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The Passions and the Interests: Unpacking the 'Sharing Economy'

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Abstract

Digital platforms generally placed under the 'sharing economy' and various other labels match different groups of users and providers and enable the increase in scale and speed for traditional transactions such as selling, renting, lending, labour trade, and provision of services. In many cases, these platform-mediated activities involve peer-to-peer or peer-to-business transactions that occur in a regulatory vacuum. Since 2014, the phenomenal growth of a few large commercial 'sharing' platforms, the increasing number of economic sectors affected, and the conflicting interests among the stakeholders involved have made the 'sharing economy' a domain of conflictual rhetoric and public controversies, legal disputes, and even violent protests. The various expressions used to refer to 'sharing' platforms, by now appropriated by practitioners and stakeholders, are 'floating signifiers' for all sorts of different activities, in what can be called the rhetorical politics of platformisation. Terms and concepts are used in such confused and confusing ways that it is at times difficult to ascertain whether advocates, opponents, regulators, and policy makers are discussing the same phenomenon. There is a closed self-reproducing loop between conceptual ambiguity, rhetorical controversies, and lack of sound measurement and empirical evidence. This loop, in turn, limits the space for a rational debate of alternative policy options and contributes to the fragmented regulatory approaches which currently address the 'sharing economy'. This theoretically-inspired and empirically-informed critical essay (i) unpacks the 'sharing economy' rhetoric, (ii) clears the field of semantic and conceptual ambiguity by providing a heuristically-useful and empirically-grounded typology, (iii) maps the controversies against available empirical evidence on the functioning and on the impacts of 'sharing' platforms, (iv) reviews the debate and the literature which focuses on regulatory and policy issues, and (v) discusses all these aspects in terms of their policy implications, and of future European research on this topic. It does so in a unique way, because of the extensive evidence base used and the inter-disciplinary approach it takes in which theoretical and empirical economics, sociology, anthropology, regulatory and legal studies, and rhetorical analysis converge. The evidence comprises: a) 120 media items (newspapers and magazine articles; blogs especially by 'sharing economy' advocacy groups and organisations; industry briefs etc.); b) in-depth analysis of a purposive sample of 70 platforms (website, blog, public relations and self-reports, etc.); c) 140 sources, consisting of scientific items (115) and broadly defined reports (25), selected using a formalised protocol and systematically reviewed; d) about 60 reports released by interested parties (industrial associations, platforms own reports and public relation materials); e) 70 indirectly relevant scientific contributions and policy reports.

Title: The Passions and the Interests: Unpacking the 'Sharing Economy'

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Acknowledgements

This essay which focuses on the '*sharing economy*' as a whole and discusses both rhetorical and empirical aspects, and a second one which deals more specifically with digital labour markets ¹, present the results of an exploratory research project conducted by Unit J.03 (Information Society) at JRC between June 2015 and February 2016.

Special thanks go to Ioannis Maghiros (Head of Unit J.03), who envisaged the scientific and policy relevance of this topic, and decided to launch this exploratory project. Other colleagues at J.03 also provided input: Gianluca Misuraca made many valuable suggestions and Bertin Martens' questions and comments helped finally to corroborate the key tenets of the analysis of the '*sharing economy*' presented in these two essays.

The preliminary versions of both essays were presented in Brussels on 24 February 2016 at an internal workshop, which was organised by Ann Branch and Maria Nyberg of DG Employment. The authors would like to acknowledge their support and policy insights which have improved the content of these essays. The workshop was attended by representatives of various Directorate Generals, whose comments and suggestions have also provided valuable input.

The authors, however, are solely responsible for the limitations of the evidence base upon which these essays rest, for any conceptual and/or logical flaw in the framing of the topic, for biases in the interpretation of the results, and for any possible 'value-relevance' (*Wertfreiheit*)² that might be attributed to the discussion of the main findings.

Two disclaimers and corresponding apologies to the community of researchers are in order here. First, for both essays and particularly for this one, there is a sizeable time lag between the completion of the formalised literature review and the finalisation of the work, due to internal peer-reviewing. The first draft of this essay was completed on 12 June 2015 and the second draft on 13 September 2015. Though one last update of the literature search (but not as systematic as the first one) was carried out, the relevant literature is growing very fast and some important contributions may have been left out, for which we apologise. Second, several contributions have been found, analysed, and cited in their pre-publication form. It is possible that some of them have now been published in peer-reviewed journals and that this fact escaped the search update. If this is the case, apologies are also due to their authors.

¹ "The future of work in the '*Sharing Economy*': *Market Efficiency and Equitable Opportunities or Unfair Precarisation?*" (Codagnone *et al.*, 2016).

² The reference here is, obviously, to Max Weber's distinction between 'value-freedom' (*Wertbeziehung*) and 'value-relevance' with respect to the three phases of research: what we research, how we do it, and how results are interpreted (Weber, 1904).

Foreword

This essay is one of two that deal with the '*sharing economy*'. While this essay deals with the '*sharing economy*' in general, the second provides a more vertical analysis of digital labour markets (see footnote 1). Both are based on primary (analysis of platforms) and secondary (scientific literature, think tanks and policy reports, and media accounts) sources. They take an interdisciplinary approach to the analysis, combining economics, sociology, anthropology, legal studies, and rhetorical analysis.

The reader will embark on what may at first sight seem a tortuous journey into different literatures, codes, terminologies, and narratives. Discussion of 'hard' findings from experimental and quasi-experimental studies will alternate with analysis of 'softer' issues such as rhetorical discourses and media 'hyped' accounts. There is a rationale, however, inspired by the enduring legacy of the work of Albert O. Hirschman (1970, 1977, 1991)³ and his view that ideas and rhetoric can become endogenous engines of social change, reforms, and policies.

In the preface of his book *The Rhetoric of Reaction* (1991), Hirschman observed that opposing groups in liberal democracies sometimes get walled off from each other's opinions and views. He argued that rhetorical discourses can explode into conflict simply as a result of the 'imperative of the argument'. He explained that he found a detached analysis of surface rhetoric, placed historically and analytically in context, more useful than a head-on attack on one of the opposing factions. He also claimed that deconstructing rhetoric by using empirical evidence could help restore dialogue and communication between conflicting factions. He also showed how rhetorical discourses do not emerge from nowhere but are historically inspired and recurring. He compared, for instance, the neoconservative attacks on welfare states, such as Charles Murray's *Losing Ground* (1984), to the reactions hundreds of years earlier against the "Poor Laws". He noted how '*Any idea that has been out of view for a long time has a good chance of being mistaken for an original insight*' (1991, pp. 29-30). A case in point is the discourse about gigs workers performing tasks on digital labour markets for 'pin money'. Here, an old idea first articulated in the 1950s and 1960s about the then-emerging temporary work agencies in the US has clearly resurfaced (Berg, 2016). More generally, the '*sharing economy*' is today a rhetorical field that needs unpacking.

The '*sharing economy*' (also given, among many others, the label 'collaborative economy'), is potentially the ideal place for reconciling the 'passions' and the 'interests'. In the last few years, however, it has become the domain of conflicting discourses, legal disputes, and at times violent strikes (i.e. traditional taxi drivers in Paris or Milan). It may seem churlish to deconstruct these discourses with empirical evidence and to challenge claims made by both naive disinterested and shrewd self-interested parties about '*le magnifique sorti e progressive*' (the magnificent and progressive fate⁴) of the '*sharing economy*'. Alternatively, deflating the gloomy predictions of the harshest detractors of 'sharing' platforms may be considered apologetic. Yet, this is exactly what this essay aims to do. It will try to disentangle the rhetoric with available empirical evidence in order to enable a more rational debate at least in the discussion of policies, if not in the public arena. Analysis of the rhetoric, mapping of stakeholder positioning and interests, and robust empirical evidence are triangulated to inform policy making with a series of options. Currently, commercial 'sharing' platforms operate in an institutional vacuum and stand to some extent 'above the law'. This makes it easy for 'detractors' to argue that they are simply thriving on 'regulatory arbitrage', rather than producing innovation. Decisions made by local governments and courts may create a very

³ As evident also in the title of the other essay on the '*sharing economy*' in general pitting the passions against the interests.

⁴ This is a famous quote from a 1836 poem by Giacomo Leopardi's (*La Ginestra o Fiore del Deserto*), where the Italian poet ironically challenged in the positivist context of the day the blind faith in an unlimited and extraordinary progress for all human race.

fragmented landscape in Europe. Regulatory and policy guidance is therefore urgently needed.

The '*sharing economy*' is a paradigmatic case of a policy-relevant issue where facts are uncertain, values disputed, and the stakes increasingly high. As such, it represents a test bed for the exercise of science to broker policy options honestly and transparently. It is a strategic case study in which the JRC could play a valuable role as a 'boundary organisation' between science and policy (Guimarães Pereira & Saltelli, 2014). This essay represents a first step in this direction. There are however some obstacles in data accessibility that must be overcome, as discussed briefly in the final part of this foreword.

On 10 February 2016, Airbnb, Uber and 45 other commercial 'sharing' platforms sent an open letter to the Netherlands Presidency of the Council of the European Union⁵. An extract is reported below:

In its Digital Single Market Strategy, the European Commission announced the development of a European agenda for the collaborative economy [...] We welcome the Strategy as an important step in realising the benefits which our platforms can deliver for European consumers. We also support the Commission's efforts to seek and remove obstacles in the broader European internal market for goods and services. In view of the upcoming European Competitiveness Council, we urge Member States to support these objectives and continue to seek to ensure that local and national laws do not unnecessarily limit the development of the collaborative economy to the detriment of Europeans. [...] We therefore call on the Council to acknowledge in its Conclusions, the positive contribution of the collaborative economy in terms of sustainable economic growth for Europe.

The work carried out as part of the exploratory project on the '*sharing economy*' shows that evidence is emerging on both the positive and negative effects of platforms. However, it also unequivocally documents that the currently available evidence on costs and benefits is absolutely partial and not yet conclusive. There are a few exceptions where data on labour platforms has been made available to researchers: i.e. from Upwork, formerly Elance-oDesk, and Freelancers. However, most of the available quantitative evidence based on platforms' own data has been produced by the platforms themselves (Airbnb, 2015b)⁶, or has been commissioned to former members of the Obama administration (Autor *et al.*, 2003; Hall & Krueger, 2015; Sperling, 2015) and of the German Monopolies Commission (Uber, 2015f, 2015g), or co-authored (but not yet published in peer-reviewed journals) by academics and 'embedded researchers' (i.e. researchers who are employed by platforms and have been given access to internal data). The datasets and methods used to produce these reports, thus, are not publicly accessible for third-party scrutiny. It is more than likely that the net welfare effects of the '*sharing economy*' are positive for the economy, and the society as a whole, including consumers, employers, and possibly workers. However, it needs to be demonstrated by further empirical research in general and especially in Europe. This research should undergo the scrutiny of peer-review. Though evidence can certainly be gathered through qualitative interviews and case studies, surveys, and web scraping of data, the important data that would show economic effects are those gathered by the platforms, which so far have been made available only to a few selected researchers. It is, thus, important that European researchers also have access to platform-generated data. It would provide evidence on costs and benefits for different categories of stakeholders, from which aggregate net welfare effects could be estimated. The European Commission should take steps to make this possible.

⁵ Available at: <https://www.airbnbaction.com/wp-content/uploads/2016/02/NLCouncilLetterCollabEcon-Final-100216-4.pdf> (retrieved 11-02-2016).

⁶ After this entry in the blog summarising the overall results, one can then access the city specific reports (Airbnb, 2012, 2013a, 2013b, 2013c, 2013d, 2014a, 2014b, 2015a, 2015b; Uber, 2014, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g).

Executive Summary

Digital platforms generally placed under the '*sharing economy*' and various other labels match different groups of users and providers and increase the scale and speed of traditional transactions such as selling, renting, lending, labour trade, and provision of services. In many cases, these platform-mediated activities involve peer-to-peer or peer-to-business transactions that occur in a regulatory vacuum. Since 2014, the phenomenal growth of a few large commercial 'sharing' platforms, the increasing number of economic sectors affected, and conflicting interests among the stakeholders involved have made the '*sharing economy*' a domain of conflictual rhetoric and public controversies, legal disputes, and even violent protests. The various expressions used to refer to 'sharing' platforms, now appropriated by practitioners and stakeholders, are 'floating signifiers' for all sorts of different activities, in what can be called the 'rhetorical politics of platformisation'. Terms and concepts are used in such confused and confusing ways that it is at times difficult to ascertain whether advocates, opponents, regulators, and policy makers are discussing the same phenomenon. There is a closed self-reproducing loop between conceptual ambiguity, rhetorical controversies, and lack of sound measurements and empirical evidence. This loop, in turn, limits the space for a rational debate about alternative policy options and contributes to the fragmented regulatory approaches which currently address the '*sharing economy*'.

This theoretically-inspired and empirically-informed critical essay

- (i) unpacks the '*sharing economy*' rhetoric,
- (ii) clears the field of semantic and conceptual ambiguity by providing a heuristically-useful and empirically-grounded typology,
- (iii) maps the controversies against available empirical evidence on the functioning and the impacts of 'sharing' platforms,
- (iv) reviews the debate and the literature which focuses on regulatory and policy issues, and
- (v) discusses all these aspects in terms of their policy implications and of future European research on this topic.

It does so in a unique way, because of the extensive evidence base used and the interdisciplinary approach it takes in which theoretical and empirical economics, sociology, anthropology, regulatory and legal studies, and rhetorical analysis converge. The evidence comprises: a) 120 media items (newspapers and magazine articles; blogs especially by '*sharing economy*' advocacy groups and organisations; industry briefs, etc.); b) in-depth analysis of a purposive sample of 70 platforms (website, blog, public relations and self-reports, etc.); c) 140 sources, which consist of scientific items (115) and broadly defined reports (25), selected using a formalised protocol and systematically reviewed; c) about 60 reports released by interested parties (industrial associations, platforms own reports and public relation materials); d) 70 indirectly relevant scientific contributions and policy reports.

Discourses

The 'sharing' discourse and movement emerged as a form of social utopianism out of the broader narrative on the wisdom of the crowds and the creativity of the commons. After the development of 'sharing' platforms has taken a more 'commercial turn', disenchantment has fuelled growing criticism. Other more tangible interests and concerns have subsequently exacerbated the conflictual climate that currently surrounds the '*sharing economy*'. This essay identifies five controversial themes that it deconstructs and maps against available empirical evidence:

- 1) The claimed neo-liberal co-optation of the 'sharing' movement by a few economically self-interested and powerful platforms through public relations and lobbying strategies;

- 2) The argument that platforms allegedly help revive communities by strengthening social capital and increasing generalised trust;
- 3) The distributional effects and how they do or do not benefit less advantaged social groups;
- 4) The promises of greener consumption (positive environmental effects) and wide net socio-economic welfare gain, much publicised in platforms' public relations campaigns;
- 5) The polarisation of the debate on regulation: laissez-faire and self-regulation versus top-down application of the same regulatory requirements faced by the incumbent industries.

In the midst of limited empirical evidence, polarised and contrasting normative and prescriptive narratives are widespread and mostly unchallenged. This essay has grouped and categorised these narratives into social utopianism, business and economics-driven optimism, and social pessimism. These narratives give rise to the following four possible development paths:

- **Great transformation.** This community-led, optimistic path (green, social, and fair economic prosperity) requires no major regulatory intervention. The re-embedding of the economy happens entirely through changes in behaviour and culture.
- **Regulated sustainability.** Governments push for re-embedding through regulatory and traditional intervention to steer society toward sustainability and resolve the disempowerment and unfair effects of the '*sharing economy*'.
- **Growth-oriented globalisation.** There is no societal and cultural re-embedding, with minimal government intervention, leading to increasing inequality, social polarisation, and a negative impact on sustainability. 'Sharing' platforms lead to human capital specialisation and 'virtual labour migrations'.
- **Barbarisation.** Traditional firms and work are dis-intermediated, decentralised, and parcelled, to be re-intermediated through algorithms. Robots substitute work, workers perform routinised, repetitive micro-tasks. Dis-embedding and dis-empowerment without government intervention lead to unemployment and inequality.

Conceptualisation

Rhetorical discourses, public controversies, and more tangible 'battles', as it occurs in any kind of polarisation process, fail to consider that 'sharing' platforms cover a wide range of different activities. Policy makers, however, need conceptual clarity and should be aware that the diversity of this domain rules out any 'one size fits all' approach to regulation. Platforms should be categorised and distinguished according to their commercial orientation, dimensional relevance, and interaction modality; all of which shape their importance for regulatory concerns. One key contribution of this essay is the purposive elaboration of a conceptually-sound typology inspired by the current regulatory implications of different types of platforms. Two dimensions (asset mix: from capital to just labour; interaction modality: P2P vs. P2B) are used to identify the following four types:

- 1) peer-to-peer assets-intensive provision of goods and services;
- 2) peer-to-peer manual labour-intensive unskilled provision of personal and home services;
- 3) peer-to-business cognitive labour-intensive unskilled provision of services to businesses;
- 4) peer-to-business cognitive labour-intensive skilled provision of services to businesses.

The range of new P2P activities in (1) raises regulatory concerns regarding consumer protection. In this type, other controversies have also emerged (zoning, taxes and local

rules for short term rental in the case of Airbnb). On the other hand, (2), (3), and (4) have implications for employment and social protection that are not relevant for (1) and are discussed at length elsewhere (Codagnone et al., 2016). Ride services (Uber), which fall under (3), are serious concern because they entail both consumer protection and labour protection issues. Ride services in this respect are very different from ride sharing (i.e., BlaBlaCar) and car sharing (e.g. RelayRides). The former are labour intensive and currently at the centre of labour disputes, whereas car sharing entails little or no work, and ride sharing only a limited amount of work. In P2P car and ride sharing, reservations are made in advance, the two peers eventually meet, and driving is mostly for personal use, with less frequent but longer utilisation. In ride services, on the other hand, scheduling is on demand with a short lead-time, the driving is for commercial use, and utilisation is very frequent (with more risks involved). When one peer is just giving a ride to the other in his/her car or renting a car rather than carrying paying passengers, liability policy is much more straightforward. The fact that provider and consumer meet increases trust; and the less frequent use reduces risks to safety. From a regulatory perspective, these are important factors. Last but not least, Uber is possibly the only 'sharing' platform that could become an object of concern for competition law.

Thus, the focus of more urgent policy and regulatory actions and supporting research has been clearly delimited. Other sub-sets of the '*sharing economy*' have been removed but are possibly of interest in other policy domains. For instance, Not-For-Profit (NFP) platforms in general and collaborative production platforms could be the object of supporting policy measures, which would aim to encourage social and industrial innovation.

Facts

In general, only limited empirical evidence is available on most of the topics raised in this essay. Lack of evidence is much more acute in Europe than it is in the US. For instance, of the 140 sources formally reviewed, only about 20 focussed on European empirical realities. On the other hand, while the evidence does not yet warrant conclusive judgements, it has nonetheless helped to deconstruct the key discourses and controversies and shed some light on the issues.

Lack of a consensual definition has hindered the development of reliable statistical measurements of both the monetary value of, and of the level of participation in, the '*sharing economy*'. PWC estimates, that on a global basis the '*sharing economy*' is worth \$15 billion and could reach \$335 billion by 2025. Other estimates presented in the report by the EU Parliament (2016) expect that it will be worth €572 billion in the EU28 by that date. Various surveys about participation in the '*sharing economy*', despite some variations due to the definition, agree that the phenomenon is statistically detectable and relevant. The fact that the 70 platforms reviewed cover both factor (capital, labour) and product markets (goods and services), i.e. the entire economy (and potentially society as a whole) is another indication of the dimensional relevance of the '*sharing economy*'. A number of trends and drivers explain the emergence of the '*sharing economy*' and suggest that it has great potential for future growth. These trends include technological developments, demographic change and urbanisation, shifts in socio-cultural attitudes to consumption and work, and also the need to economise on resource usage and to achieve a more environmentally sustainable growth trajectory.

The empirical evidence found and analysed, despite evident limitations, enabled us to shed light especially on the issue of motivations and social capital, and on the functioning of 'sharing' platforms. On the other hand, the empirical evidence on the expected environmental and socio-economic effects of 'sharing' platforms is very limited, fragmented, and inconclusive.

With respect to motivations and social capital, three broad preliminary conclusions emerge. First, motivations range from altruism to utilitarian goals. Second, the '*sharing economy*' creates some form of genuine social capital but it is also based on reciprocal (negative and positive) exchanges. Third, altruistic and ideological motivations and social

capital building clearly seem to characterise more the early not-for-profit initiatives. So, the '*sharing economy*' overall does indeed seem to be a mixture of both 'passions' and 'interests'.

The platforms delimited by the proposed typology are by definition two-sided markets where cross-side network effects may emerge provided more consumers (employers) attract more suppliers and vice versa. The empirical evidence available shows that these platforms still struggle with market frictions and inefficiency, which limit their growth. In addition, they almost all allow 'multi-homing' (no lock-in for peers in one single platform). Frictions and multi-homing do not seem to give these platforms the capacity to scale up to market dominance. Though evidence is not available on how efficient the matching process is, for Uber, 'multi-homing' is in practice impossible and the platform clearly imposes constraints on drivers. The possibility of market power is not entirely out of reach for Uber. On the other hand, the empirical evidence also shows unequivocally that the reputational rating systems harnessed by these platforms are not entirely reliable, can be manipulated, and suffer from lack of input and/or from input based on reciprocity (reluctance by users to provide negative ratings).

The potential benefits, costs and welfare implications of P2P platforms can be identified theoretically and ex-ante. They add service delivery capacity, which should decrease prices and increase supply and consumer choice, thereby enhancing consumer welfare. On the supply side, they put pressure on prices and sales of traditional businesses, reducing their revenues and potentially the number of jobs they offer. On the other hand, they create new gainful employment for additional market entrants and employment opportunities for independent contractors. On this issue, however, it has been shown that there are also costs in terms of job security and quality (Codagnone et al., 2016).

The net welfare balance from these positive and negative effects is an empirical question that cannot be answered by theory. Unfortunately, no robust and comprehensive ex-post empirical evidence on the aggregate welfare costs and benefits of these platforms was found. Available empirical evidence is very partial, un-systematic and inconclusive. Out of 140 reviewed sources, only 12 provide empirical evidence on impacts, but none consider both costs and benefits. Of these, 6 focus on Airbnb, 3 on Uber, 1 on Get Around, and 2 on consumer welfare impacts of P2P renting in general. Only one of these empirical contributions focuses on Europe, whereas all the others analyse data related to the US. There is contrasting evidence on Airbnb impacts on the hotel industry and on tourism in general; apparently Uber reduce driving-under-the-influence accidents and its competitive pressures lead to service quality improvement by traditional taxi companies. However, it also decreases the latter's revenues and the value of medallions (i.e. taxi licenses). Theoretical modelling studies, which calibrate limited empirical data, seem to suggest that P2P rental increases consumer welfare (but does not necessarily reduce either ownership or usage), particularly for social groups with below median incomes.

Aside from the contributions summarised above, the rest of the evidence is simply anecdotal and often presented by stakeholders involved in the current controversies. For example, Uber and Airbnb have released dozens of reports but their reliability could not be independently validated because the methodologies are not transparently illustrated and data are not made accessible to researchers. Equally inconclusive is the evidence on the promised positive environmental impacts of the '*sharing economy*'. First order effects can reasonably be expected to be positive: staying in existing accommodation would reduce the construction of new hotels and/or work spaces, while sharing tools or goods would reduce the production of new goods, both of which should reduce ecological and carbon footprints. However, a measure of net impact at aggregate socio-economic level should also consider the second order effects. What happens with the money providers extra-earned with the '*sharing economy*' or users saved? As seen, Airbnb has published 'evidence' that their hosts spend more than tourists staying in hotels to show its impacts on city economies. This is self-defeating with respect to the claim that Airbnb produces environmental benefits.

Regulation

On the one hand, proponents of self-regulation argue that formal regulation is costly and serves to protect vested interests. On the other hand, the proponents of extending the reach of formal regulation to P2P platforms argue that this would correct market failures that private parties on their own cannot overcome. However, more moderate approaches are also evolving. Consensus is growing around the idea that the '*sharing economy*' cannot be left entirely unchecked, nor can it be regulated by means of traditional command and control approaches.

Aside from this more general debate, there are still several unresolved issues that are briefly summarised below (except for labour issues that are addressed in Codagnone et al., 2016):

- 1) Taxation. Substantive law for tax sharing activities exists, but enforcement may present challenges because: a) some platforms opportunistically pick the most favourable regulatory regime; b) micro-providers raise unique compliance concerns. Airbnb is currently engaged with legislators in drafting or adjusting existing legislation. In addition, its website requires hosts to be aware of and comply with local laws and their landlord's rental policies, both of which may prohibit short-term rentals (Miller, 2015; Zrenner, 2015). Furthermore, Airbnb has also started to collect taxes in some US cities and in Amsterdam;
- 2) Negative externalities, liability and insurance. Negative externalities for ride service platforms derive from unsafe and uninsured or under-insured driver/car. Short-term accommodation rentals produce negative externalities for neighbourhoods (increased traffic, parking places occupied, noise, tenants disturbing neighbours, etc.) and by removing properties from long-term rental markets. Liability and insurance, however, are not only matters of negative externality and may concern also the two sides of a 'sharing' transaction. The issue is again to determine who is liable if something goes wrong and to guarantee that 'sharing' activities are insured. It is reasonable to expect that some intervention may be needed to define liability, ensure safety, and close the insurance gap. Under specific circumstances, the negative externalities of short-term rentals should also be addressed;
- 3) Information asymmetries and cognitive biases. Various information asymmetries, exacerbated by the typical cognitive biases documented in the behavioural economic literature, cast doubt on the extent to which self-regulation can fully protect consumers. This entails various more specific issues such as the reliability of reputational ratings, safety standards, frauds, dispute resolution and redress. The chances are that consumers will make poor decisions when faced with an overwhelming range of choices, poor regulation and unclear avenues for recourse in the case of a dispute. They may also fail to fully appreciate risks and safety requirements. In these circumstances, regulation and/or nudges could help increase protection for consumers;
- 4) Licensing and certification schemes. While licensing and certification schemes tend to be ineffective and may unduly favour incumbents, serious incidents with both Uber and Airbnb have caused critics to demand that they be imposed on large commercial platforms. Platforms have tried to boost confidence with ID checks and vetting processes. There are doubts, however, as to how transparent and rigorous these inspections are;
- 5) Data and privacy. There are concerns about the amount of data that 'sharing' platforms are collecting from consumers, given the sensitive nature of some of these data and how they are being used;
- 6) The potential implications of competition law. From the evidence reviewed on the characteristics and functioning of the largest platforms it seems that market dominance is out of reach for most of them due to heterogeneity and matching frictions. It is not so unlikely, however, for Uber. On the other hand, improvements in the matching algorithms, together with pricing strategies and use of personal data

without any regulatory checks, may change the situation and make market dominance more likely also for a few other platforms.

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 a competence of city councils and cities respond in various ways. Labour market and social security regulation is mostly a state competence, and is handled differently by the Member States. At a higher level, the EU may want to consider consumer protection and other liability issues. However, the literature reviewed in this paper does not give any indication of whether the EU should respond to these regulatory challenges, and if so, how. It is possible, however, from the discussion so far to identify the policy options as regards liability and consumer protection:

- (1) No intervention. A generalised 'no intervention' approach is not the best solution, for two reasons, one specific and empirical and one normative. First, clear market failures in the broadly defined domain of liability and social protection must be tackled because they have caused incidents and raised social alarm. Second, a level playing field must be created where platforms and established industry players can compete on fair terms;
- (2) Generalised regulation of the sharing economy. This option would consist of the wholesale application of existing regulation for 'offline' businesses to the '*sharing economy*', in order to create a level playing field. This option should be discarded on the grounds that existing regulation is outdated, cumbersome, and ineffective even for existing businesses;
- (3) Regulation and liberalisation. In this option, the level playing field would be created by applying light-touch regulation on the '*sharing economy*' while, at the same time, liberalising existing industries, so that gradually the two sides of the current dispute would converge toward a middle ground;
- (4) Hybrid approach with ad hoc regimes. This option would be coherent with the conceptual and empirical analysis that clearly indicates that 'one size does not fit all'.

Future research

Wide gaps in terms of empirical evidence were identified especially for Europe. The following are ways to start filling them:

- Follow up and extend the review of platforms and sources presented in this essay in order to better cover European platforms and find more studies covering European empirical realities.
- Gather qualitative and quantitative evidence in the EU in order to provide policy makers with a more reliable and comprehensive picture of the impact of 'sharing' platforms on the welfare of consumers and service producers.
- Continuous monitoring and mapping the developments of the supply side (i.e. 'sharing' platforms) both at global and at European level.
- Gather and analyse big data:
 - automatic web scraping of relevant data from the selected platforms;
 - build stakeholder engagement and consensus to obtain data held by platforms and industry, and city-level statistics, which would provide the needed measurements for full cost-benefit analyses;
 - Carry out descriptive analysis of the data to provide preliminary insights into some of the impacts discussed in this essay;
 - Estimate and model costs and benefits. The data should be analysed using appropriate econometric techniques to estimate the costs and benefits of the selected platforms. The results could then be calibrated into a modelling simulation of the aggregate economic and social effects.
- Develop statistical analyses and behavioural experiments to detect whether or not there is manipulation of reputational ratings and social influence effects.

1 Introduction

This essay analyses digital platforms, often operating as two-sided markets and generally placed under the label '*sharing economy*' (and various others, see *infra*), matching different groups of users and providers and enabling the increase in scale and speed for traditional transactions such as selling, renting, lending, labour trade, and provision of services; in many cases these platforms mediated activities involve peer-to-peer or peer-to-business transactions that are not yet fully regulated. Anthropological and neuroscience studies are sometime cited (i.e., Agyeman *et al.* 2013) to affirm that sharing and collaborating are innate evolutionary and cultural traits of humanity; indeed, communities have shared and collaborated for millennia. Car sharing was first launched in 1948 in Zurich (Shaheen *et al.*, 1999) and several small community-based car sharing cooperatives were operating in Northern Europe in the 1980s and 1990s (Jonsson, 2007); yet, such activity did not scale up. The recent sustained growth of '*sharing*' platforms has many explanations, but one key driver is clearly the coming of age of the last twenty years of industry expertise in designing market places (Horton & Zeckhauser 2016). Currently, expressions such as the '*sharing economy*', the '*collaborative economy*', and many others (see Technical Annex, Evidence Box 4) are used indiscriminately to refer to very different digital platforms. Lack of conceptual clarity hinders a rational debate on policy and regulation, which is informed by empirical evidence and focuses on a clearly and consensually-defined phenomenon.

This essay is one of a kind contribution both for the extensive evidence base comprising primary (analysis of 70 platforms) and secondary sources (a total of about 390 unique sources have been used) and for the inter-disciplinary approach it takes in which theoretical and empirical economics, sociology, anthropology, regulatory and legal studies, and rhetorical analysis converge. This theoretically-inspired and empirically-informed critical essay unpacks the '*sharing economy*' rhetoric and clears the field of semantic and conceptual ambiguity. Bringing some conceptual clarity and disentangling the key issues from the rhetoric is needed to design well targeted policy and regulatory initiatives in a context where there is no 'one size fits all' solution. It also presents the limited empirical evidence available on key aspects (motivations to participate, trust and social capital, platform matching and rating mechanisms) and impacts (environmental, economic, and social). Finally, it discusses policy and regulatory implications and presents a research agenda.

1.1 Context: disputed values and uncertain facts

According to Hirschman (1977), passions and interests are counterpoints that integrate each other. This view challenges both those who see the self as a utility-maximizing machine and the communitarian thinkers who long for a world without avarice and the quest for lucre. Passionate idealism and uncompromising utilitarian individualism are two faces of the same coin. Economic activity is also driven by passions and practices that cannot be reduced to competition between individuals or firms. At face value the '*sharing economy*' seems the perfect candidate for a positive integration of passions and economic self-interest: an opportunity for richer human experiences and utilitarian gains, for both economic and social innovation. Its success could be seen, to borrow again from Hirschman (1970), as a mixture of 'exit' and 'voice', empowering individuals as both consumers and independent entrepreneurs.

In practice however, the metaphor '*sharing wars*' (Rauch & Schleicher 2015) may be more appropriate to characterise the current debate. The purposive sampling of media and blogs coverage performed for this essay, corroborated by other similar exercises (for instance, Dredge & Gyimóthy, 2015; Martin, 2016), indicates that attention peaked in 2014-2015 and increasingly started to focus on controversies and conflictual aspects. The conflict between the '*passions*' and the '*interests*' is evident in the claim that '*true*' and '*authentic*' sharing and collaborative movements have been hijacked and co-opted in the rhetoric and public relations campaign of big commercial platforms such as Uber and

Airbnb to pursue their economic self-interest through traditional lobbying strategies (Caldararo, 2014; Kuttner, 2013; Lee, 2015; Walker, 2015). These 'wars' surrounding the '*sharing economy*' have influenced the tone of the public debate and some concrete actions taken during the past two and a half years (2014 till mid 2016). In less than five years the 'honeymoon' with the '*sharing economy*' has ended. Optimistic and utopian narratives have been substituted by accounts of legal disputes and of the 'dark side of sharing economy' (Malhotra & Van Alstyne, 2014). Accounts of the prevailing mood at the 2015 OuiShare festival held in Paris provide an example (Kaminska, 2015; Mims, 2015). Five years ago in March 2011, Time Magazine placed 'sharing' among the 10 ideas that would change the world (Walsh, 2011). In the course of 2015, however, one of the most telling headlines was that the '*sharing economy*' had become a matter of conflict among US presidential candidates (Greenhouse, 2015; McCabe & Devaney, 2015; Wood, 2015). Equally, in Europe the period 2014-2015 has seen various legal disputes, controversial court decisions, and violent strikes regarding Uber and to a lesser extent Airbnb (see Evidence Box 3).

Based on the observations of participants at the aforementioned 2015 'OuiShare' festival and analysis of the vocabularies of online platforms, Richardson argues that the 'sharing' economy represents a paradox (2015). It is defined simultaneously as part of the capitalist economy and as an alternative to it. Some see it as a remedy to a hyper-consumerist culture: access rather than ownership, reuse and leveraging of underutilised goods and assets. The perception that the vocabulary of sharing hides new forms of inequality and polarisation is gaining ground. As recently illustrated by Martin (2016), '*sharing economy*' discourses are framed in conflicting ways ranging from a path to sustainability (i.e. economic opportunity for all, sustainable form of consumption, decentralised and equitable economy, etc.) to a nightmarish form of neoliberalism' (i.e. unregulated market places, reinforced neo-liberal paradigm, false innovation, etc.). These controversies arise in debates between supporters and opponents, who harness conflicting rhetoric and present ad hoc 'evidence'. Disputes flourish as robust evidence is limited and/or inconclusive, and there is no basis on which to adjudicate opposing claims. The practice of platforms not to disclose important metrics or to make them available only to some researchers further fuels a debate that is not informed by evidence. For instance, the paper co-authored by Krueger and a researcher working for Uber (Hall & Krueger 2015), has done more to provoke further controversies than to provide evidence for a more balanced debate. Hence, not only in the press and in reports by politically-positioned think tanks, but also in many peer-reviewed academic essays one finds value-loaded, normative, and prescriptive claims. These contributions are at times visionary and futuristic and can have both an optimistic (more often) and a pessimistic bent. Even 'academic' essays can contain apocalyptic visions of a '*sharing economy*' that accelerates social degradation and further deepens inequality (Caldararo, 2014). There is also the opposite vision that the sharing economy renews and revives the 'American Dream' (Jefferson-Jones, 2015).

It is important to note that there is a closed self-reproducing loop between conceptual ambiguity, rhetorical controversies, lack of sound measurements and empirical evidence, and fragmented or non-existent policy and regulatory approaches. The various expressions used to refer to these new digital platforms which match different groups of users and providers, now appropriated by practitioners and stakeholders, are 'floating signifiers' for all sorts of different activities, in what can be called the rhetorical politics of platformisation. Current usage is confused and confusing to the point of making expressions such '*sharing economy*' or 'collaborative economy' conceptually trivial. It is at times difficult to ascertain whether advocates, opponents, regulators, and policy makers are discussing the same phenomenon. In reality 'sharing' platforms diverge in terms of dimensional relevance (i.e. from a few hundred users to millions of users), interaction modality (i.e. peer-to-peer or P2P vs. business-to-consumers or B2C), and type of assets being exchanged (i.e. a property vs. one's labour). Hence, they differ also in terms of their current regulatory implications (e.g. market access and licensing, liability and insurance, consumer protection, labour laws), and their potential to disrupt

incumbent industries. It is pointless to discuss, for instance, BlaBlaCar and Uber (see Evidence Box 5 in the Technical Annex), or TaskRabbit and Time Banksⁱ, as part of the same domain. Grouping highly profitable companies like Airbnb and Uber alongside voluntary gift-giving exchanges like Freecycle or CouchSurfing contributes to fuel conflicting rhetorics and controversies. It comes as no surprise that without a clearer and consensual definition, no reliable measurement of the phenomenon's dimensional relevance exists. Different estimates of the '*sharing economy*', either in terms of its monetary value, or in terms of the number of people involved, sometimes differ by orders of magnitude.

1.2 Policy Relevance

The heated debate is not unjustified and is clearly important for policy given the phenomenal growth of some of the platforms included under the '*sharing economy*' label. In addition, a vast range of economic sectors is affected by platforms which define themselves, or are defined by others, as part of it. Finally, aside from symbolic and rhetorical battles, there are tangible juxtapositions of interests among clearly identifiable stakeholders.

As said, lack of a clear definition prevents reliable measurement of the size of the sharing economy, however we look at it. These quantitative measurements are presented and discussed in Section 2.2. Here, it suffices to anticipate that, regardless of the differences and possible methodological flaws, estimates agree that the broadly-defined '*sharing economy*' is a statistically detectable phenomenon. An indirect way of providing a preliminary view of the importance of 'sharing' platforms is to look at a few facts about the largest ones. As of June 2015, there were 17 '*sharing economy*' companies (11 private and 6 listed on stock exchanges) worth more than 1 billion US \$ (Owyang, 2015c; VB Profiles & Crowd Companies, 2015). Of these, 12 were based in the US (of which 8 in California), one in India (OlaCabs), one in China (Kuaidi Dache), one in Australia (Freelancer), one in New Zealand (Trademe), and one in the UK (TransferWise). Uber was valued at between \$40 and 50 billion and Airbnb at between \$10 and 20 billion (Austin *et al.*, 2015; Bloomberg Brief, 2015) – i.e. more than Avis (\$5.2 billion) and Hertz (\$12.5 billion) and more than the Hyatt hotel chain (Cannon & Summers, 2014). Airbnb claims that it is present in 34,000 cities covering 190 countries; that it has had 35 million guests since its launch in 2008 and 1.2 million listings (Bloomberg Brief, 2015)ⁱⁱ. Uber is present in 230 cities in 58 countries. The French ride sharing start-up, BlaBlaCar, has expanded beyond France's borders, recruiting 10 million members in 13 countries. In the summer of 2014, it raised 100 million US \$ in venture capital (Bisserbe & Landauro, 2014). Since 2014 platforms such as Airbnb, Uber and BlaBlaCar have grown between 150% and 250% in terms of the countries they cover, number of transactions, and number of users. From the analysis of 70 platforms conducted for this essay, it emerges that they are increasingly involved in important sectors of the economy such as transportation, accommodation and rental, retail, office space and logistics, finance and consumer credit, and the labour market. Lately, new start-ups, such as Mosaic or Yeloha, are also entering the energy market (Owyang, 2015d). As a matter of fact, the platforms reviewed cover both factor markets (capital, labour) and product markets (goods and services), and therefore the entire economy. They could also potentially affect society at large, in as much as they deliver on the promises of building social capital and reviving participation and solidarity.

