organising empirical material for the sake of illustration but it is conceptually very imperfect for at least three reasons:

- a) in each category, platforms that only have one dimension in common but are very different in other respects are placed together;
- b) it leaves a lot of space for overlaps among categories; and
- c) it is not exhaustive and does not include all the digital platforms that are currently defined or self-define themselves as part of the '*sharing economy*'.

In all three categories, we find commercial platforms (of which some are 'Unicorns' with a market evaluation of more than 1 billion \$) alongside 'true sharing' initiatives that for various reasons did not scale up and remained community-based (Shor 2014; Shor& Fitzmaurice 2015). In the second category especially (increased asset utilization), we find very different platforms. First, platforms that are Business-to-Consumer (B2C, i.e., Zipcar), Business-to-Business (B2B, i.e., Cargomatic), Government-to-Government (G2G, i.e. MuniRent) are placed together with the classical Peer-to-Peer (P2P, i.e., Uber, Airbnb, TaskRabbit, etc.) where the peers are natural persons (Cargomatic or MuniRent could also be considered as platforms involving peer 'juridical persons'). Second, even within the peer-to-peer platforms, as we show at the end of this section, there are sharp differences in terms of level of control, scope for multi-homing, and the object being 'shared'.

2.14 Tentative conceptual mapping of sharing platforms

In sum, this brief overview shows that the sharing economy is a very heterogeneous group of online platforms that contains many new and very innovative economic and social activities that are hard to classify. A consensual definition and taxonomy is therefore beyond reach, given how all-encompassing the practice of using the expression '*sharing economy*' has become. However, it is possible, at least conceptually, to map the '*sharing economy*' in order to identify what area should be the object of what sort of policy interest and of supporting policy research. This is done here using the simple 2-dimensional matrix below:



The brief overview in the previous section and the matrix shown above help underscore the fact that innovation is probably the most important aspect of the sharing economy. Though regulatory concerns often make the headlines, many of these innovative activities do not seem to raise concerns in terms of incumbent reactions, risks for consumers, and the danger of network effects leading to monopolies. Policy makers should not lose sight of this important innovation dimension of the sharing economy, even though they may be preoccupied with the regulatory issues that some of these activities trigger.

The first dimension of the matrix classifies sharing platforms into for-profit and not-for-profit activities. This could be seen as a proxy for the 'true sharing' spirit that was advocated by the original grass-roots true sharing movement and is still claimed by the more commercially-oriented for-profit ventures. These ventures have now come to dominate the sharing economy label and raise more economic concerns (on this aspect see Section 2.3 on the normative and rhetorical dimensions of the '*sharing economy*'). The second dimension follows the business-to-consumer (B2C) versus the peer-to-peer (P2P) axis. Of course, many P2P platforms are owned and operated by formal businesses: Airbnb and Uber are classic examples. However, the primary service producers in these platforms are individuals who are not formally organized as companies - hence the regulatory level playing field issues that this type often generates. The label P2P is preferred to C2C because the two sides are not always only consumers but more often consumers and providers. As anticipated, broadly defined peer-to-peer platforms could also include exchanges between 'peer organisations' that were earlier classified as G2G or B2B platforms. Quadrant (2) of the matrix, however, refers only to P2P platforms which involve individuals (i.e. natural and not juridical persons). G2G and B2B sharing platforms are an emerging phenomenon that is relevant mostly from an innovation perspective (especially G2G sharing platforms as a form of public sector innovation). They involve regulatory matters other than those of interest within the DSM strategy, and they are unlikely to scale up to dominance, given their niche character.

Most 'true' sharing platforms (northwest quadrant 1) are not controversial and do not create regulatory concerns, though they could be of interest for policies concerned with community regeneration, social inclusion, and social innovation. This group is far smaller in terms of the number of users (i.e. volume) than it is in terms of the number of platforms and economic impact. The southeast quadrant (4) in the matrix connects the sharing economy to ordinary B2C online activities, the bulk of all exchange on the Internet. Some of these platforms (i.e. Zipcar) are referred to as 'sharing platforms' but in practice they are no different from other online B2C activities and are already regulated as such. As noted earlier, this quadrant is largely populated with resellers, rather than MSPs. The southwest quadrant (3) is for all

practical purposes an empty set: businesses are by definition for-profit, though they may finance some social and philanthropic activities.

Hence, the northeast quadrant (2) represents the bulk of '*sharing economy*' activities involving peer-to-peer transactions and collaboration, which are possibly the main area of focus for policy and regulation in general and for the assessment of platforms foreseen in the DSM strategy. This matrix already represents a step forward in focussing current policy and future research. The main advantages of using it for situating specific cases of sharing economy platforms is that it avoids the temptation of a one-size-fits-all definition. These definitions are either too vague because they do indeed try to fit all, or too narrow so they inevitably lose sight of some aspects of the very heterogeneous group of sharing economy platforms. Moreover, the matrix links the sharing economy with the rest of the online economy and gives it a special place in the wider universe.

Despite these merits, quadrant (2) nonetheless contains a set of very different activities with potentially distinct regulatory and policy implications. First, it does not enable us to appreciate the difference between pure transactional platforms geared to facilitating consumption of goods and services and platforms for collaborative production and innovation¹⁶. It is possible to speculate (but more empirical work would be needed to confirm this), for instance, that many of the regulatory and competition policy concerns that have been voiced for Airbnb and Uber (also as a result of the reaction of the disrupted incumbents) are not relevant for collaborative production and innovation platforms. Here, IPR and patent issues may be more relevant, whereas liability and other consumer protection matters are not. Second, it fails to consider the important differences between P2P platforms. For instance, Airbnb or Relay Rides on the one hand exert less control and are fully open for multi-homing. Uber, on the other hand, exerts a very high degree of control and centralisation and makes multi-homing fairly difficult. We come back to these aspects at the end of Section 2.2.1, after illustrating the emerging economic literature on peer-to-peer digital platforms.