In view of the potential of these platforms for disruptive economic and social innovation, it should come as no surprise that there are several interests at stakes:

- a. users/consumers (who supposedly receive large benefits from cheaper and more convenient choices as a result of more competition. However, they may also face risks due to lack of consumer protection and clear liability rules);
- b. users/providers (i.e. the alleged 'micro-entrepreneurs' who drive the cars, let their homes, or perform errands using the various platforms. This is the most diverse and

controversial group from a policy perspective since economic opportunities may be offset by concerns about erosion of workers' rights.);

- c. the platforms (the owners of the '*sharing economy*' platforms who have much to gain or lose, depending on future regulatory decisions);
- d. established operators (i.e., operators in potentially disrupted industries such as taxi drivers, who stand to lose the most if the '*sharing economy*' remains unregulated);
- e. general public interest (the '*sharing economy*' can have positive or negative spillovers also for the economy and society as a whole, as it does, for instance, with the positive externalities of innovation, or with security risks, or the alleged erosion of the broadly defined labour contract and of the tax base).

Opinions and rhetoric on the above issues abound, but solid evidence is lacking. In this context of conflicting views and interests, and limited evidence, 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 ensure competition and consumer protection, preserve labour rights, and avoid the erosion of the tax base (Ranchordas, 2015; Sunil & Noah, 2015).

Indeed, in the past five years many platforms have reached scale and developed to some extent not fully regulated; a main point voiced by disrupted incumbents and critics is, in fact, that they are benefitting from a regulatory arbitrage. One of the various cleavages currently characterising the public debate on the '*sharing economy*' sees those in favour of no regulation and of letting platforms self-regulate opposed by the proponents of strict regulations and bans. In between these two extremes a consensus is emerging that recognises platforms cannot stand above the law but neither should they be stifled by outdated regulatory regimes (Einav et al., 2015; Edelman & Gerardin 2015). On the other hand, as pointed out by law scholars (i.e., King, 2015; Lougher & Kalmanowicz, 2016), it cannot be ruled out that '*sharing economy*' platforms will raise serious competition policy challenges such as concentration through network effects (single dominant player), locking in parties located on one side (lack of real multi-homing possibility), power to reference rivals and users with risks of collusions and discrimination.

In the midst of symbolic and tangible controversies and conflicts, both in the U.S.A and in Europe fragmented responses to this new phenomenon have been given only by local administrations and courts, which undermines the existence of national (in the USA) and European single market conditions; this at European level is further exacerbated by the fact that in 2015 and in the first months of 2016 some fairly different national level legislative and regulatory proposals are emerging. In this context, 2015 was a year in which various more encompassing assessments were announced whose key elements include both competition laws and consumer protection legislation.

In the U.S.A the Federal Trade Commission (FTC) announced the launch of an inquiry into the '*sharing economy*' in order to adopt regulation that would protect consumers without hindering innovation (Jopson & Bradshaw, 2015). This was followed by a consultation and a high level workshop taking place in June 2015 (FTC, 2015a, 2015b, 2015c)ⁱⁱⁱ. In the UK, the Competition and Markets Authority (CMA) in its annual plan for 2015 planned to scrutinise the business practices of internet 'intermediaries' and 'gatekeepers' (Lougher & Kalmanowicz, 2016, p. 88). At the same time, the House of Lords has conducted an inquiry into online platforms and the EU Digital Single Market strategy, including oral and written contributions also by Uber and Airbnb representatives (House of Lords, 2016). Also in the UK, the Financial Conduct Authority (FCA) have looked into the '*sharing economy*' as regards the implications of P2P lending for consumers and competition (Lougher & Kalmanowicz, 2016, p. 88).

In 2014, the European Economic and Social Committee (EESC) in an opinion on the '*sharing economy*' called the Commission to take appropriate action to ensure both the right conditions for innovation and consumer protection (EESC, 2014, p. 2 and 9). In 2015, the European Commission took action in both the Digital Single Market Strategy

(DSM) and the Single Market Strategy. The latter announced an assessment of digital platforms (including those of the '*sharing economy*') in order to decide whether further action was required. At the time this essay was being finalised (early June 2016), a Communication from the Commission (European Commission, 2016) that provides guidance to Member States had just been released. The '*sharing economy*' has also called into question EU level competition policy (Lougher & Kalmanowicz, 2016, p. 88). The EU Competition Commissioner, Margrethe Vestager, reported that the Commission has received complaints from key 'sharing' platforms with respect to restrictions they have encountered in some Member States. She announced that issues related to the '*sharing economy*' will be monitored in both the short and the long term^{iv}. Subsequently, the EU's Director General for Competition, Johannes Laitenberger, announced that Internet platforms will also continue to be assessed through public consultation^v. Finally, the '*sharing economy*' has been analysed in various reports published by the European Parliament (European Parliament, 2014, 2015a, 2015b, 2016), the most recent of which warns about the costs that could be incurred by the lack of a unified European approach (European Parliament, 2016).

The conceptual and empirical analyses presented here will shed light on various issues that will have to be operationalised now that the guidance Communication has been released, and on various other aspects concerning both consumer protection and competition policy.

1.3 Objectives, approach, and sources

In view of the context and importance described above, the five key objectives of this essay are to:

- i. provide a better conceptualisation that is both heuristically useful and empirically grounded, and an assessment of the current dimensional relevance of the '*sharing economy*' and its future prospects (presented in Section 2).
- ii. critically analyse and unpack rhetorical discourses and controversies (presented in Section 3.1), in order to, subsequently:
- iii. map these controversies against the available empirical evidence on how 'sharing' platforms function (presented in Sections 3.2 and 3.3) and their environmental, economic and social impacts (Section 3.4).
- iv. review the debate and literature, focussing on regulatory and policy issues (Section 4).
- v. discuss the policy and regulatory implications of the main findings of (ii), (iii), and (iv) in view of the typology and other aspects resulting from (i), and suggest a future agenda for research in support of EU level policy (presented in Section 5).

As should be obvious from the previous considerations and the objectives above, this essay is not limited to the analysis of available empirical evidence but it has also tackled conceptual issues and rhetorical dimensions. The decision to do so is obviously related to objectives (i) and (ii) and springs from theoretical and epistemological inspirations. These in turn shaped the method and design for the identification and selection of the secondary sources reviewed. This essay, in fact, departs from a-critical empiricism in the holistic study of the '*sharing economy*' developed to support the policy-making process.

In a famous passage from his *First Book of Aphorisms* (1620)^{vi} Francis Bacon juxtaposed 'ants' (the empiricists) to 'spiders' (the rationalists), but noted that often human observers behave like 'bees' because they gather material from the flowers but digest it and transform it by their own power. This means that between the bare empirical facts and abstract theories there is a middle ground where interpretation, concepts, and ideas are not entirely determined by facts. Following the pragmatist critique of two empiricisms^{vii} and, as anticipated in the foreword, finding inspiration from the 'empirical idealism'^{viii} of Albert O. Hirschman, ideas, values, and rhetorical discourses are considered in this essay as having autonomous effects on the process of change itself, regardless of whether or not they are empirically grounded. They are part of the

endogenous mechanisms of social and economic change that the scholar aims to understand and explain and the policy maker would like to influence. In their analysis of discourses on the '*sharing economy*' and its impact on the tourism industry Dredge & Gyimóthy (2015, pp. 2-3) show that the initial framing of issues publicly debated create path dependencies that prioritise certain aspects to the detriment of others and end up determining the agenda for public and policy discourses and debates. Furthermore, this affects the identification of research needs and how solutions to problems are shaped. It is, thus, important to uncover the power mechanisms leading to asymmetric production of knowledge and discourses.

The '*sharing economy*' is currently a typical situation where values are disputed, facts uncertain, and stakes high. In this context, this essay tries to disentangle the rhetoric with available empirical evidence to enable a more rational debate, at least in the discussion of policies, if not in the public arena. In recent years, the 'Evidence-Based Policy' (EBM) agenda has been challenged and the expression turned on its head by authors who talk about 'Policy-Based Evidence Making' (Sanderson, 2011; Strassheim & Kettunen, 2014; Torriti, 2010)^{ix}. Critics argue that, even where facts are uncertain and values in dispute^x, the EBP approach still relies on a-critical forms of empiricism and technocratic 'scientisation'^{xi}. The present essay, however, does not aim to provide regulators and policy makers with clear-cut, 'pure scientist' solutions. Instead, it unpacks the rhetoric, removes semantic and conceptual confusion, and identifies what empirical evidence is available and what is missing. It is designed and written in the spirit of what Pielke (2007, p. 18-20) defines as the 'honest brokering of policy options'. It does not follow a purely scientific approach, nor does it stealthily reduce the options to advocate specific solutions. This does not mean, however, that the principle of scientific analysis based on sound design, methods, and evidence gathering should be abandoned in favour of a relativistic and constructivist account. On the contrary, it is strongly rooted in the scientific method but starts from the 'humble' premise that scientific research will not solve all disputes. It follows that sources were selected to capture both empirical evidence and rhetorical discourses. Specific attention was paid to cases where evidence produced by scholars is used in the media or vice versa where media accounts are used by scholars. It is, in fact, under these circumstances that evidence can be manipulated and may stir up more controversy instead of facilitating more rational debate. A case in point is an article on Uber drivers (Hall & Krueger, 2015) that has attracted very negative comments in the media. Another example is a study, widely covered in the media, which uses preliminary evidence to conclude that 'sharing' platforms disproportionately benefit lower income groups compared to other groups (Fraiberg & Sundararajan, 2015)^{xii}.

The evidence upon which this essay rests comprises both primary and secondary sources. A detailed illustration of the methodology and process followed for the gathering of evidence and of its limitations is presented in the Technical Annex (Section 6.1). Below a brief description of these aspects is presented:

- 1) an exploratory review of 120 media items (newspapers and magazine articles; blogs especially by '*sharing economy*' advocacy groups and organisations^{xiii}; industry briefs, etc.) was performed; this identified key controversial aspects and the most visible platforms, and the most frequently cited reports and academic contributions. This review informed the following two steps (listed sequentially, but mostly conducted in parallel);
- 2) primary data from an in-depth analysis of a purposive sample of 70 platforms (websites, blogs, public relations and self-reports, etc.); a summary table with classification, brief descriptions, and metrics (when available) is reported in the Technical Annex (Table 6).
- 3) using a combination of the scoping and critical review methods (see Section 6.1) 140 sources, including scientific items (115) and broadly defined reports (25), were selected using a formalised protocol and systematically reviewed; summary statistics on these sources are presented in Section 6.3.1 (see Table 2; Table 3; and Table 4),

and they are all analytically summarised in Table 5 spanning forty pages of the Technical Annex. With a few exceptions, these sources only include contributions produced by 'disinterested third parties'^{xiv}.

- 4) a total of 60 reports released by interested parties (industrial associations, platforms own reports and public relation materials) have not been included in the formal review but have been used to support the analysis of platforms and of the 140 formally-reviewed sources. Similarly, about 70 indirectly relevant scientific contributions and policy reports have also been used as sources to contextualise and integrate the above-mentioned sources.

So, in total 460 sources were used (70 platforms and 390 secondary sources), of which 400 are fully referenced either in the table that gives an overview of the platforms (Table 6) or in the references section at the end of the document.

The disclaimers on the limitations in the empirical evidence used are presented transparently in the cited Technical Annex (see Sections 6.1.3 and 6.3.3). First, in both the scoping review method and in the sampling of platforms, there is a purposive element of selection based on relevance with respect to the conceptual and theoretical framing of this essay. Second, the last less systematic update in the literature search, given the time lag between the completion of the first formalised review and final publication, may have missed some important contributions and/or added an additional element of selectivity. Third, it is possible that the criteria used for the search strategy may have led to give preference to English language sources and to more visible and large platforms, which in turns is reflected in the imbalance toward North American based analyses. Apart from the observation that a EU28 review was beyond the objective and scope of this essay, it can be safely stated that such an imbalance is the empirical result of the fact that debates and evidence are more advanced in the U.S.A, as the most successful platforms originated there.

Another aspect worth mentioning, that is not a limitation but a choice, concerns the literature on car sharing and on how 'sharing' platforms function as digital labour markets. The first search identified a substantial and consolidated body of literature dealing with car sharing. This has been studied for some years and a few literature reviews already exist (i.e. Furuhata et al., 2013; see also Evidence Box 5). Given the more general nature of this essay only a selection of contributions on car sharing are included and, by choice, a more extensive vertical focus on this specific domain was not pursued. As a result of the same first search, it became clear that there is an emerging body of literature which deals specifically with digital labour markets. This literature became the object of study in the second essay on these markets mentioned earlier (Codagnone et al., 2016) and only a few exemplificative studies are considered in this one.

The sheer volume of sources reviewed and presented for the sake of transparency and perusal by the readers justifies the split between a core text, and a much longer Technical Annex which occupies much of the space. The core text has 5 sections, including this introduction and its contents have already been described at the beginning of this section next to each of the objectives. Here, therefore, only the contents of the Technical Annex are briefly illustrated. The Technical Annex is included for the sake of referencing as Section 6. The method and sources are presented in more detail in Section 6.1. Section 6.2 contains supplementary material on conceptual issues and integrates the analysis presented in Section 2. Section 6.3 contains synthetic and analytical accounts of the sources and of the platforms reviewed and a table with basic information on the 70 'sharing' platforms. Note also that additional illustrations and evidence, including those from the 140 formally-reviewed sources, are placed in the notes at the end of this essay.

On the way the contents are structured and presented, a consideration is in order with regard to how the findings of component (3) of the evidence base are used. The formal review of 140 sources is potentially a self-standing output and will, in fact, be refined

and updated and sent for publication in peer-reviewed journals. Its findings, however, are not reported, as is usual for reviews, with details on homogenous groups of contributions. Instead, they are used selectively to discuss the various topics around which this essay is built. So these findings, while mostly reported in Section 3 where they are integrated with other sources, also inform the conceptual and prospective analysis contained in Section 2 and the overview of regulatory issues presented in Section 4.

Finally, two clarifications are in order as to terminological use and attribution of normative and prescriptive views and narratives. First, the use of the '*sharing economy*' label in sources and/or by players is considered to be empirical evidence and is taken at face value. Accordingly, although in Section 2 such usage is challenged and critically discussed, this general expression is used throughout this essay and should be understood in the broadest possible sense^{xv}. Second, excessively optimistic or pessimistic (critical) normative and prescriptive views also form part of the empirical evidence and are attributed as far as possible to specific sources. This essay maintains an impartial position and if, at times, the reader should get a different impression, this is only due to limits of expression.

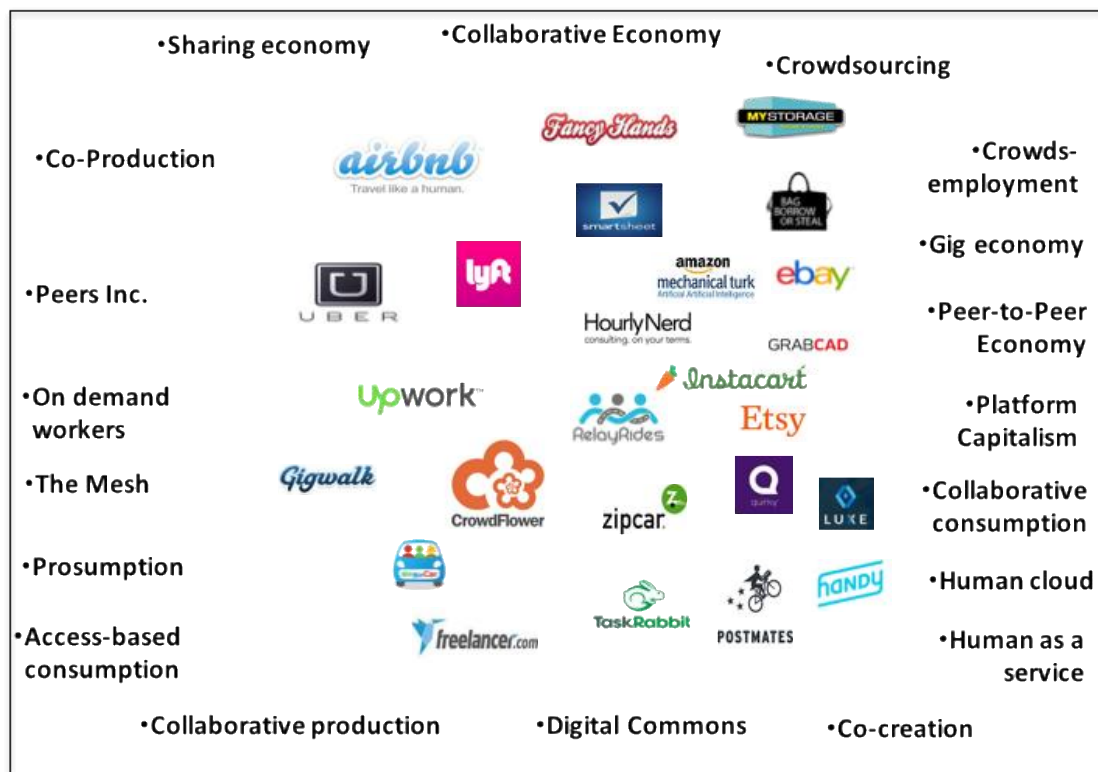
2 Conceptualisation, sizing, and future prospects

In the approach adopted, ideas, rhetorical discourses, and controversies are part of the empirical evidence and must be considered when envisaging policy and regulatory approach. On the other hand, they contribute to a semantic and conceptual ambiguity that hinders a comprehensive and sound identification of the most relevant issues for regulatory and policy actions. It is, thus, useful to review and unpack 'sharing' and 'crowd' rhetoric as this will help to clear the fog obfuscating conceptually what is at stake.

2.1 Conceptual clarification and typology

The 'sharing economy' (and other alternative labels) is used as a 'floating signifier' for a diverse range of activities (Nadeem, 2015, p. 13). This is shown in Figure 1 and can be gathered from all the additional material and evidence in Section 6.2 of Technical Annex (see, for instance, Evidence Box 4, which gives a dozen different definitions), and in the wide diversity of the 70 platforms reviewed, all of which are defined or define themselves as being part of the 'sharing economy' (Table 6). This section builds on, and refers to, this supplementary empirical evidence, so that many of the details and sources presented there are taken for granted and not always referenced in what follows.

Figure 1: Floating signifiers



Source: authors' elaboration

The confused and confusing way in which practitioners use the various labels is one of the empirical findings of this essay. This makes it hard even for scholars to formulate 'externally rigorous' definitions when they empirically have to consider how agents define themselves. One of these empirical contributions, for instance, is entitled 'The sharing economy: Why people participate in collaborative consumption' (Hamari et al., 2015). One wonders what the conceptual relation between the 'sharing economy' and 'collaborative consumption' is. Are they synonyms? Or were the authors interested in collaborative consumption but had to include 'sharing economy' in the title because it is currently 'trendier'? In some cases, authors pragmatically accept this semantic confusion that characterises practice. They are satisfied for the purposes of their inquiries to

consider the '*sharing economy*' as comprising '*peer-to-peer internet platforms (including Airbnb, Uber, TaskRabbit, Just Park...)* which empower individuals to monetise their underutilised assets, time and skills' (Martin, 2016, p. 153). A briefing paper by the UK Office for National Statistics, after stressing that the lack of a good definition and consensual definition of the '*sharing economy*' hampers its measurement, concludes that it can be regarded '*... as being activity that is facilitated by digital platforms which enable people or businesses to share property, resources, time, or skills, allowing them to 'unlock' previously unused or under-used assets*' (ONS, 2016, p. 5). Martin, who adopts a widely-used broad categorisation, identifies four domains: accommodation 'sharing' platforms; car and ride 'sharing' platforms; peer-to-peer employment markets; and, peer-to-peer platforms for sharing and circulating resources (2016). There are several other broad-based categorisations (see summary in Section 6.2.2) such as the one proposed by Shor and associates (Dubois, et al., 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015; Schor et al., 2014): recirculation of goods (i.e. Craigslist, eBay); increased utilisation of tangible assets (i.e. Zipcar, Relay Rides, Uber, CouchSurfing, Airbnb); exchange of services (i.e. Time banking, TaskRabbit, Zaarly); sharing of productive assets; and building of social connections (i.e. Mama Bake, Soup Sharing, and EatWithMe). These broad-based categories are a hybrid mix of factor markets (goods and labour) with specific sectors (accommodation and transportation). More consistently, one could identify three broad categories and match them to a traditional economic classification as follows: a) recirculation of goods (second-hand and surplus goods markets); b) increased asset utilisation (production factors markets); and c) service and labour exchanges (labour market).

All of these pragmatic approaches represent a good enough first approximation that, however, does not fully capture aspects that are important from both an analytical-empirical and a policy-oriented perspective. First, one of the key rhetorical and ideological discourses about 'unlocking the potential of idle assets' is used as a key definitional element without empirically questioning the differences in the kind of asset used and to what extent this asset is actually under-utilised. The essay on digital labour markets explains that (i) leveraging a property or just labour makes a difference in terms of distributional and employment effects, and (ii) in many cases, it is not a matter of using free time for 'pin money' but a way of making necessary income (Codagnone et al., 2016). Second, differences in the interaction modality (peer-to-peer, P2P, business-to-consumer, B2C, and various other modalities that the review of 70 platforms document) are not fully considered. Digital platforms which define themselves as part of the '*sharing economy*' include cases of B2C transactions (i.e. one of the early 'sharing champion' such as Zipcar), but also of business-to-business (B2B, see for instance Cargomatic or Cohealo in Table 6) and government-to-government (G2G, see for instance MuniRent in Table 6). Third, the distinction between commercial and not-for-profit (NFP) platforms, an aspect that is also related to current rhetorical battles, is not receiving enough attention. Fourth, platforms diverge in terms of dimensional relevance (from a few hundred users to millions of users). Fifth, the review of the 70 platforms presented in Table 6 shows that there are many more domains of the four broad groups listed above. Finally, and most importantly, there are differences that cut across these broad-based categorisations in terms of the regulatory and policy implications. Platforms placed in the same broad category (for instance, Uber and BlaBlaCar) differ widely in terms of their current regulatory implications (e.g. market access and licensing, liability and insurance, consumer protection, labour law), and of their potential to disrupt incumbent industries. Indeed, the various distinctions are important from a scientific perspective but most of all for regulation and policy, as clearly a 'one size fits all' policy and regulatory approach is inappropriate. It is worth pointing out that this is also the perspective expressed (orally or in writing) in public consultations by representatives of, for instance, Relay Rides^{xvi}, and of Airbnb and Uber^{xvii}.

The reason why the first approximations above are considered insufficient is that they do not enable us to produce a typology (rather than a taxonomy^{xxviii}) to inform policy making or a future research agenda, both of which are key objectives of this essay. A typology is an organised system of types that can be used for 'forming and refining concepts, drawing out underlying dimensions, creating categories for classification and measurement, and sorting cases'. (Collier *et al.*, 2012). Most importantly 'typology mapping is a strong form of theory development in that it tends to ensure greater parsimony' (Cohen & Muñoz, 2015, p. 4)^{xxix}. A good typology should (i) have descriptive power and be empirically grounded, (ii) reduce complexity, and (iii) identify similarities and difference.

Current definitions do not help build a typology because they tend to be 'ostensive' (by pointing and exemplification) rather than 'intensional' (connotative)^{xx}. Even when they are 'intensional,' they sometimes cut our important empirical parts of the 'sharing economy' field. So, they are either all-encompassing and 'trivial' (grouping together items that are similar with regard to a few characteristics and dissimilar with regard to many others), or too restrictive^{xxi}. A few typologies have been presented for the 'sharing economy' as whole (i.e. Lamberton and Rose 2012; Cohen & Muñoz, 2015; Schor, 2014)^{xxii}, and there are also industry-based sectoral categorisations (i.e. Owyang, et al., 2014; VB Profiles & Crowd Companies, 2015; PIPAME, 2015; see illustration in Section 6.2.3). Yet, only for the broadly-defined 'transportation sector' there are exhaustive and empirically-grounded distinctions between different business models that are used in the typology proposed here (see sources and description in Evidence Box 5).

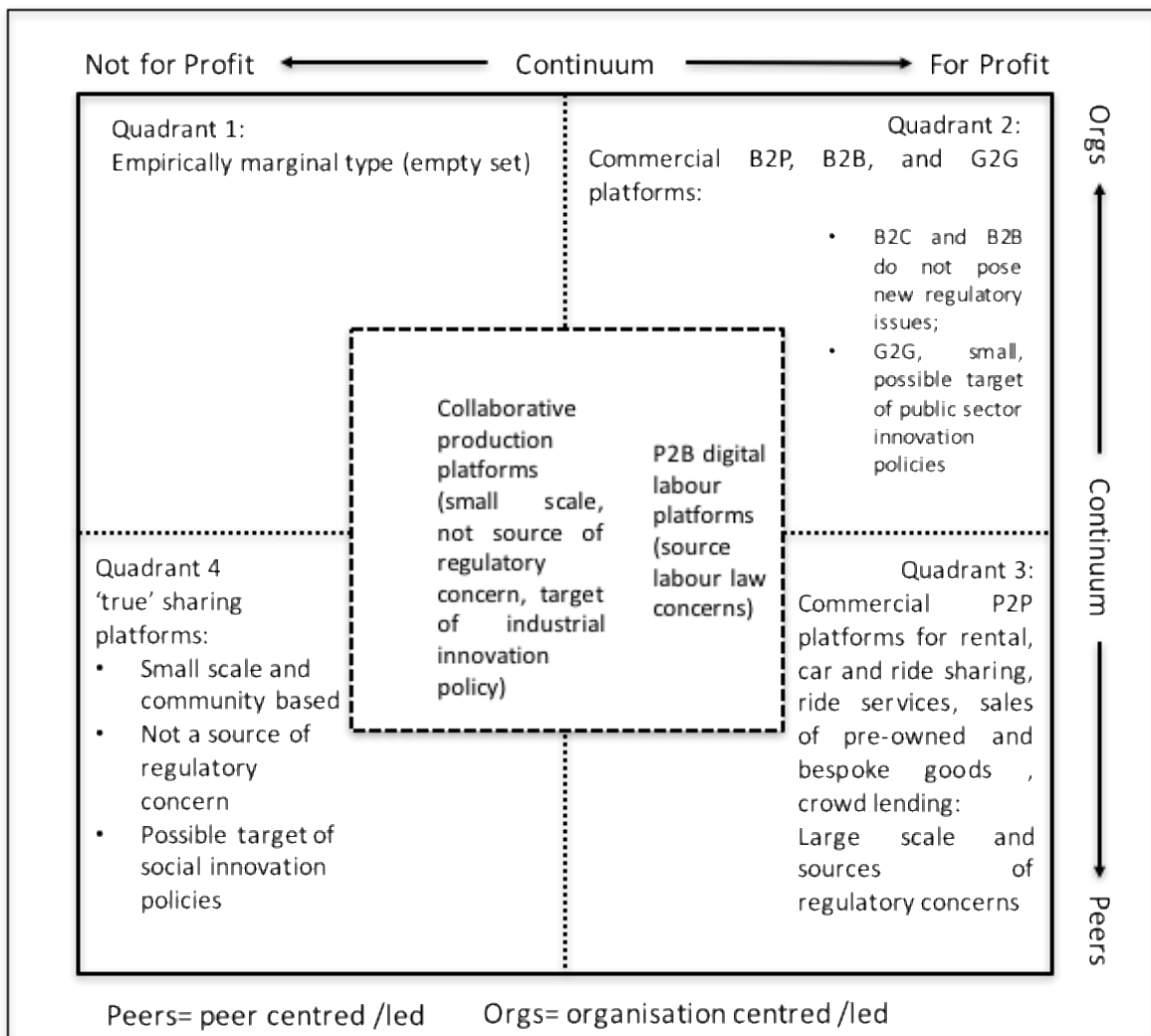
The starting point for the typology proposed here is the following pragmatic and practice-oriented definition of the 'sharing economy': *'the expression sharing economy is commonly used to indicate a wide range of digital commercial or non-profit platforms facilitating exchanges amongst a variety of players through a variety of interaction modalities (P2P, P2B, B2P, B2B, G2G) that all broadly enable consumption or productive activities leveraging capital assets (money, real estate property, equipment, cars, etc.) goods, skills, or just time'*. This is an all-encompassing definition that nonetheless contains better specified elements (i.e. profit or not for profit orientation, interaction modalities, the concrete distinction between types of assets). If these elements are integrated with a reasoning on policy and regulatory concerns, it is possible to arrive at a more delimited and useful typology by progressive elimination.

This progressive elimination aims to identify consistent types that are relevant scientifically and especially from a policy perspective in terms of the regulatory and policy concerns they raise in the short term. The types discarded from the first typology (Figure 2) are still interesting from a scientific perspective and some of the formally reviewed sources focus on them and are discussed in Section 3. Currently, they do not raise regulatory concerns, but they could be the target of support policy measures (i.e. for social innovation, public sector innovation, and industrial innovation).

It is important to stress that the dimensions used to define the next two typologies (see Figure 2 and Figure 3 **Error! Reference source not found.**) must be seen as defining a continuum rather than clear-cut dichotomous classes. They are displayed in discrete clusters for simplicity's sake, but in both graphs a 'hybridisation' area is delimited for cases that to some extent overlap different types.

Platforms can be categorised and distinguished according to their commercial orientation^{xxiii}, dimensional relevance^{xxiv}, and interaction modality^{xxv}, all which in turn shapes their importance for regulatory concerns^{xxvi}. In the first preliminary typology used for progressive elimination of cases, the following two dimensions are used: a) profit orientation (commercial vs. not-for-profit); b) the interaction modality in the sense of whether the transaction is peer-centred/led or instead organisation-centred/led. Cases that possibly overlap either one of these two dimensions are placed in the hybridisation areas.

Figure 2: First typology (profit orientation and interaction modality)



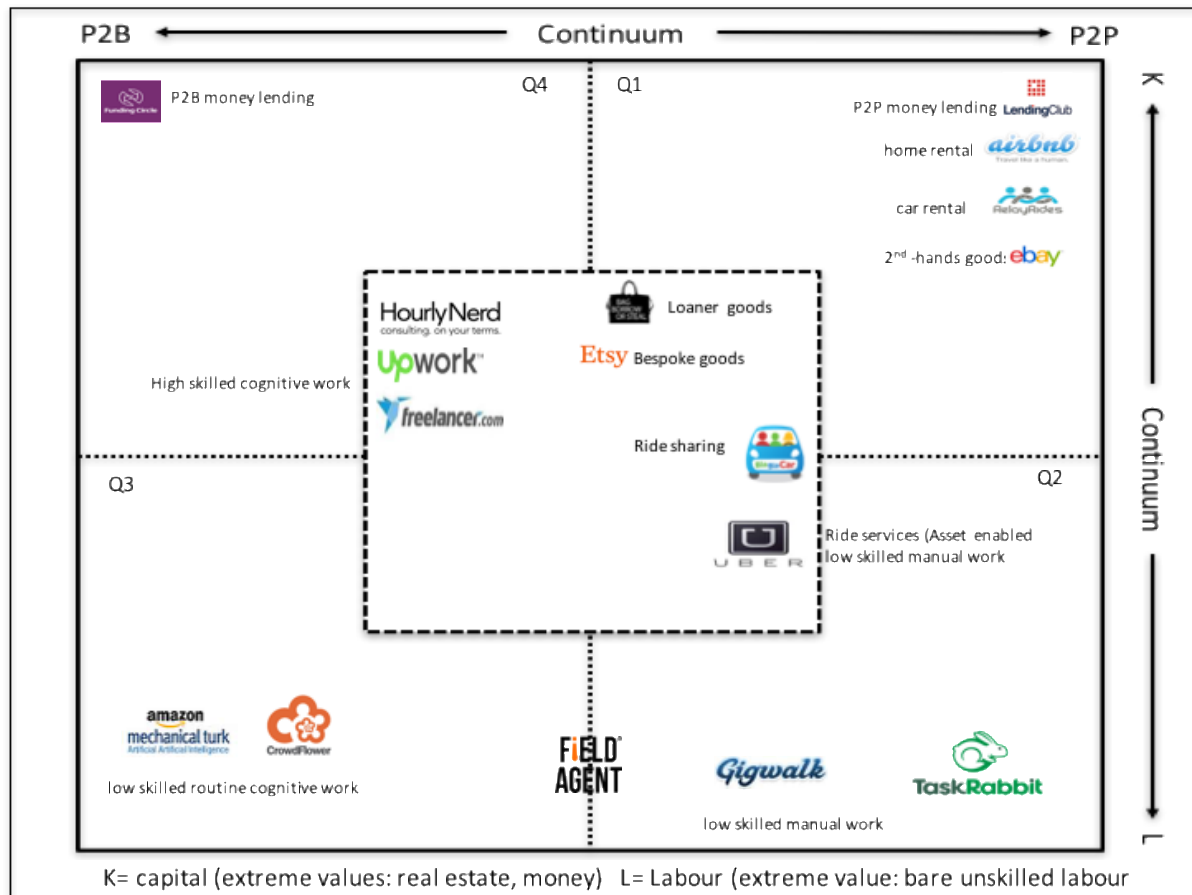
Source: authors' elaboration

So, in the above typology Quadrant 1 (Q1) contains an empirically very marginal type that is not worth considering further. In Q4, there are **not-for-profit peer-to-peer (P2P) small** platforms (e.g. for time-banking, lending of goods, makers' spaces), which often act locally and though they provide potential for social innovation, they currently raise no regulatory or policy questions. A sort of hybrid case is represented by platforms for collaborative production in that they can be either P2P, P2B, or B2P and they may or may not have a fully commercial for-profit orientation. At any rate, they are small and not currently a matter of regulatory concern (with the possible exception of Intellectual Property Rights) and could be the target of industrial innovation policy. Q2 includes commercial platforms that are B2P, B2B, or G2G: (i) **Business-to-Consumer (B2C) or Business-to-Business (B2B)** platforms, no matter how innovative or large, are fully regulated by existing legislation and raise no new regulatory challenges. (ii) **Government-to-Government (G2G)** platforms (i.e. hospitals renting from each other under-utilised medical equipment using Cohealo, or municipalities renting from each other under-utilised heavy duty equipment using MuniRent) are currently small. In the future, they may become a source of public sector innovation and related support policy, but currently they do not pose urgent regulatory issues.

The core type identified by this preliminary step is represented by the platforms in Q3 (including those that are placed in the hybridisation box as they involve also P2B and not only P2P interactions). These are **Commercial peer-to-peer (P2P) or peer-to-**

business (P2B) platforms such as Uber, Airbnb, TaskRabbit, Upwork. They have a large user base, raise short-term regulatory concerns (market access, taxation, consumer protection and liability, and labour law), and the largest players disrupt incumbent industries and trigger their protest. This group still includes platforms with important differences^{xxvii} and, thus, is further broken down into four types in the following final typology proposed in this essay.

Figure 3: Final typology (interaction modality and asset mix)



Source: authors' elaboration

The extreme values of the 'interaction modality' dimension are exchanges between peers (P2P) and peers selling their labour to businesses (P2B). The second dimension considers that broadly defined 'under-utilised' assets can take different forms and entails a different mix of tangible things (money, real estate property, a car, second hand or bespoke goods), less tangible but very valuable skills, or free time to offer one's labour. For this dimension, it is important to repeat that it must be seen as defining a continuum and not clear-cut, dichotomous classes. Obviously, letting an apartment on Airbnb and a car with Relay Rides, or selling goods also requires some work. It is equally obvious, however, that in these cases most or the larger part of value obtained comes from the property or goods, unlike doing errands for other peers in TaskRabbit or performing micro-tasks for businesses in Amazon Mechanical Turk. At any rate, at one extreme there is time and basic labour (L) and unskilled work is offered, whereas at the other extreme only capital is offered, with no or little labour (K). In between these two extremes, other mixes are possible, such as a lot of labour using a physical asset (a car), labour and skills to produce a good (Etsy), only goods to sell or loan, or professional skills.

In Quadrant (1) the extreme ideal-typical case is the lending of money with basically no labour input but from peers to peers (i.e. Lending Club). Because lending (and to some

extent crowdfunding platforms) represents vertical specific activities with very distinct regulatory implications, they are no longer considered here. In addition, no scientific study was found on this topic. Hence, quadrant (1) can be described as 'asset-intensive provision of goods and services'. Platforms where more skills (i.e. Etsy) and/or work (i.e. BlaBlaCar) are needed, or where there is also possible interaction with businesses, are placed (i.e. loaner goods) in the hybridisation area. Quadrant 2 includes platforms which enable peers to provide labour-intensive services to other peers through unskilled manual work (i.e. TaskRabbit). Uber and Lyft are placed in the hybridisation area because while they evidently provide unskilled manual work for the drivers, this work is enabled by a tangible asset. Quadrant 3 covers 'labour-intensive unskilled provision of services to businesses'. Note that digital labour platforms (in Q4hyb, Q3, and Q4), together with ride services (Uber and Lyft) are discussed in depth in the second essay cited earlier (Codagnone et al., 2016), so their regulatory implications are only briefly mentioned here. Finally, in Quadrant (4), the clear-cut and ideal-typical case is a platform where peers use just their capital to provide something to businesses. This is the case, for instance, of the platform Funding Circle, where individual investors lend money to small and medium-sized firms. On the other hand, in the hybridisation area inside this Quadrant (Q4hyb), there are platforms that digitally match skilled labour-intensive services to businesses (P2B and skilled cognitive work is considered to be closer to being a tangible asset than unskilled manual labour). There is still some in-quadrant variability that may require further subdivision of the four types into more vertical and specialised sub-types^{xxviii}. Where this concerns digital labour platforms, the issues are discussed elsewhere (Codagnone et al., 2016).

Moving to the regulatory and policy rationale of this typology it can be observed that in quadrant (1) a range of new P2P activities raise regulatory concerns regarding consumer protection that will be discussed in Section 4. In this quadrant, Airbnb has also been the object of other controversies (zoning, taxes and local rules for short-term rental). On the other hand, quadrants (2), (3), and (4hyb) have implications for employment and social protection that are not relevant for quadrant (1). On the other hand, ride sharing (Uber) is the utmost source of concerns as it entails both consumer protection and labour protection issues. In this respect this typology helps appreciate the different regulatory implications of ride services (Uber and Lyft), as compared to ride sharing (i.e., BlaBlaCar) and car sharing (i.e., RelayRides). The former is labour intensive and currently at the centre of labour disputes, whereas car sharing entails little or no work, and ride sharing only a limited amount of work. In P2P car and ride sharing, reservations are made in advance, the two peers eventually meet, driving is mostly for personal use, with less frequent but longer utilisation. In ride services, on the other hand, scheduling is on demand with a short lead-time, the driving is for commercial use, utilisation is very frequent (with more risks entailed). When one peer is the owner, just giving a ride or renting his/her car, and not a driver carrying paying passengers, liability policy is much more straightforward. The fact that provider and consumer meet increases trust; and the less frequent use reduces risks to safety. From a regulatory perspective, these are important factors. Last but not least, as shown in Section 3.3, Uber is possibly the only 'sharing' platform which could become the object of concern as regards competition law.

2.2 Dimensional relevance

According to a briefing paper recently released by the UK Office for National Statistics (ONS, 2016), the lack of a common definition and understanding of the '*sharing economy*', together with certain features such as transactions among individuals, are the main obstacles to measuring the '*sharing economy*' in terms of either its economic value or the number of individuals involved as users or providers.