2.2 Empirical evidence

2.2.1 Economics of P2P sharing platforms

A few recent contributions have looked, from an economics perspective, at P2P platforms that are commonly considered part of the '*sharing economy*' either theoretically (Einav et al., 2015) or empirically. They focus on the specific cases of TaskRabbit (Cullen & Farronato, 2015), Airbnb (Farronato & Fradkin, 2015; Fradkin, 2014; Fradkin, et al., 2015), and oDesk (Horton, 2014; Horton & Golden, 2015). These empirical studies have analysed primary administrative data obtained from the platforms. However, there are two other studies which focus on Airbnb and which use publicly-scraped data. These are discussed later as they look at impacts and reputational ratings (Zervas et al., 2014; Zervas et al., 2015).

Einav et al (2015) present a theoretical model of the interaction between P2P and B2C traditional suppliers and show that the outcome depends on the relative level of fixed and variable (marginal) costs in both sectors. If marginal production costs are lower in the formal B2C sector than they are in the informal P2P sector, but fixed costs are higher, then B2C market operators will have an advantage until their capacity constraint is reached. P2P operators will fill up excess demand. In the reverse case, P2P operators may crowd B2C operators out of the market. This explains why P2P sharing platforms are successful in markets with highly fluctuating demand, such as taxi services and tourist accommodation or very short-term labour markets. Established formal operators will not invest in production capacity that can cope with peak levels of demand because it would lower the rate of return on investment. Informal operators can fill that gap. On the other hand, P2P service providers are unlikely to be successful in markets with high fixed costs and strong economies of scale where large established providers can sell services at low marginal cost. P2P providers will also have

¹⁶ Furthermore, those digital platforms that are publicly funded and aim at fostering collaboration for Innovation do not fit well in this matrix. Placing them within the quadrant of not for profit and peer-to-peer platforms does not seem appropriate given the different core objectives and the fact that collaborative innovation may eventually produce profits for participants. On the other hand, they are radically different from typical commercial P2P platform given the nature of the operators.

difficulties operating in sectors with high visibility costs that require sustained investment in advertising, for instance. While online platforms can dramatically reduce information and thus visibility costs, brand-sensitive services that, for instance, require sustained visibility will be less sensitive to competition by P2P platforms.

According to Einav et al (2015) one of the key characteristics of P2P platforms is the trade-off between minimizing transaction costs for users (i.e. search and deliberation) and optimising the use of information to match the two sides, in the presence of a high level of heterogeneity of supply and consumer preferences. Heterogeneity can take several forms and concerns: a) preferences; b) suppliers and consumers; and c) the object of transaction. Before recent changes (see *infra*), TaskRabbit presented high heterogeneity in terms of the users, the requested tasks, and the skills and price offering of the suppliers. Differences in tastes and in seller costs also create a fair degree of heterogeneity for Airbnb. Uber has high heterogeneity in users only. Accordingly, given differences in tastes and seller costs, Airbnb is designed in a fairly decentralised manner with little control over the key terms of the interaction between hosts and guests. Uber, on the other hand, needs to match the two in real time, especially in peak hours and the type of cars and type of drivers is probably less important than getting a ride at the right time. This has led to a very centralised design and high level of control over the key terms of the interaction.

Pricing or auction mechanisms can also help in coping with the trade-off between transaction costs and efficient use of information. However, auctions can be cumbersome and time consuming. Indeed, a trend that marks a move from decentralisation to centralisation is the observed decline in the number of digital platforms that use auction mechanisms (Einav et al., 2013). TaskRabbit, for instance, recently moved away from the auction model. Earlier TaskRabbit accepted any possible task and let the taskers bid to perform them. Now it accepts only standardised tasks that are offered at fixed prices. This change has been described as '*TaskRabbit becoming the Uber for personal services*'¹⁷.

The limited empirical research available so far (for instance, there is no systematic empirical analysis of the matching mechanism for Uber) suggests that peer-to-peer markets are inherently frictional (Fradkin, 2014; Horton, 2014). This emerging research focuses on the microstructure of specific marketplaces, estimating search inefficiencies (Fradkin, 2014; Cullen & Farronato, 2015), heterogeneity in the matching process and problems of congestion (Horton, 2014), the consequences of search frictions and platform design for price competition (Dinerstein et al., 2014). Three studies show, for instance, that Airbnb (Fradkin, 2014), oDesk (Horton, 2014), and TaskRabbit (Cullen & Farronato, 2015), are characterised by high levels of heterogeneity, frictions, high percentages of non-matched potential (search friction), and congestion (i.e. matches fall through because of multiple requests at the same time). Fradkin (2014) reports that in Airbnb: a) potential guests typically view only a subset of potential matches in the market and more than 40% of listings remain vacant for some dates; b) hosts reject proposals to transact by potential guests 49% of the time, causing the potential guests to leave the market although there are potentially good matches remaining; and c) without search frictions (guests had all information and knew which host were willing to transact with them), there would be 102% more matches and revenue per searcher would be \$117 higher. In TaskRabbit, before the recent change of model, Cullen and Farronato (2015) found that auction mechanisms were not very efficient as they did not vary much with market conditions and suggested that a simpler mechanism may be preferable. This spot market clears thanks to a high elasticity of supply: in periods when demand doubles, sellers work almost twice as hard, prices hardly increase and the probability of requested tasks being matched falls only slightly. Similar results are found by Horton (2014) for the oDesk market for professional services.

The use of data and search algorithms (i.e. data analytics) are crucial for digital platforms to increase their capacity to match the two sides of the market. In this respect, Einav et al., (2015) do not rule out that the possibility that platforms could arrange search results and manipulate them in a way that is more beneficial to them than to the users. The previously

¹⁷ See, for instance, Casey Newton "TaskRabbit is blowing up its business model and becoming the Uber for everything", *The Verge*, June 17, 2014 (<http://www.theverge.com/2014/6/17/5816254/taskrabbit-blows-up-its-auction-house-to-offer-services-on-demand>).

cited study of Airbnb (Fradkin, 2014), for instance, simulated different scenarios with interventions that could maximise matching and were all based on hypothetical changes in the use of information through algorithms. One example was that matching would increase if hosts could manipulate the ranking algorithms. If hosts know that the ranking algorithm favours listings with a particular amenity, they may either obtain that amenity or lie about having that amenity. More generally, Fradkin (2014, p. 31) foresees that *"As the marketplace designer's knowledge about buyer and seller preferences approaches the full information benchmark, outcomes approach their frictionless benchmark. The on-going reduction in the costs of storing and analyzing data, commonly referred to as the "Big Data" revolution, will probably have a profound impact on platforms like Airbnb because more and better data can improve the platform's estimates of agent preferences"*.

The above considerations reinforce the point made earlier that there are differences with potential regulatory and policy implications even among classical P2P sharing platforms. First, they should be placed on a continuum of 'centralisation versus decentralisation' that can be illustrated by a brief comparison between Airbnb and Uber. The flexibility and openness of Airbnb is reflected in the large variety of types of locations, prices charged, and additional services provided by the hosts. This is both an advantage and a disadvantage for Airbnb in that it can make the service and experiences very diverse and rewarding but at the same time it makes the platform entirely dependent on the hosts on dimensions beyond their control (apart from the system of ratings). Multi-homing is typical of Airbnb hosts, who post their houses on various platforms. Uber, on the contrary, imposes conditions more rigidly on the drivers. Its offering is more standardised and controlled and the ride services platform has been trying to enlist providers in a more proactive and sometime openly aggressive strategy (i.e. poaching drivers from one of the competitors, e.g. Lyft). A final important difference is that multi-homing is more difficult (if not impossible) with Uber (and also with Lyft). This fact has been used by the drivers of both platforms, who demanded that they be considered as employees. They have recently been given a positive verdict by a Californian court. Second, the characteristics of what is shared (for instance, a car versus a ride service) and the modality of interaction (for instance, scheduled versus real time on demand) distinguish digital match-making platforms in ways that are not entirely germane from a policy perspective. When the transaction is scheduled in advance and there are repeated interactions between the two sides (often also in person), another layer of 'protection' on top of the reputational ratings system is added. It entails a relation between renter and owner (as, for instance, in Relay Rides) and not between drivers and passengers, which has clear implications in terms of liability (being easier to be covered by insurance). The frequency of occurrence of the transaction also matters and impacts on risk/safety. So, three dimensions of differentiation could be formulated as: a) the extent to which the object of sharing is on-demand or scheduled with some advance; b) the frequency of occurrence; and c) the level of risk/safety. So, although the revenue stream is the same, one could certainly distinguish three different segments such as car sharing (RelayRides), ride sharing (BlaBlaCar), and ride services (Uber) that have different implications for consumer protection. As the value of each transaction is higher in the former two instances than in the latter, then there is less pressure to increase volumes and to forego consumer protection aspects. Less risk and better-defined liability also make insurance policies easier to define. Although Airbnb is in a totally different sector, it is more similar to P2P car and ride sharing than to ride services.

As regards competition policy, the evidence reviewed seems to suggest that peer-to-peer digital markets are inherently frictional with clear limits to scaling up and industry concentration. Similar studies, however, are not available for Uber that, due to its lower heterogeneity and strict centralisation, can be reasonably expected to have higher scaling up potential. So, heterogeneity among both users and the object of transactions, frictions, and the possibility for multi-homing seem to suggest - at least ex ante - that platforms such as Airbnb or TaskRabbit are less likely to scale up to dominance. This may be different for Uber, given its centralisation and standardisation and the limited possibilities for multi-homing.

2.2.2 Evidence on impacts

Available empirical evidence to date is very partial and inconclusive - in many cases, it is simply anecdotal and often presented by stakeholders in the current controversies. For

example, Uber and Airbnb have released dozens of reports, the reliability of which could not be independently validated because the methodologies are not transparently illustrated and data are kept internal and not made accessible to researchers. On the labour market there is an ongoing debate, but the empirical evidence is even more scarce (Codagnone, forthcoming 2016). Regarding trust in P2P transactions and the social experience in interactions there is a larger body of literature that, however, provides mixed and inconclusive results. Most of the empirical evidence available to date pertains to the US. In the EU, the lack of evidence is more pronounced and there are few scientific articles. The only evidence comes from reports from the DG GROW Business Observatory and the Uber and Airbnb reports on the impact of their services on European cities. For European cities, there is no evidence on the profile of Uber drivers and users or Airbnb's hosts and guests, etc. It is crucial that this gap be filled, given that both Uber and Airbnb are hiring scholars and consultants to flood the European public debate with reports, which use non-transparent data and methods.

There are few empirical studies to date on the impact of sharing economy platforms. Some studies use very partial data that were collected from platform websites or through surveys. Some authors collaborated with platform operators in order to get access to internal platform data but the transparency and independence of these studies are hard to verify. Consequently, the empirical evidence to date remains patchy and inconclusive.

Exploiting the natural experiment created by the staggered entrance of Uber in different Californian cities between 2009 and 2013, Greenwood & Watal (2015) adopt a difference-in-difference identification strategy. They conclude that Uber services contributed to reducing alcohol-related motor vehicle homicides.

Wallsten (2015) uses Google trends as proxies to measure the demand for Uber services and administrative records of taxi complaints placed by consumers in New York and Chicago for improved service quality by the traditional taxi industry. He identifies a negative correlation (increased usage of Uber correlates with fewer complaints). He hazards the conclusion that Uber's competitive pressure has led traditional taxi drivers to improve customer service.

A very preliminary modelling simulation has calibrated data from the traditional US car market and from just one online peer-to-peer rental service (Getaround) to draw very general conclusions that have been much disseminated to the media (Fraiberger & Sundararajan, 2015). The simulation allegedly shows that peer-to-peer rental markets change the allocation of goods significantly and that below-median income consumers will enjoy a disproportionate fraction of eventual welfare gains from this kind of '*sharing economy*' through broader inclusion, higher quality rental-based consumption, and new ownership facilitated by rental supply revenues.

A qualitative empirical study based on fieldwork was conducted at four sites from the 'sharing economy' (interviews and participant observation at a time bank, a food swap, a makerspace, and an open-access education site) with a view to analysing how class and other forms of inequality operate within this type of economic arrangements (Schor, et al., 2014). The authors find considerable evidence of distinguishing practices and the deployment of cultural capital (i.e. some individuals did not share with others who made grammatical errors in online exchanged text). This exercise of class power in turn undermines the ability to forge relations of exchange and the volume of trades. It creates an inconsistency between actual practice and the widely articulated goals of openness and even equality, which the authors call '*paradox of openness and distinction*'.