As regards the first measurement (monetary), the '*sharing economy*' does not fall within standard classifications used in business and economic statistics, since businesses in any industry may contribute to it. In addition, statistics capturing business-to-business and business-to-consumer sharing transactions are obviously an underestimation as they only account for the revenues of the platforms. Finally, and most importantly, the

volume of peer-to-peer transactions is almost entirely lost to consumer statistics and price indexes. As regards measurement through surveys, the ONS briefing paper reports the result of piloting qualitative interviews and also casts doubts on the reliability of these surveys. Individuals and experts interviewed, or those who participate in focus groups, have very different understandings of what the '*sharing economy*' is. Those who have used 'sharing' platforms have clear difficulties in recalling exactly how many times they did it, the average expenses they incurred, or the income they obtained. These aspects, thus, cast some doubts on the data coming from surveys of the general populations. Bearing these caveats in mind, some exemplificative estimates of monetary values and findings from surveys are reported below.

In 2013, Forbes estimated that the revenue flowing through the '*sharing economy*' directly into people's wallets reached \$3.5 billion (Geron, 2013). A report released by PwC in August 2014 calculated that on a global basis the '*sharing economy*' was worth \$15bn and could reach \$335 billion by 2025 (Vaughan & Hawksworth, 2014)^{xxix}. For the UK alone, the report indicates that the '*sharing economy*' was worth around £500 million in 2014 and could grow to £9 billion by 2025. A study released in January 2016 by the French government estimates that in France the 'collaborative economy' activities turn over \$2.5 billion, involve about 15,000 firms (including self-employed micro-entrepreneurs), and generate 13,000 permanent jobs (Barbezieux & Herody, 2016). This would amount to approximately 0.1% of French GDP generated by 0.5% of French companies for 0.05% of French total employment. In the study by the European Parliament cited in the introduction (2016) the potential value of under-utilisation of labour, accommodation and cars that could be leveraged through the '*sharing economy*' is estimated at €572 billion in EU28. Besides quoting the usual PwC estimate of \$3.5 billion, this report also estimates that, currently in the EU28, the value of the sharing economy is €20 billion. Most of these estimates, however, should be taken with caution as because of the lack of reliable data and consolidated empirical evidence they are inevitably based on questionable assumptions.

Moving to surveys that attempt to measure at least the 'prevalence' of participation in sharing economy platforms, a first large survey conducted in 2013, which included the UK, the US and Canada, found that 29% of the British population had engaged at least once in a 'sharing' transaction and 23% used one or more platforms such as Airbnb, Uber, TaskRabbit, Etsy, Kickstarter (Owyang et al., 2014). A report by NESTA estimated that in 2014, 25% of the UK adult population shared online in some way (Stokes et al., 2014). A survey based on a nationally-representative sample of the UK population aged 16-75 and conducted at the end of 2015, reported that 72% of the respondents are either making an income from online activities or buying labour from others (Huws & Joyce, 2016b). Of these, around 1% are only involved in online rental schemes such as Airbnb. Another survey by the same authors conducted in Sweden at the beginning of 2016 provides similar shares (Huws & Joyce, 2016a). Around 68% of the Swedish adult population are active in some way in the online economy, for instance selling goods online or renting out rooms on platforms like Airbnb (those involved only in online rental are around 1% in Sweden as well). A large representative survey of Amsterdam's citizens shows that 38% of respondents are willing to take part in all possible forms of 'collaborative consumption' and 84.1% are willing to take part in at least one form (van de Glind, 2013). Another study by the French government reports the findings of a survey conducted in 2009, indicating that, at that time, 89% of the respondents had engaged at least once in a 'collaborative consumption practice' (PIPAME, 2015). In Denmark, the national statistical office has included a short module on the sharing economy. It focuses on ride services and renting in the traditional ICT usage by household survey. It found that by mid 2015:

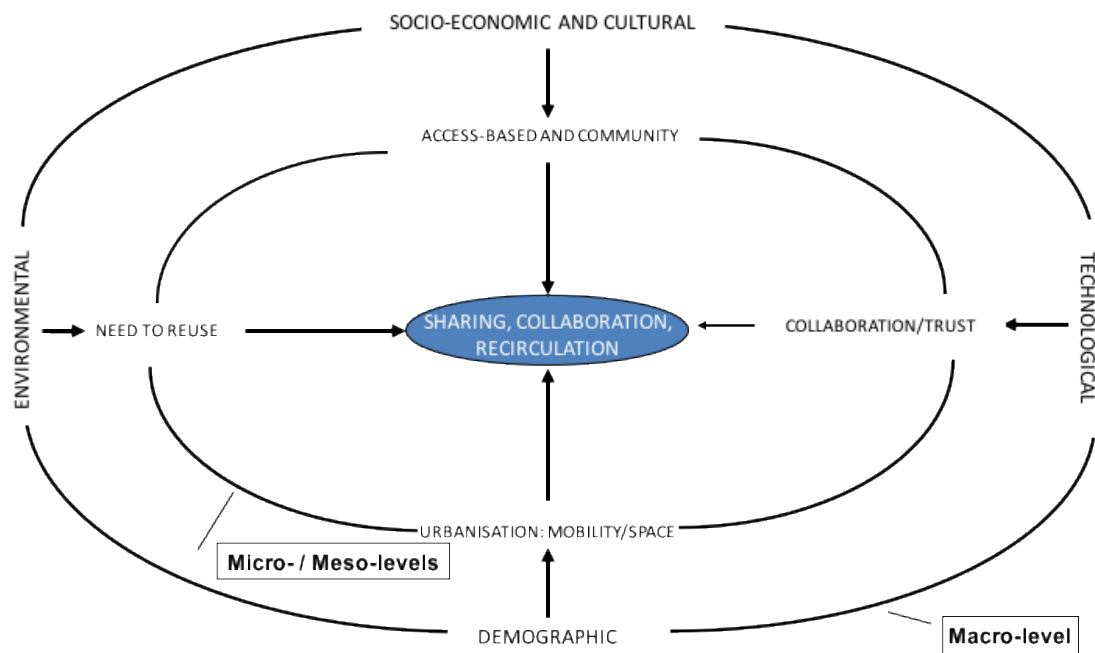
- a) 3.1% of Internet users let out through digital platforms and 8.7% rented from Airbnb and similar platforms abroad and 4.4% in Denmark;
- b) Uber was used by 2.8% of the Internet users (Nielsen, 2015).

In the US, two surveys (one conducted in 2013 and one in 2015) designed by researchers at the Boston branch of the Federal Reserve both found that 26% of the adult Internet population use 'sharing' platforms as either consumers or providers. Obviously surveys which report higher percentages have used less stringent definitions of participation in the sharing economy compared to those which more explicitly restrict participation to renting and ride services. However, even surveys which give conservative estimates suggest that the phenomenon is not statistically marginal.

2.3 Trends, drivers, and development paths

From the reviewed sources and from other additional sources^{xxx}, the macro trends and respective drivers that explain the rise of the sharing economy and predict its further development are plotted in the graph below.

Figure 4 Trends and drivers

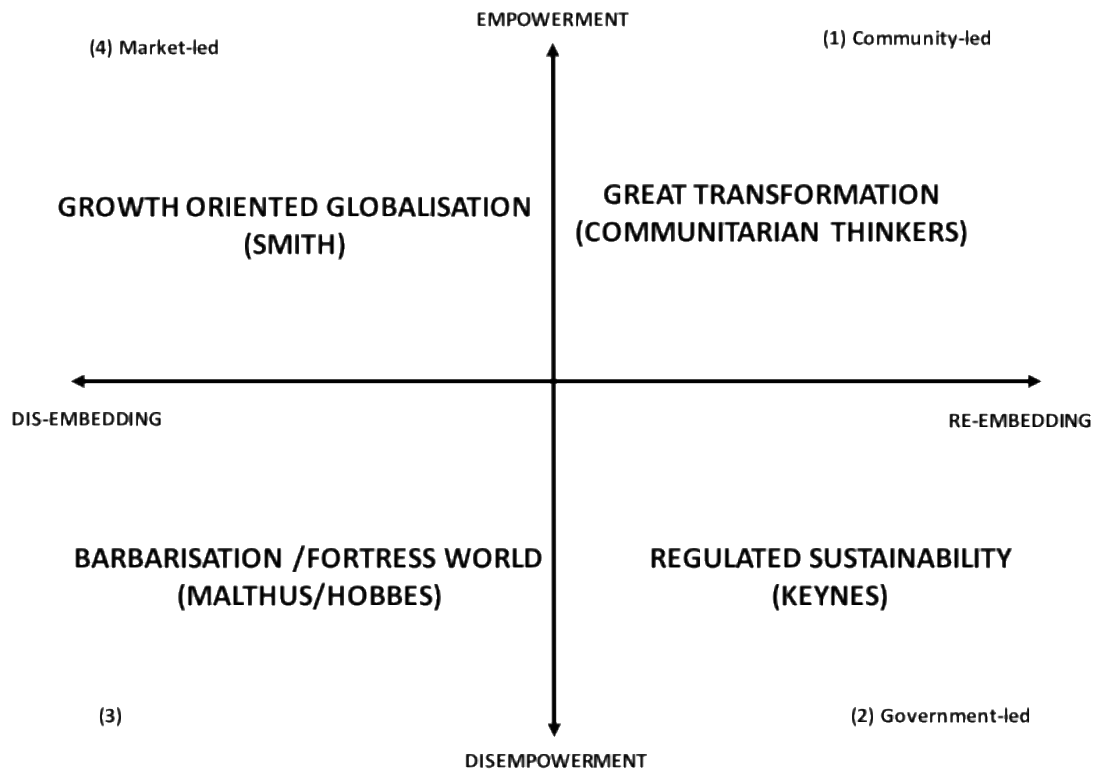


Source: authors' elaboration on sources cited in note xxx

The picture places macro-level trends in the outer ring and meso- /micro-level drivers in the inner ring. The graphic assumes that all trends interact with each other, as do the drivers. As seen, some claim that sharing and collaborating are evolutionary and culturally innate traits of human beings and forms of car sharing date as far back as 1948. So, what explains the explosion of collaborative platforms during this decade? The obvious place to start is the macro technological trend of increased penetration and accessibility of Internet and smart phone, although concretely the driver is the coming of age of the last twenty years of industry expertise in designing market places; search algorithms and reputational rating have abated almost to zero Bring to Market (BTM) costs for individuals and harnessed the trust mechanisms supporting transactions and collaboration among strangers. These new possibilities are in a positive feed-back loop with socio-economic and cultural trends and drivers. Lower BTM costs and engineered trust met the obvious socio-economic need and possibility to leverage excess capacity both for the sale or rental of durable goods (i.e. owners of homes or cars do not use them 100% of the time so they can let this excess capacity) as well as under-utilised labour. New technological possibility and the economic crisis started in 2008 have triggered participation of individuals in platforms as consumers and providers of rental services and/or sellers of goods (imbalance between rich and poor countries with inflows of cheap goods to the former have produced accumulation of unused goods in the former). The same process occurred for the offer and use of on demand labour traded in

platforms. Such socio-economic drivers are co-evolving alongside socio-cultural changes with increasing preference for access-based consumption (as opposed to ownership) and to some extent also for more flexible forms of employment. More recently, environmental pressures and sustainability objectives have encouraged individuals to use resources more parsimoniously, which add a further driver for more efficient forms of consumption. Finally, the concentration of billions of individuals in large cities puts mobility, logistics, and space systems under strain, and here again platforms enabling new forms of mobility, accommodation, and delivery are playing and will play a role.

Figure 5 Possible development paths for the 'sharing economy'



Source: author's elaboration on sources cited in Section 3.1 and in corresponding notes.

The four possible development paths described above allow us to summarise the various rhetorical and normative contributions that are discussed in Section 3.1. They should not be taken as foresight scenarios, but simply as an impressionistic means of summarising the views expressed by the authors of the reviewed sources.

The development paths extracted from contrasting narratives consider two dimensions: embeddedness of economic activity within the community and its values; empowerment of individuals and organisations. Both dimensions can take two extreme values, respectively, 're-embedding' vs. 'dis-embedding' and 'empowerment' vs. 'dis-empowerment'. In the optimistic view, the 'sharing economy' can contribute to reincorporating economic activities within communitarian interaction and (new) values (i.e. green consumption). In the pessimistic view, it can be seen as contributing to further isolation and separation of economy from community and to fragmentation (dis-embedding). In the same way, participating in the sharing economy can empower consumers to improve their wellbeing and workers/firms to leverage new opportunities and access new markets. On the other hand, it may create new risks for consumers, alienate and disempower workers and small firms to the advantage of increasingly oligopolistic and quasi-monopolistic platforms (dis-empowerment)

Great transformation. Obviously this is the most optimistic development path with triple wins (green, social, and fair economic prosperity). It is important to stress that this path, mostly coinciding with the early utopian views on the crowd and sharing movement, is entirely community-led and requires no major regulatory intervention by the state. The re-embedding of the economy is achieved entirely as a result of changes in behaviour and culture; individuals and firms internalise new values of collaboration and sustainable consumption. Platforms may be enlisted to provide public goods and services and even eventually disintermediated (i.e. using block chain) by local government for these purposes.

Regulated sustainability. In this path, re-embedding is attempted by the governments through regulatory and traditional intervention, which aims to steer society toward sustainability (as new communitarian values do not take hold) and also to find remedies for the disempowerment and inequality compounded by the way the sharing economy develops.

Growth-oriented globalisation. Individuals and firms are empowered but in a more competitive and individualistic way as there is no societal and cultural re-embedding. Market forces are left uncontrolled since government intervention and regulation is minimal or absent altogether. To some extent, this is the status quo development path, in which inequality and social polarisation increase and environmental concerns and sustainability are sacrificed to the imperative of economic growth within heightened globalisation. 'Sharing' platforms, and especially those functioning as online labour markets, remove geographical distance and contribute to human capital specialisation and 'virtual labour migrations'.

Barbarisation. This path, if it were to be strictly considered from the perspective of the sharing economy could also be called 'uberisation'. Traditional firms and work are first dis-intermediated, decentralised, and deconstructed into smaller elements, to be re-intermediated through panoptical control implemented through algorithms. It is the world of the 'lumpen cognitariat' or 'algorithmic salariat' and 'algocracy'. Workers are substituted by robots or they are transformed into 'robots' (i.e. Mechanical Turk) performing highly routinised, repetitive, micro-tasks. Dis-embedding and dis-empowerment increase unemployment and inequality to unprecedented levels and further fuel antagonist feelings not only towards 'out-groups' (i.e., immigrants) but also toward 'in-groups'.

3 Main findings: rhetoric, motives, functioning, and impacts

The main findings of the formal review of 140 sources, presented together with supporting elements from other sources, is divided into four sections. In Section 3.1 rhetorical discourses and controversies are presented together with an account of more tangible battles. The former refers to issues discussed in public debates or academic work, and the latter to real social conflicts such as the taxi drivers' protests, controversies reaching the courts, and other dire events which give rise to social alarm and regulatory concerns. So, Section 3.1 identifies a number of themes that are then contrasted with available empirical evidence. In Section 3.2 motivations to participate in 'sharing' platforms are discussed in view of quantitative and qualitative findings, which shed light on questions such as social capital and community revival. In Section 3.3, articles from empirical economics which study the matching functioning of the platforms are presented. These provide insight into reputational ratings as a form of self-regulation and into the potential of scaling up to dominance. Finally, in Section 3.4, public claims about the positive impacts of the '*sharing economy*' are examined in the light of available empirical evidence and of the results of a few modelling simulations.

3.1 Rhetorical and more tangible 'battles'

Whereas only three out of the 140 reviewed sources are entirely focussed on rhetorical and discourse analysis (i.e., Cohen & Muñoz, 2015; Dredge & Gyimóthy, 2015; Martin, 2016), a large number of other sources contain either critical assessment of these discourses (Belk, 2014a, 2014b; John, 2013a, 2013b; Lee, 2015; Schor, 2015; Walker, 2015), or are themselves a source of normative and rhetorical narratives of both an overly optimistic or overly pessimistic nature (Agyeman *et al.*, 2013; Allen & Berg, 2014; Caldararo, 2014; Cohen & Sundararajan, 2015; Guttentag, 2013; Heimans & Timms, 2014; Heinrichs, 2013; Koopman *et al.*, 2014, 2015; Kuttner, 2013; Matzler & Kathan, 2015; Morgan & Kuch, 2015; O'Regan, 2009; Sundararajan, 2014; Thierer *et al.*, 2015; WEF, 2013, 2014; Wittel, 2011; Woskrow, 2014). The latter type of sources can be divided into (i) social utopianism^{xxxi}, (ii) business^{xxxii} and economics laissez-faire^{xxxiii} driven optimism, and (iii) social pessimism^{xxxiv}.

According to the discourse analysis presented in Dredge & Gyimóthy (2015, pp. 3-5), framing the sharing economy has gone through four stages:

- a) the book and Ted talk by Botsman brought the topic to wider attention in 2010;
- b) next came the powerful message that technologically-enabled matching and reputational trust could unlock idle assets, favour the activation of the commons and trust among strangers, and lead to sustainable consumption;
- c) this was followed by large-scale public relations campaigns by Uber, Airbnb, and other platforms which established research departments and government relations department and flooded the debate with their own reports (based on opaque and unreliable methodologies) about their benefits;
- d) fourth, proliferation of discourses has been delegated to advocacy groups.

This is a good reconstruction that, however, from a historical perspective misses one important aspect. Before the popularisation by Botsman, the sharing discourse emerged out of the broader narrative on the wisdom of the crowds and the creativity of the commons (see endnote xxxi) as social utopianism. As the movement took a more 'commercial turn', it can be said that social utopian thinkers and analysts were disillusioned and joined the social pessimists in a rhetorical battle against business- and economics-driven optimism. Without considering this aspect, some of the ongoing controversies cannot be fully grasped.

From their analysis, Dredge & Gyimóthy (2015) uncover five discourses that they critically assess and deconstruct: (D1) social technologies unlock hidden wealth; (D2) they enable more equal distribution of benefits; (D3) they facilitate resilient communities, authentic relations, and the moral economy; (D4) invoking the invisible hand; (D5) self-

regulation. On the other hand, Martin (2016) identifies six discourses (three positives and three negatives): (M1) economic opportunity; (M2) more sustainable form of consumption; (M3) path to decentralised and equitable economy; (M4) unregulated market places; (M5) reinforcing neo-liberal paradigm; (M6) incoherent field of innovation. In an earlier draft (completed before Martin 2016 and Dredge & Gyimóthy 2015 were publicly available) the main author of this essay had instead identified the following five themes: (C1) co-optation of the sharing movement for lobbying purposes; (C2) claim of reviving community and social capital; (C3) self-reported positive impacts; (C4) reputational ratings as a form of self-regulation; (C5) dispute on regulation. If we put these three analyses of rhetoric and discourses together, the following themes can be identified:

- 1) Neo-liberal cooptation of the 'sharing' rhetoric and movement (D1+M5+C1);
- 2) Social capital and community revival (D3+M3+ C2);
- 3) Distributional effects (D2+ M3+ C3);
- 4) Environmental and socio-economic impacts (D1+M1&M2+C3);
- 5) Regulation (D4 & D5;M4; C4 & C5)

Apart from (2) that is addressed only in Section 3.2, all other themes are presented in this section (though to different degrees of depth), together with an overview of more tangible 'battles'. Themes (1) and (4) are merged and treated together. On the other hand, themes (3) and (4) are treated also in Section 3.4 by reporting empirical evidence on them, whereas (5) is treated in Section 4.

3.1.1 Neo-liberal co-optation and impacts as lobbying

One controversy divides the activists of the 'sharing movement' on what is and what is not the '*sharing economy*' (Belk, 2014a, 2014b; John, 2013a, 2013b). It originates in the contrast between optimistic social views and reality. When an ethnographic study (Bardhi & Eckhardt, 2012) produced evidence that Zipcar members were not inspired by a sense of community and altruism, this was vehemently rebuffed in the Magazine Shareable (Gorenflo, 2012) but welcomed by a more sceptical observer (Badger, 2012). When in 2010, CouchSurfing became a for-profit 'B Corporation'^{xxxv} it gave rise to controversies and heated debates (Lapowsky, 2012; Marx, 2012). These examples testify to the value-loaded ways in which sharing was originally conceived. Activists and hippies supporting CouchSurfing are supposedly in a different league from the founders and users of Airbnb. It further demonstrates the rhetorical and ambiguous significance and importance that the vocabulary of sharing has assumed not only in the context of the '*sharing economy*' but also more generally in the broadly-defined Web 2.0 ecosystems (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*'. In this respect, it has been proposed that large companies have co-opted the sharing movement to pursue their own economic interests through traditional lobbying strategies (Lee, 2015; Schor, 2015; Walker, 2015)^{xxxvi}. 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". The anti-establishment ideology disseminated by the magazine Shareable and the association Peer.org are increasingly seen as mouthpieces of big companies such as Uber and Airbnb that use this rhetorical weaponry to pursue their own economic interests (Kerr, 2014).

Indeed, both Airbnb and Uber (and other larger players) are pursuing aggressive market growth strategies and calling for no regulation in a classical neo-liberal fashion. At the same time, they are exploiting the 'sharing' rhetoric in public relations activities: they are participating in official hearings and releasing their own reports on the positive social impacts they have. In a public hearing with the UK House of Lords (see more in endnote xvii, Patrick Robinson (Head of Public Policy Europe and Canada for Airbnb) affirmed:

"In our case, the public interest at stake here is, first, about consumers and consumer choice not just to consume services but to be producers of services too. The additional

income that Airbnb hosts are making is very important to them. Identifying outdated rules and regulations that might stop people engaging in what is beneficial activity is a good exercise and one that I am delighted that we undertook in London earlier this year when they introduced the new rules allowing people to share their homes without the need to seek planning permission, for example. That then raises other issues that we need to be mindful of. We need always to be mindful of the impact that that could have on neighbours or on local communities. That is why we and many other companies in the collaborative economy spend a lot of time measuring impacts and finding effective ways to deliver good public interest outcomes.”(House of Lords, 2016, p. 45).

In a Harvard Business Review piece, Cannon & Summers (2014) advised big players in the ‘*sharing economy*’ to lobby in various ways, using for example reports on their positive impacts. Airbnb and Uber, following this advice or anticipating it, have cobbled together evidence to show the benefits their products/services produce. Few young tech start-ups have publicly ruminated on their economic impact in quite the same way that Airbnb has (Badger, 2014). Uber has also released reports on the benefits of its services. These are summarised in the next two boxes.

Evidence Box 1: Airbnb self-reported impacts

- 81% of hosts share the home where they live, 52% earn low to moderate incomes, 53% affirmed that hosting helped them remain in their home, and 48% that they use earnings from hosting to pay for regular household expenses. Airbnb commissioned former White House National Economic Advisor, Gene Sperling (Sperling, 2015) to write a report, which allegedly^{xxxvii} shows that the platform creates a 14% annual increase (\$7,350 per year for an average of 66 days of hosting) on the income of middle class families hosting guests in their homes;
- Conducted in 2012, the study on S. Francisco found that Airbnb generated approximately \$56 million in local spending and supported 430 jobs;
- A 2013 study reports that in Paris, Airbnb generated €185 million (approximately US\$240 million) of economic activity in Paris, and supported 1,100 jobs;
- Conducted in 2014, the study on the UK reports that Airbnb generated £824 million in economic activity and supported 11,600 jobs;
- Other studies report that Airbnb supports 1,600 jobs in Sydney and 4,000 in Barcelona.

Source: (Airbnb, 2015b)^{xxxviii}

Evidence Box 2: Uber self-reported impacts

- Uber has published various reports on its impacts on cities. These are presented as being generated by additional rides (in addition to those of the established taxi industry) and creation of jobs (Uber, 2014, 2015d, 2015e);
- For Chicago, for instance, \$43 million from new economic activities and 1,000 new jobs are reported. In another report, the ‘*sharing economy*’ giant claims that its services are improving the reliability of drivers in communities where military bases are located (Uber, 2015b);
- It also claims that Uber has contributed to a sharp decline in the DUI (driving under influence of alcohol or drugs) rate in cities where it operates;
- The most ambitious effort is a two volume report entitled Ubernomics: How Ridesharing Can Impact The German Economy (Uber, 2015f, 2015g). This report basically argues that with Uber, more rides and lower prices will increase consumer welfare and provide more earnings to drivers. In order to produce this study, Uber collaborated with Justus Haucap, Director of the Düsseldorfer Institut für Wettbewerbsökonomie (DICE) and former Chairman of the German Monopolies Commission, and with DIW Econ, the consulting arm of the German Institute of Economic Research (DIW);
- Last but not least, Uber provided data to Krueger for the paper he wrote with Hall on the allegedly high earnings and flexibility enjoyed by its drivers (Hall & Krueger, 2015)

Sources:(Uber, 2014, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g)

As regards impacts on consumers and sustainability, it is worth noting that BlaBlaCar reports that an estimated £216 million per year is saved by drivers and that CO2 is reduced by 700,000 tons (<https://www.blablacar.co.uk/blog/blablacar-about>).

It was not possible to access details on the methodology supporting these reports. Hence, the robustness of these self-reports cannot be evaluated. On the other hand, it can be observed that both Airbnb and Uber commissioned reports by influential academics, who had formerly held important governmental posts: a) Gene Sperling was a White House Economic Advisor; b) Alan Krueger was formerly Chairman of President Barack Obama's Council of Economic Advisers; c) Justus Haucap, was formerly Chairman of the German Monopolies Commission. As regards the first two economists, it has been shown that Silicon Valley is the new revolving door for Obama staffers (Kang & Eilperin, 2015).

3.1.2 Do the 'sharing economy' benefits trickle down?

One very important and still highly uncertain and controversial issue is whether or not the 'sharing economy' has positive redistributive effects. Evidence to support this claim is lacking or inconclusive (see Section 3.4 in general; and Codagnone, et al., 2016 as regards labour markets effects). A Financial Times' article, entitled "Sharing economy benefits lower income groups" (Bradshaw, 2015), cites a modelling simulation as proof that the 'sharing economy' will benefit lower income groups and have a democratising effect in terms of access to goods and services (Fraiberger & Sundararajan, 2015). However, as this essay shows later, this model only represents a first exploration that does not warrant the conclusion trumpeted in the newspaper headlines. The Sperling report commissioned by Airbnb (Sperling 2015), see the previous box, reports that the platform creates a 14% annual increase (\$7,350 per year for an average of 66 days of hosting) on the income of middle class families. In this respect, two observations are in order:

- a. as there currently are about 2 million listings worldwide and some individuals have multiple listings, the additional middle class income is an important contribution that, however, concerns a very limited pool of individuals;
- b. this positive income integration can also be seen as having two possible shortcomings: (i) increasing inequality between propertied and property-less middle class individuals, and/or (ii) leading marginal groups to make a living just by renting a room and therefore entirely dropping out of the labour market.

Another debate, analysed in further detail elsewhere (Codagnone et al., 2016), concerns the conditions of workers who advocates call 'micro-entrepreneurs' and opponents call 'gigs' or the 'new precariat' (Kuttner, 2013). Investigative journalists' reports have shed light on the conditions of these 'on demand' workers (Singer, 2014; Weber & Silverman, 2015) and showed that in some cases their earnings are not as high as companies such as Uber and Lyft claim (Weiner, 2015). In a critical essay, (Kuttner, 2013) argues that practices such as those emerging in the 'sharing economy' add to the erosion of the labour contract and to the increase of what economists call 'contingent labour'. In the US, this issue is currently the object of hundreds of court cases about the misclassification of workers as contractors.

3.1.3 Tangible 'battles'

The rhetorical polarisation between the 'passions' and the 'interests' has recently turned into real conflict, legal disputes, and consumer protection concerns. As empirically documented (McNeill, 2016), one place where this is being played out most visibly, creating urban policy tensions and conflicts, is the San Francisco Bay area. Mc Neill (2016) reconstructs the political processes and tensions surrounding the rise of San Francisco as a city of unicorns. He underlines the important role played by technology and venture capital in the political economy of urban development. The urban policy tensions associated with the evolution of new 'sharing economy' firms such as Uber and Airbnb, have, according to the author, aggressively challenged municipal regulations in

the taxi and property rental fields. In addition, legal disputes have given rise to various forms of protests related to negative externalities in neighbourhoods and to shortages and rising prices in the long-term housing rental market.

As reported in Evidence Box 3, the '*sharing economy*' giants Uber and Airbnb have been the object of legal challenges and bans. Violent protests by taxi drivers have erupted in many U.S. and European cities, leading to Uber being banned by local decree or court rulings (in Europe). Airbnb has also been challenged for not respecting city regulations in New York, for violating zoning rules, and for indirectly contributing to the erosion of the local government tax base. Now, the Airbnb website informs and requires hosts to be aware of local laws and their landlord's rental policies and comply with them, which may prohibit short-term rentals (Miller, 2015; Zrenner, 2015). Furthermore, Airbnb has also started to collect taxes in some US cities and in Amsterdam.

In addition, concrete cases have raised regulatory concerns, for instance: liability and insurance, identification, licensing and permits, safety standards, reliability of reputational ratings, information and privacy, frauds, etc. These aspects are discussed in Section 4.3 on regulatory approaches and open issues, and they are only selectively and briefly mentioned below. Incidents reported for Uber drivers and/or with Airbnb hosts have raised concerns about the fact that suppliers of lift and rental services are not required to obtain licenses, permits, or certification (i.e. Sablik, 2014; Rauch & Schleicher, 2015). It is not clear, for instance, whether the platform is liable when a hired car crashes or a host's apartment is damaged (McLean, 2015) or whether it is responsible for the security of the service provided by its platform to users. Furthermore, platforms, in order to escape liability, can argue that they are only intermediaries providing a "matching service", not direct service providers (Malhotra & Van Alstyne, 2014).

Evidence Box 3: Conflicts, Bans, and Court cases

- Taxi companies complaints against Uber Technologies have led to the prohibition of Uber in several cities, including Berlin and Brussels, since April 2014 (Vasagar, 2014).
- In Germany, the Frankfurt District Court went further than previous cases on the topic and highlighted the fact that Uber did not have the necessary licenses and insurance. It was therefore competing unfairly with the local taxi industry (Scot & Eddy, 2014).
- Uber has been banned in Spain, and risks being banned in the Netherlands (Kroet, 2014). It is also a very sensitive issue in Brussels (Keating, 2014);
- On 26 May 2015, a judge in Milan blocked UberPop in Italy on the grounds that it represents 'unfair competition' (http://milano.corriere.it/notizie/cronaca/15_maggio_26/uber-pop-bloccati-app-servizio-tutta-italia-vittoria-tassisti-277dd376-038b-11e5-8669-0b66ef644b3b.shtml) (8-6-2015)
- Uber is operating in London, but the clash between the interests of licensed taxi drivers and Uber operation is far from resolved (Collins, 2014).
- In New York City, Airbnb has faced several problems. Its hosts have been fined (Liber, 2013) and a very strong and negative report on its practices in the city was released by the NYC state attorney office (Schneiderman, 2014). The report concludes that according to New York regulations, Airbnb rooms and apartments qualify as illegal hotels. It also contains the following information: a) as little as 6% of Airbnb dominated the platform, offering hundreds of unique units, receiving 36% of private short-term bookings, and earning \$168 million (37% of the host's revenue; b) Airbnb Rentals displaced long-term housing for about 5,000 apartments; c) bookings in just three Community Districts in Manhattan — the Lower East Side/Chinatown, Chelsea/Hell's Kitchen, and Greenwich Village/ SoHo — accounted for approximately \$187 million in revenue to hosts, or more than 40% of private stay revenue to hosts during the Review Period. By contrast, all the reservations in three boroughs (Queens, Staten Island, and the Bronx) brought hosts revenue of \$12 million — less than 3% of the New York City total.
- So far in Europe, Airbnb seems to have been hit less hard than Uber, although it has been seriously constrained in Barcelona. In Amsterdam, however, it has been regularised (Ranchordas, 2015, p. 8).

Ratings can be biased and inflated and it is possible that platforms present the results of search in a way that is more convenient to them than to the users (Einav *et al.*, 2015). With respect to the utilisation of data by the platforms, the same authors pose questions such as: can consumers limit platforms' use of data? Can platforms share/sell ratings and purchase history? What about potential gender and race discrimination in ratings leading to these groups getting fewer opportunities? It is obvious that small Not for Profit (NFP) platforms with a few thousand members and platforms worth \$ billions, engaging millions of users and providers, are very different and pose different regulatory and policy challenges. But there are also stark differences among commercial platforms between, for example, providing ride services (i.e. Uber: who is liable? and what type of insurance could cover the drivers) and giving a ride in your own car for a fee covering the costs (i.e., BlaBlaCar: the car owner is liable but fully covered by standard insurance). This is why a conceptual clarification is needed that, based on regulatory and policy importance, selectively identifies the most important types of platforms. This is done in the next section.

3.2 Motivation to participate and social capital

The evidence on the motivation of individuals to participate in sharing activities and on the impact that this may have on social capital^{xxxix} and generalised trust is mixed.

A survey testing the extent to which participation in one 'sharing' platform was a form of 'anti-capitalism', found that individuals have different motives and identified four clusters: 'socialites', 'market avoiders' and two other profiles with no particular ideological motivation (Ozanne & Ballantine, 2010). Lamberton & Rose (2012) found the same mix of utilitarian and socially/environmentally-oriented motivations in a study based on three surveys of the users of three different platforms. A qualitative study of time banks found that anti-capitalist sentiments, discontent with consumption, and an ideology of sustainability emerged as strong motivations for participation (Dubois *et al.*, 2014). The authors, however, also found that the different levels of cultural capital and the distinctions they produce matter and create contradictions^{xl}. An ethnographic study of Italian home-swappers (Forno & Garibaldi, 2015) also found both social and utilitarian motives. Sustainability, enjoyment of the activity, and economic gain were the key motivations found among users of a platform in Finland (Hamari, *et al.*, 2015). A large-scale survey of free reuse groups (e.g. Freecycle and Freegle) in the UK, shows that the majority of participants do have significantly stronger self-transcendence (i.e. pro-social) values than the wider UK population, but they also have other more extrinsic values (Martin & Upham, 2015). Möhlmann (2015) found a mixture of self-interest and socially-oriented motivation through surveys of users of the car sharing service car2go, and of Airbnb (N=187) in Germany. The Baumeister & Wangenheim (2014) survey of a representative sample of 2,000 German respondents, randomly assigned to express their views and attitudes to accessing rather than owning different types of products, found that the attitude to access is consistently worse than the attitude to ownership across all product categories.

An in-depth qualitative study of Freecycle found thick relations and social capital at work and also tensions between the goals of the institution (the owners of the Freecycle brand) and those of its community members (Arsel & Dobsha, 2011). Three exploratory studies of local level platforms found that while traditionally relational and reciprocal exchange is highly valued, the weak ties of non-reciprocal exchange allow the communities to tap into the significant distributed expertise of the community (Ozanne & Ozanne, 2011). A qualitative empirical analysis of non-monetary market places (Really Really Free Markets, RRFMs), which blend 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 did not feel any sense of attachment to the organisation, their main motivation was use value. These consumers did not refer to hedonist or altruistic values, and engaged in

opportunistic behaviour toward the company and one another (negative reciprocity). An empirical qualitative analysis of gift-giving, sharing, and commodity exchange at Bookcrossing.com underscored the importance of collective reciprocity and anonymous sharing (Corciolani & Dalli, 2014). Empirically, the most robust study of social capital and social networks in the '*sharing economy*' was performed on CouchSurfing by Parigi and colleagues (Parigi & State, 2014; Parigi et al., 2013). The first study consisted of a network analysis using data obtained by CouchSurfing.com for the period from 2003 to 2010 (Parigi, et al., 2013). A random sample of 10,000 American users, whose monthly logins were counted and recorded over their career in the association was created and analysed. The study tested two alternative hypotheses about individuals' participation in associations: a) participation as by-product of existing friendships; b) participation driven by the association's capacity to form new identities. The authors reported that new friendship ties had a significant impact on participation, whereas pre-existing ties (defined here as ties to other members formed outside of the organisation's context) had a negligible impact. This would seem to suggest that a platform like CouchSurfing is generating new social capital. On the other hand, the second study, where quantitative analysis was integrated with ethnographic work, produced a somewhat paradoxical result on the disenchanting effect of technology (Parigi & State, 2014). The accumulation of ratings about users (whether guests or hosts) had a double-edged effect on the emergence of trust and relationships; it made relationships easier to establish initially but it also weakened them above a certain threshold. That is, technology facilitated the emergence of interpersonal trust among CouchSurfers, but it also made establishing strong ties harder as users acquired more and more reviews. This case illustrates a process of disenchantment created by technology, where technology increases the ease with which friendships are formed and, at the same time, diminishes the bonding power of these experiences.

Although the evidence base is still limited and the findings mixed, at this preliminary stage it is nonetheless reasonable to conclude that:

- a) the motivations that lead individuals to join the '*sharing economy*' range from altruism to utilitarian goals and also include a scattering of 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 clearly to characterise more the early not-for-profit initiatives.

Once again, it can be stated that, going beyond the polarised rhetoric and controversies, the '*sharing economy*' overall is a mixture of 'passions' and 'interests'.

3.3 Platforms functioning: matching and ratings

For the general purposes of this essay the literature on two-side markets or platforms (TSP) is not central (Armstrong, 2006; Eisenmann et al., 2006; Evans, 2003; King, 2013; Parker & Van Alstyne, 2000; Parker & Alstyne, 2005; Rochet & Tirole, 2003, 2006; Wright, 2004). It is not crucial to debate or ascertain in this essay which 'sharing' platforms qualify as TSP and which do not. Nonetheless, a few key points from this literature are included here to illustrate the empirical findings coming from economic studies of some 'sharing' platforms.

In very simple and possibly simplistic terms, TSPs bring together two groups of users (i.e. two sides) on different sides (i.e. consumers and providers) with direct and indirect network externalities that they internalise. Success depends on bringing both sides on board, as there is a reinforcing loop between increasing the size of the group on one side and bringing more individuals on board on the other side. The efficiency of the matching and reputation ratings mechanisms contribute to this. The literature on two-sided markets also describes potential implications for competition law, such as network

effects leading to dominant market power and the conditions for 'single-homing' or 'multi-homing' for different sides^{xli}.

Matching and ratings have been analysed recently in an emerging body of micro-economic studies focussing on Airbnb, TaskRabbit, and oDesk (Cullen & Farronato, 2015; Einav *et al.*, 2015; Fradkin, 2014; Fradkin *et al.*, 2015; Horton, 2014; Horton & Golden, 2015). The key characteristic of these platforms is the trade-off between minimizing transaction costs for users (i.e. search and deliberation) and optimising the use of information for matching the two sides, when there is a high level of heterogeneity in what is offered and who demands it (Einav *et al.*, 2015). This trade-off entails designing the platform so that it centralises or decentralises choice. As the authors explain, Airbnb has adopted a decentralised design because, in the case of renting apartments, it is justified by differences in preferences and in seller costs. Uber, on the other hand, needs to match customers with rides in real time (especially at peak hours). The type of cars and type of drivers is probably less important than getting a ride at a right time, which justifies its centralised design at least with respect to the goal of maximising matches and revenues. Pricing mechanisms can also help in coping with the trade-off between transaction costs and efficient use of information.

Indeed, three studies show that Airbnb (Fradkin, 2014), oDesk (Horton, 2014), and TaskRabbit (Cullen & Farronato, 2015) are characterised by: a) high level of heterogeneity; b) frictions; c) high percentage of non-matched potential; and d) congestion (i.e. a match falls through because of multiple requests at the same time).