A statistical analysis of a dataset constructed from Airbnb (combining pictures of all New York City landlords on Airbnb with their rental prices and information about the quality of the rentals) finds what can be seen as indirect evidence of racial discrimination (Edelman & Luca, 2014). The main finding is that, controlling for other relevant covariates, non-black hosts charge approximately 12% more than black hosts for the equivalent rental. These effects are robust when controlling for all information visible in the Airbnb marketplace. These findings highlight the existence of discrimination in online marketplaces as an important unintended consequence of a seemingly routine mechanism for building trust.

Bond (2015) analysed Uber impacts in San Francisco, District of Columbia and New York using extensive statistics on the taxi industry in the three areas pre- and post-Uber (statistics are

used only descriptively and there is no design/ attempt to document causal effects). The descriptive data suggests that Uber has had a negative impact on both the revenue of the taxi industry and on the values of the medallions (i.e, the taxi licenses).

Zervas et al (2014) used data obtained from both Airbnb and the hotel industry in the Austin areas. They exploited the significant spatio-temporal variation in the patterns of Airbnb adoption across city-level markets to adopt a counterfactual identification strategy ('Difference in Difference'). They found that Airbnb's impact on the hotel market consists of an 8%-10% reduction in revenues and that this impact is non-uniformly distributed, with lower-priced hotels, and hotels not catering to business travel being the most affected segments. They also find that affected hotels have responded by reducing prices, an impact that benefits all consumers, not just participants in the '*sharing economy*'.

Farronato & Fradkin (2015) found that the market expansion and business stealing effects of Airbnb differ by location, and attributed this heterogeneity to supply constraints - legal and geographic - relative to the level of demand. According to a model of competition derived by the authors, hotels and peer-to-peer suppliers differ in their fixed (higher for hotels) and marginal costs (higher for peer-to-peer suppliers). Having run the model, the authors were able to conclude that efficient market structure depends on the level and variability of demand, and to quantify the welfare gains from peer-to-peer entry in the accommodation industry.

2.2.3 Labour impact

As one of the increasing number of controversies surrounding the '*sharing economy*' in the period 2014-2015, the dispute over eroding labour security and inequalities is probably the most heated. Hall & Krueger (2015) present some empirical evidence on this. This paper is not as relevant for the evidence it presents (mostly descriptive and inconclusive) as it is for: a) the way it originated; b) the debate on contingent labour in which it is embedded; and c) for the heated reactions it produced. First, in a move that seems to follow closely the advice of Cannon, Uber gave Hall & Krueger access to its administrative data and to a survey of its drivers. Critics have speculated that this is a public relations strategy by Uber in that it selected Krueger, a prominent economist and former head of President Obama's Council of Economic Advisers, after the San Francisco company had already hired former Obama political adviser David Plouffe (CEPR, 2015)¹⁸. Second, Hall and Krueger frame their paper and the review of the literature with respect to the discussion of what economists call 'contingent labour' (flexible and precarious labour). A report from the Centre for American Progress, after noting the heated debate in Britain over "zero hour contracts" and charges that highly insecure and contingent employment leads to the exploitation of workers, stated that "technology has allowed a sharing economy to develop in the United States. Many of these jobs offer flexibility to workers, many of whom are working a second job and using it to build income or are parents looking for flexible work schedules. At the same time, when these jobs are the only source of income for workers and they provide no benefits, that leaves workers or the state to pay these costs"(Summers & Balls, 2015). 'Zero hours contracts' in the UK do not guarantee work for individuals, who are only paid for the actual hours they work for their employer. Workers have to be available as and when their employer needs them (Brinkley, 2013). Although, according to the UK Labour Force Survey, these contracts account for only 1% of employment, they have caused a heated debate in the UK (Brinkley, 2013). In their review of the debate on contingent work, Hall & Krueger (2015) note that according to US official statistics, this form of less secure employment accounts for a very small percentage of total employment and has not grown much since the 1990s. Hence, they argue that contingent work cannot be taken as one of the causes of income inequality. They reinforce this argument by noting that part-time employment has grown rapidly in some countries, such as the Netherlands, that have not experienced much of a rise in inequality. Although it is commonly believed that the reorganization of work and production has contributed to the undermining and erosion of labour standards, a liberal economist acknowledged that "Yet at least with aggregate national data, it has been hard to find evidence of a strong, unambiguous shift toward nonstandard or contingent forms of work – especially in contrast to the dramatic

¹⁸ The Centre for Economic and Policy Research (CEPR) is liberal leaning think tank ('liberal' in the American sense of the term liberal that can be equated with a centre-left position in Europe).

increase in wage inequality” (Bernhardt, 2014). Part of the problem may be hidden by the fact that official statistics still struggle to catch changing trends. According to a recent report, in fact, about 34% of the labour force, or 53 million Americans, work in some form of contingent arrangement (Freelancers & Elance-oDesk, 2014). Third, the publication of Hall and Krueger’s findings in January of 2015 does not seem to have brought consensus: to the contrary they have been harshly criticised and challenged both by activists and by less radical think tanks and newspapers. Their main findings are the following. Drivers appear to be attracted to the platform largely because of the flexibility it offers, the level of compensation, and the fact that earnings per hour do not vary much with hours worked, which facilitates part-time and variable hours. Supposedly, an Uber driver earns \$6 per hour more than drivers of traditional cabs. Uber’s driver-partners are more similar in terms of their age and education to the general workforce than to taxi drivers and chauffeurs. Uber may serve as a bridge for many seeking other employment opportunities, and it may attract well-qualified individuals because, with Uber’s star rating system, driver-partners’ reputations are explicitly shared with potential customers. Most of Uber’s driver-partners had full- or part-time employment prior to joining Uber, and many continued in those positions after starting to drive with the Uber platform, which makes the flexibility to set their own hours all the more valuable. Uber’s driver-partners also often cited the desire to smooth fluctuations in their income as a reason for partnering with Uber. So, a very nicely positive picture emerges where Uber’s drivers earn more, have more flexible schedules, earn extra money on top of other employment. As soon as it came out, the paper attracted harsh criticism (CEPR, 2015) and investigative journalistic reports have seriously challenged most of the reported findings (Guendelsberger; Kerr, 2014; Mims, 2015; Weber & Silverman, 2015; Weiner, 2015). In particular, journalists have amply demonstrated that once the costs of being an Uber driver are factored in, the positive differential reported by Hall and Krueger disappears and their hourly wage is only just above the minimum wage. The \$70.000 and \$90.000 yearly income that Uber and Lyft had earlier published on their websites are an utter misrepresentation of the reality. We reported more general criticisms about insecurity and lack of control over conditions of work earlier in this report. These criticisms apply to both Uber drivers and other providers of the ‘sharing economy,’ as reviewed in both Summers & Balls and Schor (2014, 2015).

2.3 The normative and rhetorical dimensions of the sharing economy

2.3.1 A value and vision-loaded domain

Amidst the lack of empirical evidence, public controversies prosper, not only because of this evidence gap. There are also profound, intrinsic, and symbolic reasons that are worth recalling and analysing to provide the normative and rhetorical context that both policy and policy-oriented research should not overlook. Sharing has a long-established positive normative load which inspires visions of both individuals and the societies they build and live in. From the very beginning the ‘*sharing economy*’ has emerged as a theme and phenomenon carrying value and vision-loaded connotations ranging from anti-capitalist social narratives to ecological themes, libertarian thinking, and management rhetoric. Some of the most passionate discussions and controversies on the sharing economy are rooted in these normative approaches. With some simplification, three main strands can be identified:

- a) The non-economic social approach to consumption sees sharing of resources as part of post- and anti-capitalist developments (Gansky, 2011; Grassmuck, 2012; Leadbeater, 2009; O’Regan, 2009; Wittel, 2011). It emphasizes the switch from ownership to access (Bardhi & Eckhardt, 2012; Baumeister & Wangenheim, 2014; Brinkø et al., 2015). Perceived benefits include greener commerce, richer social experiences, community revival and strengthening of social capital.
- b) Economics commentaries see the sharing economy as a new source of beneficial competitive pressure and economic innovation (Guttentag, 2013; Jenk, 2015; Koopman et al., 2014; Thierer et al., 2015). It could lead to an increase in productivity through use of underutilized assets or ‘dead capital’, create new markets through disruptive innovations and spur in turn further innovation among incumbent industries. In this libertarian version, the vision considers digital sharing platforms as a way of reducing the need for regulatory controls since they have their own built-in forms of self-regulation.

c) In the business and management literature (Guttentag, 2013; Heimans & Timms, 2014; Heinrichs, 2013; Matzler & Kathan, 2015; Woskow, 2014) the emphasis is on new business models expected to create new industries, revitalise traditional ones, create high quality jobs, and lead to a sustainable circular economy (WEF, 2013, 2014). Management gurus distinguish between '*new power*' (sharing economy, and also grass-roots political movements) that is about radical transparency, openness and collaboration, wisdom of crowds, do-it-yourself; and '*old power*' (big corporations, but also established political parties) that is about bureaucracy, institutionalisation, etc. (Heimans & Timms, 2014).

As a result, controversies have arisen over: (1) the alleged co-optation of the true sharing movements for lobbying purposes; (2) what motivates participants and the social capital impact; (3) the positive and negative impacts (including those on labour); and (4) laissez-fair versus regulation. We have already discussed (3) in the previous paragraph and we tackled the debate over regulation in Section 2.4; hence below we look at (1) and (2).

2.3.2 From movement to lobby?

Controversies have originated from the ambiguity of where the '*sharing economy*' begins and where it ends as demonstrated in analyses of the debate over true sharing and 'pseudo-sharing' (Belk, 2014a, 2014b; John, 2013a, 2013b). Because sharing has a positive and progressive connotation, more and more companies have started to claim that they are part of the '*sharing economy*'. For instance, as documented by Belk (2014b), the relevance of the symbolic dimension of the 'sharing economy' is exemplified by media and activists' negative reaction to a piece of research showing that people use sharing platforms for utilitarian and opportunistic reasons (Bardhi & Eckhardt, 2012) or to the news that CouchSurfing was no longer a not-for-profit activity and had become a for-profit 'B Corporation'¹⁹. Equally telling are the complaints that large companies have co-opted the sharing movement to pursue economic self-interest through traditional lobbying strategies (Lee, 2015; Schor, 2015; Walker, 2015). According to Lee (2015, p. 17), the 'sharing economy' "*is just another example of how 'insurgent sentiments' are used to 'sell the bona fide of profit-making corporations'*". Walker (2015) argues that, while the success of such companies depends on large and ever expanding decentralized networks of users (consumers and providers), this dimension of '*social connectedness*' should not hide the fact that dominant firms extract substantial rents and ruthlessly lobby for their interests. In this respect it has been suggested that Silicon Valley is the new revolving door for Obama staffers with much emphasis placed on the fact that Uber appointed former Obama campaign manager David Plouffe as chief of policy and strategy (Kang & Eilperin, 2015) and provided its data to Alan Krueger — the former Chairman of President Barack Obama's Council of Economic Advisers — to produce a paper concerning impacts on labour matters (see infra). The danger envisaged by Schor (2014, 2015) is that, as with other platforms (i.e. Facebook and Google), if left unchecked some 'sharing economy' companies could scale up to become monopolies.

2.3.3 Participation and social capital

This highly ideological normative debate on the sharing economy should take into account the real motivations of consumers for participating in sharing platforms and the evidence on whether or not 'sharing platforms' reinforce or create new forms of social capital.

A survey found different motives for participation and identified four clusters including both 'socialites' and 'market avoiders' but also other profiles that were not linked to ideological motivations (Ozanne & Ballantine, 2010). Lamberton & Rose (2012) detected the same mix of utilitarian and socially/environmentally-oriented motivations with surveys of users of three platforms. A study of time banks found that anti-capitalist sentiments, discontent with consumption, sustainability, enjoyment of the activity, and economic gains were the key

¹⁹ As reported in the relevant website "B Corp is to business what Fair Trade certification is to coffee or USDA Organic certification is to milk. B Corps are certified by the non-profit B Lab to meet rigorous standards of social and environmental performance, accountability, and transparency. Today, there is a growing community of more than 1,000 Certified B Corps from 33 countries and over 60 industries working together toward 1 unifying goal: to redefine success in business." (<https://www.bcorporation.net/what-are-b-corps>, accessed 8-6-2015). This type of special for profit entity is legislated in 28 US states. By statute B corps must include besides profit also positive impact on society and the environment among its legally defined goals.

motivations of members of the sharing platform 'Sharetribe' (Hamari, et al., 2015). A large-scale survey of free reuse groups (e.g. Freecycle and Freegle) in the UK, shows that while the majority of free reuse group participants do hold significantly stronger self-transcendence (i.e. pro-social) values than the wider UK population, they also hold other values in common with that population and a minority actually place less emphasis on self-transcendence values (Martin & Upham, 2015). Möhlmann (2015) also found mixture of self-interest and socially-oriented motivation through surveys of users of the car sharing service car2go, and Airbnb. It should be noted that these studies are all based on small samples or on qualitative in-depth studies. Baumeister & Wangenheim (2014) asked a more representative sample of 2000 randomly assigned German respondents to express their views and attitudes to accessing rather than owning different types of products. They found that the attitude towards access is consistently worse than the attitude towards ownership across all product categories.