Fradkin (2014), for instance, reports that in Airbnb:

- potential guests typically view only a subset of potential matches in the market and more than 40% of listings remain vacant for some dates;
- 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
- if there were no search frictions (i.e. guests had all market options and knew which hosts were willing to transact with them), there would be 102% more matches and revenue per searcher would be \$117 higher.

In TaskRabbit, Cullen and Farronato (2015) found that the auction mechanism is not very efficient as it does not vary much with market conditions. They suggested that a simpler mechanism may be preferable; this market clears due to suppliers' elasticity: 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 were found by Horton (2014) for the oDesk market for professional services. These authors seem to suggest that this type of peer-to-peer market is inherently frictional, but no data and analysis of this kind is available on Uber.

Another important mechanism is that of reputational ratings (henceforth simply ratings). These are the evaluative reviews (usually 5 stars rating systems) that the two sides of a platform make of each other (i.e. in Airbnb hosts rate guests and guests rate hosts). They are both a source of information on 'product quality' and of trust. 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 for the biggest players such as Airbnb and Uber. As we have seen, the motivations to participate are mixed and the '*sharing economy*' is not unequivocally based on social capital and generalised trust as there is self-interest, and positive and negative reciprocity, and opportunistic behaviour cannot be ruled out. Therefore, it is obvious that the generalised trust that makes the '*sharing economy*' possible is the combined result of users' attitudes and of how these attitudes are effectively leveraged by online reputational rating systems. The reliability of reputational rating systems is a regulatory relevant topic as it is claimed that they reduce information asymmetry and are a reliable form of self-regulation. It is also claimed that they ensure consumer

protection and security and should not be altered by any form of regulatory intervention (Allen & Berg, 2014; Koopman, et al., 2014; Thierer, et al., 2015).

In practice, however, there are two main potential biases: under-provision of ratings and strategic behaviour in providing ratings. Leaving an accurate rating is a public good and is likely to be under-provided (Avery et al., 1999; Miller et al., 2005). As a result, a given user may not always leave a rating and 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). Whereas the topic of online ratings and trust is discussed in a growing body of literature (Abdul-Rahman & Hailes, 2000; Ba, 2001; Burnham, 2011; Corritore et al., 2003; Gefen et al., 2008; Hogg & Adamic, 2004; Jøsang et al., 2007; Kwan & Ramachandran, 2009; Pavlou & Gefen, 2004; Swamynathan et al., 2008), only five empirical contributions focussing on reputational ratings with respect to the '*sharing economy*' were found (Cullen & Farronato, 2015; Fradkin, et al., 2015; Horton & Golden, 2015; Lauterbach et al., 2009; Overgoor et al., 2012; Zervas et al., 2015). The first two studies focussed on CouchSurfing and use big data scraped from the web. They conclude that there is a bias toward positive reviews and 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, the rate of five star reviews is 31% on TripAdvisor and 44% on Expedia (Mayzlin et al., 2014) compared to 75% on Airbnb. This difference in ratings could be interpreted as showing that the two-sided review system induces bias in ratings. A recent study, involving researchers affiliated with Airbnb, documents through field experiments conducted on Airbnb itself that there is some bias. However, this study also shows that when the bias is removed through experimental treatments, the five star rates on Airbnb remain substantially higher than even 44% (Fradkin, et al., 2015). This would imply they are a reliable measure of quality to inform other consumers. The study of another platform (oDesk) documents through a laboratory experiment that reputational ratings are fairly inflated (Horton & Golden, 2015). The evidence is, thus, inconclusive and mixed and further evidence is needed to know whether or not reputational ratings are a sufficient and reliable measure of quality and consumer protection, especially in European contexts.

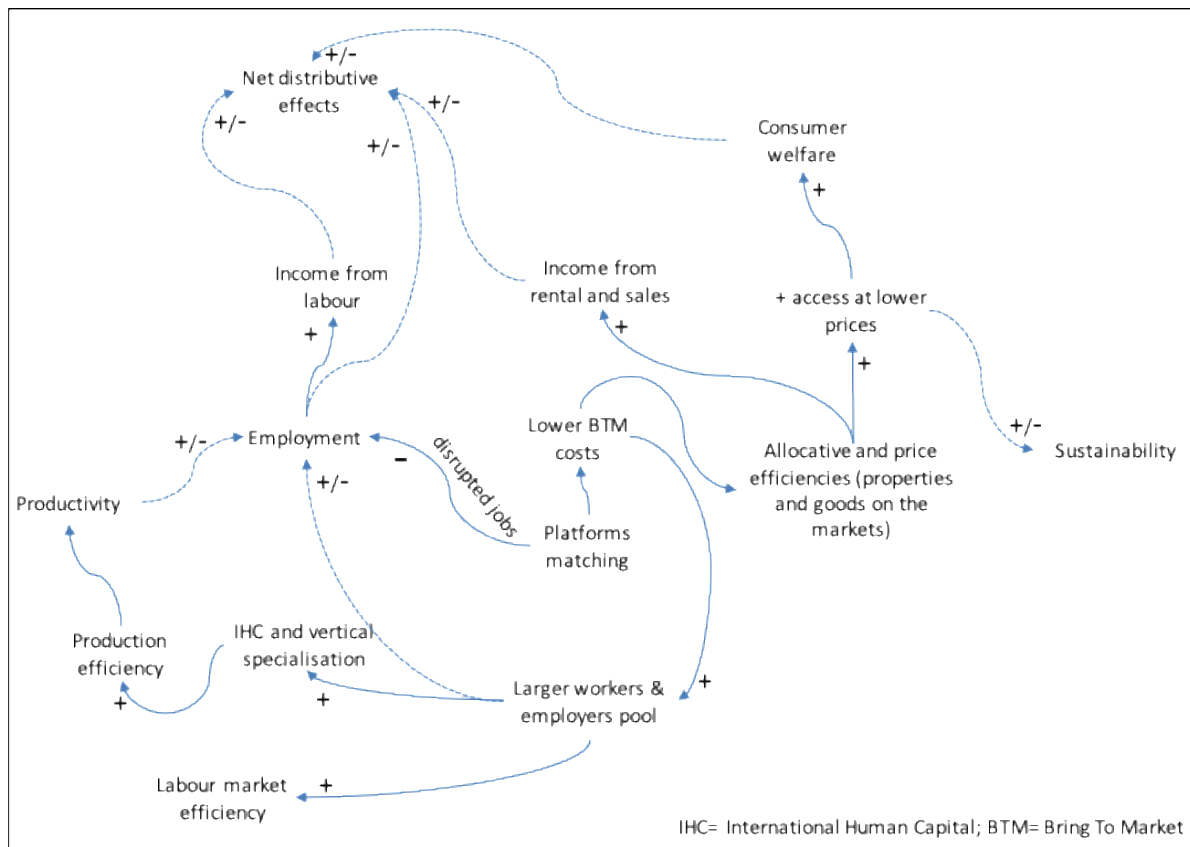
To sum up, the evidence on the functioning of digital 'sharing' platforms provides some food for thought on competition law and consumer protection. First, evidence on heterogeneity and matching frictions suggest that platforms such as Airbnb and TaskRabbit are less likely to scale up to market dominance. In Airbnb, multi-homing is viable and fairly widespread on both sides (hosts and guests). Whereas empirical evidence (e.g. like the evidence reviewed on Airbnb and TaskRabbit) is not available, it is possible to speculate that Uber is more likely to achieve a dominant position (the billions of US\$ that investors are betting on it constitute an indirect proxy). It may suffer less friction due to the lower heterogeneity of the object transacted, its centralised model, and its use of the surge price algorithm that allows price per mile to vary as supply and demand conditions change. There is also little possibility for drivers to 'multi-home', which means that, as Uber market power grows, it may charge them a higher transaction fee for the monopolistic supply of access to 'single-homing' users. Second, it can be said that empirical evidence casts at least some serious doubt on reputational ratings as the best and only possible form of consumer protection through self-regulation.

3.4 Impacts: ex-ante hypotheses and empirical evidence

3.4.1 The ex-ante big picture

This section is dedicated to the findings from the sources that have been reviewed and that provide empirical evidence or modelling simulation on the potential effects of 'sharing' platforms. By way of introducing the findings that will be discussed, the figure below provides an ex-ante theoretical big picture of the potential effects drawn from all the sources gathered (including those not formally reviewed). Note that, although they are not discussed here but elsewhere (Codagnone et al., 2016), for the sake of completeness, the picture also includes the potential effects of digital labour markets.

Figure 6: Big Picture of Sharing Economy potential effects



Source: author elaboration from all reviewed sources

Individuals as providers can let their assets, sell goods, offer their labour to businesses (high or low skilled work delivered digitally) or to consumers (ride services or generic personal services matched digitally but delivered physically as in TaskRabbit). Conversely, individuals as consumers can rent homes and cars, buy goods, share rides on BlaBlaCar, use Uber instead of traditional taxis, pay for personal services, and businesses can hire on demand workers for digital work. *Ex ante* it can be reasonably assumed that the digital matching between users and providers may deliver a wide variety of efficiencies such as reducing transaction and search costs, improving allocative efficiency, reducing information asymmetries, and producing price efficiencies. By lowering geographical barriers (except in the case of more localised digitally-enabled markets such as ride services and generic personal services, e.g. Uber and TaskRabbit) they greatly enlarge the pool of potential matches, favouring international specialisation (especially in the case of digital labour platforms). These direct efficiency gains may translate into various intermediate outcomes and final global impacts as shown in the picture. Considering the consumer markets (i.e. rental, goods, and labour-intensive services to consumers), platform-generated efficiencies may result in consumer welfare

effects (increased access at better prices). Furthermore, renting assets, selling goods, driving passengers, and performing errands and delivering other personal services are sources of income. Looking at the provision of on demand labour to businesses, platforms may produce social welfare effects in terms of increased efficiency at aggregate level both for labour markets (better and more matches between supply and demand, mismatches avoidance) and production (unbundling of tasks and lowering of geographical barriers favour vertical and international human capital specialisation, and lower coordination costs favour outsourcing); these could have spill-over effects on employment levels and quality, on productivity and eventually on growth. As said, these are reasonable assumptions of direct and indirect effects from platform-generated efficiency-enhancing activities and are conveyed by the solid lines in the picture. The dotted lines, however, concern more ambiguous effects whose net impact or direction cannot be assumed *ex ante* and can only be verified empirically. The green and sustainability effects of platforms, for instance, are subject to contrasting forces: re-use of goods and car sharing in principle reduce emissions, but if improved accessibility produces an aggregate increase in travelling and income obtained from platforms is spent on more consumption, then the net sustainability impact could be negative. The net distributive and employment effects are also hard to assume *ex ante*. Platforms disrupt incumbent industries and by reducing their revenues may lead to loss of secure jobs that may not be fully offset at aggregate level by the income and flexible jobs created by labour platforms and by consumer welfare effects. The net distributive effects of all income-generating activities and consumer welfare can either reduce or increase the level of inequality, depending on how they spread across different social groups. They can have either equalising or polarising effects. For instance, the income integration from renting for middle class families shown by a study Airbnb commissioned a former member of the Obama's administration to carry out, may have equalising effects with respect to upper middle class families and polarising ones with regard to property-less middle class and lower middle class families. Labour platforms may increase or decrease employment levels and quality (i.e. security and social protection), and income polarisation, not only for and among on demand workers but also for regular workers (i.e. competition between platform and regular employment affecting wage levels). The overall impact on labour may be different depending on other effects that *ex-ante* are ambivalent; for instance, depending on how 'super star' or 'long-tail' effects play out, they could increase income for a limited group and lower it for others as a result of competition between platforms and traditional employment for most sought workers; the overall impact on employment depends also on the extent to which platforms favour or not generalised outsourcing and firm's boundary contraction.

This quick broad-brush illustration should have clarified the complexities of potential interactions. The following paragraphs show how limited the empirical evidence is, as it is available only for some of these interactions. Together these two considerations further underscore how simplistic and obfuscating both the prescriptive narratives and the current public debates are and how further empirical evidence is needed to support policy making and regulatory initiatives. For instance, some of the grand narratives about the sharing economy and particularly peer-to-peer rentals, including those about its contribution to sustainability and to consumer welfare, require answers to a number of questions. For instance: how does 'sharing' affect ownership and usage of resources? Does it unequivocally decrease ownership levels, decrease usage, or both? Under what conditions? Who benefits the most: owners or renters? To what extent would a profit-maximizing platform, through its choice of rental prices, improve social welfare? To what extent do frictions, such as moral hazard (additional wear and tear renters place on rented resources) and inconvenience experienced by renters affect platform profit and social welfare? What determines the rental rate and the quantity exchanged in a P2P rental market? How much total surplus is "unlocked" by the P2P rental market, and how is it distributed? When there are substantial bringing-to-market costs (such as labour, excess depreciation, and transaction costs), who bears them, and how does it affect short- and long-term equilibria? To these questions, so far, answers come only from

theoretical economic modelling. One of these answers is based exclusively on solving equilibrium equations from economic theory (Benjaafar *et al.*, 2015), and another two are very partially corroborated by empirical data (Fraiberger & Sundararajan, 2015; Horton & Zeckhauser, 2016).

3.4.2 Environmental impacts

The environmental benefits of the '*sharing economy*' are often presented as obvious and are much advertised in platforms' own promotional descriptions. In practice, however, the evidence is scant and it is extremely challenging and complex to demonstrate at aggregate level the net impacts in terms of environmental sustainability (Shor, 2014). First order effects can reasonably be expected to be positive: staying in existing accommodation would reduce the construction of new hotels and/or work spaces, while sharing tools or goods would reduce the production of new goods, both of which should reduce ecological and carbon footprints. Yet, a net impact at aggregate socio-economic level should also consider second order effects: what happens with the extra money providers earned with the '*sharing economy*' or users saved? As seen, Airbnb to demonstrate its impacts on city economies provides 'evidence' that its guests spend more than traditional tourists, which is self-defeating with respect to the claim that it produces environmental benefits. Only one empirical study of these kinds of impacts was found (Martin & Shaheen, 2010). Some preliminary estimates have been produced for France (Demaillly & Novel, 2014), and two modelling simulations have been carried out: one focussed on New York (Santi *et al.*, 2014) and the other on Teheran (Seyedabrishami *et al.*, 2012). One study evaluated the greenhouse gas (GHG) emission changes that result from individuals participating in a car sharing organisation across the US using data from a survey and plugging them into an estimation model (Martin & Shaheen, 2010). The authors report a measurable reduction in greenhouse gas emissions when a small fraction of households reduces substantially their emissions. This is, however, almost totally offset by the fact that, for the majority of households, car sharing expands access to cars and obviously increases emissions. According to estimates using data from the French Environment and Energy Management Agency (ADEME), if sharing models in France were operated under the most favourable conditions, savings of up to 7% in the household budget and 20% in terms of waste could be achieved (Demaillly & Novel, 2014). A modelling simulation of the effects of carpooling, which calibrates data for New York and makes assumptions about take up and removal of barriers, concludes that in positive scenarios cumulative trip length could be cut by 40% or more, resulting in decreased service cost and emissions (Santi, *et al.*, 2014). The modelling simulation of car fuel saving produced by carpooling in Teheran calibrates the data obtained through a Stated Preference (SP) survey (Seyedabrishami, *et al.*, 2012) in a model. Given the user preferences revealed and assuming that appropriate strategies to help users identify suitable rideshares would be adopted, the author concludes that carpooling could increase by 30% which would reduce annual fuel consumption by about 240 million litres.

3.4.3 Socio-economic impacts

In the literature, no empirically robust and comprehensive cost-benefit studies were found which weigh consumer welfare benefits and additional income for suppliers against reduced revenues and jobs for incumbent industries, the cost to the public budget from tax base erosion or future expenditure to provide social protection to on demand workers. Obviously, at this stage of development in the evidence base it would be unrealistic to expect this analysis for the entire '*sharing economy*'. However, this kind of aggregate costs / benefits analysis is not available even for single platforms. Neither is there any conclusive evidence on the impact on the labour market and on re-distributive effects. While prescriptive and critical essays on these topics abound, only a very few empirical (or modelling) studies are available:

- a) as anticipated, as regards consumer welfare one theoretical economic modelling is based exclusively on solving equilibrium equations from economic theory (Benjaafar *et al.*, 2015), and another two are very partially corroborated by

empirical data (Fraiberger & Sundararajan, 2015; Horton & Zeckhauser, 2016). Of the latter two, only Fraiberger & Sundararajan (2015) consider distributional effects;

- b) a quasi-experimental study on the impact of Uber in reducing DUI (Driving Under Influence) accidents (Greenwood & Wattal, 2015);
- c) a quasi-experimental study of Uber's competitive pressure effects on the traditional taxi industry (Wallsten, 2015);
- d) a qualitative study on the effect of sharing practices on issues of inequality (Schor *et al.*, 2014);
- e) a statistical analysis of racial discrimination on Airbnb (Edelman & Luca, 2014);
- f) a statistically descriptive analysis of the negative impacts of Uber on the taxi industry in three US urban areas (Bond, 2015);
- g) a quasi-experimental study of Airbnb impacts on the hotel industry in Austin (Zervas *et al.*, 2014);
- h) a quasi-experimental study of Airbnb's impacts on the hotel industry in Norway, Finland, and Sweden (Neeser, 2015);
- i) an econometric study (Farronato & Fradkin, 2015) of Airbnb's two effects on the hotel industry: 'expansion' (meeting demands of previously under-served consumers) and 'stealing' (attracting consumers away from conventional suppliers);
- j) one panel study of Airbnb's effect on tourism industry employment in the US state of Idaho (Fang *et al.*, 2015).

On digital labour market effects, a more dedicated analysis has been provided in a separate paper (Codagnone *et al.*, 2016). In this essay, as regards labour impacts only, the Hall & Krueger (2015) paper and a review of online labour markets (Agrawal *et al.*, 2013) are briefly mentioned. The findings of these studies are organised partially by theme and partially by platform. Relatively more space is devoted to the consumer welfare topic, because this is one of the most publicised benefits and also because, from the reviewed sources, implications of the unrealistic narratives about sustainability effects can be derived. Furthermore, some implications of theoretical models are also relevant with respect to consumer protection issues.

Consumer welfare and distributional effects. In the theoretical model by Benjaafar *et al.* (2015), consumers allegedly always benefit from the P2P rental. However, this does not necessarily imply sustainability outcomes. According to their model, depending on rental price, P2P rental can result in both higher ownership and higher usage. It is also possible for ownership to decrease but usage to increase. Only under very specific circumstances, is it possible for both ownership and usage to decrease. Hence, except in the latter case, there is no guarantee that there is economisation in the usage of resources and in the related activities producing emissions. On the other hand, according to this model, it cannot be ruled out that profit maximising platforms may not have an incentive to completely eliminate moral hazard (by the renters causing wear and tear on the rented assets possibly as a result of the renter's potential negligence and mishandling). This means that some elements of consumer protection (for the owners) may be circumvented by platforms in order not to decrease volume of transactions (from which they draw their revenues).

Horton & Zeckhauser (2016) present a theoretical model similar to that of Benjaafar *et al.* (2015), which they partially test with data from a survey on a convenience sample drawn from Amazon Mechanical Turk. These authors model the choice of owning or renting with and without the presence of digital platforms for P2P rental. They also find that ownership and usage can either increase or decrease, depending on various key parameters. Whereas Benjaafar *et al.* (2015) model also consider matching (i.e. how utility of being owner or renter depends on the likelihood of finding a match in P2P rental platforms), this is not done in Horton & Zeckhauser (2016). Another difference is that

Horton & Zeckhauser (2015) model how the rental rate influences owners' and renters' decisions on how much they use a given good, which is not done in Benjaafar et al. (2015). Despite these differences, Horton & Zeckhauser's model also predicts that consumer welfare will increase as a result of the presence of digital P2P rental under all configurations and hypotheses. Their model predicts that surplus increases (both in short- and long-term market equilibria for P2P rental) compared to a situation where digital P2P rental was absent. Whereas owners consume less, they are significantly compensated by the income they receive in a way that more than offsets the loss of utility as consumers. When renters value the goods almost as much as the owners (therefore they demand these goods), having the chance to rent them represents a consumer surplus for them. An important aspect to mention from Horton & Zeckhauser (2015) concerns how 'bring-to-market costs' (simply BTMs) affect P2P rental markets and platform strategies. For the ideal-typical example of Airbnb, BTMs include: cleaning up an apartment, doing check-in and check-out, depreciation from usage, plus the fee charged by the platforms (covering conventional transaction costs inherent in finding trading partners, coming to terms, executing payments). BTMs can obviously increase or reduce the renters' supply curve. From the platform's perspective, lowering these BTMs is convenient when the demand is elastic since in this case, as the supply curve shifts out, demand increases without reducing price, which increases the revenue from the platform's fees. The implication is that when demand is elastic, competition between platforms would produce more benefits for consumers and society (i.e. one dominant platform would not lower its fees, even when demand is elastic).

Last but not least, from both models it can be deduced that all of these potential gains depend on the possibility of matching. Neither model ensures that matching is always perfect or that all the excess capacity is put to work. As seen in Section 3.3, empirical evidence shows that matching frictions and inefficiencies are widespread. These cast serious doubt on the optimistic prediction of both these two theoretical model. It cannot be ruled out, for instance, that 'super star effects' prevail over 'long-tail effects'. In this case, only a small percentage of renters would receive a relatively higher proportion of earnings from renting. In this respect, it is worth recalling that the earlier cited (see Evidence Box 3, p. 34) inquiry conducted by Office of the Attorney General of the State of New York on Airbnb's operation in the city (based on administrative data forcefully obtained from the platform) found that: a) as little as 6% of Airbnb hosts offer up to hundreds of unique units, getting 36% of private short-term bookings, and receiving \$168 million equal to 37% of all host revenue in NYC; b) bookings in just three Community Districts in Manhattan — the Lower East Side/Chinatown, Chelsea/Hell's Kitchen, and Greenwich Village/ SoHo — accounted for approximately \$187 million in revenue to hosts, or more than 40% of private stay revenue to hosts during the Review Period; c) by contrast, all the reservations in three boroughs (Queens, Staten Island, and the Bronx) brought hosts revenue of \$12 million — less than 3% of the New York City total (Schneiderman, 2014)

Fraiberger & Sundararajan (2015) model short-term P2P rental markets and calibrate the model using transaction and survey data from Getaround (one of the leading US P2P car rental platform), integrated with official US statistics on car ownership, the second-hand car market, and patterns of car usage in order to provide a first empirical assessment of the welfare implications of these kinds of markets. They model various effects and costs that can be summarised as follows. As regards positive effects, P2P rental for cars may: a) increase allocative efficiency by creating new gains from trade between consumers; b) produce surplus for consumers who cannot afford ownership; c) shift consumption toward higher quality products; d) lead to surplus for manufacturers by inducing new 'ownership for peer-to-peer rental supply.' On the other hand, P2P rental could also induce more rapid depreciation, and hurt manufacturers as a result of lower equilibrium production volumes if durable goods are used more efficiently. There are obvious limitations in the dataset used and some technical aspects of calibration (i.e. estimates of transaction costs function and of depreciation rate) which may heavily

shape the results obtained. Having made these limitations clear, the key results from the modelling simulations are briefly reported below:

- New car ownership would drop (-5%), as would ownership of second hand cars (-12%) even under a P2P rental adoption scenario where only 25% of the overall pool of potential users adopt P2P rental. The shift from ownership to rental would be more pronounced among those who use the car below the average usage rate;
- People with above median incomes tend to maintain car ownership for longer than people with below median income;
- The installed base of cars in the economy drops but usage intensity increases, especially of older car. This occurs as the car market becomes more efficient, and, in this respect, it is worth noting that, according to the simulation, below median income car owners significantly increase their supply of cars to the rental market.

Consumer surplus increases across the board, but especially for individuals with below median income as a result, according to the model, of the following:

- a) lower-income consumers who could not afford to own a car and were thus excluded from participation now consume through the peer-to-peer rental marketplace;
- b) a different fraction of below-median income consumers shift from being owners to being non-owner renters, realizing ownership cost savings, gains from greater usage efficiency and higher quality consumption;
- c) a small fraction of below-median income consumers switch from being non-owners to being owners, induced in part by lower used-car prices, realizing surplus gains through their supply activity on the peer-to-peer rental marketplace.

The simulation also clearly shows that usage will increase and so will emissions of CO₂, which once again undermines the claimed sustainability effects.

Given the preliminary, exploratory, and very partial empirical validation of the model, headlines such as “Sharing economy benefits lower income groups” (Bradshaw, 2015), are exaggerated at best.

Uber. Exploiting the natural experiment created by the staggered entrance of Uber in different Californian cities between 2009 and 2013, Greenwood & Watal (2015) adopted a difference-in-difference identification strategy to estimate Uber effects on DUI accidents. They concluded that Uber services reduced alcohol-related motor vehicle homicides. Wallsten (2015) used Google trends as proxies to measure the demand for Uber services. They also looked at administrative records of taxi complaints placed by consumers in New York and Chicago for improved service quality by the traditional taxi industry. They identified a negative correlation (increased usage of Uber correlates with fewer complaints) and hazard the conclusion that Uber’s competitive pressure has led traditional taxi drivers to improve their customer service. Bond (2015) analysed Uber impacts in San Francisco, District of Columbia and New York using extensive statistics on the taxi industry in these areas pre- and post-Uber (statistics are used only descriptively and there is no design/ attempt to document causal effects). The descriptive data show that Uber has a clearly negative impact on both taxi industry revenues and one the value of the medallions.

Airbnb. Zervas et al (2014) used data obtained for the Austin areas from both Airbnb and the hotel industry. 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 find that Airbnb’s impact on the hotel market is in the order of an 8%-10% reduction in revenues. This is non-uniformly distributed, and lower-priced hotels, and hotels that do not cater for business travel are 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’. Neeser (2015) replicated the same study as Zervas and colleagues with data on Sweden, Norway, and Finland. The paper uses a difference-in-differences

strategy with many time periods and different levels of treatment. The data are used to differentiate among Airbnb listings and to identify which type of hotel customers Airbnb is more likely to attract. The main findings are that: a) Airbnb does not significantly affect hotel revenue per available room on average; b) it contributes to a reduction in the average price of a room where Airbnb is most present; c) it is relatively more attractive for foreigners than locals. Farronato & Fradkin (2015) found that the market expansion and business stealing effects of Airbnb differ by location, and attribute this heterogeneity to supply constraints – both legal and geographic - relative to the level of demand. According to the competition model developed 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. They were also able to quantify the welfare gains from peer-to-peer entry in the accommodation industry. A statistical analysis of a datasets constructed from Airbnb (combining pictures of all New York City landlords on Airbnb with their rental prices and information about 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 quality-equivalent rentals. 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.

Forms of class distinctions within NFP platforms. A qualitative empirical study based on fieldwork conducted at four sites (interviews and participant observation at a time bank, a food swap, a maker space, and an open-access education site) aimed to analyse how class and other forms of inequality operate within this type of economic arrangement (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 texts exchanged online). This exercise of class power undermines the ability to forge relations of exchange and reduces the volume of trade. This yields an inconsistency between actual practice and the widely articulated goals of openness and even equality, which the authors call 'paradox of openness and distinction'.

Labour impacts. As mentioned earlier, further and more detailed analysis is presented in a separate paper, which shows that evidence on labour impacts is limited and not conclusive. Hall & Krueger (2015) performed a statistically descriptive analysis of data obtained from Uber on driver profiles, their motivation, and earnings. The main findings are that drivers:

- a) are more similar in terms of their age and education to the general workforce than to taxi drivers and chauffeurs;
- b) appear to be attracted to the platform largely because of the flexibility it offers and the level of compensation;
- c) earn on average \$6 per hour more than regular taxi drivers.

However, as documented by Codagnone et al., (2016), the latter two findings have been seriously challenged. Agrawal et al (2013) review the evidence on the market functioning and impacts of online labour markets, such as oDesk. The evidence is not conclusive, although it suggests that these markets tear down geographical barriers and seem to increase female participation. On distributional and aggregate welfare effects, the evidence is ambiguous and does not warrant any preliminary conclusions.

4 On regulatory matters

In this final section, first the general positions of the reviewed sources which focus specifically, and also indirectly on regulatory matters, are presented (Section 4.1). From these sources, the key consumer protection (Section 4.2) and competition law issues (Section 4.3) are illustrated. One additional important matter concerns taxation that, given its specific and peculiar technicalities is not discussed at length here. It can be briefly reported here, that, as noted (Oei & Ring, 2015), substantive law on tax sharing activities exists. However, enforcement may present challenges because: a) some platforms opportunistically pick the more favourable regulatory regime; and b) micro-providers raise unique compliance concerns. Platforms have already been taking action to address some of these issues. In this regard, Airbnb is currently engaged with legislators in drafting or adjusting existing legislation. In addition, its website informs and requires hosts to be aware of and comply with local laws and their landlords' rental policies, both of which may prohibit short-term rentals (Miller, 2015; Zrenner, 2015). Furthermore, Airbnb has also started to collect taxes in some US cities and in Amsterdam.

4.1 Debating regulations

In the midst of controversies and legal disputes, the various regulatory essays reviewed are to some extent polarised between those radically against any intervention (Allen & Berg, 2014; Cohen & Sundararajan, 2015; Koopman, et al., 2014, 2015; Sundararajan, 2014; Thierer, et al., 2015), and those that are in favour of some forms of regulation (Cannon & Chung, 2015; Edelman & Geradin, 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 & Zehngelot, 2014; Daus & Russo, 2015; Miller, 2014; Miller, 2015) which propose very strict interventions in, for example, transportation services (Daus & Russo, 2015).

The libertarian solution uses the weaponry of text-book economics about the failures of regulation and the self-regulatory nature of markets (Allen & Berg, 2014; Koopman, et al., 2014; Thierer, et al., 2015). A key and objectively valid point is the risk of regulatory capture of regulators by incumbent industries. This dynamic can promote socially unproductive but costly rent-seeking behaviour by firms seeking to maintain their market stronghold through lobbying, donations and other means. From a libertarian standpoint, excessive legislation and regulation could absorb and neutralise the benefits to consumers and the efficiency gains allegedly produced by technological innovation. According to this perspective, the '*sharing economy*' has allegedly overcome market imperfections without recourse to traditional forms of regulation. The Internet and the rapid growth of the sharing economy alleviate the need for much of this top-down regulation, and these recent innovations probably do a much better job of serving consumer needs. It is argued that the '*sharing economy*'s reputational feedback mechanisms solve the information asymmetry, commonly called the 'lemons problem' (Thierer, et al., 2015)^{xiii}. From this 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, which attempt a compromise to ensure consumer protection and safety without stifling innovation (Barry & Caron, 2014; Miller, 2014; Miller, 2015; Ranchordas, 2015; Rauch & Schleicher, 2015; Sunil & Noah, 2015). By and large, the smarter regulations envisage a number of possible solutions:

- a) use of information-based regulation (metrics and performance);
- b) development of a general but differentiated regime for the '*sharing economy*';
- c) co-opting of the '*sharing economy*' organisations into the city governance structure, as was done in the past with industries that performed a quasi-public service;
- d) not applying traditional regulation to the '*sharing economy*' but rather, if necessary for the sake of fair competition, gradually deregulating incumbent industries.

Sunil & Noah (2015), for instance, recommend that governments should establish a strategic operating framework, re-align political and cultural incentives, and modernise their structures in order to be ready to manage smart regulation regimes. Importantly, they also stress that sharing economy companies will have to make their data fully open, if a regime like this is to emerge. Rauch & Schleicher (2015) interestingly observe and then challenge the current sharing wars for they rely on an unstated assumption: if the sharing firms win these fights, their future will be largely free from government regulation. Local governments will either shut sharing down, or they will leave it alone. However, they envisage that, as '*sharing economy*' firms move from being start-ups to being important and permanent players in key urban industries (transportation, hospitality and dining), local and state governments are likely to adopt the mixed regulatory strategies they apply to the types of firms with which sharing firms share important traits: e.g. property developers and incumbent taxi operators. In this spirit, a very technical but interesting solution has been suggested by Miller for the short-term rental market in general and Airbnb in particular (2014). They propose a 'transferable sharing right' (TSR) mechanism, which is modelled on existing transferable development rights regimes. This TSR regime would provide cities with a means of regulating short-term rentals while also charging a fee equal to the resulting externalities and lost city revenues. Furthermore, TSRs could be used to re-invest in neighbourhoods where short-term rentals occur, or to drive economic development to neighbourhoods where cities seek to encourage tourism. Cannon & Chung (2015) 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, there is the risk of retaliation which can lead 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 introducing a minimum insurance requirement, as imposed by California, for instance, on ride-sharing companies.

A couple of very balanced appraisals mix economic analysis and regulatory considerations. They argue that old-fashioned and ineffective regulation should not stifle innovation and undermine efficiency gains and consumer welfare gain and they recognise that platforms cannot continue from above the law as they currently do (Edelman & Geradin, 2015; Einav et al., 2015). Edelman & Geradin (2015, pp. 9-13) consider imposing licensing schemes on platforms ineffective and a source of regulatory capture by incumbents. However, they urge platforms to be ready to accept requirements which genuinely protect both customers and non-customer. With respect to the latter, they stress the need for intervention when platforms' negative externalities affect non-customers who lack any contractual relationships with platforms or service providers. Einav et al. (2015) recognise that ratings can be biased and inflated 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 also point out that imposing licensing and certification on the platform may protect incumbents without really protecting consumers. Although these requirements can be seen as remedies to market failures, their implementation takes the form of lengthy processes after which little monitoring is performed. In this respect, they seem to favour small interventions, which allow traditional industries and new platforms to compete on an equal footing. With respect to the use of data by the platforms, they observe that several questions emerge such as: can consumers limit the use by platforms of data? Can platforms

share/sell ratings and purchase history? What about potential gender and race discrimination in ratings leading to certain groups getting fewer opportunities?

Regardless of the regulatory debate described and despite the availability of various proposals, in practice regulatory regimes are lagging behind. As a result, many 'sharing' activities occur in a 'grey area'. They are neither legal nor illegal, but at times violate local level ordinances (Miller, 2015). The European Sharing Economy Coalition has indicated that there is a lack of European policy frameworks and of institutional support for regulating this sector^{xliii}. This situation favours the incumbents' claim that 'sharing' platforms avoid regulation and have an unfair competitive advantage (McLean, 2015; Oei & Ring, 2015; Rauch & Schleicher, 2015; Zrenner, 2015). Most open issues concern consumer protection and are reviewed in the next section.

4.2 Consumer protection open issues

These issues include: trust in the provider, product/service safety, quality and rating, safety standards, liability, fraud, data and privacy, pricing, dispute resolution and redress, and information. These are briefly reviewed below, where the most important aspects from the various regulatory essays and sources used are reported.

4.2.1 Negative externalities and issues of liability and insurance

On New Year's Eve in 2013 in San Francisco, a driver for UberX failed to give way to a six-year-old girl, thus killing her. The parents sued the driver and Uber, but the driver was under-insured and Uber attorneys said the company was not liable because the driver was an independent contractor and had no reason to be actively engaged with the app at the time (Daus & Russo, 2015). Uber claimed that the driver was logged onto the app and was searching for a client but had not got one at the time. Several other incidents have occurred, most of them less severe. One, however, involved a death caused by a Lyft driver (Pfeffer-Gillett, 2016, pp. 234-235). It is reported that in the US Uber and Lyft continue to publicly represent themselves as online networking platforms, not transportation services and to include in their terms of agreement a clause waiving any liability (Pfeffer-Gillett, 2016).

The main negative externalities for ride service platforms derive, thus, from unsafe and uninsured or under-insured drivers/cars. Without empirical evidence on the capacity of these new drivers and on the conditions of their cars, Edelman & Geradin recognise that they should be held to the same higher standards of training and inspection applied to other commercial vehicles and call for the insurance gaps to be closed (2015, p. 17-18). Pfeffer-Gillett, (2016, pp. 263-264) has a more radical approach. They propose that plaintiffs, instead of determining an employment relation (i.e. 'respondeat superior'), should instead apply the principle of 'a non-delegable duty to operate safely' in order to demonstrate liability and crack down on the misleading statements contained in Uber's and Lyft's terms of agreement. Short-term rental of accommodation produces negative externalities on neighbourhoods (increased traffic, parking places occupied, noise, tenants disturbing neighbours, etc.) and removes properties from long-term rental markets. This may require regulatory intervention under specific circumstances (Edelman & Gerardin, 2015, pp. 19-21).

Liability and insurance, however, are not only a matter of negative externality and may also concern the two sides of a 'sharing' transaction. The issue is again to determine who is liable if something goes wrong and to guarantee that 'sharing' activities are insured. It is not clear, for instance, if the platform is liable when a hired car crashes or a host's apartment is damaged (McLean, 2015), or if it is responsible for the security of the service provided to a user of its platform. Platforms, as seen, in order to escape liability, argue that they are only intermediaries providing a 'matching service', not direct service providers (Malhotra & Van Alstyne, 2014). Platforms in the food businesses, which are being investigated in some cities for tax and health code violations, have argued that they are merely "network services" and not restaurants (Rauch & Schleicher, 2015). Similarly, Airbnb maintains that it only facilitates the contact between hosts and

travellers and ensures the payment. In the UK, existing insurance policies for physical persons often do not cover them when they engage in activities through 'sharing' platforms (Woskowiak, 2014). It is difficult to determine how these activities should be insured because they do not fit in with either individual or commercial insurance.

4.2.2 Information asymmetries and related issues

In view of the possibly safety risks seen above, some level of protection could increase consumer welfare. In this respect, the reliability of reputational ratings is a key question as they help platforms to be successful (Dervojeda et al., 2013; Koopman et al., 2014) and to ensure that bad apples are known to all (Rauch & Schleicher, 2015). If they work well, they represent a channel of consumer protection both ex-ante (helping the choice) and ex-post (producing reviews that will help future users). However, ratings and reviews can be abused and have shortcomings, such as low response rates and incomplete information (see Section 3.3). Overall, it is evident that people are reluctant to provide negative ratings and almost all Airbnb and Uber ratings are at the top of the valuation scale (Edelman & Geradin, 2015 p. 22), which casts doubts on their usefulness.

If ratings are not fully reliable, there is a clear ex-ante information asymmetry on the quality and safety of the good or services purchased through platforms. On eBay, this is mitigated by 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). This solution is not available, however, for apartment rental and ride services. Another concern is that they are not subject to the same safety standards as traditional industries (Rauch & Schleicher, 2015). Ranchordas (2015) stresses that private kitchens are not licensed, or subject to health or safety standards, which may put the health of customers at risk. Similarly, Airbnb and Uber are not directly legally responsible for the same safety standards as hotels or taxi (Zrenner, 2015). Where a hotel must install automatic fire suppression systems such as sprinklers, most private homes and apartments lack this equipment, as do many apartments.

These asymmetries can be exacerbated by the information overload facing potential consumers, who tend to suffer from the typical cognitive biases documented in the behavioural economics literature, e.g. in Edelman & Geradin (2015, pp. 23-24). This may increase the chances of consumers making poor decisions when faced with an overwhelming range of choices, poor regulation and unclear avenues for recourse in the case of a dispute, not to mention failure to fully appreciate risks and safety requirements. In these circumstances, regulation and/or nudges could help increase consumer protection.

Indirectly related to information asymmetries and cognitive biases are matters concerning frauds, dispute resolution and redress. Payments on these platforms are usually made online, which may raise the issue of fraud. In the context of the '*sharing economy*', Ranchordas (2015) indicates that there have been protests about scams on numerous websites. Platforms have taken a number of measures to avoid fraud. In Airbnb, the payment will only be transferred to the host after the traveller has checked in (Ranchordas, 2015). Likewise, eBay withholds payment for sellers for a number of days or until the buyer receives the item and leaves feedback (Thierer et al., 2015). Another issue is whether consumers are able to engage in dispute resolution if they are not satisfied with a product or service. The opportunity for consumers to file complaints and obtain complaint resolution is an important part of consumer protection. Airbnb's website indicates that hosts can require guests to sign contracts or rental agreements prior to check-in. However, it adds that Airbnb cannot help to enforce any special policies in the contract. Another important problem that might create insecurity is the fact that travellers can see their reservations in Airbnb suddenly cancelled with no warning (Ranchordas, 2015). Providers such as eBay already have an online dispute resolution system in place.

Finally, a matter that can also be seen as part of consumer protection, is that most legislations impose the requirement that businesses should offer their services to disfavoured groups, including racial minorities, low-income users, and low-income regions or neighbourhoods (Edelman & Geradin, 2015, p. 24-28). In this domain no regulation exists and 'sharing' platforms operate completely unchecked.

4.2.3 Licensing and certification

As anticipated, licensing and certification schemes tend to be ineffective and may unduly favour incumbents. Nonetheless, instances of serious incidents occurring with both Uber and Airbnb have led some scholars to call for imposing them on 'sharing' platforms.

Trust in provider. Incidents to do with Uber drivers and/or with Airbnb hosts have raised concerns about the fact that suppliers of lift and rental services are not required to obtain certification (i.e. Sablik, 2014; Rauch & Schleicher, 2015). Hosts or drivers do not seek city operating permits because they do not know how to obtain them or do not think they need one. Uber and Lyft drivers are not required to obtain city certification or licenses or pass tests. Platforms try to boost confidence with ID checks (Dervojeda et al., 2013) because any information that confirms a person's identity strengthens the trust and reputational ties between parties (Thierer et al., 2015). Many platforms require users to have a clear profile photo displayed with their accounts. They prefer people to sign up using their Facebook account, as this 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 drivers' phone numbers, emails, and Facebook accounts along with real photos and names (Thierer et al., 2015). Some platforms use vetting and screening mechanisms to block questionable or untrustworthy users (Thierer et al., 2015). Concerning driver safety, it is argued that there is no transfer of cash and Uber possesses information about passengers' addresses and credit cards. Drivers are therefore considered by and large to be safe (Koopman et al., 2014). Yet, concerns remain. Some argue that self-regulation measures are not sufficient and that it is the government which should be responsible for setting driver-fitness licensing standards via rulemaking or legislative processes, and for deciding who to license (Daus & Russo, 2015). There are doubts as to how transparent and rigorous these inspections are (Ranchordas, 2015).

4.2.4 Data and privacy

There are concerns about the amount of data that 'sharing' platforms are collecting about consumers, given the sensitive nature of some of these data, and how they are being used (Koopman et al., 2015). Having a large amount of personal data can provide a platform with a significant competitive advantage. However, this could be a problem for consumers if a dominant platform uses its market power to extract more data than consumers might want to disclose, or if it uses data to engage in behavioural advertising and price discrimination. Geradin (2015) concedes that online-enabled car transportation services collect sensitive information about passengers, such as their locations at various moments in time, and financial information, such as credit card details, etc. But he indicates that it is not clear whether there should be specific legislation for them, or whether they are already covered by existing legislation, which prevents holders of such data to misuse them. Likewise, Koopmans et al., (2015) argue that privacy-related concerns about 'sharing' platforms can be addressed through contract law: when platforms do not comply with the promises made to consumers, courts can act.

4.3 Potential issues for competition law

Two very recent essays have discussed for the first time the possible implications for competition law of 'sharing' platforms with a special focus on EU level matters (King, 2015; Lougher & Kalmanowicz, 2016). They both report that competition issues first emerged in Europe as a result of complaints filed by Uber and Airbnb against restrictions imposed in certain Member States. This has been confirmed in the hearing that both companies had with the UK House of Lords (2016; pp. 25-50). According to King (2015),

there are three potential concerns: a) anti-trust implications when platforms activate network effects leading to dominance; b) lock-in of third parties on one side of the transaction; and c) power to reference rivals (i.e. leading to collusion or alternatively to discriminatory behaviour). King argues that Uber has also faced pricing complaints for its 'surge pricing', which was voluntarily limited in New York, due to the potential for such pricing to breach price-gouging laws (King, 2015, p. 731).

In the review by Lougher & Kalmanowicz (2016), it is not ruled out that 'sharing' intermediation markets can become concentrated and possibly dominated by a single market player. The activities of powerful platforms, for which data use is key, are likely to be scrutinised in merger control proceedings and in the long term potentially also in the area of market abuse. They cite statements by representatives of the French and Germany competition authorities to substantiate the claim that market power for such platforms comes from the capacity to collect a large amount of personal data and to use it commercially (2016, pp. 96-97). Finally, after noting that the regulation of 'sharing' platforms is hotly debated, they report that whereas some Member States have called for specific regulatory framework, however, the European Competition Commissioner Margrethe Vestager made clear in several statements that such platforms are too diverse to be monitored through a single regulatory framework and that it is preferable to apply existing antitrust rules case by case (2016, p. 102).

From the evidence reviewed on the characteristics and functioning of the largest platforms it seems that market dominance is out of reach for most of them due to heterogeneity and matching frictions, but is not so unlikely for Uber. On the other hand, improvements in the matching algorithms, together with pricing strategies and use of personal data without any regulatory checks, may change the situation and make market dominance more likely also for a few other platforms.

5 Discussion and conclusions

Policy makers and regulators are having to tackle entirely new activities that blur the boundaries between the personal and the commercial. They must avoid stifling potentially beneficial innovation and, at the same time, ensure consumer protection, preserve labour rights, and prevent the erosion of the tax base (Ranchordas, 2015; Sunil & Noah, 2015). Although more empirical research will be needed, this essay has touched upon many relevant policy and regulatory concerns. It has deconstructed and contextualised rhetorical and tangible controversies and brought conceptual clarity. It has also provided empirical insights and highlighted evidence gaps.

The aims of this essay were to:

- i. provide a better conceptualisation that is both heuristically useful and empirically grounded,
- ii. critically analyse and unpack rhetorical discourses and controversies,
- iii. map these controversies against the available empirical evidence on how 'sharing' platforms function and on their environmental, economic and social impacts, and
- iv. review the debate and literature, focussing on regulatory and policy issues.

Having gathered the evidence and the analysis resulting from these four goals, the final aim was to discuss the policy and regulatory implications of the main findings and define the future agenda for research in support of EU level policy. In the following paragraphs, the main points and findings with regard to each of the first four objectives are recalled and summarised to prepare the discussion of policy implications and the proposal of a European research agenda.

5.1 Discourses and concepts

It has been shown that the various expressions used to refer to 'sharing' platforms, now appropriated by practitioners and stakeholders, are 'floating signifiers' for all sorts of different activities, in what can be called the rhetorical politics of platformisation. A closed self-reproducing loop exists between conceptual ambiguity, rhetorical controversies, and lack of sound measurements and empirical evidence. This loop, in turn, limits the possibilities of a rational debate of alternative policy options and contributes to the fragmented regulatory approaches, which currently address the '*sharing economy*'. This essay has contributed to breaking this loop by deconstructing and contextualising rhetorical discourses and by proposing a typology to guide both policy and future research.

The 'sharing' movement emerged as a form of social utopianism out of the broader narrative on the wisdom of the crowds and the creativity of the commons. After the development of 'sharing' platforms has taken a more 'commercial turn', disenchantment has fuelled growing criticism. Other more tangible interests and concerns exacerbated the conflictual debate that currently surrounds the '*sharing economy*'. These include the political activation of the disrupted incumbents, and urban tensions concerning the negative externalities caused by ride services and short-term accommodation rentals. The fact that 'sharing' platforms operate in a 'grey area' where they are neither legal nor illegal, but at times violate local-level ordinances, also raises genuine or instrumental concerns about consumer protection and the rights of independent on demand workers. This essay identified five controversies that it has deconstructed and mapped against available empirical evidence:

- (1) Neo-liberal co-optation of the 'sharing' movement. 'Sharing' activists and critical observers claim that this has been done by the large commercial platforms. As documented in this essay, these platforms have pursued aggressive growth strategies, and are calling for no regulation. They are using the 'sharing' rhetoric in public relations activities (i.e. through official hearings and the release of reports they have written themselves on their positive social impacts).

- (2) Social capital and community revival. Advocates for 'sharing' platforms claim that they help to revive communities by strengthening social capital and increasing generalised trust. Opponents, however, question this claim and suggest that not all individuals and communities have the option to 'share' and that less advantaged urban areas are not targeted by large commercial players.
- (3) Distributional effects. Advocates and platforms themselves use the arguments that the benefits of these activities trickle down to the needy, but there is no robust empirical evidence to document this claim.
- (4) Environmental and socio-economic impacts. The promises of greener consumption (positive environmental effects) and wide net socio-economic welfare gains are at the core of current platforms' public relations campaigns, but even in this domain, empirical evidence documenting these effects is lacking.
- (5) Regulation. The debate is polarised between, on the one hand advocates of laissez-faire and self-regulation, and on the other hand, those calling for the application, to 'sharing' platforms, of the same regulatory requirements faced by the incumbent industries they disrupt

In the midst of limited empirical evidence, polarised and contrasting normative and prescriptive narratives are widely produced and remain mostly unchallenged. This essay has grouped and categorised these narratives into social utopianism, business- and economics-driven optimism, and social pessimism, and has used them to construct four possible development paths:

- **'the great transformation'** path where the *'sharing economy'* contributes to placing community and new values at the centre of society, and thus to achieving a triple win: green, fair, and socially-oriented prosperity;
- the **'growth-oriented globalisation'** where the *'sharing economy'* is entirely at the service of markets, which, according to the critiques, would contribute to increasing inequality and social polarisation. Environmental sustainability would be sacrificed to the imperative of economic growth;
- Radical opponents go even further in pessimistic views of the impacts of the *'sharing economy'* in a way that is captured in the **'barbarisation'** path;
- In this respect, the fourth path **'regulated sustainability'** intuitively suggests the kind of regulatory intervention that may be adopted in the coming years.

Rhetorical discourses, public controversies, and more tangible 'battles', usual in any kind of polarisation process, fail to consider that 'sharing' platforms cover a wide range of different activities. In fact, these controversies flourish in semantic and conceptual ambiguity and contribute to it. Confused and confusing semantics and concepts are their bread and butter. Yet, policy makers need conceptual clarity and should be aware that the diversity of this domain rules out a 'one size fits all' approach to regulation. Some EU Member States have called for a single regulatory framework for the *'sharing economy'*. This is not only opposed by large platforms such as Airbnb and Uber (see for instance House of Lords, 2016, p. 25), but has also been deemed inappropriate by the EU Competition Commissioner (see for instance Lougher & Kalmanowicz, 2016, p. 102), Margrethe Vestager.

Platforms can be categorised and distinguished according to their commercial orientation, dimensional relevance, and interaction modality; all of which in turn shape their importance for regulatory concerns. It makes no sense to treat together a commercial local platform for personal services such as TaskRabbit with community-based time-banking where services are exchanged for time on non-monetary basis. Some platforms have a user base of a few hundred or thousand individuals whereas others have millions. The modalities of the exchange are different as some of the largest platforms (i.e. Airbnb) are pure P2P and others are B2C (i.e. Zipcar). B2C platforms, no matter how innovative their business model is (i.e. Zipcar), are already fully regulated by existing legislation.

One key contribution of this essay has been the purposive elaboration of a conceptually sound typology inspired by the current importance of different types of regulatory concerns. This has been done by first eliminating platforms that do not raise regulatory concerns, and then proposing a typology which identifies four types. The following groups do not currently raise regulatory concerns: a) not for profit peer to peer (P2P) small platforms (e.g. for time-banking, lending of goods, makers' spaces), are a potential source of social innovation while currently not raising regulatory or policy questions; b) platforms for collaborative production (either P2P, P2B, or B2P, some commercial and some NFP) are small and not currently a matter of regulatory concern (with the possible exception of Intellectual Property Rights) and could be the target of industrial innovation policy; c) business to consumer (B2C) or business to business (B2B) platforms, no matter how innovative or large, are fully regulated by existing legislation and raise no new regulatory challenge; c) government to government (G2G) platforms (i.e. hospitals renting from each other under-utilised medical equipment using Cohealo or municipalities renting from each other under-utilised heavy duty equipment using MuniRent) are currently small, may become in the future a source of public sector innovation and related support policy, but currently do not pose urgent regulatory issues.

After the elimination of the above groups, two dimensions (asset mix: from capital to just labour; interaction modality: P2P vs. P2B) were used to identify the following four types:

- 1) peer-to-peer assets-intensive provision of goods and services;
- 2) peer-to-peer manual labour-intensive unskilled provision of personal and home services;
- 3) peer-to-business cognitive labour-intensive unskilled provision of services to businesses; and
- 4) peer-to-business cognitive labour-intensive skilled provision of services to businesses.

The range of new P2P activities in (1) raise regulatory concerns regarding consumer protection; Airbnb has also been the object of other controversies (zoning, taxes, local rules for short term rental). On the other hand, (2), (3), and (4) have implications for employment and social protection that are not relevant for (1) and are discussed at length elsewhere (Codagnone et al., 2016). Ride sharing (Uber) falling in (3) is the utmost source of concerns as it entails both consumer protection and labour protection issues. Ride services in this respect are very different from ride sharing (e.g. BlaBlaCar) and car sharing (e.g. RelayRides). The former is labour intensive and currently at the centre of labour disputes, whereas car sharing entails little or no work, and ride sharing only a limited amount of work. In P2P car and ride sharing, reservations are made in advance, the two peers eventually meet, driving is mostly for personal use, with less frequent but longer utilisation. In ride services, on the other hand, scheduling is on demand with a short lead-time, the driving is for commercial use, utilisation is very frequent (with more risks entailed). When one peer is the owner, just giving a ride or renting his/her car, and not a driver carrying paying passengers, liability policy is much more straightforward. The fact that provider and consumer meet increases trust; and the less frequent use reduces risks to safety. From a regulatory perspective, these are important factors. Last but not least, Uber is possibly the only 'sharing' platform with a potential to become object of competition law concerns.

In this fashion, the focus of more urgent policy and regulatory actions and supporting research has been clearly delimited. Other sub-sets of the '*sharing economy*' have been removed but are possibly of interest in other policy domains. For instance, NFP platforms in general and collaborative production platform can be the object of supporting policy measures, which aim to encourage respectively social and industrial innovation.

5.2 Facts

In general, empirical evidence is limited on most of the topics raised in this essay, and evidence gaps are particularly acute for European contexts as compared to US ones. For instance, out of the 140 sources formally reviewed only about 20 focussed on European empirical realities. On the other hand, while evidence does not yet warrant conclusive judgements, it nonetheless helped deconstruct and shed some light on the key discourses and controversies.

Lack of a consensual definition has hindered the development of reliable statistical measurements of both the monetary value of, and of the level of participation in, the '*sharing economy*'. There are several estimates of the turnover such as the one by PWC that on a global basis the '*sharing economy*' is worth \$15bn and could reach \$335 billion by 2025, or those presented in the report by the EU Parliament (2016) projecting the potential prospective value in EU28 at €572 billion. Various surveys about participation in the '*sharing economy*', despite some variations due to the definition, converge in documenting that the phenomenon is by now statistically detectable and relevant. A number of trends and drivers explain the emergence of the '*sharing economy*' and suggest great potential for future growth; these include technological developments, demographic changes and urbanisation, shifts in socio-cultural attitudes to consumption and work, as well as the need to economise on resource usage and to achieve a more environmentally sustainable growth trajectory.

The empirical evidence found and analysed, despite evident limits, enabled to shed light especially on the issue of motivations and social capital, and on the functioning of 'sharing' platforms; on the other hand, the empirical evidence on the expected environmental and socio-economic effects of 'sharing' platforms is very limited, fragmented, and inconclusive.

With respect to motivations and social capital three broad preliminary conclusions emerge. First, the motivations that lead individuals to join the '*sharing economy*' range from altruism to utilitarian goals and also include a scattering of anti-capitalist and anti-consumption ideologies and sentiments. Second, the '*sharing economy*' creates some form of genuine social capital but is also based on reciprocal (negative and positive) exchanges. Third, judging from the reviewed sources, altruistic and ideological motivations and social capital building seem clearly to characterise more the early not-for-profit initiatives. So, going beyond the polarised rhetoric and controversies, it can be stated that the '*sharing economy*' overall is a mixture of 'passions' and 'interests'.

The platforms delimited by the proposed typology are by definition two-sided markets where cross-side network effects emerge if more consumers (employers) will attract more suppliers and vice versa. The empirical evidence available shows that these platforms still struggle with market frictions and inefficiency, which limit their growth (Cullen & Farronato, 2015; Einav, *et al.*, 2015; Fradkin, 2014; Fradkin, *et al.*, 2015; Horton, 2014; Horton & Golden, 2015). In addition, they almost all allow 'multi-homing' (non lock-in for peers in one single platform). Frictions and 'multi-homing' do not seem to give these platforms the capacity to constrain users and providers or to scale up to market dominance. Though evidence is not available on how efficient the matching process is, in the case of Uber 'multi-homing' is in practice impossible and the platform clearly imposes constraints on drivers; possibility of market power is not entirely out of reach for Uber. On the other hand, the empirical evidence also unequivocally shows that the reputational rating systems harnessed by such platforms are not entirely reliable, can be manipulated, and suffer from lack of input and/or from input based on reciprocity (reluctance by users to provide negative ratings).

The potential benefits, costs and welfare implications of P2P platforms can be identified theoretically and ex-ante. They add service delivery capacity, which should decrease prices and increase supply and consumer choice, thereby enhancing consumer welfare. On the supply side, they put pressure on the prices and sales of formal businesses, reducing their revenues and potentially the number of jobs they offer. On the other

hand, they create new gainful employment for additional market entrants and employment opportunities for independent contractors. On this issue, however, it has been shown that there are also costs in terms of job security and quality (Codagnone et al., 2016).

The net welfare balance from these positive and negative effects is an empirical question that cannot be answered by theory. Unfortunately, no robust and comprehensive ex-post empirical evidence on the aggregate welfare costs and benefits of these platforms was found. Available empirical evidence is very partial, un-systematic and inconclusive. Sound empirical works include only the following:

- a) as regards consumer welfare and distributional effects only three theoretical economic modelling are available (Benjaafar et al., 2015; Fraiberger & Sundararajan, 2015; Horton & Zeckhauser, 2016). These focus on P2P rental markets and in only two cases is the modelling partially corroborated by some empirical data (Fraiberger & Sundararajan, 2015; Horton & Zeckhauser, 2016). Only one considers distributional effects (Fraiberger & Sundararajan, 2015). They all suggest that, under various hypotheses entailed in the theoretical models, P2P rentals increase consumer welfare (but does not necessarily reduce ownership and/or usage). These benefits seem to affect below-median income individuals more than the population as whole (Fraiberger & Sundararajan, 2015). Yet, the theoretical nature and very limited empirical validation of these contributions do not warrant any conclusions on consumer welfare effects;
- b) a quasi-experimental study reports that Uber has reduced DUI (Driving Under Influence) accidents in a number of US cities (Greenwood & Wattal, 2015);
- c) another quasi-experimental study documents that Uber has put competitive pressure on the traditional taxi industry leading to improvement in the quality of services in three US cities (Wallsten, 2015);
- d) a qualitative study on the effect of sharing practices on issues of inequality (Schor *et al.*, 2014);
- e) a statistical analysis of Airbnb listing in New York documents racial discrimination in the price that hosts belonging to minority groups are able to charge for their property (Edelman & Luca, 2014);
- f) a statistically descriptive analysis has documented the negative impacts of Uber on the taxi industry revenues and values of the medallions in three US urban areas (Bond, 2015);
- g) a quasi-experimental shows that Airbnb decrease revenues for the low end of the hotel industry in Austin (Zervas *et al.*, 2014);
- h) on the other hand, a study following the same design finds that Airbnb does not negatively impact the hotel industry in Norway, Finland, and Sweden (Neeser, 2015);
- i) an econometric study (Farronato & Fradkin, 2015) documents Airbnb's two effects on the hotel industry: 'expansion' (meeting demands of previously under-served consumers) and 'stealing' (attracting consumers away from conventional suppliers);
- j) one panel study of Airbnb's effect on tourism industry employment in the US state of Idaho shows that employment increases as a result of the extra expenditure of the guests in other areas, but the net effects may be offset by loss of jobs in the hotel industry (Fang *et al.*, 2015).

The first thing to note is that only one of the various contributions above is about European countries, while all the others focus on US contexts.

Aside from the contributions summarised above, the rest of the evidence is simply anecdotal and often presented by stakeholders involved in the current controversies. For example, Uber and Airbnb have released dozens of reports but their reliability could not be independently validated because the methodologies are not transparently illustrated and data are not made accessible to researchers.

Equally inconclusive is the evidence on the promised positive environmental impacts of the '*sharing economy*'. It is extremely challenging and complex to demonstrate at aggregate level the net impacts in terms of environmental sustainability (Shor, 2014). First order effects can reasonably be expected to be positive: staying in existing spaces would reduce the construction of new hotels and/or work spaces, while sharing tools or goods would reduce the production of new goods, both of which should reduce the ecological and carbon footprints. However, a measure of net impact at aggregate socio-economic level should also consider the second order effects. What happens with the extra-money providers earned or users saved with the '*sharing economy*'? As seen, Airbnb has published 'evidence' that their hosts spend more than traditional tourists to show its impacts on city economies. This is self-defeating with respect to the claim of producing environmental benefits.

5.3 Regulation

The earlier cited report by the European Parliament (2016) on the '*sharing economy*' and the possible costs of 'Non Europe', concludes that the current regulatory framework is not fit for purpose (e.g. eCommerce Directive). In addition, the difference in regulatory regimes for online and offline services leads to situations perceived as unfair competition. The report calls for adaption of the regulatory framework so as to allow online and offline services to compete on fair terms, which is currently not the case.

Yet, the key policy question remains as to whether or not there is a need for regulatory intervention, at EU level or elsewhere. This question immediately gives rise to a second one: What would the costs and benefits of regulation of this kind be? To answer this question one would need to have empirical evidence on the current net welfare effects of 'sharing' activities and then calculate how this would change after regulation is introduced. As the former is unavailable (see the previous paragraph), the latter is obviously not feasible. Hence, it is only possible to summarise below the different approaches, open issues, and options discussed in Section 4 (for those concerning labour issues, see Codagnone, et al. 2016).

There is a 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 by user-generated reputational ratings are more effective in ensuring consumer welfare than traditional consumer protection measures. Traditional command and control regulation would stifle innovation, and would turn contractors into employees. Instead of imposing private certification licensing schemes, reputation mechanisms should be allowed to evolve. Some empirical studies, however, challenge the libertarian view of the effectiveness and reliability of reputation ratings as a form of consumer protection and show that these systems can be manipulated. More empirical evidence will be required on the extent to which the 'libertarian' hypothesis could lead to less costly and burdensome self-regulation. However, opponents to the libertarian view have put forward radical proposals to impose all licensing and certification schemes on large commercial 'sharing' platforms. They want to crack down on these platforms' attempts to present themselves just as software companies, and to impose top-down liability and other responsibilities.

However, more moderate approaches are evolving. Consensus is growing around the idea that the '*sharing economy*' cannot be left entirely unchecked, nor can it be regulated by means of traditional command and control approaches. Innovative forms of smart regulation have been proposed: for instance, 'information-based regulation' that would tie regulation to some usage and performance metric. This approach would require that platforms adopt a policy of open data and information, which clashes with the secretive attitudes that platforms have about their data. Yet, if a less controversial climate is to be built around the '*sharing economy*', these companies have no alternative

but to open up their data for screening and analysis of costs and benefits by neutral third parties.

Regardless of the general approach reviewed above, there are still several unresolved issues that are briefly summarised below (except for labour issues that are addressed in Codagnone et al., 2016):

- (1) Taxation. Substantive law to tax sharing activities exists. However, enforcement may present challenges because: a) some platforms opportunistically pick the more favourable regulatory regime; b) micro-providers raise unique compliance concerns. Airbnb is currently engaged with legislators in drafting or adjusting existing legislation. In addition, its website informs hosts about local laws and their landlord's rental policies and requires hosts to comply with them, both of which may prohibit short-term rentals (Miller, 2015; Zrenner, 2015). Furthermore, Airbnb has also started to collect taxes in some US cities and in Amsterdam;
- (2) Negative externalities, liability and insurance. Negative externalities for ride service platforms derive from unsafe and uninsured or under-insured drivers/cars. Short-term accommodation rentals produce negative externalities on neighbourhoods (increased traffic, parking place occupied, noise, tenants disturbing neighbours, etc.) and by removing properties from long-term rental markets. Liability and insurance, however, are not only a matter of negative externality and may also concern the two sides of a 'sharing' transaction. The issue is again to determine who is liable if something goes wrong and to guarantee that 'sharing' activities are insured. It is reasonable to expect that some intervention may be needed to define liability, ensure safety, and close the insurance gap. Under specific circumstances, the negative externalities of short term rentals should also be addressed.
- (3) Information asymmetries and cognitive biases. Various information asymmetries, exacerbated by the typical cognitive biases documented in behavioural economic literature, cast doubt on the extent to which self-regulation fully protects consumers. This entails various more specific issues such as the reliability of reputational ratings, safety standards, fraud, dispute resolution and redress. The chances are that consumers will make poor decisions when faced with an overwhelming range of choices, poor regulation and unclear avenues for recourse in the case of a dispute, not to mention the fact that they may fail to fully appreciate risks and safety requirements. In these circumstances, regulation and/or nudges could help increase consumer protection.
- (4) Licensing and certification schemes. Licensing and certification schemes tend to be ineffective and may unduly favour incumbents. However, instances of serious incidents with both Uber and Airbnb have caused critics to call for them to be imposed on large commercial platforms. Platforms try to boost confidence with ID checks and vetting processes but there are doubts as to how transparent and rigorous these inspections are.
- (5) Data and privacy. There are concerns about the amount of data that 'sharing' platforms are collecting about consumers, given the sensitive nature of some of these data and how they are being used.
- (6) Competition law potential implications. From the evidence reviewed on the characteristics of the largest platforms and how they function, it seems that market dominance is out of reach for most of them due to heterogeneity and matching frictions. However, it is not so unlikely for Uber. On the other hand, improvements in the matching algorithms, together with pricing strategies and use of personal data without any regulatory checks, may change the situation and make market dominance also more likely for a few other platforms.

Policy makers may approach some (if not most) of the issues above by splitting them in two groups:

- 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 to this approach;
- 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 important. Some platforms have started to search for solutions to prevent incidents from happening. It appears that it is difficult in the EU to find insurance firms that can fulfil 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 a competence for city councils and cities respond in various ways. Labour market and social security regulation is mostly a state competence, handled differently by the Member States. At a higher level, the EU may want to consider consumer protection and other liability issues. However, the literature reviewed in this paper does not give any indication of whether the EU should respond to these regulatory challenges, and if so, how to do so. It is possible, however, from the discussion so far to identify the policy options for the domain of liability and consumer protection:

- 1) No intervention;
- 2) Generalised regulation of the sharing economy;
- 3) Regulation and liberalisation;
- 4) Hybrid approach with ad hoc regimes.

(1) No intervention. The laissez-faire approach relies on self-regulation and highlights two dangers of regulation that should be borne in mind. First, there is the possibility of regulatory capture of the regulators by incumbent industries and second, interventions which aim to tackle market failures can create regulatory failures. The laissez-faire approach also highlights the fact that it is worth remembering that many information-related issues will be gradually resolved as technology progresses. However, having recognised this, a generalised 'no intervention' approach is not the best solution, for two reasons, one specific and empirical and one normative. First, clear market failures in the broadly defined domain of liability and social protection must be tackled because they have caused incidents and raised social alarm. Second, a level playing field must be created where platforms and established industry players can compete on fair terms. This is a general principle that, depending on the country, is enshrined either in the constitution or in fundamental legislation. Where it can be empirically demonstrated beyond any reasonable doubt that platform X and traditional business Y provide the same service, it is normatively embarrassing for a free market liberal democracy that the former extract advantages through regulatory arbitrage.

(2) Generalised regulation of the sharing economy. This option would consist of the wholesale application of existing regulation for 'offline' businesses to the '*sharing economy*', in order to create a level playing field. This option should be discarded on the grounds that existing regulation is outdated, cumbersome, and ineffective even for existing businesses. In some cities, taxi drivers face dozens of pages of licensing requirements, which spell out mandatory training, the minimum number of hours to be driven a month, and many more details that have accumulated across decades. Similarly, hotels have to deal with various pieces of national and local regulation. In these as in many other domains, regulatory elements have been added and stratified across almost

a century. Regulators have added pieces without ever removing old elements so that a lot of regulation no longer makes sense, given economic, social, and technological changes. It would be simply insane to apply existing regulation across the board.

(3) Regulation and liberalisation. In this option, the level playing field would be created by applying light-touch regulation on the 'sharing economy' while, at the same time, liberalising existing industries, so that gradually the two sides of the current dispute would converge toward a middle ground. As reported by Einav et al (2015), this option is favoured by the majority of the US university economists, who were asked in a survey about what type of regulation they would prefer.

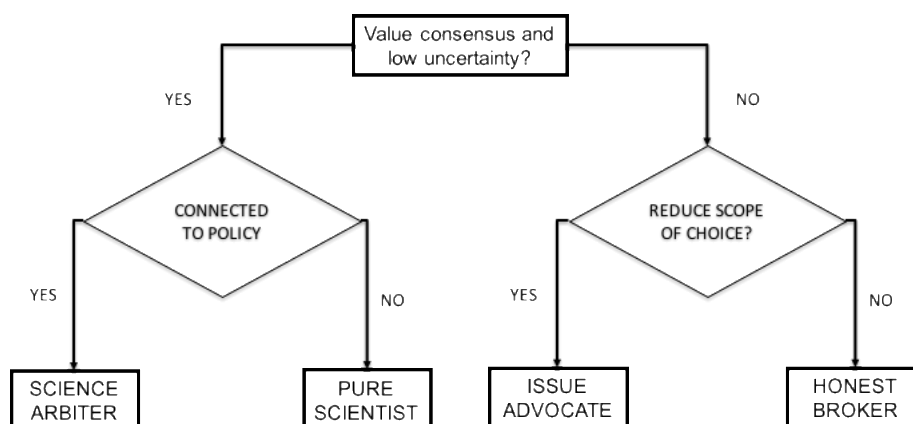
(4) Hybrid approach with ad hoc regimes. This option would be coherent with the conceptual and empirical analysis that clearly indicates that 'one size does not fit all'. Taking the transportation sector as an example, this essay has unequivocally demonstrated that Uber, RelayRides, and BlaBlaCar have little in common when it comes to liability and consumer protection matters. In this case, ad hoc regimes could be based on smart and information-based regulation or co-regulation.

5.4 Future research

This review has amply documented the fact that the 'sharing economy' is currently characterised by conflicting rhetoric and controversies between disputed values and interests. Factual evidence is currently limited, which creates an opportunity for science. Though epistemic uncertainty is a condition for science and cannot be removed, substantial research efforts are nonetheless needed to construct a more robust evidence base. These efforts could not promise to solve all the conflicts and controversies following a pure 'technocratic' model. They could, however, more 'realistically' and 'humbly' partially reduce the current value-loadedness^{xliv} that characterises not only the public debate, but also many of the more academic and supposedly scientific contributions. A number of essential areas where gaps are evident and research is needed are presented in this section. Before doing this, however, it is worth going back to the relation between science and policy briefly introduced in Section 1.3.

In many cases, the use of scientific advice from the 'pure scientist' (disinterested in policy making process and simply providing neutral information) or the 'science arbiter' (adjudicating claims through scientific research as part of panels or advisory boards) would amount to 'stealth issue advocacy'. It is worse when the legitimacy of a scientist is used to reduce the scope of choices available for policy, as seen in some of the reports commissioned by Airbnb and Uber. This actually turns scientific work into issues advocacy^{xlv}.

Figure 7: Determining the role of science in policy and politics



Source: Adapted from Pielke (2007, p. 19)

The only possible way to progress when problems are intractable is to provide scientific expertise in the spirit of what Pielke (2007) calls the 'Honest Broker of Policy

Alternative'. This approach is based on clarifying and possibly widening the choices available to decision-makers. Indirectly or directly, this approach facilitates the integration of scientific advice with the perspective and input of all the stakeholders involved. This spirit inspires the high-level research agenda presented in the next section and indicates the role that the JRC as a boundary organisation, which bridges science and policy, can play. In particular, it is important to avoid the possibility that new evidence counter-intuitively increases rather than defuses conflicts, as happened with the paper produced by Hall & Krueger (2015) using Uber data. The JRC can act as a neutral third party which can approach relevant stakeholders in order to obtain the necessary data for a fair analysis of all the issues at stake. Yet, for this to happen, a different attitude toward sharing their data with European researchers is also required from 'sharing' platforms.

A paradox in the digital and Internet economy is that never before has so much data been collected, and never before has it been so difficult to access. The value of this data is likely to be much higher for social and public policy purposes than it is for private purposes of the platform operators. However, online platforms in general - and '*sharing economy*' platforms are no exception - jealously keep their data to themselves and refuse to release them, except to selected academics and consultants who produce often narrowly-focused reports in favour of the platform. The controversial climate and suspicions that have built up around major 'sharing' platforms is partly fuelled by data secrecy. Opening up access to data to neutral third parties might deflate some of that tension.

European-informed refinement of conceptual and theoretical framework. A systematic follow-up of the review of sources and platforms presented in this essay should expand the qualitative and quantitative evidence base on the presence and practices of the '*sharing economy*' in Europe. A wider ranging and less time-constrained review of media accounts, scholarly work, and reports (which also searches non English language sources) should be performed. In addition, it is important to identify and analyse European platforms, and look at the practices that non-European platforms enact in Europe. Information on European short-term regulatory responses should also be gathered.

Mapping and monitoring of '*sharing economy*' platforms in Europe. Extending the approach adopted in this essay, a supply-side mapping and monitoring of '*sharing economy*' platforms in Europe should be performed and then regularly updated. This mapping and monitoring should include a global-level component (i.e. developments in Silicon Valley and few other areas in the world). For this purpose, the gathering and analysing of secondary sources (companies' datasets, newspapers and magazines, and platforms websites and blogs) should be complemented with in-depth interviews with selected stakeholders in Europe and the US.

Big data gathering and analysis. This research stream has various components and steps:

- automatic web scraping of relevant data from the selected platforms
- stakeholder engagement and consensus building in order to obtain relevant data that is not publicly available. The stakeholders that should be involved include representatives of the selected '*sharing economy*' platforms (Global-level representatives and those who are present in Brussels heading Europe-wide matters), representatives of selected city governments, and representatives of incumbent industries (i.e. taxi, hotel, etc.), also in the selected cities. The data that should be gathered of course include those held by the platforms, and also industry and city-level statistics, providing the measurements needed for full cost-benefit analyses.
- Descriptive analysis of the data will provide preliminary insights into some of the impacts presented earlier in Section 3 (Bond, 2015; Edelman & Luca, 2014; Hall & Krueger, 2015; Schneiderman, 2014; Zervas, et al., 2015). This may include socio-

demographic data on consumers and providers, trends in platform membership and revenues, trends in incumbent industry revenues and employment level, and geospatial analysis of listings and services.

- Estimates and modelling of costs and benefits. The data will be analysed using opportune econometric techniques to estimate the costs and benefits of the selected platforms. The results could then be calibrated into a modelling simulation of the aggregate economic and social effects.

Reputational ratings: statistical analysis and behavioural experiments. The first component would consist of extending the kind of analysis presented in Section 3.3 to the European operation of key selected platforms. This would consist of web scraping data to analyse hundreds of thousands of reputational ratings in order to detect whether or not there is manipulation and social influence effects (Zervas et al 2015). The second component would be to design laboratory and/or field behavioural experiments to test the presence of generalised trust and of peer pressure mechanisms causing biases in the ratings and also treatments that could neutralise them.

6 Technical Annex

6.1 Method and sources

As anticipated in Section 1.3, this work is based on three distinct though integrated types of empirical evidence: a) a preliminary review of media accounts; b) a formalised review of the scientific and policy literature; and b) online field-work on a selective sample of platforms. This section illustrates the method for the secondary sources review, whereas the criteria for the selection of the platforms analysed are presented later in Section 6.3.3.

6.1.1 Design

Reviews can range from unstructured and fairly subjective in the selection of sources and limited in scope (i.e. narrative reviews) to very structured along the lines of the Cochrane protocol (Higgins & Green, 2011); they can be comprehensive with a narrow vertical but longitudinal focus including only empirical items (i.e. systematic review) and sometimes only quantitative empirical items (meta-analysis). Recently two 'reviews of reviews' have conceptually mapped the field and, if used jointly, identified as many as 17 different review types (Grant & Booth, 2009; Paré et al., 2015). The literature sources used as evidence in this essay have been identified using a mix between the scoping and critical review methods (see summary of key features in the table below).

Table 1 Scoping, critical, and systematic reviews

Parameters	Systematic	Scoping	Critical
Scope of question	Narrow (Longitudinal)	Broad (Cross-sectional)	Broad (Cross-sectional)
Search strategy	Comprehensive	Comprehensive	Selective and/or representative and/or iterative and purposive
Nature of sources	Empirical only	Empirical and conceptual	Empirical and conceptual
Explicit inclusion criteria	Yes	Yes	Not always
Quality assessment	Yes	Not essential	Not essential
Reporting	Statistical method plus narrative analysis	Content/thematic, possibly frequency analysis	Narrative / interpretative

Source: adapted from (Grant & Booth, 2009; Paré, et al., 2015)

Scoping reviews attempt to provide an initial indication of the potential size and nature of the available literature (Paré et al., 2015, p. 186), and are useful to inform policymakers as to whether a full systematic review is needed (Grant & Booth, 2009, p. 101); they tend to privilege breadth over depth of coverage (Paré et al., 2015, p. 187), but they strive to be as comprehensive, transparent, and systematic as those called 'systematic reviews' (Grant & Booth, 2009, p. 102). In scoping reviews inclusion and exclusion criteria are usually established to eliminate studies that do not address the initial research questions, however this usually does not involve exclusion on the basis of quality assessment (as in systematic reviews) but rather mostly based on the criteria of relevance and representativeness. Critical reviews go beyond mere description of identified articles and include a degree of analysis and conceptual innovation to provide a 'launch pad' for a subsequent phase of conceptual development and empirical testing (Grant & Booth, 2009, p. 93); they are also based on broad and diverse sources like scoping review, but they are usually less comprehensive and more selective in the inclusion of sources; the strength of a critical review lies in its ability to highlight problems, discrepancies, or areas in which the existing knowledge about a topic is untrustworthy, whereas its weakness is in the selectivity and less comprehensiveness of the search and in the lack inclusion and assessment criteria (Paré et al., 2015, p. 189).

With respect to the latter point it is important to notice that critical and scoping reviews include both broadly defined empirical studies and broadly defined conceptual essays (conceptual essays, theoretical essays, prescriptive/normative essays, other reviews, as well as essays discussing regulation and/or legislation). They consider both academic (journal articles, conference and working papers, book chapters, etc.) and other less academic types of sources (i.e. policy reports and similar). Compared to systematic review and meta-analysis, scoping and critical reviews therefore do not establish a hierarchy of sources and strict quality criteria for inclusion and exclusion.