An in-depth qualitative study of Freecycle finds thick relations and social capital at work but also tensions between the goals of the institution (the owners of the Freecycle brand) and its community members (Arsel & Dobsha, 2011). Three exploratory studies of local level platforms found that while traditional relational and reciprocal exchange is highly valued, the weak ties of non-reciprocal exchange allow communities to tap into their significant distributed expertise (Ozanne & Ozanne, 2011). A qualitative empirical analysis of non-monetary market places (Really Really Free Markets, RRFMs) blending online and offline sharing events found that a sense of community is both a driver of participation and an outcome of these events (Albinsson & Yasanthi Perera, 2012). The findings of the ethnographic study done by Bardhi & Eckhardt (2012) on Zipcar users came as a thunderbolt for both activists and earlier scholars of the 'sharing economy'. The authors report that Zipcar members do not feel any sense of attachment to the organization, their main motivation is use value with no reference to altruistic values. Consumers engage in opportunistic behaviours toward the company and one another (negative reciprocity). An empirical qualitative analysis of gift-giving, sharing, and commodity exchange at Bookcrossing.com underscores the importance of collective reciprocity and anonymous sharing (Corciolani & Dalli, 2014).

Although the evidence base is still limited and inconclusive, at this preliminary stage it is nonetheless reasonable to conclude that: a) there is a mix of motivations leading individuals to join the 'sharing economy' that spans the whole range from altruism to utilitarian goals and also includes some scattered anti-capitalist and anti-consumption ideologies and sentiments; b) the 'sharing economy' creates some form of genuine social capital but is also based on reciprocal (negative and positive) exchanges; c) judging from the reviewed sources altruistic and ideological motivations and social capital building seem to have characterised more the early not-for-profit initiatives. It can be concluded that, going beyond the polarised rhetoric and controversies, the 'sharing economy' is a mixture of 'passions' and 'interests'.

2.4 Regulatory issues

2.4.1 The general terms of the debate on regulations

In the midst of ongoing legal disputes (see an overview in Codagnone, forthcoming 2016), the debate on regulation is polarised between those radically against any intervention (Allen & Berg, 2014; Cohen & Sundararajan, 2015; Koopman, et al., 2014; Koopman et al., 2015; Sundararajan, 2014; Thierer, et al., 2015), and those who are in favour of some form of regulation (Cannon & Chung, 2015; Gobble, 2015; Malhotra & Van Alstyne, 2014; McLean, 2015; Ranchordas, 2015; Rauch & Schleicher, 2015; Sunil & Noah, 2015; Zrenner, 2015). There are also some more specialist legal approaches (Barry & Caron, 2014; Cohen & Zehngebot, 2014; Daus & Russo, 2015; Miller, 2014; Miller, 2015; Oei & Ring, 2015), some of which propose very strict interventions on, for example, taxes (Oei & Ring, 2015) or transportation services (Daus & Russo, 2015).

The libertarian thinkers oppose regulatory intervention on the grounds that they produce regulatory failures that are more costly than the market failures they aim to address (Allen & Berg, 2014; Koopman, et al., 2014; Thierer, et al., 2015). They also underline the risk that regulators fall prey to the pressures exerted by incumbent industries (i.e., regulatory capture). From a libertarian standpoint, excessive legislation and regulation could absorb and neutralize the consumer and efficiency gains produced by technological innovation. It is actually argued

that the '*sharing economy*' reputational feedback mechanisms (the ratings) solve the classical information asymmetry known as the '*lemons problem*' (Thierer, et al., 2015)²⁰. From this libertarian perspective a new approach to bottom up self-regulation is needed where: a) various forms of licensing should be reduced to allow private certification schemes and reputation mechanisms to evolve; b) regulations making it difficult for start-ups to compete for labour (contractors should not be turned into employees) should be avoided; and c) regulation should remain general and not industry specific.

More nuanced and less radical approaches call for innovative and smart forms of regulation attempting a compromise to ensure consumers' protection and safety without stifling innovation (Barry & Caron, 2014; Miller, 2014; Miller, 2015; Ranchordas, 2015; Rauch & Schleicher, 2015; Sunil & Noah, 2015). These smarter regulations envisage a number of possible solutions: a) use of information-based regulation (metrics and performance); b) the development of a general but differentiated regime for the '*sharing economy*'; c) co-optation of '*sharing economy*' organisations within the city governance structure, as was done in the past with industries that perform a quasi-public service; d) gradual deregulation of incumbent industries if necessary for fair competition, rather than the application of traditional regulation to the '*sharing economy*'. Cannon & Chung (2015), for instance, argue in favour of a co-regulation approach, as certain areas of the '*sharing economy*' are suited to regulatory intervention and others to self-regulation. They warn, for instance, that when both suppliers and consumers depend on one another for reviews, the risk that the suppliers could retaliate may lead the users to soften negative reviews and make (as documented in Section 3.6) ratings less negative and, thus, less reliable. They also underscore the need for the introduction of a minimum insurance requirement, like the one imposed by California on ride-sharing companies.

A very balanced position can also be found in Einav et al (2015), which is based on theoretical and empirical economics. First, they recognise that the welfare and labour effects of these platforms remain an open empirical question. *Ex ante* positions in favour or against regulating are not yet empirically grounded. They also clearly acknowledge that ratings have shortcomings (i.e. biases and inflations, see next section) and that it is possible that platforms present the results of search in a way that is more convenient to them than to the users. On the other hand, they point out that imposing licensing and certification on the platforms may protect incumbents without really protecting consumers. They observe that these requirements can be seen as remedies to market failures, and their implementation could be lengthy, after which little monitoring may be actually performed. In this respect they seem to favour small interventions which would allow traditional industries and new platforms to compete on an equal footing. With respect to the utilization of data by the platforms, they highlight several open questions such as: can consumers limit the use of data by platforms? Can platforms share/sell ratings and purchase history? What about potential gender and race discrimination in ratings, leading these groups to receive fewer opportunities? Finally, they make the interesting observation that the timing of regulation is crucial. Once platforms start to grow, they grow very fast and when they are very big regulating them becomes problematic. On the other hand, platform characteristics may change whereas regulation, once applied, is difficult to reverse. They therefore suggest early but lenient regulatory intervention.

Consumer protection concerns can generally be split into two categories: service quality concerns and liability, and damage claims in case of accidents. The first type may be addressed through reputational ratings on websites. The second type cannot be addressed through self-regulation and requires a third-party insurance contract. In the next section, reputational ratings are briefly discussed, and other consumer protection concerns are presented in Section 2.4.3.

²⁰ In a famous paper, Akerlof (1970) describes how information asymmetries prevent certain mutually beneficial exchanges from taking place. Considering the used car market, he explains that used car buyers know that "*lemons*" (bad cars) exist but are unable to distinguish them from higher quality cars, and they are therefore less willing to pay. The buyers' uncertainty, in turn, discourages sellers of higher-quality cars from offering their cars for sale, making both buyers and sellers worse off.

2.4.2 Trust and reputational ratings

As shown earlier, motivations for participating in sharing platforms are mixed and are not unequivocally based on social capital and generalised trust. Self-interest and opportunistic behaviour play a part. Exchange among strangers is one of the salient characteristics of '*sharing economy*' platforms and building trust to get both sides of a market on board has been a key challenge and driver of success. The trust that makes the '*sharing economy*' possible is the combined results of users' attitudes and of how such attitudes are effectively leveraged by online reputational rating systems and liability insurance schemes.

The reliability of these reputational ratings is the subject of debate. On the one hand, ratings reduce information asymmetry and constitute a form of self-regulation that may not require regulatory intervention (Allen & Berg, 2014; Koopman, et al., 2014; Thierer, et al., 2015). In practice, however, there are reasons why ratings may not be fully reliable. An accurate rating is a public good and is likely to be under-provided (Avery et al., 1999; Miller et al., 2005). A user may not always leave a rating, in which case the distribution of his/her evaluations may not accurately represent the outcomes of that agent's previous transactions. Fear of retaliation or intentional collusive behaviour with friends can lead reviewers not to reveal their experiences in the review. An experiment has shown that a system in which reviews are hidden until both parties submit one ("simultaneous reveal") reduces retaliation and makes markets more efficient (Bolton et al., 2012).

Only a few empirical contributions that analyse ratings with respect to the sharing economy were found (Fradkin, et al., 2015; Horton & Golden, 2015; Lauterbach et al., 2009; Overgoor et al., 2012; Zervas, et al., 2015). Two studies focussed on CouchSurfing and, using data scraped from the web, conclude that there is a bias toward positive reviews. They also found that there can be collusive reciprocity among individuals belonging to the same network (Lauterbach, et al., 2009; Overgoor, et al., 2012). A comparison of the distribution of reviews for the same property on both TripAdvisor and Airbnb shows that ratings in the former are lower than those on Airbnb by an average of at least 0.7 stars (Zervas, et al., 2015). More generally, on TripAdvisor 31% of reviews are five star, on Expedia 44% (Mayzlin et al., 2014) and on Airbnb 75%. This difference in ratings could be interpreted as showing that the two-sided review system induces a bias in ratings. A recent study, involving researchers affiliated with Airbnb, based on field experiments conducted on Airbnb itself found that there is bias. However, it concluded that when this bias was removed through experimental treatments, the percentage of five star ratings on Airbnb remained substantially higher than 44% (Fradkin, et al., 2015). The study of another platform (oDesk) documents through a laboratory experiment that reputational ratings are inflated (Horton & Golden, 2015). Thus, the evidence is inconclusive and mixed. Further evidence is needed to ascertain whether or not reputational ratings are a sufficient and reliable measure of quality and consumer protection, especially as regards European contexts.

2.4.3 Other consumer protection concerns

Incidents reported for Uber drivers and/or with Airbnb hosts (i.e. Sablik, 2014) have raised concerns over the fact that suppliers in these platforms do not need any certification (Rauch & Schleicher, 2015). On the other hand, it is reported that Uber and Lyft control the channels for demand for their drivers and can easily disconnect them (Cohen & Sundararajan, 2015). Many platforms require users to display a clear profile photo with their accounts and prefer people to sign up using their Facebook account, as it is linked to their real identity (Thierer et al., 2015). Airbnb uses technology to digitally verify the government IDs of its providers (Cohen & Sundararajan, 2015). BlaBlaCar also verifies a driver's phone number, email, and Facebook account along with real photos and names (Thierer et al., 2015). It is not clear whether platforms are liable for damages and insurance claims when, for example, a hired car crashes or a host's apartment is damaged, or whether they are responsible for the security of the service provided to a user. Platforms try to escape liability and argue that they are only intermediaries providing a 'matching service' and are not direct service providers. On the other hand, it should be noted that Airbnb has a team that constantly reviews suspicious activity and looks for new ways to combat fraud and abuse (Thierer et al., 2015). Sharing platforms raise concerns regarding sufficient insurance (Ranchordas, 2015). For example, in the UK, people's existing insurance policies often do not cover them when they engage in 'sharing' activities

(Woskow, 2014). Furthermore, sharing activities do not formally fit into individual or commercial types of insurance. Nonetheless, Airbnb, RelayRides and Uber offer some kind of guarantee and insurance (Rauch & Schleicher, 2015; Thierer et al., 2015). Uber's insurance applies when a passenger is in the vehicle and driver's own insurance applies when his app is off. When the app is on but there is no passenger in the car, the driver's own insurance applies and Uber supplements this with contingent liability coverage for damages not covered by personal insurance (Koopman et al., 2015). However, some problems appeared because some insurance companies cancelled drivers' personal insurance policies for being Uber partners (Koopman et al., 2015). San Francisco requires short-term rental websites platforms to provide liability insurance for the rental (Miller, 2015). California enacted legislation establishing minimum insurance requirements for ride-sharing companies (Cannon & Chung, 2015). Finally, despite the existence of ratings, it is difficult to assess the quality *ex ante* and users can only make a full appraisal when they actually experience the service, which is not fully satisfactory since redress possibilities are very limited. eBay, for instance, has a money back guarantee that refunds buyers if they do not receive their item or it does not match the listing description (Thierer et al., 2015). To ensure quality, Uber and Lyft allow consumers to see the GPS path of their rides so that they can verify that the driver took the shortest route (Koopman et al., 2014). Airbnb guests can leave the rented place on the first day if they do not like it and are charged only one day. However, there is no redress mechanism for the extra costs they may incur in finding an alternative place to stay or in changing their travel plans.