Systematic reviews usually tackle longitudinally and vertically a well-delimited and focussed research question, using explicit and reproducible criteria for inclusion and quality appraisal of items. Such a vertical and longitudinal focus is not possible in scoping and critical reviews as they tackle a domain holistically and in most cases at an early stage when it is not yet possible to vertically focus on just one simple research question; proposals for more focussed research questions for systematic reviews are possibly one of the outputs of scoping and critical reviews. Scoping and/or critical reviews are undertaken when a researcher is entering a new field and/or the field is known to be emergent and not fully researched; this is evidently the case of the broadly defined '*sharing economy*', although for some of its sub-domains such as 'car sharing' that have been studied for some years already (see Evidence Box 5, p. 67) a more systematic review would be possible. The focus of both critical and scoping reviews is broader and cross-sectional (including inter-disciplinary literature and different topics potentially concerning very different research questions) and less longitudinal (they focus on a limited time frame in including items for analysis); they include both broadly defined empirical studies (qualitative, quantitative, and mixed methods) and broadly defined conceptual items. By definition they may present some bias both in the search and in the inclusion of items for analysis, but such bias can be justified by the conceptual choices and the research objectives. The literature sources supporting this essay have been identified and analysed using a scoping approach with a critical bent in that: a) it matches the scoping type with respect to all the parameters of Table 1 and, as a result, it is more comprehensive and transparent than a critical review; b) it goes beyond mere description and includes a degree of analysis; c) the search strategy, given the state of the art, had to be to some extent purposive and iterative.

6.1.2 Process and sources

The first step was a comprehensive but unstructured free text search of media accounts using the Lexis Nexis dataset. The expressions '*sharing economy*', 'collaborative consumptions', 'accessed based consumptions', and 'collaborative economy' were used to search newspapers and magazines (for the period January 2010-June 2015, a few items were added later as a result of the successive rounds of update), as well as industry sources and blogs/reports by advocacy groups (i.e. Peers, Shareable, OuiShare, etc.). Besides being instrumental to the search of literature sources (see below) and to the identification of 'sharing' platforms (see Section 6.3.3), this first search produced the evidence that partly supports the reconstruction of rhetoric and controversies.

From the media accounts it was possible to identify a few much cited academic contributions. As a result, combing the media accounts and these academic contributions allowed us to extract the key dimensions and key words to perform the formal search in electronic databases. These dimensions included: a) definitions, taxonomies, and business models; b) conflicting narratives and rhetoric; c) issues related to social capital, motivation to participate, trust and reputational systems; d) environmental impacts; e) economic impacts (positive and negative); and f) legal disputes and regulatory issues. These dimensions then informed the search performed on key electronic datasets including: Scopus (Elsevier); JSTOR Archival Journals; Taylor & Francis Online – Journals; SciVerse ScienceDirect (Elsevier); SpringerLink; Wiley Online Library; Emerald Journals (Emerald Group Publishing); IEEE Conference Publications; ACM Digital Library. The following search string with Boolean operators was used:

('sharing economy' OR collaborative Consumption OR access based consumption OR collaborative economy) AND (definition OR taxonomy OR business model) AND (Lobbying OR Political consumerism OR rhetoric OR true sharing OR exploitative practices OR "dark side") AND (social capital OR participation OR community revival OR civic sense OR motivation OR reciprocity OR trust Or reputation Or reputational rating) AND (impact Or benefits OR costs OR labour OR contingent labour OR gas emissions Or fuel consumption) AND (inequality OR lower income groups OR disadvantaged groups OR inclusion Or Exclusion) AND (innovation OR entrepreneurship OR micro-entrepreneurs OR contractors) AND (legal disputes Or regulation Or policy regimes Or courts decisions OR tax base).

Two main criteria were used for inclusion in the analysis: a) representativeness of the conceptual dimensions deemed as relevant; and b) time of publication with a preference toward the items published in the period 2013-2015 over those published in the period 2009-2012; this time criterion led us to exclude: a) conceptual and qualitative empirical items focussing more on the not-for-profit and 'true sharing' platforms that dominate the literature prior to 2012; and b) a fairly large literature on C2C eCommerce dating as far back as 2001 and mostly concentrating on eBay.

While performing the search it became clear that: a) a more consolidated, vertically focussed literature on car sharing exists; and b) a body of literature is emerging on the employment implications of platforms interchangeably classified under the 'crowd' and/or the 'sharing' movements. For the former a few literature reviews exist already and, given the more general nature of this essay, only a selection of contributions on car sharing are included; the latter has been the object of a separate scoping review presented elsewhere (Codagnone et al., 2016).

No quality assessment criteria were used and all empirical and conceptual contributions matching the two criteria described above were included. This is fully in line with the characteristics of scoping reviews described earlier and responds to the substantive and theoretical interest in the emerging narratives (regardless of their empirical basis and/or quality of analysis). This means that the items reviewed formally do not only come from a wide array of different disciplines applying different methods and perspectives, but include scientific articles in peer-reviewed journals, papers in the pre-publication phase, think tank reports, as well as policy reports.

The first round of search was conducted between May 20 and June 15 2015 and it was extended between August 10 and September 10 2015. The second draft completed September 13 2015 was presented at several internal seminar presentations and underwent peer-reviews before this final version was approved and published. This means that seven months have elapsed between the completion of the last formalised search and analysis and the final publication of this essay. In order to obviate to this lag time a final updated search on the sources was conducted between April 18 and May 20 2016 that, however, was not as systematic and formalised as the previous rounds. Between the first search in May-June 2015 and the last update in April-May 2016 the number of sources identified and selected as relevant increased from 70 to 140, which shows that the literature on the broadly defined 'sharing economy' is growing very rapidly; this may also mean that despite the last update performed several important sources may have been missed.

6.1.3 Limitations

The main limitations are intrinsic both to the scoping-critical approach and to the current state-of-the-art. The search strategy has been very comprehensive and the criteria for inclusion/exclusion transparently described. Some purposive elements of selection are present and depend on the time frame and on the iterative process followed. The time frame chosen has determined the exclusion of conceptual and qualitative items published before 2009. The state-of-the-art (very limited quantitative empirical literature) and the theoretically inspired interest in narrative and discursive dimensions

have influenced the decision not to assess the quality of contributions when deciding for inclusion or exclusion from the analysis.

Out of the 140 sources included for review, only about 20% focus on European contexts and the overwhelming majority focus on North American contexts; this may be the result of performing an English language search only and there may be other contributions focussing on European contexts that have been published in other languages. On the other hand, a few English language contributions in peer-reviewed scientific journals studying European settings have been found and usually scholars in Europe have a strong incentive to publish in such journals; hence even if this bias exists, it should not be overestimated. It is also important to stress that, since almost one year has passed between the first draft and the final publication, some parts of the analysis presented in this essay show similarity with contributions that have been published much later and were not available when the first draft was completed, like for instance for a few articles dealing with rhetoric and discourse analysis (i.e., Cohen & Muñoz, 2015; Dredge & Gyimóthy, 2015; Martin, 2016). These sources have now been included and cited. This actually shows that different scholars have been reaching similar conclusions following different paths and methods.

Finally, the review of media accounts and of platforms (see more on this in Section 6.3.3) is explicitly selective and exemplificative and does not aim to be representative, which is why it would probably be superfluous to discuss their limitations.

Having clarified the above, it must nonetheless be stressed that to the best of our knowledge there is no review essay similar in scope and comprehensiveness as this one in the literature; for what concerns quantitative studies, modelling studies, and regulatory essays, those included in this essay are fairly representative of what is currently available.

6.2 Supplementary material on definitions and classifications

6.2.1 Selective review of definitions

As summarised in Evidence Box 4, there are different expressions are used to refer to the platforms that are considered part of the *'sharing economy'*. The first definition to appear was that of *'collaborative consumption'* by Botsman & Roger (2010, p. xv; but see also Botsman 2013); according to these authors the concept is defined as including *'bartering, lending, renting, gifting, and swapping'* and further divided into three categories: *'product service systems'* (access to products or services without the need for owning the underlying assets), *'redistribution markets'* (i.e. re-allocation of goods), and *'collaborative lifestyles'* (i.e. exchange of intangible assets). Criticising this definition (Belk, 2014b) and distinguishing between *'true'* and *'pseudo-sharing'* (Belk, 2014a), Belk: a) defines collaborative consumption as *'people coordinating the acquisition and distribution of a resource for a fee or other compensation'*; and b) defines *'true sharing'* has entailing temporary access rather than ownership, no fees or compensation, and use of digital platforms. Belk clearly makes the point that the majority of commercial platforms are improperly included in the *'sharing economy'*. According to industry analyst Jeremiah Owyang the *'collaborative economy'* can be simply defined as *"An economic model where technologies enable people to get what they need from each other –rather than from centralised institutions"* (Owyang, 2015d). 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-utilised physical assets ("idle capacity"), possibly for money'* (Frenken et al., 2015; Meelen & Frenken, 2015). On the basis of qualitative field work and of the review of 254 platforms, 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., 2015). Shor and associates have defined the *'sharing economy'* as digitally *'connect consumption'* to convey the

importance of the digitally mediated social component and make a distinction from earlier forms of sharing and collaboration (Dubois, *et al.*, 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015; Schor, *et al.*, 2014)^{xlvi}. Starting from this premise, they have provided slightly different formulation briefly reported here. Schor (2014, p. 2) presents the following illustration in terms of broad categories '*Sharing economy activities fall into four broad categories: recirculation of goods, increased utilisation of durable assets, exchange of services, and sharing of productive assets*'. It is worth pointing out the evident contradiction between defining it as 'connected consumption' and then including also 'sharing of productive assets'. In Schor & Fitzmaurice the four categories are '*recirculation of goods, exchange of services, optimizing use of assets, and building social connections*' (2015, p. 415). Starting from the latter categorisation Schor's last definition of what she calls the 'new sharing economy' is as follows '*economic activity that is Peer-to-Peer, or person-to-person, facilitated by digital platforms*' (2015, p. 14).

Evidence Box 4 Conceptual and semantic ambiguity in the sharing economy

Industry/advocates or opponents/policy

- **Collaborative consumption.** This is the first expression popularised by Botsman and Rogers (Botsman & Rogers, 2010a, 2010b) that defined it as consisting of three systems ('product service systems'; 'redistribution markets'; 'collaborative lifestyles') based on organised sharing, bartering, lending, trading, renting, gifting, and swapping;
- **Collaborative economy (industry).** According to a key industry analyst (Owyang, 2013; Owyang, *et al.*, 2014), '*An economic model where technologies enable people to get what they need from each other –rather than from centralised institutions*';
- **Collaborative/sharing economy (European Commission).** In the fall 2015 the Commission launched a consultation on the collaborative economy, but no definition has been provided and the expression is used interchangeably with '*sharing economy*'; in the background document to the consultation the collaborative economy is defined as corresponding to '*sharing economy service*', which in turns comprises platforms bringing together providers and users and allow assets, resources, time and skills to be shared. In a report delivered for DG Grow Business Observatory the sharing economy is defined as '*companies that deploy accessibility based business models for peer-to-peer markets and its user communities*' (Dervojeđa *et al.*, 2013a); in other reports of the same observatory freemium, crowdsolving, and collaborative production platforms are put together as part of the '*collaborative economy*' (Probst *et al.*, 2015a, 2015b; Probst *et al.*, 2015c)
- **Sharing Economy.** 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 & Hawksorth, 2014); In two reports by the World Economic Forum (WEF, 2013, 2014) the '*sharing economy*' is defined by its capacity of maximising the utility of assets and unleash their untapped social, economic, and environmental value by way of renting, swapping, lending, bartering, and giving in either P2P (also referred to as C2C) or B2C modes. A wide definition of the sharing economy is provided in a UK advocacy report as comprising online platforms enabling people to share access to assets, resources, time, and skills under a variety of business model and practices that include both for-profit and not-for-profit activities (Woskow, 2014); A OECD workshop background paper basically does not presents a definition, apart from referring to a variety of online platforms specialised on '*matching demand and supply in specific markets, enabling peer-to-peer (P2P) sales and rentals*';
- **Peer Production (commons-based).** Collaboration among large numbers of individuals effectively cooperating and coordinating for the provision of information, knowledge, and cultural goods without having to rely on market mechanisms or managerial hierarchies (Benkler, 2004, 2006)
- **Peers Inc.** The leveraging of business intelligences and peer-to-peer networks as defined by Chase of Zipcar (Chase, 2015), which is in practice a business-to-consumer model very different from real peer-to-peer markets;
- **The Mesh.** Meshiness refers to networked nature of people and societal value and casts a large set of activities in which the author invests (Gansky, 2010; Gansky, 2011)
- **Temp Land and Gig Economy.** These are two of the more critical and at times derogatory expressions that can be found in public commentaries. The expression temp land (see:

<http://www.propublica.org/series/temp-land>) is used to refer to the transient and bit-sized nature of future work underscoring the many obstacles that peer denizens will face. The 'Gig Economy' is used to refer to the multiple micro-task people accept to put together an income and make a living (Horowitz, 2013). Another expression used to convey the negative impact on work is the 'The TaskRabbit economy' (Kuttner, 2013).

Academia

- **True and pseudo-sharing.** Belk criticises most definitions above and distinguishes between 'true' and 'pseudo-sharing' (all commercial platforms); 'true sharing' entails access rather than ownership, no fees or compensation, and use of digital platforms (Belk, 2014a, 2014b).
- **Access-based consumption.** 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-utilised physical assets ("idle capacity"), possibly for money' (Frenken, *et al.*, 2015; Meelen & Frenken, 2015); "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.*, 2015).
- **Sharing economy.** While recognising the conceptual difficulties, sociologist Schor and her associates have attempted to retain the expression and define it somehow in ways that are conceptually and empirically consistent (Dubois, *et al.*, 2014; Schor, 2014, 2015; Schor & Fitzmaurice, 2015; Schor, *et al.*, 2014); the sharing economy comprises activity that is Peer-to-Peer, or person-to-person, facilitated by digital platforms in five categories: recirculation of goods, increased utilisation of durable assets, exchange of services, and sharing of productive assets', building social connections;
- **Just peer-to-peer markets.** Economists studying platforms generally considered part of the sharing economy and refer to them simply as peer-to-peer marketplaces for the exchange of underutilised goods and services or as spot labour markets (Cullen & Farronato, 2015; Einav, *et al.*, 2015; Farronato & Fradkin, 2015; Fradkin, 2014; Fradkin, *et al.*, 2015; Horton, 2014; Horton & Golden, 2015).

The OECD background paper prepared for the earlier cited June 2015 workshop basically does not presents a definition, apart from referring to a variety of online platforms specialised on '*matching demand and supply in specific markets, enabling peer-to-peer (P2P) sales and rentals*', and simply 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). In this definition, besides typical examples such as Uber and Airbnb, collaboration geared toward productive activity is also included, as well as subscribing models for content and musical entertainment (i.e. Spotify). In two reports by the World Economic Forum (WEF, 2013, 2014) the '*sharing economy*' is defined by its alleged capacity facilitated by digital technology to maximise the utility of assets and unleash their untapped social, economic, and environmental value by way of renting, swapping, lending, bartering, and giving in either P2P (also referred to as C2C) or B2C modes. This occurs through three systems: a) redistribution markets for items or services no longer required to someone or somewhere where they are needed (cited examples: eBay or Craigslist); b) product service systems that provide access without need for ownership (amongst cited examples: Zipcar, RelayRides); c) collaborative lifestyles platforms which allow people to share and exchange less tangible assets such as time, skills, money, experience or space (amongst cited examples: Airbnb, TaskRabbit).

Evidence Box 5 Distinct models in the broadly defined car sharing domain

- The broadly defined car sharing domain has been the object of research much before the '*sharing economy*' hype picked up; there is relatively more consolidated literature (Cohen & Kietzmann, 2014; Furuhata et al., 2013; Shaheen et al., 2012) and clearer conceptual distinctions.
- The first distinction is between 'car sharing' (i.e. Zipcar, Car2Go, Relay Rides) and broadly defined 'ride sharing' (BlaBlaCar, Uber, Lyft). Within the car sharing category there are another four sub-categories: a) Business-to-Consumer (B2C) point-to-point (Car2Go); b) B2C round-trip (Zipcar); c) NFP cooperative (Modo); d) P2P (Relay Rides, EasyClub). Ride sharing is further broken down into: a) various forms of carpooling and ride sharing (i.e. BlaBlaCar; and b) ride services (i.e. Uber, Lyft). This classification is important because it clarifies that 'car sharing' is not necessarily B2C but it also includes P2P transaction where two individuals eventually meet, one renting and later returning the other's car. Furthermore, it is also very important to distinguish Uber ride services from true 'ride sharing' platforms such as BlaBlaCar. P2P car sharing and/or ride sharing are very different from those of ride services and have different regulatory and safety implications. In P2P car and ride sharing the reservations are scheduled in advance, the two peers eventually meet and driving is mostly for personal use, with less frequent but longer utilisation. In ride services on the contrary scheduling is on demand and on short lead-time, the driving is for commercial use, utilisation is very frequent although shorter. When one peer is the owner and not a driver the issue of liability policy is much more straightforward; the fact that the peers meet increases trust; the lower frequency in utilisation should reduce risk and increase safety. These are relevant characteristics from a policy and regulatory perspectives.

6.2.2 Broad objects-based categorisations

There have been some attempts to pragmatically go beyond a clear cut definition and define the '*sharing economy*' in terms of some broad categories. For instance, Botsman & Rogers identified three categories: '*product service systems*' (access to products or services without the 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) refer to 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 the need for ownership (amongst cited examples: Zipcar, RelayRides); collaborative lifestyles platforms allowing 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 Shor 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 utilisation of tangible assets (i.e. Zipcar, Relay Rides, Uber, CouchSurfing, Airbnb); exchange of services (i.e. Time banking, TaskRabbit, Zaarly); 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 underutilised assets between buyers and semi-professional sellers (2015, p. 5). The next evidence boxes use the four categories presented by Shor and associates; they include examples that can be associated to each category.

Evidence Box 6 Recirculation of goods: examples

eBay and Craigslist were the first two online market places for the exchange of pre-owned goods to be launched in the mid-1990s. By the beginning of the current decade dozens of new initiatives emerged including both free exchange and swapping platforms (Freecycle, Freecycle, Yerdle, Swapstyle) and for profits marketplaces (i.e. Etsy). With respect to the recirculation of goods a sensible segmentation into pre-owned goods (eBay), bespoke goods (Etsy), and 'loaner products' can be introduced. This latter category includes, for instance, 'Bag Borrow or Steal' a platform facilitating the borrowing, collecting, and sharing of luxury accessories (especially clothing). A conceptually more difficult issue is whether or not the Food category could be placed under recirculation of goods. Certainly activities that facilitate the sharing of foods and meals could be placed here. Leftoverswap, for instance, allows individuals to share their leftovers with people in their community who have signed up and are notified by a mobile app. On the other hand, the sharing of food preparation would probably fit better under the '*building of social connection*' category (examples are placed there).

Evidence Box 7 Increased assets utilisation: examples

This category could include activities that optimise the use of tangible assets. The first big '*sharing economy*' success was Zipcar that in 2009 started placing cars offered for rent in convenient urban locations. With the promise of lower gas emission and more sustainability, initiatives in this domain proliferated and boomed with well-known cases such as Uber (ride services), BlaBlaCar (ride sharing) and various others. The other big success in increased use of assets is in the area of accommodation and hospitality business. The first and most famous example is CouchSurfing that between 2003 and 2012 paired travellers and people willing to offer them a bed or couch as a not-for-profit activity. Today it is a Benefit Corporation (with 6 million members in 100,000 cities). CouchSurfing was followed by successful more commercial initiatives such as Airbnb (short-term rental) and Home Away (vacation rental). Also renting of storage and office space could be included here. Sharemystorage, for instance, is a social marketplace that brings together those who have spare space and those who need it for storage. Wework, on the other hand, is the community of creators where buildings are provided as collaborative workspaces. ShareDesk connect mobile professionals with productive work and meeting spaces. There are, however, also new platforms that could arguably be considered a way to leverage underutilised assets: a) Cohealo is an asset mobilisation and analytics platform for the healthcare industry. It allows hospitals to use their non-emergency medical equipment more efficiently and save money on their future equipment purchases; b) Cargomatic connects shippers with qualified carriers who have unutilised capacity on their trucks; c) MuniRent, targets local governments with a platform that facilitate the sharing of heavy duty equipment (directors of Public Works or Fleet Managers can access an online catalogue of equipment owned by neighbouring jurisdictions). Money is by definition an asset, which would justify including under this category different types of initiative in the financial sector (personal loans, business loans, and crowdfunding). Lending Club, for instance, is a credit marketplace platform facilitating personal loans, business loans, and financing. Borrowers access lower interest rate loans and investors provide the capital to enable many of the loans in exchange for earning interest. Funding Circle allows savers to lend money directly to small and medium-sized businesses. Indiegogo and Kickstarter are well-known crowdfunding platforms. There are new platforms leveraging assets such as Internet connections and solar energy. Open Garden, for instance, is dedicated to connecting the next 5 billion mobile devices with peer-to-peer connections by leveraging the density of mobile devices. Open Garden is a platform for the crowdsourcing of connectivity across 3G, 4G, Wi-Fi and Bluetooth. It enables users to create their own ad hoc mesh networks with other Open Garden-enabled devices including smartphones, tablets and PCs. Yeloha is a platform that allows the sharing of solar energy between 'sun hosts' and 'sun partners'. It provides access to purchase solar energy generated by neighbours.

Evidence Box 8 Services/ labour exchanges: examples

Monetised services and labour exchanges with sizeable market values such as TaskRabbit and Freelancers are the commercialised version of 'time banks' (Shor 2014; Shor & Fitzmaurice 2015). The digital services and labour exchange platforms that have emerged more recently have, however, nothing to do with the spirit of the time banks. They have more recently become the object of the controversy over labour security and rights. At TaskRabbit 'taskers' sign in (30,000 currently signed in) to be available to run errands, assemble furniture, and perform other skilled task to people in their community. When contacted they set their own rates. According to data reported by TaskRabbit roughly 10% to 15% of taskers can earn \$6,000 to \$7,000 a month. Freelancer is a platform facilitating freelance work offered by individuals to businesses that boasts over 14 million registered members that have so far posted over 6.9 million projects and contests to date in over 700 areas as diverse as website development, logo design, marketing, copywriting, astrophysics, aerospace engineering and manufacturing. In conceptual terms it can be noticed that labour when idle can be considered as 'dead capital'; its harnessing through digital platforms to provide services could thus also be characterised as a case of increased asset utilisation. Furthermore, one could also observe that Uber drivers (with Uber being placed under increased asset utilisation) if considered from the perspective of labour rights are no different from the small tasks contractors delivering errands on TaskRabbit.

Evidence Box 9 Building of social connections: examples

This is a variant between recirculation of goods and service exchange and is best represented by exchange and/or co-preparation of home-produced and prepared food. These initiatives have also the stated objective of favouring and building social connections and social experiences. Shareyourmeal.com, for instance, is a start-up based in Utrecht which helps people share food. Shareyourmeal.net makes it possible to share one's cooking with people in the neighbourhood. Similar sites include Soup Sharing, and EatWithMe.

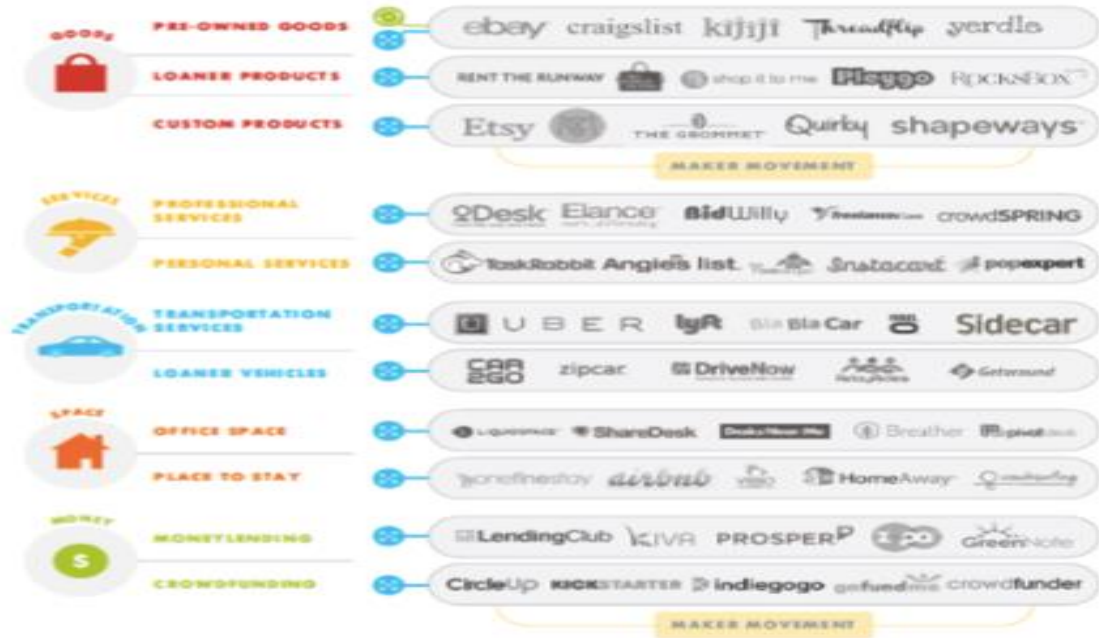
Evidence Box 10 Other platforms: examples

Finally, there are a number of new emerging cases that can hardly be re-compacted with the four categories above. The ride sharing and ride service boom is creating both satellite activities and vertically specialised emulation. 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. SherpaShare's information systems are integrated with Uber, Lyft, and on demand services. Hence, in practice, this is a service organisation that caters for Uber drivers. On the other hand, SAP launched TwoGo, which is basically a sort of Uber for corporate employees; it provides mobile and cloud-delivered service for enterprises to support ride sharing among employees for their daily commute and business travel. On the other hand, in the accommodation sector there is an equivalent of what has just been mentioned for ride sharing and ride services. Smart Host, for instance, provide recommendations for pricing short-term rental analysing listings in the surrounding marketplace to determine an optimal price, promising more bookings, more profit with less work. There is a wider range of platforms self-defining themselves as 'sharing'. ClassPass is a monthly fitness membership programme allowing members to go to gyms in different cities. The platform Musketeer is among the activities included under 'Municipal/Security'. Musketeer is a social safety network modelled on initiatives such as Guardian Angels in New York City, Mothers against Drunk Driving, and Neighbourhood Watch but powered by digital technologies working with smart cities, providing a real time control system that empowers the city to better protect its citizens. Chegg (with a market value of US \$ 733 million) is a student hub which emerged from what was originally a textbook rental company (this could be seen as part of service exchanges). It connects millions of students with each other and with people and tools needed to succeed in college. Google Helpouts is an online platform that allows users to share their expertise through live video and provide real-time help from their computers or mobile devices.

6.2.3 Sector-based categorisations

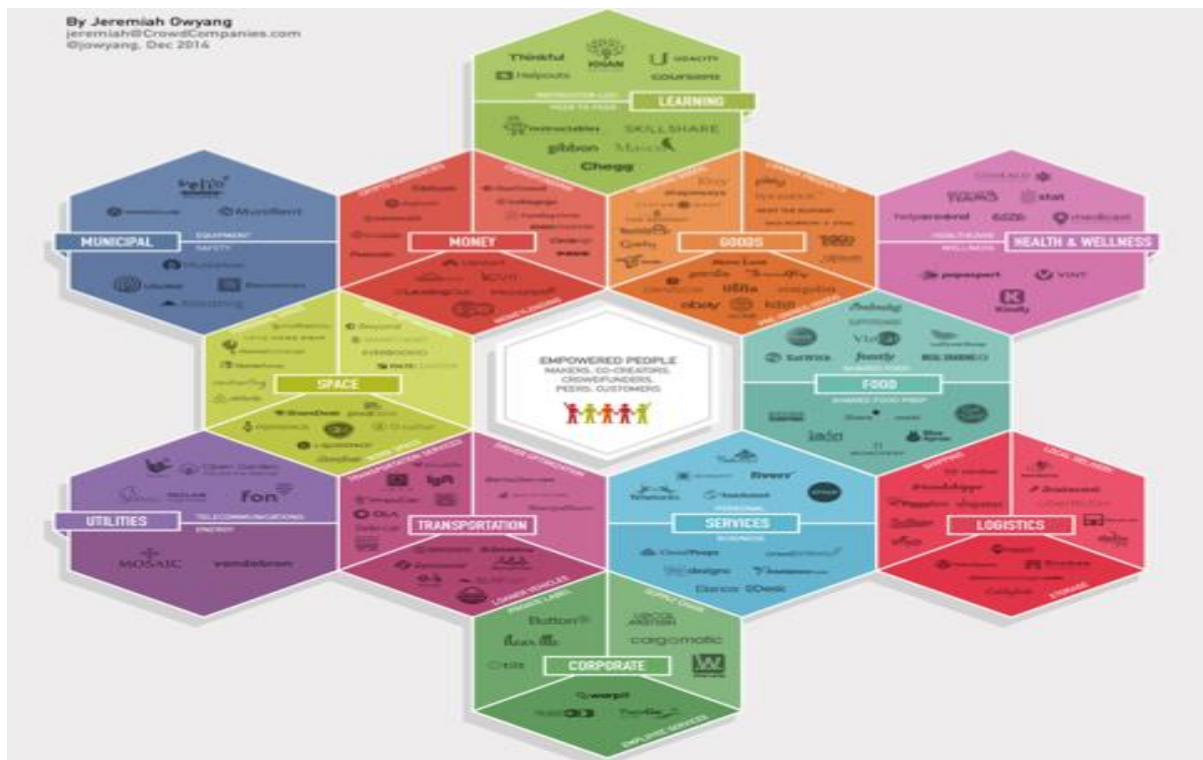
An alternative approach is to break down the 'sharing economy' into sectors and segments defined to some extent with respect to their traditional counterparts, as done by industry analyst Owyang and illustrated by the next two figures.

Figure 8 Sectors Classification: Categories and Examples



Source: (Owyang, et al., 2014)

Figure 9 Collaborative Economy Honeycomb, version 2.0



Source: Owyang (2014)^{xlvii} and (VB Profiles & Crowd Companies, 2015)

The second and more recent categorisation by Owyang (figure above) includes 12 sectors and a total of 31 segments reported below in alphabetic order; for the segments examples used by Owyang are reported in parentheses. The majority of these examples are already briefly described in the previous evidence boxes or reviewed in Table 6, the others are briefly described in notes. The sectors and segments in Owyang’s classification are: (1) *Corporate*: Private label (i.e. Near Me^{xlviii}, customised digital platforms); Supply chain (i.e. Cargomatic, optimisation of use of trucks); Employee services (i.e. TwoGo, SAP version of Uber for its employees); (2) *Goods*: Pre-owned goods (i.e. eBay, Craigslist); Bespoke goods^{xlix} (i.e. Etsy); Loaner Products (i.e. Bag Borrow or Steal, platforms to rent luxury and fashion items); (3) *Food*: Food sharing (i.e. Leftoverswap); Shared food preparation (i.e. Kitchen Surfing^l); (4) *Health and Wellness*: Healthcare (i.e. Cohealo, hospital exchanging idle medical equipment); Wellness (i.e. ClassPass, sharing of passes to gyms); (5) *Learning*: Instructor led (i.e. Google Helpouts); Peer to peer (i.e. Chegg); (6) *Logistics*: Local delivery (i.e. Instacart, delivery of grocery); Storage (i.e. Sharemystorage, renting of storage space); Shipping (i.e. Friendshipp^{li}); (7) *Money*: Lending (i.e. Lending Club); Crowdfunding (i.e. Funding Cycle); Transfer (i.e. TranferWise); Crypto currencies (i.e. Bitcoin^{lii}); (8) *Municipal*: Equipment (i.e. MuniRent: local governments exchanging idle big equipment used for construction work); Safety (i.e. Musketeers, a sort of digitally enabled city angels activity); (9) *Services*: Personal (i.e. TaskRabbit, market for personal generic services); Business (i.e. Freelancers, oDesk, markets for professionalised services); (10) *Space*: Personal space (i.e. Airbnb); Work space (i.e. Wework); Rental optimisation (i.e. smart host); (11) *Transportation*: Ride sharing (i.e. BlaBlaCar); Car sharing (i.e. Getaround); Ride Services (i.e. Uber); Driver Optimisation (i.e. SherpaShare); (12) *Utilities*: Energy (i.e. Mosaic^{liii}, Yeloha, sharing of solar energy installations); Telecommunications (i.e. Open Garden, sharing of WiFi connections).

A different sector and segment-based categorisation has been proposed in a report on the French ‘Collaborative Consumption’ (see next two figures) and is based on the consumers’ needs

Figure 10 Sectors Categorisation (France)



Source: (PIPAME, 2015), p.20

Figure 11 Sectors and segments Categorisation (France)

1 Moving around	Ride sharing Private minicabs Peer-to-peer car renting Exchange/reselling of transport tickets Parking	5 Eating	Co-supply (consumer groups, production sharing etc.) Meal sharing (home made dishes, collaborative food making etc.)
2 Goods transport / storage	Collaborative delivery Co-storage	6 Equipment	Mutualisation (lending, sharing, exchange, renting) Recirculation (donation, barter, reselling/buying)
3 Housing	Co-housing (lending/sharing of property, exchange of property, peer-to-peer rental) Home sharing (peer-to-peer selling/renting, home exchange, flat sharing, participative housing)	7 Clothing	Mutualisation (renting) Recirculation (donation, barter, reselling/buying)
4 Entertainment	Tourism and discovery abroad Community entertainment Sports activities and boat renting	8 Getting help	Services between peers
		9 Financing	Donations Loans Capital investment

Source: (PIPAME, 2015), p.20

6.3 Synthetic and analytical accounts of sources

6.3.1 Summary overview of scoping review findings

In the next three tables summary statistics are reported only for the 140 items formally included in the review.

Table 2 Summary statistics: type of source and type of contribution

	Empirical studies	Conceptual ^{liv}	Essays on regulation	Policy analysis and similar	Total
Academic contributions ^{lv}	58	38	19	0	115
Reports	5	5	6	9	25
Total	63	43	25	9	140

Table 3 Summary statistics: empirical contribution by topic*

	Policy Reports	Social capital & related	Inequality	Ratings/matching/network growth	Motivations	Impact	Other	Total
Qualitative	5	11	2	1	8	0	4	31
Quantitative	0	1	1	8	8	10	0	28
Mixed	0	1	0	0	3	0	0	4
Modelling	0	0	1	2	0	5	0	8
Total	5	13	4	11	19	15	4	71

(*) Several items could be placed in two or more categories; hence there is a double counting which explains why the total of empirical and modelling studies is 71 in this table and only 63 in the previous one.

Table 2 shows that 115 broadly defined scholarly work (journal articles, academic papers in the pre-publication stage, and academic book chapters) and 25 reports were included in the analysis. Out of 140 items, 43 were essays of a different nature (conceptual, conceptual-theoretical, theoretical, critical, prescriptive, reviews). 25 essays focussed on either regulation or legislation and 9 on broadly-defined policy-oriented analyses. The remaining 63 items are empirical studies or modelling simulations using some empirical data. When studies are imputed to more than one category the total number of empirical and/or modelling contributions increases to 71. In terms of topics the majority of empirical or modelling contributions are around the following distinct but closely related topics: social capital and related issues such as reciprocity and network structure (13), inequality (4), reputational ratings (11), motivations to participate (19), and broadly defined impacts (15). Though this is not shown in the two tables above, only 24 of the 140 reviewed items focussed on a European context.

Table 4 overleaf provides an even more granular account for the above 140 sources, although the total shown this time is 152, because in this case not only the empirical studies but also the other items have been imputed to more than one cell when appropriate. This table presents the discipline of origin and/or the approach across the various domains/sectors of application. The data in the table can be aggregated in various interesting ways, some of which are briefly presented below. A total of 65 entries focussed on the sharing economy in general and/or on several types of domains/sectors, whereas the remaining 87 focus on a specific domain of application. As could be expected, all of the contributions originating from economics deal with commercial platforms, whereas NFP platforms are dealt with by contributions from other social sciences disciplines; the latter also include all qualitative study on social capital and motivations, although they have also produced some quantitative studies on these two topics. From economics most contributions, both theoretical and empirical, are on the dynamic of peer-to-peer markets and only a few focus on impacts. Airbnb, CouchSurfing, and Uber are the most studied platforms, followed by broadly defined platforms for the recirculation of goods, and by labour markets such as TaskRabbit and oDesk. A fairly large number of studies, including four modelling simulations, focus on car-sharing, and this can be explained by the fact that these platforms have emerged earlier and seem to be less reluctant to provide their data compared to Airbnb and Uber; in this respect it should be mentioned that for almost all of the contributions on matching and or rating at least one of the co-authors is a researchers formally affiliated with the platform providing data (Cullen & Farronato, 2015; Farronato & Fradkin, 2015; Fradkin, 2014; Fradkin, et al., 2015; Horton & Golden, 2015); the same applies to the earlier cited and only contribution studying '*sharing economy*' contractors (Hall & Krueger, 2015). As anticipated, the normative positive and optimistic narratives outnumber the critical and pessimist ones. Amongst the regulatory essays 8 are radically against any regulation and in favour of self-regulation through reputational ratings, while 11 are more moderate and show a balanced approach considering various forms of co-regulation and smart regulation; the three specialist legal essays lean to some extent more towards more traditional and strict forms of regulation.

Table 4: Summary statistics by disciplines and domain

Discipline/type of contribution	Domain/sector									Total
	Space rental		Labour markets/ services		Transportation		Other		General	
	Couch Surfing	Airbnb	Time-banking	Commercial	Car sharing	Uber	NFP	FP		
Economics: theoretical/conceptual P2P markets	0	4	0	0	0	4	0	0	2	10
Economics: empirical/impacts	0	4	0	1	2	3	0	0	0	10
Economics empirical/ ratings	1	2	0	1	0	0	0	0	0	4
Economics empirical/ P2P markets	0	1	0	2	0	0	0	0	0	3
Economics: labour issues	0	0	0	0	0	1	0	0	0	1
Modelling: inequality issues	0	0	0	0	1	0	0	0	0	1
Modelling car sharing impacts	0	0	0	0	4	0	0	0	0	4
Other social sciences: Social capital (qualitative)	3	1	1	0	1	1	5	0	2	14
Other social sciences: Social capital (quantitative)	2	0	0	0	0	0	0	0	1	3
Other social sciences: Motives (qualitative)	2	1	2	0	2	0	1	0	0	8
Other social sciences: Motives (quantitative)	1	3	0	0	5	3	1	1	4	18
Other social sciences: inequality issues	0	1	0	0	0	0	1	0	1	3
Normative optimistic visions	0	2	0	0	0	0	0	0	7	9
Normative critical visions	0	0	0	0	0	0	0	0	4	4
Narrative Review essay	1	0	0	0	0	0	0	0	4	5
Theoretical-conceptual	0	0	0	0	0	0	0	0	9	9
Business models / Strategic Management	0	0	0	0	2	0	0	1	2	5
Regulatory essay: Laissez-faire	0	1	0	0	0	2	0	0	6	9
Regulatory essay: co-regulation/ smart regulation	0	1	0	0	0	1	0	0	9	11
Specialist legal essays	0	1	0	0	0	2	0	0	6	9
Policy analysis	0	0	0	0	0	0	0	4	5	9
Other	0	0	0	0	0	0	0	0	3	3
Total	10	22	3	4	17	17	8	6	65	152

6.3.2 Analytical tabulation of scoping review findings

Table 5: Formally reviewed sources: analytical accounts

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
1.(Agrawal <i>et al.</i> , 2013)	<ul style="list-style-type: none"> • Paper • oDesk (Online Labour Market, OLM) • Matching and impact 	<ul style="list-style-type: none"> • Review of empirical evidence • Other empirical study 	The authors review the evidence on the market functioning and impacts of online labour markets such as oDesk. The evidence is not conclusive, although it suggests that such markets tear down geographical barriers and seem to increase female participation. On distributional and aggregate welfare effects the evidence is ambiguous and does not warrant any preliminary conclusions
2.(Agyeman, <i>et al.</i> , 2013)	<ul style="list-style-type: none"> • Report • Sharing economy & cities (general) • Regulation to maximise benefits 	<ul style="list-style-type: none"> • Prescriptive essay • Secondary sources plus short examples 	If well steered and regulated at city level the ' <i>sharing economy</i> ' can produce economic, social, and environmental benefits to cities as reinvigorated polis, through increased social participation and sense of community
3.(Albinsson & Yasanthi Perera, 2012)	<ul style="list-style-type: none"> • Journal Article • NFP (free reuse sharing of goods) • Social capital, participation 	<ul style="list-style-type: none"> • Empirical study • Participant observations and interviews (N=36) 	A sense of community is both a driver of participation and an outcome of these NFP platforms. According to the authors the findings challenge the entrenched notions of exchange and reciprocity.
4.(Allen & Berg, 2014)	<ul style="list-style-type: none"> • Report • Sharing economy in general • Critique of regulation 	<ul style="list-style-type: none"> • Regulatory essay; • Secondary sources 	The authors propose a new approach to bottom-up self-regulation. Various forms of licensing should be reduced to allow private certification schemes and reputation mechanisms to evolve; avoid regulations making it difficult for start-ups to compete for labour (contractors should not be turned into employees)

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
5.(Arsel & Dobsha, 2011)	<ul style="list-style-type: none"> • Journal Article • NFP (Freecycle, platform for reuse of goods) • Social capital, community cohesion 	<ul style="list-style-type: none"> • Empirical study • Case study based on blog mining, archival search, and interviews with 22 regular participants of Freecycle. 	The authors find tensions between the goals of the institution (the owners of the Freecycle brand) and its community members (participants in local chapters). The findings contrast with other studies reporting improved community cohesion as a result of such kind of pro-social communitarian activities and sharing.
6.(Balck & Cracau, 2015)	<ul style="list-style-type: none"> • Paper • Various platforms (space rental, car sharing, recirculation of goods) • Motivations 	<ul style="list-style-type: none"> • Empirical study • Survey based on a convenience sample (Pilot N=15; main survey N=105) of German users of different types of platforms 	The most important motivation are lower prices. Other motives include sustainability, preference for access over ownership
7.(Bardhi & Eckhardt, 2012)	<ul style="list-style-type: none"> • Journal Article • Car sharing (Zipcar) • Social capital/ altruistic vs. utilitarian values 	<ul style="list-style-type: none"> • Empirically informed conceptual essay • 40 semi-structured interviews with a purposive sample of Zipcar users located in Boston 	Four key findings are reported: consumers do not experience perceived ownership and avoid identification with the accessed object of consumption; the predominant object-self relationship is that of use value, which do not match altruistic or hedonic values attributed to sharing; consumers engage in opportunistic behaviours toward the company and one another (negative reciprocity); no sense of brand community
8.(Barnes & Mattsson, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Future driver of growth 	<ul style="list-style-type: none"> • Empirical study • Four stage Delphi with 25 experts 	The driver most cited by experts is the economic one (need to economise in view of crisis), followed by technology and socio-cultural changes. The environmental drivers did not emerge as very important. Socio-cultural attitudes are also cited as inhibitors, together with ongoing political and regulatory controversies.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
9.(Barry & Caron, 2014)	<ul style="list-style-type: none"> • Paper • Car & ride sharing • Regulating innovation 	<ul style="list-style-type: none"> • Regulatory essay • Legislative and regulatory sources 	The essays used the ' <i>sharing economy</i> ' to illustrate the challenges that existing laws and regulations pose for new industries.
10.(Baumeister & Wangenheim, 2014)	<ul style="list-style-type: none"> • Paper • Various platforms (bike and car sharing, books, bags) • Motivations / consumers' preferences 	<ul style="list-style-type: none"> • Empirical study • Online experiment (N=2098, Germany) • Respondents were randomly assigned to one of four conditions, which differed in the product category (cars, bicycles, books and handbags). They were instructed about different scenarios with respect to which they had to express their perceptions on access and ownership. 	The main finding is that the attitude towards access is found to be consistently worse than the attitude towards ownership across all product categories. In other and simpler words the respondents expressed preference for ownership across all the four product categories.
11.(Belk, 2010)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Sharing 	<ul style="list-style-type: none"> • Theoretical essay on the concept of sharing • Secondary sources 	It distinguishes between 'sharing in' and 'sharing out' and suggests that sharing in dissolves interpersonal boundaries posed by materialism and possession attachment through expanding the aggregate extended self. However, growing market commoditisation challenges such sharing.
12.(Belk, 2014a)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Sharing 	<ul style="list-style-type: none"> • Critical distinction between sharing and pseudo-sharing; • Secondary source 	As in the previous case of the wars on music and file sharing, the ' <i>sharing economy</i> ' is characterised by conflicting rhetoric and semantic confusion. Money, egoistic motives, expectations of reciprocity, and lack of a sense of community are major criteria by which sharing and pseudo-sharing may be distinguished

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
13.(Belk, 2014b)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Definitions / typology 	<ul style="list-style-type: none"> • Conceptual and theoretical review; • Secondary sources; 	Sharing and collaborative consumption as alternative ways of consuming and as new business paradigms should not be overlooked and few industries will be exempted from potential disruptive change these practices introduce. Sharing makes a great deal of practical and economic sense for the consumer, the environment, and the community
14. (Bellotti et al., 2014)	<ul style="list-style-type: none"> • Paper • NFP (exchange of services/ Time banks) • Motivation 	<ul style="list-style-type: none"> • Empirical study • 50 semi-structured interviews with time bank coordinators, users, and other community members 	These NFP platforms lag very much behind commercial platforms in terms of users' base. The focus on tracking credits and debts earned by giving and receiving personal services is seen as hampering scaling up. The authors propose to emphasise the personal and social benefits of participation, and avoid such unappealing concepts as debt and neediness.
15. (Benjaafar <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Paper • Owning and renting • Equilibrium outcomes (ownership, usage levels, consumer surplus, and social welfare) 	<ul style="list-style-type: none"> • Theoretical economic modelling • No empirical sources used, based on key hypotheses from standard economics 	According to this theoretical modelling exercise and its underlying assumptions, consumers always benefit from collaborative consumption. Under the model assumptions a platform is least profitable when the cost of ownership is either very high or very low. The authors also claim that a platform may not have an incentive to completely eliminate moral hazard. This is because the platform can leverage moral hazard to induce desirable ownership levels without resorting to extreme pricing, which can be detrimental to its revenue.
16. (Birdsall, 2014)	<ul style="list-style-type: none"> • Journal article • Car sharing • Business models 	<ul style="list-style-type: none"> • Conceptual discussion of business model • Secondary sources ; 	The articles identifies three models: a) round trip (i.e. Zipcar); b) point-to-point (Car2Go); and c) peer-to-peer (Getaround and Relay Rides)

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
17.(Bond, 2015)	<ul style="list-style-type: none"> • Journal Article • Uber • Impact on taxi industry 	<ul style="list-style-type: none"> • Empirical study • Descriptive statistics use to quantify impact of Uber on taxi industry in San Francisco, District of Columbia and New York. 	The descriptive data suggests a clear negative impact of Uber both on the revenue of the taxi industry and on the values of the medallions.
18. (Botsman & Rogers, 2010a)	<ul style="list-style-type: none"> • Journal article • Sharing Economy in general • Business models 	<ul style="list-style-type: none"> • Conceptual essay • Secondary sources 	The article states that collaborative consumption is a system of organised sharing, renting, and trading of merchandise reducing personal costs and decreased environmental impact. It describes three forms of collaborative consumption: goods as a rented service, redistribution markets of pre-owned or used goods, and collaborative lifestyles.
19. (Brinkø <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Journal Article • Conceptual essay; • Space rental • Typology of access over ownership models 	<ul style="list-style-type: none"> • Conceptual essay • Secondary source 	Typology proposed with the following types: a) sharing a specific facility – a desk or a workspace in a semi-closed community; b) sharing several facilities in an open or semi-closed community; c) sharing physical space in a building or a building in itself in a closed community; d) sharing facilities between users in a network of buildings/organisations in an open, semi-closed or closed community
20.(Buksh & Mouat, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing of productive assets (work hubs) • Urban work 	<ul style="list-style-type: none"> • Conceptual essay; • Secondary sources; 	The paper re-orientates attention to the networked interplay of agglomeration, collaborative consumption and co-working towards urban revitalisation as part of suburban and regional development policies to strengthen local communities.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
21. (Caldararo, 2014)	<ul style="list-style-type: none"> • Paper • Sharing economy in general • Negative social impact 	<ul style="list-style-type: none"> • Critique • Secondary sources and statistics 	According to the author the socio-economic status of American families has steadily degraded as wealth shifted to a small percentage of the population in the past 40. The sharing economy represents one more mechanism for continuing and deepening this degradation trend.
22. (Cannon & Chung, 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Co-regulation approach 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	Sharing platforms do not fit traditional-regulatory approaches and it is in the public interest not to curb such forms of innovation; neither is laissez-faire appropriate because of possible negative externalities on local level public goods. The author propose a framework for co-regulatory scheme that can effectively complement the inherent attributes of the sharing economies to improve effectiveness and the optimal level of protection of public interests over interest groups
23. (Cannon & Summers, 2014)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Regulation and platforms' strategy 	<ul style="list-style-type: none"> • Prescriptive essay • Secondary sources 	The authors advise ' <i>sharing economy</i> ' players to: 1) be offensive with regulators making their case evident and supported; 2) respond to regulators' concerns; 3) use best practices in influencing public policy (form coalitions, seek external validators); 4) share their data so that it is public and usable and may reduce regulators' concerns
24. (Cohen & Muñoz, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing economy and cities • Sustainable consumption and production 	<ul style="list-style-type: none"> • Empirically informed conceptual essay • Mesh database of 9400 sharing initiatives around the globe 	The authors develop an empirically grounded typological mapping of sharing activities with respect to the topic of Sustainable Consumption and Production (SCP) in the context of cities. They identify five groups 18 sharing activities to create a Sharing Cities-SCP

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
25. (Cohen & Kietzmann, 2014)	<ul style="list-style-type: none"> • Journal Article • Car & ride sharing • Business models taxonomy 	<ul style="list-style-type: none"> • Conceptual and theoretical essay • Secondary sources 	Using four business model building blocks (a value proposition, supply chain, customer interface, and financial model) the authors identify and describe 8 different business models distinguishing car sharing from ride sharing and sub-types internal t each of the two types
26. (Cohen & Sundararajan, 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Innovation and Self-regulation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	Self-regulatory approach preferred to regulation. Platforms as actors that are a key part of the regulatory process.
27. (Cohen & Zehngebot, 2014)	<ul style="list-style-type: none"> • Article • Sharing Economy in general • List of legal issues 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	The sharing economy raises (US context) issues concerning: a) ownership (can you share what you do not own); b) consumer protection (quality, information); c) taxation; d) insurance; e) liability ; f) zoning; g) licensing/permitting
28. (Corciolani & Dalli, 2014)	<ul style="list-style-type: none"> • Journal Article • NFP (Bookcrossing.com, reuse of goods) • Social capital, reciprocity 	<ul style="list-style-type: none"> • Empirical study • Bookcrossing.com is analysed with qualitative tools, such as ethnography, personal interviews and participant observation 	The main result is that gift giving is not the only process responsible for value creation and distribution in consumption communities: sharing and commodity exchange also play a role. Evidence about collective reciprocity and anonymous sharing is provided.
29. (Costain et al., 2012)	<ul style="list-style-type: none"> • Journal article • Car sharing • Motivations & behaviour 	<ul style="list-style-type: none"> • Empirical study • Quantitative descriptive and econometric analysis (using administrative data) of motivations and behaviour of the users of a car sharing platform in Toronto 	Members are motivated also by environmental concerns, yet having the option for CO2 reduction car sharing would increase the amount of driving per month, which would cancel out any potential benefit in terms reduced emissions.

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30. (Cullen & Farronato, 2015)	<ul style="list-style-type: none"> • Paper • TaskRabbit (MLM / generic services) • Matching 	<ul style="list-style-type: none"> • Quantitative study • Econometric analysis (including difference in difference identification strategy) of TaskRabbit internal data 	Three main findings are reported: 1) supply is highly elastic and prices hardly increase: when demand doubles the providers work twice as hard; 2) the average gain from each trade is \$37; 3) platform success varies greatly across cities as a result of geographic density (buyers and sellers living close together), and of level of task standardisation (buyers requesting homogeneous tasks).
31. (Daus & Russo, 2015)	<ul style="list-style-type: none"> • Report • Ride sharing • Drivers vetting and criminal checks 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	The authors argue that safety requirements concerning for-hire vehicles should be applied to all players, including platforms such as Lyft and Uber.
32. (Demailly & Novel, 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general (French context) • Sustainability 	<ul style="list-style-type: none"> • Policy analysis • Secondary sources and official statistics for the discussion of sustainability and social impacts 	The authors argue that if sharing models could be operated under the most favourable conditions, savings of up to 7% in the household budget and 20% in terms of waste could be achieved.
33. (Derojeda, et al., 2013a)	<ul style="list-style-type: none"> • Report • Sharing Economy in general (Europe) • Trends, impacts, drivers and barriers 	<ul style="list-style-type: none"> • Policy Report commissioned by European Commission • Based on a four case studies and interviews focusing on peer-to-peer '<i>sharing economy</i>' examples in Europe 	Trust is a main driver or bottleneck and measures to boost confidence include peer-to-peer rating systems and ID checks. Policy makers could provide valuable contributions in the form of minimum quality and safety requirements.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
34.(Dervojeda <i>et al.</i> , 2013b)	<ul style="list-style-type: none"> • Report • Sharing of productive assets • Trends, impacts, drivers and barriers 	<ul style="list-style-type: none"> • Policy Report commissioned by European Commission Report • Based on a few case studies and interviews focusing on sharing productive facilities examples in Europe 	The obstacles include: the resistance to change by organisations considering the implementation of mobility measures; the lack of skills of middle management to manage more flexible employees; and the (perceived) cost associated with implementing more mobility into work processes. In contrast, the drivers are employee's perceptions of flexibility, productivity and reduced commuting and the reduction of operational costs for businesses.
35.(Dillahunt & Malone, 2015)	<ul style="list-style-type: none"> • Paper • Sharing Economy in general • Disadvantaged groups 	<ul style="list-style-type: none"> • Empirical study • A participatory-design based workshop with unemployed individuals to investigate the perception and feasibility of finding some work / income opportunity within sharing platform 	According to the authors the findings indicate that individuals seeking employment could positively leverage ' <i>sharing economy</i> ' solutions. All participants believed that the ' <i>sharing economy</i> ' applications could help with employment and/or saving money. Yet, the lack of skills, of awareness of opportunities, and of trust in the sharing-economy platform are a clear barrier for less advantaged individuals.
36.(Dredge & Gyimóthy, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Discourses on effects on tourism 	<ul style="list-style-type: none"> • Critical review essay • Secondary sources 	Critical exploration and assessment of the sharing economy and its implication for the tourist industry. Five claims made by the supporters of the sharing economy are critically appraised.
37.(Dubois, et al., 2014)	<ul style="list-style-type: none"> • Book chapter • NFP (Exchange of services, Time Bank) • Motivation to participate 	<ul style="list-style-type: none"> • Empirical study • In depth qualitative case study of one Time Bank 	Anti-capitalist sentiments, discontent with consumption, and an ideology of sustainability emerged as strong motivations for participation. On the other hand, the authors also find that high cultural capital and distinction (in the sense specified by Bourdieu) matter and create contradictions forms of social differentiation between members with high and low cultural capital.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
38.(Edelman & Geradin, 2015)	<ul style="list-style-type: none"> • Paper • Sharing economy in general • Platforms efficiencies and scope for intervention 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	After reviewing the potential efficiency gains that sharing platforms can produce, the authors discuss the issue of regulation and propose that: a) regulatory restrictions should be avoided; but b) certain evident market failures should be corrected with smart regulatory interventions
39.(Edelman & Luca, 2014)	<ul style="list-style-type: none"> • Paper • Airbnb (space rental) • Racial discrimination 	<ul style="list-style-type: none"> • Empirical study • Descriptive statistical analysis of data web scraped from Airbnb (dataset combine pictures of all New York City landlords, prices of their listings, and information about quality of the listed rentals) 	The main finding is that that 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.
40.(Einav, <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Paper • Uber, Airbnb, TaskRabbit (peer-to-peer markets) • Two-sided market functioning and implication for regulation 	<ul style="list-style-type: none"> • Conceptual and theoretical essay • Formalised economic theory informed by data from empirical economic studies 	According to the authors matching algorithms, pricing, and reputation systems are the main features making such platforms successful or not. A simple model of how these markets enable entry by small or flexible suppliers, and the resulting impact on existing firms is developed and used to consider when and how such platforms should be regulated. The economic arguments for different approaches to licensing and certification, data, and employment regulation are discussed.
41.(Fang <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Journal article • Airbnb (space rental) • Spill-over effects on tourism industry employment 	<ul style="list-style-type: none"> • Empirical study • Panel data analysis and extrapolation at macro-economic level of the impact of Airbnb tourism industry employment 	The findings are ambivalent and identify both positive and negative effects without concluding on the net results. Airbnb has positive overspill on tourism but may reduce employment in the low end of the hotel industry as its penetration increases

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
42. (Farronato & Fradkin, 2015)	<ul style="list-style-type: none"> • Paper • Airbnb (space rental) • Impacts 	<ul style="list-style-type: none"> • Quantitative study • Econometric analysis of data on Airbnb and the hotel industry 	The authors show that Airbnb has two effects: a) market expansion (meeting demands of previously under-served consumers); and b) business stealing (attracting consumers away from conventional suppliers). Hotels and peer-to-peer suppliers differ in their fixed (higher for hotels) and marginal costs (higher for peer-to-peer suppliers). The authors conclude that efficient market structure depends on the level and variability of demand, and quantify the welfare gains from peer-to-peer entry in the accommodation industry.
43. (Fassi et al., 2012)	<ul style="list-style-type: none"> • Journal article • Car sharing • Network growth 	<ul style="list-style-type: none"> • Modelling simulation; • Data from one platform calibrated into a discrete event simulation model 	The model provides decision makers with a tool for selecting best network growth strategies to implement for meeting adequately the demand growth while maximizing the members' satisfaction level and minimizing the number of vehicles used.
44. (Fellander <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general (global considerations and analysis of situation in Sweden) • Trends, policy and regulatory implications 	<ul style="list-style-type: none"> • Policy report for Swedish government • Secondary sources and statistics 	The reports review the benefits and the potential risks of the sharing economy and propose a flexible trial and error approach to regulation that would also support innovation and entrepreneurship
45. (Firnborn, 2012)	<ul style="list-style-type: none"> • Journal article • Car2go (car sharing) • Impact on other transportation forms 	<ul style="list-style-type: none"> • Quantitative study • Survey of Car2Go users in Germany (N=1881) to assess the impact of using such mean over other means of transportation. 	The study using two methods based on different questions of the survey produce contrasting estimates of the impact of car sharing on other means of transportation.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
46.(Foden, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Sharing, inclusion/exclusion 	<ul style="list-style-type: none"> • Theoretical essay • Practice theories and secondary sources 	Findings suggest that technologically mediated reuse 'communities' connect some people but exclude others. Eliminating money from the exchange process gives participants access to goods they would otherwise struggle to afford, but at the same time raises questions as to how goods are allocated, potentially privileging other unequally distributed material and cultural resources.
47.(Forno & Garibaldi, 2015)	<ul style="list-style-type: none"> • Journal Article • NFP (Home swapping) • Motivations 	<ul style="list-style-type: none"> • Empirical study • Qualitative analysis (i.e. in depth interviews) of Italian home-swappers. 	The authors analyse and discuss the socio-economic profiles, motivations, and lifestyles of Italian home-swappers. This alternative form of tourism requires trust, open-mindedness, inventiveness, enthusiasm, and flexibility. While the economic aspect is arguably one of the key driving factors when opting for this type of travelling accommodation, it cannot account alone for the current popularity of the social phenomenon.
48.(Fradkin, 2014)	<ul style="list-style-type: none"> • Paper • Airbnb (space rental) • Matching 	<ul style="list-style-type: none"> • Quantitative study • Econometric analysis and modelling of Airbnb internal data 	The efficiency of this market and the effects of ranking algorithms are analysed. Airbnb uses novel data generated by users' activities on the website to design algorithms and products that influence the search and matching process. The more descriptive finding is that potential guests engage in limited search, are frequently rejected by hosts, and match at lower rates (compared to a normative potential) as a result. Using a micro model of search and matching the paper shows that there are major matching frictions and that, if such frictions were removed, matches would increase by 102%.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
49.(Fradkin, et al., 2015)	<ul style="list-style-type: none"> • Paper • Airbnb (space rental) • Reputation rating 	<ul style="list-style-type: none"> • Quantitative study • Two field experiments conducted inside Airbnb 	<p>The experiments aimed at studying the determinants of reviewing behaviour, the extent to which reviews are biased, and whether changes in the design of reputation systems can reduce bias. Descriptively the main finding is that reviews on Airbnb are generally positive and informative: 97% of guests privately and anonymously report having positive experiences and 74% of guests submit a five out of five star overall rating. The results of the field experiments show that that non-reviewers tend to have worse experiences than reviewers and that strategic reviewing behaviour occurred on the site, although the aggregate effect of the strategic behaviour was relatively small. The authors model the three mechanisms causing bias and show that the experimental manipulations tested reduce the reviewing biases.</p>
50.(Fraiberger & Sundararajan, 2015)	<ul style="list-style-type: none"> • Paper • Getaround (Car sharing) • Welfare impacts (with focus on lower income groups) 	<ul style="list-style-type: none"> • Modelling simulation • Data from one platform (Getaround) and from the traditional US car market place calibrated into a model used as a stripped-down "laboratory" 	<p>The simulation shows that peer-to-peer rental markets change the allocation of goods significantly, substituting rental for ownership and lowering used-good prices while increasing consumer surplus. Consumption shifts are significantly more pronounced for below-median income users, who also provide a majority of rental supply. The results suggest that these 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.</p>

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
51. (Furuhata, <i>et al.</i> , 2013)	<ul style="list-style-type: none"> • Journal article • Car sharing • Literature review 	<ul style="list-style-type: none"> • Literature review • Secondary sources 	A taxonomy and classification of current ridesharing systems. Is presented. From the reviewed sources it emerges that ridesharing can reduce travel costs, congestion, and pollution, but still faces challenges and bottleneck.
52. (Geradin, 2015)	<ul style="list-style-type: none"> • Report • Uber (ride services) • Regulating Uber in Europe 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources and mere speculation. 	The author argues that, since Uber business model is so superior in terms of efficiency and consumer welfare, it will prevail and should not be stopped by European regulators, else they would users of attractive services and trigger many years of litigation. The other option is to embrace technological change and allow Uber to compete on a level playing field with taxi companies. The regulatory changes that will be needed raise complex questions, but these questions are unavoidable and it is important to tackle them early. Taxi companies can also embrace technologies and rely on the competing online-enabled car transportation services that are already available to them.
53. (Greenwood & Wattal, 2015)	<ul style="list-style-type: none"> • Paper • Uber (ride services) • Impact (reduction in accidents) 	<ul style="list-style-type: none"> • Quantitative study • Quasi-experimental difference-in-difference identification strategy 	The study exploits natural experiments settings produced by the time diversified entry of Uber in different local markets. According to the counterfactual analysis carried out Uber contributed to a significant drop in the rate of DUI homicides during 2009-2013 in California.
54. (Gobble, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing Economy in general (but focus also on Airbnb, Uber, and TaskRabbit) • General review of regulatory issues and controversies 	<ul style="list-style-type: none"> • Regulatory review essay • Secondary sources on legal controversies between 2013 and 2014 regarding especially Uber and Airbnb, but also task rabbit 	The main issues of controversy include: insurances, liability, consumer protection, but also labour regulations.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
55.(Guttentag, 2013)	<ul style="list-style-type: none"> • Journal Article • Airbnb (space rental) • Sharing as disruptive innovation 	<ul style="list-style-type: none"> • Conceptual essay with discussion of regulation • Secondary sources and exploring 	<p>Disruptive innovation theory describes how products that lack in traditionally favoured attributes but offer alternative benefits can, over time, transform a market and capture mainstream consumers. Airbnb distinct appeal centres on cost-savings, household amenities, and the potential for more authentic local experiences. The legality issues and their corresponding tax concerns are discussed, with an overview of the current state of regulatory flux and a possible path for resolution.</p>
56. (Habib et al., 2012)	<ul style="list-style-type: none"> • Journal Article • Car sharing • Network growth 	<ul style="list-style-type: none"> • Quantitative study • Data obtained from a Canadian platform are used in the application of an econometric model to the behaviour of car sharing users 	<p>Main empirical findings: a) males and French-speaking people tend to be shorter-duration members but high-frequency users; b) initially members have the intention of staying for a short duration, but with increasing membership-duration the tendency to remain a member increases; c) increasing the number of cars in the car sharing stations does not influence membership duration but increase frequency of usage; d) in zones where car ownership is higher car sharing membership duration is shorter</p>

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
57.(Hall & Krueger, 2015)	<ul style="list-style-type: none"> • Paper • Uber (ride services) • Labour issues 	<ul style="list-style-type: none"> • Quantitative study • Comprehensive statistical analysis of Uber provided data on the drivers 	According to the analysis of the authors, drivers appear to be attracted to the platform in large part because of the flexibility it offers, the level of compensation, and the fact that earnings per hour do not vary much with hours worked, Uber drivers are more similar in terms of their age and education to the general workforce than to taxi drivers and chauffeurs. Most drivers 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.
58.(Hamari, et al., 2015)	<ul style="list-style-type: none"> • Paper • Sharing economy in general plus empirical study of one Finnish platform • Motivations to participate 	<ul style="list-style-type: none"> • Quantitative study; • Survey (N=168) of members of www.sharetribe.com 	Participation is motivated by many factors such as its sustainability, enjoyment of the activity as well as economic gains. It includes also a conceptual discussion of what the sharing economy means.
59.(Harvey <i>et al.</i> , 2014)	<ul style="list-style-type: none"> • Journal Article • NFP (CouchSurfing, Freecycle, Landshare) • Social capital, social exchanges 	<ul style="list-style-type: none"> • Empirical study • Ethnography and in depth interviews with members of three platforms that facilitate offline gift giving and sharing. 	Findings reveal how technology is used to enact and influence the management of identity, partner selection, ritual normalisation, and negotiation of property rights. The findings have significant implications for the design and management of systems that encourage non-monetary forms of collaborative consumption.
60.(Heimans & Timms, 2014)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • New power vs. Old power 	<ul style="list-style-type: none"> • Normative/prescriptive essay (optimistic) • Secondary sources, speculative reasoning, and typical business rhetoric. 	It presents a typology of players with respect to the dimension of New/Old forms of power and values. New power values represented by the ' <i>sharing economy</i> ' champions are based on informal, opt-in decision making; self-organisation; networked governance; radical transparency; open source and collaboration.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
61.(Heinrichs, 2013)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Sustainability 	<ul style="list-style-type: none"> • Normative/prescriptive essay (optimistic) • Analysis of the '<i>sharing economy</i>' as a new path for sustainability beyond the hype 	The ' <i>sharing economy</i> ' has the potential to serve as an umbrella concept that may bring together and re-frame older and recent alternative forms of economic activity and their academic conceptualisation. The significant (public) attention, evoked by the ' <i>sharing economy</i> ' over the past two years, indicates the attractiveness of the phenomenon for broader parts of society. The ' <i>sharing economy</i> ' approach might bring together the fragmented landscape of diverse academic perspectives and practices in specific milieu and niches.
62.(Hirshon et al., 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general in cities • Trends, benefits, drafting regulation 	<ul style="list-style-type: none"> • Policy analysis (stakeholders' consultation) • Interviews with city leaders around the US who were looking for guidance on how to modify or develop new regulations for the sharing economy 	There is no one size fits all approach to regulating the sharing economy. It emerges from interviews with all stakeholders the need to balance issues of innovation, economic development, tourism, equity, access, and safety.
63.(Horton, 2014)	<ul style="list-style-type: none"> • Paper • oDesk (OLM) • Matching of two market sides 	<ul style="list-style-type: none"> • Empirical study • Econometric analysis of oDesk data 	The author documents the problem of congestion when buyers inefficiently pursue oversubscribed sellers the data show that such misdirected search effort are consequential: recruited seller rejecting a buyer's recruiting inquiry reduces the probability of match formation by as much as 67%.
64.(Horton & Golden, 2015)	<ul style="list-style-type: none"> • Paper • oDesk (OLM) • Reputation ratings 	<ul style="list-style-type: none"> • Quantitative study • Field experiment implemented inside oDesk to analyse reputation ratings 	Reputation ratings tend to be inflated by two: (1) it costs more to give bad feedback than good feedback and (2) this cost to raters is increasing in the cost to sellers from bad feedback. Together, (1) and (2) can lead to an equilibrium where feedback is always positive, regardless of performance.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
65. (Horton & Zeckhauser, 2016)	<ul style="list-style-type: none"> • Paper • Owning and renting • Modelling of renting and owning 	<ul style="list-style-type: none"> • Theoretical economic model backed by consumer survey • Own survey conducted with convenience sample using Amazon Mechanical Turks 	The authors present a model of short-run and long-run equilibrium for P2P rental markets partially tested with the results of a surveys of consumers. Ownership and consumptions, rental rates, quantities, bring to market costs and surplus generated are modelled. According to the model surplus increases in both the short- and long-run P2P rental market equilibria relative to the pre-sharing status quo. Yet, these results are based on assumptions that simplify the possible variability concerning different type of goods for what concerns owning or renting decisions, as well as bring to market costs.
66. (Huiskamp, 2015)	<ul style="list-style-type: none"> • Paper • Airbnb vs Uber model • Two-sided markets 	<ul style="list-style-type: none"> • Conceptual essay • Secondary sources 	The author concludes that both platforms are two sided markets but that they differ widely in the extent of standardisation and flexibility. In particular Airbnb is much more flexible than Uber with respect to the supplier (host and drivers) freedom in setting the prices
67. (Ikkala & Lampinen, 2014)	<ul style="list-style-type: none"> • Paper • Airbnb in Helsinki (rental space) • Social capital, social exchange, reputation 	<ul style="list-style-type: none"> • Empirical study • In depth interviews with Airbnb hosts in Helsinki 	The study examines how money mediates and structures social Exchange. Monetary transactions set to exchange relationships contributes to the hosts' sense of control and ease in the exchange. Two behavioural patterns that highlight the importance of reputation and trust were identified: a) hosts divert their accumulated reputational capital into the rental price and b) they may price their property below "the market price", so that they can choose their exchange partners form a wider pool of candidates

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
68. (Jefferson-Jones, 2015)	<ul style="list-style-type: none"> • Journal Article • Airbnb & others (in space rental) • Local government restrictions and constitutional rights 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	Legal discussion on the extent to which local rulings limiting Airbnb short-term rentals represent an unconstitutional taking (in the US). It particularly focuses on the New York city controversy with Airbnb. Guidelines should be adopted in the short-term housing regulation context.
69. (Jenk, 2015)	<ul style="list-style-type: none"> • Paper • Uber (ride services) • Coase Theorem & Uber 	<ul style="list-style-type: none"> • Theoretical essay • Application of the Coase theorem to the emergence of Uber 	The author argues that Uber has transformed the city regulated oligopolistic taxi markets with value-added effects. Uber and similar platforms are reducing transaction costs, increasing social utility and disaggregating the structure of firms
70. (John, 2013a)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Rhetoric of sharing 	<ul style="list-style-type: none"> • Critical review essay • Secondary sources and analyses of the 44 largest, most visited and historically significant SNSs (Social Networking Sites). 	The paper argues that a new meaning of sharing has emerged in the context of Web 2.0 with three main features: fuzzy objects of sharing; the use of the word 'share' with no object at all; and presenting in terms of sharing functions of social network sites that used not to be so described.
71. (John, 2013b)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Rhetoric of sharing 	<ul style="list-style-type: none"> • Review essay • Secondary sources 	This article explores the concept of sharing in three distinct spheres: Web 2.0; "sharing economies" of production and consumption; intimate interpersonal. It is argued that a range of distributive and communicative practices—not all of which are entirely new—are converging under the metaphor of sharing. Thus, practices in one sphere are conceptualised in terms of practices from other spheres.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
72.(King, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Implications for competition law 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	According to this review of the possible implications of the sharing economy from the perspective of competition law there are three main concerns: a) anti-trust implications when platforms activate network effects leading to dominance; b) lock in of third parties on one side of the transaction; and c) power to reference rivals (i.e. leading to collusion or alternatively to discriminatory behaviour).
73.(Koopman, et al., 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Self-regulation as the solution 	<ul style="list-style-type: none"> • Regulatory essay (developed in response to public consultation launched by the US Federal Trade Commission prior to a workshop held in June 2015 on the sharing economy) • Secondary sources 	The authors call for the FTC to intervene to stop the local level anti-competitive regulation that are hindering innovation in the sharing economy
74.(Koopman, et al., 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Self-regulation as the solution and critique to regulation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources and application of orthodox economic theory critique of regulation. 	The ' <i>sharing economy</i> ' has overcome market imperfections without recourse to traditional forms of regulation. Continued application of these outmoded regulatory regimes is likely to harm consumers. The Internet, and the rapid growth of the ' <i>sharing economy</i> ', alleviates the need for much of this top-down regulation, with these recent innovations likely doing a much better job of serving consumer needs.
75.(Kuttner, 2013)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Labour issues / inequality 	<ul style="list-style-type: none"> • Radical critique • Secondary sources 	The author illustrates claims that the ' <i>sharing economy</i> ' cause labour insecurity and the weakening of the broadly defined labour contract. The ' <i>sharing economy</i> ' represents the latest manifestation in the precarisation of work.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
76. (Lamberton & Rose, 2012)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Commercial sharing systems/motivations 	<ul style="list-style-type: none"> • Theoretical essay with empirical components • The authors develop a conceptual and theoretical framework of commercial sharing systems using two empirical studies (Study 1: Sample of 369 licensed US drivers using the online panel provided by Amazon Mechanical Turk; Study 2: sample of 129 respondents; Study 3: 3*2 experimental design). 	The authors specify the various forms of utility that a good may provide in order to be sharable. It should favourable transaction utility similar to that of ownership, storage utility from not taking up our space, anti-industry utility by acting against the power of large corporations through sharing rather than buying their goods, environmental utility by doing less harm to the environment and creating less waste, and social utility in gaining approval from our reference groups.
77.(Lauterbach, et al., 2009)	<ul style="list-style-type: none"> • Paper • NFP (CouchSurfing) • Reciprocity and reputation ratings 	<ul style="list-style-type: none"> • Empirical study • Quantitative network analysis of reciprocity and reputation ratings using CouchSurfing data (666,541 users with 1,541,398 connections amongst them) 	The global CouchSurfing network displays a high degree of reciprocal interaction and a large strongly connected component of individuals surfing the globe. This high degree of interaction and reciprocity among participants is enabled by a reputation system that allows individuals to vouch for one another. The authors find that the strength of a friendship tie is most predictive of whether an individual will vouch for another. However, vouches based on weak ties outnumber those between close friends. We discuss these and other factors that could inform a more robust reputation system.
78.(Lee, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Sharing as marketing instrument 	<ul style="list-style-type: none"> • Normative/prescriptive (critical) essay • Secondary sources 	According to the author, the ' <i>sharing economy</i> ' is just the latest example of insurgent sentiment being used to sell the bona fides of profit-making corporations. In today's post-crash reality, ' <i>sharing economy</i> ' giants like Uber and Airbnb compete to be seen as leading the charge against "Big Taxi" and "Big Hotel."