3. Discussion and conclusions

This literature scanning exercise shows that we are far from providing unambiguous answers to some of the fundamental questions about the '*sharing economy*'. The available research is too limited and patchy to give us a comprehensive and coherent picture. Our only ambition therefore is to try and clear some of the conceptual and empirical fog around the '*sharing economy*' and perhaps identify where possible answers might be found.

The public debate and even part of the more scholarly literature is very polarized. There are, on the one hand, passionate normative arguments that promote the sharing economy as a socially and ecologically sustainable alternative to monetized market-based exchange and, on the other hand, equally passionate business-driven promotion campaigns for commercial sharing economy platforms. Controversies and conflicts have arisen from this polarisation. Some of the more successful and fast-growing businesses in the latter group have sparked concerns among more established providers of similar services. For policy makers, this is an uncomfortable situation because both sides stake claims with little supporting objective empirical analysis. Policy makers and regulators face the challenging task of tackling entirely new activities that blur the personal and the commercial. They must avoid stifling potentially beneficial innovation but at the same time ensure consumer protection, preserve labour rights, and avoid the erosion of the tax base (Ranchordas, 2015; Sunil & Noah, 2015). This review has touched upon many of the policy issues and concerns contained in the internal policy documents mentioned in the introduction, sometimes providing insights but more often highlighting evidence gaps.

What are sharing platforms and what distinguishes them from other online service activities? A wide variety of definitions has been offered in the literature that we scanned and there seems to be no consensus emerging around any one of these. Rather than proposing another definition that would run into the same debate, we identified the key characteristics of existing definitions and extracted some common ground from these, leaving aside the peculiarities that distinguish them. We presented a conceptual mapping that distinguishes P2P commercial platforms from non-commercial ones and also from more traditional B2C models. B2C includes company-provided services. However, even in P2P sharing platforms, the platform owner or organizer is often a formal company though individuals supply the service content. In terms of multi-sided market jargon, both sides of the market may be individuals but the market organizer is often a company. Another debate concerns the "pure" sharing platforms where exchange takes place without profit motives and sometime even on a non-monetary basis, and sharing platforms with commercial motives and monetized exchange. The rhetoric of '*sharing*' and its social connotations has diverted attention towards the motivation of service providers and the contents of the exchange and away from the mechanisms and economic interests of

the platforms. Moreover, the reactions of the disrupted industries and the intervention of local courts have catalysed conflictive and polarised arguments that blur the picture.

We suggest that the definition of sharing platforms should focus on P2P activities because this would reflect the group of platforms where most of the policy concerns are situated. These include regulatory and consumer protection issues in the informal production of services, potentially unfair competition with formal B2C service providers, and questions related to dominance and market power of the P2P platform operator as a commercial business.

Regulatory issues are at the centre of the sharing economy debate. This review has reported on the debate between proponents of self-regulation who argue that formal regulation is costly and serves to protect vested interests, and the proponents of extending the reach of formal regulation to P2P platforms in order to correct market failures that private parties on their own cannot overcome. Libertarian thinkers argue that self-regulation from user-generated reputational ratings are more effective in ensuring consumers' welfare than traditional consumer protection measures. Traditional command and control regulation would greatly stifle innovation, and would also turn contractors into employees. Instead of imposing licensing, private certification schemes and reputation mechanisms should be allowed to evolve. More moderate approaches would evolve in parallel with a growing consensus that the 'sharing economy' cannot be regulated by means of traditional command and control approaches. New innovative forms of smart regulation are necessary, in order to avoid stifling innovation, including 'information-based regulation' that would tie regulation to some usage and performance metric. However, some empirical studies have challenged the libertarian view on the effectiveness and reliability of reputation ratings and showed that these systems can be manipulated. More empirical evidence is required to examine the extent to which the 'libertarian' hypothesis could lead to less costly and burdensome self-regulation in selected domains of regulation and licensing.

Apart from the challenges that online self-regulation faces about the validity of review scores, policy makers may wish to split the regulatory question in two parts. First, there is regulation that seeks to overcome information and coordination failures that prevent markets from operating efficiently. Digital information technology may offer innovative and better alternatives in this respect. Typical examples include a-priori testing and certification of taxi drivers and hotel rooms versus continuous monitoring of service quality by taxi drivers and hotels. Second, there is regulation that seeks to overcome market failures in liability and consumer protection. No amount of information can overcome these market failures and the need for third-party supervision and regulation remains. Typical examples include liability insurance for taxi drivers and tourist accommodation operators. There is evidence that platforms may at times try to avoid liability responsibility claiming that they are simply a matching service and not a service provider. Reported incidents with drivers and hosts have made this issue quite relevant. Some platforms started to search for solutions to prevent incidents from happening. It appears that it is difficult in the EU to find insurance forms matching the needs of 'sharing' platforms. For the mapping of regulatory and non-regulatory approaches used by EU Member States and third countries (such as the US) only scattered evidence was gathered, mostly for the US and to a very limited extent the UK. This represents a clear evidence gap.

The regulatory debate and policy response to the challenges posed by some sharing economy platforms is very fragmented in the EU. Taxi and hotel sector regulation is mostly the competence of city councils, and cities respond in various ways. Labour market and social security regulation is mostly a state competence, handled differently in Member States. At a higher level, the EU may want to consider consumer protection and other liability issues. However, the literature that we have reviewed in this paper does not yet help policy makers decide whether or how to respond to these regulatory challenges.

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