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
79. (Lougher & Kalmanowicz, 2016)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Implications for EU competition law 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	According to this review Sharing economy intermediation markets are likely to become concentrated and possibly dominated by a single market player. The activities of powerful sharing economy platforms, for which data use is key, are likely to be scrutinised in merger control proceedings and in the long term potentially also in the area of market abuse.
80. (Malhotra & Van Alstyne, 2014)	<ul style="list-style-type: none"> • Journal Article • Narrative Review • Sharing Economy in general • Dark side of the sharing economy 	<ul style="list-style-type: none"> • Review essay • Secondary sources 	The authors review various controversies that surround the sharing economy; according to them a crucial aspect is the quality of review systems, for authenticating the validity of reviews is critical to prevent abuse. They suggest that an independent agency might help prevent glowing "sock puppet" reviews or unfair criticisms.
81.(Martin, 2016)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Discourse analysis 	<ul style="list-style-type: none"> • Empirically based discourse analysis • Secondary sources and online ethnography 	Through his discourse analysis the author observe that the sharing economy is framed in contrasting ways from being seen as a pathway to sustainability to being considered a nightmarish form of neoliberalism. The author identifies six different ways in which current discourses frame the sharing economy as: economic opportunity; sustainable consumption; decentralised and more equitable economy; unregulated marketplaces; reinforcing the neoliberal paradigm; incoherent field of innovation.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
82.(Martin <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Journal article • NFP (Freegle) • Grass-root initiatives and scaling 	<ul style="list-style-type: none"> • Empirical study with development of a conceptual model • Case study of one grass-root platform (Freegle), becoming more commercially-oriented 	Focussing on a NFP platform, the authors identify the causes, processes and outcomes of the attempt to become more commercial. They argue that grassroots organisation may be forced to undergo such transition and point out the ambiguities of such development. They conclude calling for further research on whether is desirable and feasible to protect grassroots organisations from such pressures.
83.(Martin & Shaheen, 2010)	<ul style="list-style-type: none"> • Report • Car sharing • GHG (greenhouse gas) emission 	<ul style="list-style-type: none"> • Empirical study • Survey of car sharing users in the US to extract estimate of GHG emission impacts 	The authors conclude that, while car sharing does facilitate lower emissions, the reduction is not generalizable across all households. Rather, car sharing as a system facilitates large reductions in the annual emissions of some households, which compensate for the collective emission increases of other households.
84.(Martin & Upham, 2015)	<ul style="list-style-type: none"> • Journal Article • NFP (Freecycle and Freegle) • Values and motivations 	<ul style="list-style-type: none"> • Empirical study • Large-scale survey of free reuse groups (e.g. Freecycle and Freegle) engaged in collaborative forms of consumption 	The authors show 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. We conclude that diffusion of this particular grassroots innovation is unlikely to be simply value limited and that structural features may be more significant.
85.(Matzler & Kathan, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Strategies and business models 	<ul style="list-style-type: none"> • Prescriptive strategic management essay • Secondary sources 	According to the authors, while the shift toward more sustainable modes of consumption represents a major threat to established business models and revenue streams, it also offers several potentially profitable paths by which also established companies can benefit.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
86.(McArthur, 2014)	<ul style="list-style-type: none"> • Journal Article • NFP (Land sharing) • Motivation 	<ul style="list-style-type: none"> • Empirical study • Ethnographic study of the motivations to participate in Landshare, 	Landshare is a non-profit scheme operating in the UK, Canada, and Australia, which connects growers to people with land to share The study finds that there are significant social belonging and other benefits stemming from collaborative consumption.
87.(McLean, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing Economy in general • Regulatory and legal challenges 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	Key legal issues include: consumer protection, data protection, discrimination, taxation, employment, safety and security, liability, payments and frauds, insurance
88.(McNeill, 2016)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in S. Francisco • Politics, lobbying, and urban tensions 	<ul style="list-style-type: none"> • Empirical study • Reconstruction of city level developments using statistics and secondary sources 	The author reconstructs the political processes and tensions surrounding the rise of S. Francisco as a city of unicorns. He underlines the important role played by technology and venture capital in the political economy of urban development. The paper describes the urban policy tensions associated with the evolution of new "sharing economy" firms such as Uber and Airbnb that, according to the author, have aggressively challenged municipal regulations in the taxi and property rental fields.
89.(Miller, 2014)	<ul style="list-style-type: none"> • Paper • Assets (space rental) • Transferrable sharing rights as a way to regulate Airbnb and similar 	<ul style="list-style-type: none"> • Legal-theoretical essay • Secondary sources 	The mechanism proposed is that of "transferable sharing right" (TSR), which is modelled on existing transferable development rights regimes. The proposed TSR regime would provide cities a means of regulating short-term rentals while also charging a fee equal to externalities and lost city revenue resulting from short-term rentals. Further, TSRs could be used to re-invest in neighbourhoods where short-term rentals occur or to drive economic development to neighbourhoods.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
90.(Miller, 2015)	<ul style="list-style-type: none"> • Paper • Sharing Economy in general • Ad hoc policy regime 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	The paper presents a normative and prescriptive analysis proposing 10 principles to regulated the ' <i>sharing economy</i> '. The ten principles proposed include among others the following: ' <i>sharing economy</i> ' requires differentiated regulatory regime; need to daylight activities; information based regulation; traditional regulation not appropriate
91.(Möhlmann, 2015)	<ul style="list-style-type: none"> • Journal Article • Airbnb and Car2go (space rental and car sharing) • Motivations 	<ul style="list-style-type: none"> • Empirical study • Regression analysis of data from surveys of car2go (N = 236), Airbnb (N = 187) users 	Utility, trust, cost savings, and familiarity were found to be essential in both studies, while service quality and community belonging were identified solely for the car sharing users.
92.(Molz, 2013)	<ul style="list-style-type: none"> • Journal Article • NFP (CouchSurfing) • Social networking / Moral economy 	<ul style="list-style-type: none"> • Empirical study • 37 in depth interviews with CouchSurfers 	Using the concept of 'moral affordances', the analysis outlines the way CouchSurfing technical systems, software design, and search algorithms enable participants to engage in a moral economy based on the non-commodified provision of accommodation to strangers and personal relations of trust and intimacy. Findings suggest that these affordances are not isolated effects of the technologies themselves, but rather reflect a broader moral landscape in which alternative tourism is performed.
93.(Morgan & Kuch, 2015)	<ul style="list-style-type: none"> • Journal article • NFP Sharing economy in general • Discourses and the law 	<ul style="list-style-type: none"> • Theoretical and critical essay • Secondary sources 	By combining the analysis of legal consciousness, the law, and diverse forms of economic activities the authors conceive non-commercial platforms as the locus of radical transactionalism, where legal building blocks of property and capital can be reimagined and reconfigured, helping to construct a shared infrastructure for the exercise of collective agency in response to disadvantage sustained by law.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
94.(Neesser, 2015)	<ul style="list-style-type: none"> • Paper • Airbnb (Rental Space) • Effects on hotel business in Nordic countries 	<ul style="list-style-type: none"> • Empirical study • Quasi-experimental counterfactual analysis of the impact of Airbnb on the hotel industry in Nordic countries 	<p>The paper measures the impact of Airbnb on hotel revenues in Norway, Finland, and Sweden using a difference-in-differences strategy with many time periods and different level of treatment. The data are used to differentiate among Airbnb listings and to identify which type of hotel costumers Airbnb is more likely to attract. The main findings are that: a) Airbnb does not significantly affect hotel's revenue per available room in average; b) it contributes to a reduction in the average price of a room where Airbnb entered the most; c) it is relatively more attractive for foreigners than locals.</p>
95.(O'Regan, 2009)	<ul style="list-style-type: none"> • Book chapter • NFP (CouchSurfing) • Social capital and trust 	<ul style="list-style-type: none"> • Review essay • Secondary sources and theoretical/conceptual analysis 	<p>The author argues that social networking has been wrongly criticized for the decline of social trust, social capital, privacy, autonomy and even community; he contends that individuals working with one another via social networks are a growing force in our economy and society, as they create and manage ties once bounded and maintained by door-to-door and place-to-place relationships.</p>
96.(OECD, 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Labour issues 	<ul style="list-style-type: none"> • Conceptual essay as background paper prepared for the workshop held in June 2015 on new forms of work in the sharing economy • Secondary sources 	<p>It distinguishes three types: P2P selling, P2P sharing, and Crowdsourcing. The effects of these activities on working arrangements and their implications for workers are still poorly understood. Firms can increasingly source inputs of different types all along the value chain.</p>

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
97.(Oei & Ring, 2015)	<ul style="list-style-type: none"> • Paper • Essay on Regulation • Sharing Economy in general • Taxation 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	The authors argue that, the application of substantive tax law to sharing is clear, because current law generally contains the concepts and categories necessary to tax sharing. However, tax enforcement and compliance may present challenges, as a result of two distinctive features of sharing. First, some sharing businesses opportunistically pick the more favourable regulatory interpretation if there is ambiguity regarding which rule applies or whether a rule applies. Second, the "microbusiness" nature of sharing raises unique compliance and enforcement concerns.
98.(Ozanne & Ozanne, 2011)	<ul style="list-style-type: none"> • Journal Article • NFP (ecovillage, online exchange, time bank) • Social capital, reciprocity 	<ul style="list-style-type: none"> • Empirical study • Qualitative case studies of a community time bank, an online goods exchange community, and one ecovillage 	While traditionally relational and reciprocal exchange is highly valued, the weak ties of non-reciprocal exchange allow the communities to tap into the significant distributed expertise.
99.(Ozanne & Ballantine, 2010)	<ul style="list-style-type: none"> • Journal Article • NFP (Toy sharing off and online) • Motivation to participate 	<ul style="list-style-type: none"> • Empirical study • Survey of 397 toy library members 	The study reveals four groups - Socialites, Market Avoiders, Quiet Anti-Consumers and Passive Members. The Socialites enjoy the social benefits of active participation in their library. The Market Avoiders also perceived social and community benefits, are interested in sharing and are the least materialistic of the groups. The Quiet Anti-Consumers feel a sense of belonging to their toy library and hold strong anti-consumption, frugality and sharing values. The Passive Members are not socially involved, nor did they hold strong anti-consumption values.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
100.(Parigi & State, 2014)	<ul style="list-style-type: none"> • Book chapter • NFP (CouchSurfing) • Social capital, strength of ties 	<ul style="list-style-type: none"> • Empirical study • Quantitative network analysis of 2 millions ties among CouchSurfing members between 2003 and 2010 complemented with qualitative ethnographic work 	The accumulation of ratings about users (whether guests or hosts) had a double-edged effect on the emergence of trust and relationships: it made relationships easier to establish initially but it also weakened them after a certain threshold. That is, technology facilitated the emergence of interpersonal trust among CouchSurfers, but it also made establishing strong ties harder as users acquired more and more reviews. This case illustrates a process of disenchantment created by technology, where technology increases the ease with which friendships are formed and, at the same time, diminishes the bonding power of these experiences.
101.(Parigi, et al., 2013)	<ul style="list-style-type: none"> • Journal Article • NFP (CouchSurfing) • Social capital, friendship impact on participation 	<ul style="list-style-type: none"> • Empirical study • Quantitative network analysis of CouchSurfing data from 2003 till 2010 (random sample of 10,000 American users was created and analysed) 	The study tests two alternative hypothesis about individuals' participation in associations: a) participation as by-product of existing friendship; b) participation driven by the association's capacity to form new identities. The authors report significant impact of new friendship ties on participation, compared to a negligible impact of pre-existing friends, defined here as ties to other members formed outside of the organisation's context.
102.(Piscicelli <i>et al.</i> , 2015)	<ul style="list-style-type: none"> • Journal Article • Recirculation of goods • Motivation, values, acceptance 	<ul style="list-style-type: none"> • Empirical study • Mixed qualitative and quantitative study (in depth interviews and survey among users of Ecomodo, a UK-based online marketplace where people can lend and borrow each other's objects, spaces and skills) 	This paper investigates how consumers' values can influence the acceptance, adoption, and diffusion of collaborative consumption. It concludes with a discussion of the role of values in relation to the introduction and scaling up of Product Service Systems (PSSs) that enable collaborative consumption

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
103.(Pfeffer-Gillett, 2016)	<ul style="list-style-type: none"> • Journal article • Uber and Lyft (ride sharing) • Liability issues (US cases) 	<ul style="list-style-type: none"> • Legal essay • Secondary sources 	This essay focuses on the grey area of ride sharing concerning for consumers whether injured parties can recover from the platforms operators rather than their drivers alone. The author argues that platforms operators such as Uber and Lyft should be liable for acts of their drivers, and based this claim on the the non-delegable duty rule. This is a new approach yet to be used by plaintiffs in existing cases.
104.(Probst, et al., 2015a)	<ul style="list-style-type: none"> • Report • Collaborative production business models • Trends, impacts, drivers and barriers 	<ul style="list-style-type: none"> • Policy Report commissioned by European Commission • Secondary sources and interviews 	The report defines the collaborative production business model, analyses trends, and identifies drivers and obstacles, and presents policy recommendations The key recommendations are to: support the provision of common physical infrastructures; promote the platforms marketplace; introduce regulatory frameworks to democratising and scaling up the makers collaboration and also to create flexible labour contracts; Assure quality of products and services through government, community and industry standards
105.(Probst, et al., 2015b)	<ul style="list-style-type: none"> • Report • Crowdsolving business models • Trends, impacts, drivers and barriers 	<ul style="list-style-type: none"> • Policy Report commissioned by European Commission • Secondary sources and interviews 	The report defines the crowdsolving business model, analyses trends, and identifies drivers and obstacles, and presents policy recommendations. The key recommendations are to: support marketing efforts; have governments as first buyer and door opener; raise awareness and educate on Intellectual Property and Taxation issues

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
106.(Probst, et al., 2015c)	<ul style="list-style-type: none"> • Report • Freemium business models • Trends, impacts, drivers and barriers 	<ul style="list-style-type: none"> • Policy Report commissioned by European Commission • Secondary sources and interviews 	The key recommendations are to: support in early stages to help companies grow their user base; create community for Freemium companies; devise proper safeguard to protect consumers' from in app purchase abuse.
107.(Ranchordas, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Regulation of Innovation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	Regulation and policy review of challenges faced by regulators in dealing with the emergent disputes on ' <i>sharing economy</i> ', frames as regulating innovation. Challenging questions included: should the regulation of these platforms be designed to pursue same goals as the regulatory regime of established businesses? How can regulation be technology neutral as to avoid steady need of catching up with innovations. The solution to these problems requires analysing two fields of study, both of which seem to be at an embryonic stage in legal literature: the study of ' <i>sharing economy</i> ' practices and the relationship between innovation and law in this area.
108.(Rauch & Schleicher, 2015)	<ul style="list-style-type: none"> • Paper • Sharing Economy in general • Local government 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	Regulation and policy review considering in particular local government options in dealing with the ' <i>sharing economy</i> '. The authors argue that the local governments will adopt some combination of the following policies in addition to insisting on consumer/incumbent protections: (1) subsidize sharing firms to encourage expansion of services that produce public goods, generate substantial consumer surplus and/or minimize the need for excessive regulation of the property market; (2) harness sharing firms as a tool for redistribution; and/or (3) contract with sharing firms to provide traditional local government services.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
109.(Richardson, 2015)	<ul style="list-style-type: none"> • Journal article • Sharing economy in general • Rhetoric and discourse 	<ul style="list-style-type: none"> • Empirical analysis • Participant observation at sharing economy festival and discourse analysis of online platform material 	<p>According to the author the discourses and actual practices of the sharing economy have the potential to both shake up and further entrench 'business-as-usual'. The sharing economy does simultaneously two contrasting things: a) it presents a narrative of more socially connect and less isolated activities; but b) it also masks new forms of inequality and polarisations. The author, however, concludes that the sharing economy should be used as an opportunity to use the 'digital' transformations of economy as a source of change</p>
110.(Rogers, 2015)	<ul style="list-style-type: none"> • Journal article • Uber (ride services) • Social cost 	<ul style="list-style-type: none"> • Regulatory and economic analysis • Secondary sources and statistics 	<p>The essay argues that Uber is not simply the result of regulatory arbitrage but originates in its creation of more efficient market. On the other hand, it also contends that Uber success is both a source of optimism and pessimism: a) compilation of data on passenger and driver behaviour can enable Uber and regulators to ensure safety and root out discrimination against passengers with relative ease; but b) longer-term impact on labour standards is quite unclear and may cause the worsening of future of low-wage work more generally.</p>
111.(Sablik, 2014)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Benefits and costs 	<ul style="list-style-type: none"> • Critical review essay • Secondary sources 	<p>Critical review essay that contrasts potential economic benefits against risks for consumer safety and potential for consumers' detriments. The author concludes by observing that even the most enthusiast supporters of the sharing economy do not claim that it should be unaccountable. Rather they urge regulators to allow firms to experiment and seek solutions to problems after they arise.</p>

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
112.(Santi, et al., 2014)	<ul style="list-style-type: none"> • Journal Article • Car pooling • Shareability network (impacts) 	<ul style="list-style-type: none"> • Modelling simulation • Dataset of millions of taxi trips taken in New York City calibrated into a modelling simulation 	A modelling simulation is developed to estimate collective benefits of sharing as a function of passenger inconvenience, and to efficiently compute optimal sharing strategies using a massive dataset. The simulation shows that carpooling can cut cumulative trip length by 40% or more. This benefit could come with reductions in service cost, emissions, and with split fares
113.(Schaefers, 2013)	<ul style="list-style-type: none"> • Journal Article • Car sharing • Motivation 	<ul style="list-style-type: none"> • Empirical study • Laddering interviews with 14 users of a US car sharing service 	The underlying hierarchical motive structure is uncovered and four motivational patterns are identified: value-seeking, convenience, lifestyle, and environmental motives.
114.(Schneiderman, 2014)	<ul style="list-style-type: none"> • Report • Airbnb in NYC (space rental) • Legal essay 	<ul style="list-style-type: none"> • Official report of NYC State Attorney • Based on very extensive statistics, including data from the platform 	The main findings reported are the following: a) revenues for Airbnb New York City exceeded \$282 mn; b) 72% of units used as private short- term rentals on Airbnb violated city laws; c) 94% of Airbnb hosts offered at most two unique units during the Review Period. But the remaining 6% of hosts dominated the platform offering hundreds of unique units, accepting 36% of private short-term bookings, and receiving \$168 million, 37% of all host revenue. The report refers to these hosts as "Commercial Users; d) Private short-term rentals displaced Long-Term Housing in thousands of apartments; e) Numerous short-term rental units appeared to serve as illegal hostels;
115.(Schor, 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Various topics (typology, impacts, conflicts) 	<ul style="list-style-type: none"> • Review essay • Secondary sources 	The review shows a polarisation of opinions and analyses. As an alternative the author envisages the possibility that sharing entities become part of a larger movement that seeks to redistribute wealth and foster participation, ecological protection, and social connection.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
116. (Schor & Fitzmaurice, 2015)	<ul style="list-style-type: none"> • Book chapter • Sharing Economy in general • Various topics (typology, motivation, impacts, conflicts) 	<ul style="list-style-type: none"> • Review essay • Secondary sources 	The authors suggest that participation in the ' <i>sharing economy</i> ' is motivated by economic and ecological concerns, as well as a desire to increase social connections. But they question how effective the ' <i>sharing economy</i> ' has been in meeting these goals. They underscore the importance of digital technologies, facilitating the emergence of "circuits of commerce," in overcoming the trust and reputational barriers that once restricted sharing to kin and community.
117.(Schor, et al., 2014)	<ul style="list-style-type: none"> • Paper • NFP Sharing • Class and other forms of inequality 	<ul style="list-style-type: none"> • Empirical study • Qualitative empirical fieldwork conducted at four NFP sharing platforms 	The authors find considerable evidence of distinguishing practices and the deployment of cultural capital. This exercise of class power in turn undermines the ability to forge relations of exchange and the volume of trades. This results in an inconsistency between actual practice and the ' <i>sharing economy</i> ' widely articulated goals of openness and even equality, which they call the "paradox of openness and distinction."
118. (Seyedabrishami, et al., 2012)	<ul style="list-style-type: none"> • Journal Article • Car pooling • Fuel consumption reduction 	<ul style="list-style-type: none"> • Modelling simulation • Data from stated preferences survey used in a simulation model 	The results show that; under certain assumptions, carpooling would increase by 30% and this increase will reduce annual fuel consumption about 240 million litres.
119. (Shaheen & Bansal, 2015)	<ul style="list-style-type: none"> • Journal Article • Car Sharing (S. Francisco) • Perception by users 	<ul style="list-style-type: none"> • Empirical study • Verbal intercept survey with 300 respondents 	The authors find that there was generally low awareness about P2P carsharing, even in the San Francisco Bay Area where many shared-use services exist. It also shows that people who drive more are less likely to be drawn to P2P carsharing, while people who use public transit more are more likely to consider using it.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
120.(Shaheen, <i>et al.</i> , 2012)	<ul style="list-style-type: none"> • Journal Article • Car sharing • Motivations, drivers, barriers, trends 	<ul style="list-style-type: none"> • Empirical study • 34 expert interviews 	Personal vehicle sharing could impact the transportation sector by increasing availability and interconnectivity among modes and providing greater alternatives to vehicle ownership in more geographic locations.
121.(Shaughnessy, 2014)	<ul style="list-style-type: none"> • Paper • Airbnb and Uber • Two-sided markets 	<ul style="list-style-type: none"> • Conceptual essay; • Secondary sources 	The essay discusses different platforms business models (focusing on Uber and Airbnb) and their degree of two-sidedness and the importance for them of network effects. The author contends that not all platforms are two-sided markets and network effects are not a necessary condition in all platforms. Uber and Airbnb qualify as two-sided markets but their network effects are of medium importance and much less important than for credit cards and operating systems.
122.(Stokes <i>et al.</i> , 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Miscellaneous 	<ul style="list-style-type: none"> • Policy analysis by NESTA • Secondary sources 	According to this report the most obvious question for policymakers is how to manage any direct collaborative economy risks. Providing effective oversight that encourages positive innovation, whilst managing public concerns and potential risks, can be remarkably difficult.
123.(Sundararajan, 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Benefits/regulation 	<ul style="list-style-type: none"> • Written testimony for the hearing titled, The Power of Connection: Peer-to-Peer Businesses, held by the Committee on Small Business of the United States House of Representatives, January 15th, 2014 	The author affirms that peer-to-peer business enabled by digital platforms will constitute a significant segment of the economy in the future with likely positive impact on economic growth and welfare, by stimulating new consumption, raising productivity, and catalysing individual innovation and entrepreneurship. The current regulatory infrastructure can impede the growth of these businesses, because of misalignment between new business models/roles and older guidelines developed to mitigate safety concerns and

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
			economic externalities for the existing ways of providing the same or similar services.
124.(Sunil & Noah, 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Regulation of innovation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	The report explores why the ' <i>sharing economy</i> ' is such a puzzle for governments. It assesses what's new and what's not about these marketplaces. Specific recommendations for policymakers grappling with the challenges and opportunities posed by the ' <i>sharing economy</i> ' are proposed, including establishing a strategic operating framework, re-aligning political and cultural incentives, modernizing government structures and adopting smarter regulatory responses
125.(Thierer, et al., 2015)	<ul style="list-style-type: none"> • Paper • Sharing Economy in general • Reputation systems as self-regulation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources and classical economics hypotheses 	The authors argue that the Internet, the ' <i>sharing economy</i> ', and reputational Feedback Mechanisms solve the classical "Lemons Problem". They also discuss how these new realities affect public policy and conclude that asymmetric information is not a legitimate rationale for policy intervention in light of technological changes
126.(van de Glind, 2013)	<ul style="list-style-type: none"> • Master Thesis • Sharing Economy in general in Amsterdam • Motivations 	<ul style="list-style-type: none"> • Empirical study • Mixed methods by first conducting 27 in depth interviews with users of three Dutch platforms and then a quantitative survey with 1330 citizens of Amsterdam 	The findings show that users started participating in platforms for the extrinsic motives of practical need, financial gains and receiving praise. The main intrinsic motives are social, for example 'meeting people' or 'helping out,' or have an environmental character, for example contributing to a healthy environment. Besides motivational factors, networks, (social) media and recommendation prove to be explanatory factors for the willingness to take part.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
127.(Wallsten, 2015)	<ul style="list-style-type: none"> • Paper • Uber (ride services) • Impacts (competitive pressure on taxi industry) 	<ul style="list-style-type: none"> • Empirical study • Quantitative analysis of: a) Google trends of Uber popularity in NYC and Chicago (proxy measures of market penetration); and b) official statistics about consumers' complaints on taxi in NYC and Chicago (proxy measure of taxi service quality) 	Controlling for underlying trends and weather conditions that might affect taxi service, the author concludes that Uber increasing popularity is associated with a decline in consumer complaints per trip about taxis. The author concludes that competitive pressure from Uber is forcing taxi drivers to provide better services
128.(Walker, 2015)	<ul style="list-style-type: none"> • Journal Article • Sharing economy in general • Rhetoric to cover exploitative practices 	<ul style="list-style-type: none"> • Normative/prescriptive essay (critical) • Secondary sources 	The author argues that the rhetoric of sharing is a smoke-screen hiding exploitative practices. Highly profitable companies like Airbnb and Uber are grouped alongside voluntary gift-giving exchanges like Freecycle or CouchSurfing.
129.(Weber, 2014)	<ul style="list-style-type: none"> • Journal Article • Theoretical essay • Space rental • Insurance 	<ul style="list-style-type: none"> • Theoretical essay • Agency theory 	The paper argues that an intermediary can eliminate the moral hazard problem by providing optimal insurance to the lender and first-best incentives to the renter to exert care.
130.(WEF, 2013)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Contribution to circular economy 	<ul style="list-style-type: none"> • Prescriptive/foresight essay • Secondary sources and statistics 	According to this report, the adoption of sharing economy principles, systems and drivers has the potential to reshape business models and create valuable opportunities for companies – large and small, start-up and established – who can understand and harness the advantages available.
131.(WEF, 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Contribution to circular economy 	<ul style="list-style-type: none"> • Prescriptive/foresight essay • Secondary sources and statistics 	According to this report, accelerating the scale-up of the circular economy (of which the sharing economy is a component) promises to deliver substantial macro-economic benefits.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
132.(Widener, 2015)	<ul style="list-style-type: none"> • Paper • Space rental • Regulating shared spaces 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	<p>According to the author, as the sharing economy grows it will increase traffic trips, overtaxed curb side parking spaces, additional ambient noise, and stress upon electric and other utility grids tapped by sharing enterprises. Since these neighbourhood burdens are not addressed in the form of sales taxes or license fees directly returned to host enclaves, many of these burdens are borne largely by dwellers. Hence, the paper proposes a form of spatial zoning regulation of district with heavy sharing activities.</p>
133.(Willer et al., 2012)	<ul style="list-style-type: none"> • Journal Article • NFP (reuse of goods) • Social exchange, solidarity 	<ul style="list-style-type: none"> • Theoretical essay • Secondary sources 	<p>The authors argue that benefits received through exchange foster group identification and solidarity but that this effect is stronger in generalised exchange systems—in which giving and receiving of resources occurs unilaterally among three or more individuals—than direct exchange systems—which feature reciprocal transfers of resources between two people.</p>
134.(Wittel, 2011)	<ul style="list-style-type: none"> • Journal Article • Sharing Economy in general • Social capital 	<ul style="list-style-type: none"> • Theoretical essay • Secondary sources 	<p>The hypothesis developed by the author is that different forms of sharing have different qualities with respect to social capital. Whereas sharing in the pre-digital age was meant to produce social exchange, sharing in the digital age is about social exchange on the one hand and about distribution and dissemination on the other hand. What makes sharing with digital media so hard to understand is exactly this blurring of two rather different purposes.</p>

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
135.(Woskow, 2014)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • UK policy approach 	<ul style="list-style-type: none"> • Advocacy report • Secondary sources and anecdotal evidence 	The report affirms that there has been tremendous growth in the ' <i>sharing economy</i> ' in recent years, and that this is set to continue. The author argues that this is a huge opportunity for the UK where ambition should be to be the world's leading ' <i>sharing economy</i> '.
136.(Yannopoulou, 2013)	<ul style="list-style-type: none"> • Journal Article • Airbnb, CouchSurfing • Brand and Identity construction, indirectly motivation 	<ul style="list-style-type: none"> • Empirical study • Discourse analysis of the material available in the two platforms. 	The paper examines the brand identity construction of user-generated brands (UGBs), using discursive and visual analysis of UGBs' social media material in an attempt to contribute to a better understanding of this relatively new branding phenomenon. The findings are that the main themes include: the access to the private sphere, the human dimension and meaningful inter-personal discourses, and authenticity.
137.(Zekanovic-Korona & Grzunov, 2014)	<ul style="list-style-type: none"> • Paper • Airbnb in Croatia (space rental) • Adoption/motivation 	<ul style="list-style-type: none"> • Empirical study • A convenience online survey posted on the Facebook page of Airbnb in Croatia to explore the drivers of adoption and main motivations 	The main findings are the users were mostly in the middle range income and with high level of technological readiness, and motivated mostly by practical needs and benefits
138.(Zervas, et al., 2014)	<ul style="list-style-type: none"> • Paper • Airbnb (space rental) • Impact on hotel industry in Austin, Texas 	<ul style="list-style-type: none"> • Empirical study • Quasi-experimental counterfactual analysis of the impact of Airbnb on the hotel industry in Texas 	Using data both from Airbnb and from the hotel industry in Austin the authors adopt a Difference in Difference identification strategy exploiting that exploits the significant spatiotemporal variation in the patterns of Airbnb adoption across city-level markets. The authors find that that in Austin, where Airbnb supply is highest, the impact on hotel revenue is roughly 8-10%. They find that Airbnb impact is non-uniformly distributed, with lower-priced hotels, and hotels not catering to business travel being the most affected segments.

Source	Source type/Domain/ topic	Contribution type / method & source	Main points/findings
139.(Zervas, et al., 2015)	<ul style="list-style-type: none"> • Journal Article • Airbnb (space rental) • Reputational ratings 	<ul style="list-style-type: none"> • Empirical study • Quantitative analysis of 600.000 rating collected from Airbnb contrasted with the ratings of approximately half a million hotels worldwide collected on TripAdvisor. 	<p>The authors find that nearly 95% of Airbnb properties boast an average user-generated rating of either 4.5 or 5 stars (the maximum); virtually none have less than a 3.5 star rating. This is much higher of the 3.8 average rating found for hotels in TripAdvisor. This is to be considered as a first step is a first step towards understanding and interpreting nuances of user-generated ratings in the context of the '<i>sharing economy</i>'</p>
140.(Zrenner, 2015)	<ul style="list-style-type: none"> • Report • Sharing Economy in general • Ethical aspects of sharing economy regulation 	<ul style="list-style-type: none"> • Regulatory essay • Secondary sources 	<p>Main issues discussed include: competition, consumer protection, taxes, and legality of practices.</p>

6.3.3 Selective review of 'sharing' platforms

A short illustration on how the platforms reviewed were identified and on what information was retrieved is in order, for it may shape the design of future research activities.

The platforms were selected following dimensional (i.e. platforms with larger users base) and convenience criteria (visibility and availability of information during the first round of analysis of media accounts), which led to include in the first round almost only platforms that were launched in the USA (many of which, however, already have a global or at least international reach); in a subsequent update a few more European platforms were included (in this case relaxing the dimensional criterion, for very few European platforms have reached the scale of those launched in the U.S.A.), but obviously a more extended and systematic search will be needed in the future to have a better picture (even if not representative) of the situation in the EU28 Member States.

Platforms' websites and blogs were analysed in depth to gain information on key metrics (number of users, volume of transactions, self-reported impacts), on the key features of the business model (i.e., revenue streams, pricing strategy, ratings, vetting, liability, insurance, etc.), as well as to consider the terminology and rhetoric in their self-description. In addition, information on platforms was obtained from the various newspaper and magazine articles reviewed, from some of the reports and journal articles, and from specific industry sources such as for instance: a) the blog of a key industry analyst quoted in countless newspapers articles (Owyang, 2015a, 2015b, 2015c, 2015d); b) a market report on the 17 most valued '*sharing economy*' companies (VB Profiles & Crowd Companies, 2015); and c) the repository of information, company data, and market trends available at <http://www.vbprofiles.com> (accessible for free upon registration)^{vi}. As anticipated, the empirical analysis of platforms has informed various parts of this essay and in the following table only schematic and synthetic information is presented. The following acronyms (reported in alphabetic order) are used in the table:

B2C= business-to-consumer

B2B= business-to-business

G2G= government-to-government

OLM= online labour markets

MLM= mobile labour markets

NFP= Not For Profit

P2P= peer-to-peer

P2B= peer-to-business

Please note that, except for those indicated with the acronym NFP, all other platforms are for profit.

Table 6: Reviewed platforms

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Adtriboo (http://www.adtriboo.com/en/)	P2B OLM/ micro-tasking	Spain/ Spain and Latin America	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 135,000 registered 'contractors'.
Airbnb www.airbnb.com	P2P space sharing (home/room rental)	US/ Global	Transaction fee	Residential space renting platform matching hosts and guests; as of February 2016 the platform reports: presence in 34,000 cities (covering more than 190 countries, 2 million listings, and more than 60 million guests 'hosted'. Private Company valued at between \$ 10 billion and employees category: 2.500-5000 (Source: VB Profiles).
Amazon Mechanical Turk https://www.mturk.com/mturk/welcome	P2B OLM/ micro-tasking	US/ International	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 500,000 registered 'contractors'.
Bag Borrow or Steal www.bagborrowsteal.com	P2P Loaner goods	US/Global	Subscription	Platform for borrowing, buying, and selling of fashion items. Employees category: 25-50 (Source: VB Profiles).
BlaBlaCar www.blablacar.com	P2P Ride sharing	France/ Growing in Europe & worldwide (22 countries)	Transaction fee	BlaBlaCar is a ride-sharing platform enabling drivers with empty seats and paying passengers to share distance travel costs; as of February the platform reports: 25 million members and 10 million travellers per quarter; In April 2015 it acquired the German platform Carpooling.com. Private Company valued at: \$ 1.6 billion; employees category: 250-500 (Source: VB Profiles).
Care.com www.care.com	Mobile unskilled home & personal services	US/ International	Transaction fee	Platform matching families and care givers. As of end of 2015 the platform reports: 17.6 million members (10 million families and 7.6 million care givers) in 16 countries (half a million employees of corporate clients use the services). Public company traded at NYSE with market cap of \$ 160 million (in 2014 it was valued at \$ 500 million); about 600 employees.

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Car2Go www.car2go.com	B2P Car sharing (rental)	Germany/ Growing in Europe & North American	Traditional rental business	car2go offers transportation on demand using "by-the-minute" rates. Present in 29 European and North American cities. It reports having 1,000,000 members. Employees category: 100-250 (Source: VB Profiles).
Carpooling www.carpooling.com	P2P Ride sharing	Germany/ Global	Transaction fee	Ride sharing network present in 40 countries used by 1.4 million people every month. Acquired BlaBlaCar in April 2015. Employees category: 25-50 (Source: VB Profiles).
Cargomatic www.cargomatic.com	B2B Truck sharing (delivery)	US/US	Transaction fee	Platform matching shippers with carriers having unutilised capacity on their trucks. Raised \$ 10.6 million in venture capital; Employees category: 25-50 (Source: VB Profiles).
ClassPass www.classpass.com	B2B gym sharing (subscription)	2012 US/US	Subscription fee	ClassPass matches users with gyms around the country, so that one can access a workout also when travelling. Raised \$ 54 million in venture capital; employees category: 100-250 (Source: VB Profiles).
Clickworker https://www.clickworker.com/	P2B OLM/ micro-tasking	Germany / International	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 700,000 registered 'contractors'.
Cohealo www.cohealo.com	B2B Equipment sharing (rental)	US/US	Service Fee	Platforms match hospitals with other hospitals or different departments within a single hospital to share underused equipment. Raised \$ 13.3 million in venture capital; employees category: 25-50 (Source: VB Profiles).
CouchSurfing www.couchsurfing.org	NFP P2P space sharing	US/Global	Advertising and charges for its verification system	CouchSurfing has 10 million members in more than 200,000 cities. It was totally not for profit until 2010; since 2010 it became a for profit business in the form of a Benefit Corporation (i.e. having a special focus in producing benefits for the communities). Raised \$ 22.6 million in venture capital; employees category: 25-50 (Source: VB Profiles).
Crowdfunder http://www.crowdfunder.com/	P2B OLM/ micro-tasking	US / International	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 5, million registered 'contractors'.

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Crowdgure.de http://www.crowdguru.de/en/start/	P2B OLM/ micro-tasking	Germany / Germany	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 30,000 registered 'contractors'.
Crowdsource http://www.crowdsource.com/	P2B OLM/ micro-tasking	US / International	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 8 million registered 'contractors'.
EasyCar Club https://carclub.easycar.com/	P2P Car sharing (rental)	UK/UK (National mkt.)	administration charge (only charged to car owners)	Platform whereby individuals can let their car and/or van. Car owners currently earn about £3,500 per year for each car listed.
EatWith www.eatwith.com	P2P Food sharing	2012 US/US plus Spain, Israel (Localised: S. Francisco, Barcelona, Tel-Aviv)	Transaction Fee	Platform matching hosts who share their home and cooking skills with guests willing to have 'authentic' homecooked meals; hosts may or may not charge guests for the meals; Raised \$ 8 million in venture capital; employees category: 25-50 (Source: VB Profiles).
Etsy www.etsy.com/	P2P and P2B Bespoke goods	US/Global	A fee of 3.5% of sale value; a listing fee of 20 Cents per item	Etsy, Inc. is a benefit corporation operating a platform for buying and selling handmade and/or vintage products and supplies. The platform self-reports: 32 million items for sale, 1.4 million active sellers and 20.8 million active buyers. Public Company (NYSE) valued \$ 708 million; Employees category: 1000-2500 (Source: VB Profiles).
9Flats http://www.9flats.com/	P2P space sharing (home/room rental)	Germany/International	Transaction fee	Residential space renting platform matching hosts and guests. Allegedly the leader in Europe after Airbnb with 100,000 listings globally (Employees category: 25-50 (Source: VB Profiles).
Favour https://favordelivery.com/	P2P Mobile unskilled home and personal services	US and Canada (18 cities)	Transaction Fee	Platform for delivery of anything within one hour by a fleet of 3,500 part-time 'runners'; it has 80 employees

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Fieldagent https://fieldagent.net/	P2B unskilled business services	US/ International	Transaction Fee	Platform connecting 800,000 'agents' with retailers in need of market research and audit services.
Freecycle www.freecycle.org	P2P NFP goods exchange	US/Global	Not applicable	Platform connecting 9 million members lending or borrowing (giving or receiving) stuff as to reuse and reduce waste.
Freelancer www.freelancer.com/	P2B OLM / macro-tasking	Australia/Global	Transaction fee	Online labour market for macro-tasking (website development, logo design, marketing, copywriting, astrophysics, aerospace engineering) matching employers and on demand workers; about 18 million registered 'contractors'. Public company (ASX) valued at AUD 700 million; about 500 employees
Funding Circle www.fundingcircle.com	P2P money lending	UK/ UK &US	Success and servicing fees	Platform connecting SMEs with potential lenders/investors. Private Company valued at \$ 1 billion; Employees category: 100-250 (Source: VB Profiles).
Gigwalk http://www.gigwalk.com/	P2B mobile unskilled business services	US/US	Transaction fee	Platform matching leading brand and retailer to about 400,000 'Gigwalkers' who since 2011 have performed 4 million 'gigs' (mystery shopping, store audits, field data collection, including photographic work and interviews) across US cities. Private Company raised \$ 18 million in venture capital funds; Employees category: 25-50 (Source: VB Profiles).
GoMore www.gomore.dk	P2P car pooling	Denmark/Denmark, Norway, Sweden, Spain	Transaction fee	Peer-to-peer carpooling platform with 170,000 members
Grownies www.grownies.com	P2P marketplace	2010 Spain/Spain	Subscription	Peer-to-peer marketplace for goods and clothes for children aged 0 to 8. Spanish only platform (available only in Castellan and Catalan).
Handy (US) www.handy.com	P2P mobile unskilled home and personal services	US/US (28 cities)	Transaction Fee	Handy is a platform matching individuals looking for household services (house cleaning, but also handyman services) with 5,000 'contractors'. According to platform self-report data the wage is between \$15 and \$22 per hour, averaging around \$18 per hour; it has reached presence. Private company raised \$ 62.5 million in venture capital; Employees category: 100-250 (Source: VB Profiles).
HomeAway www.homeaway.com	P2P space sharing (vacation home rental)	US/Global	Transaction fee and/or subscription	Residential space renting platform matching hosts and guests with coverage of 190 countries Public Company (Nasdaq) valued at \$ 3.4 billion with about 1600 employees.
Home Exchange www.homeexchange.com	P2P NFP good exchanges	Spain/Global	Subscription	Platform for home swapping boasting 65,000 homes in 150 countries.

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
HourlyNerd https://hourlynerd.com/	P2B OLM/macro-tasking	US/ International	Transaction fee	Marketplace that connects MBAs (both current students and alumni; currently 17,000 registered) with businesses seeking help on projects in Marketing, Finance, Strategy, Operations, Business Planning, Presentation Creation and more. Private company raised \$ 13 million in venture capital (Source: VB Profiles)
Hub Culture https://hubculture.com	P2P collaborative production	2002 UK/Global	Subscription and services fee	Collaborative production platform connecting 25,000 Urban professionals through Pavilions (common work spaces), Knowledge brokerage (exchange of services), and VEN (global digital currency).
Jepti www.jepti.dk	P2P goods sharing (rental)	Denmark/Denmark	Transaction Fee	Platform for renting of underused durable goods. It has 10 employees.
IndieGogo www.indiegogo.com	P2P crowdfunding	US/Global	Transaction fee	Platform matching individuals with projects (creative, entrepreneurial, or related to a cause) with all sorts of funders. Private company raised \$ 56.5 million in venture capital; employees category: 100-250 (Source: VB Profiles).
Instacart www.instacart.com/	P2P mobile unskilled home and personal services	US/ US	Delivery fee; Subscription for Instacart express	Platform for same-day delivery of food local grocery stores done with 7,000 independent contractors. Private Company valued at \$ 2 billion; employees category: 250-500 (Source: VB Profiles).
Lending Club http://lendingclub.com	P2P money lending	US/US	Success and servicing fee	Platform connecting borrowers (individual and/or SMEs) with potential lenders. Public Company valued at \$ 2.5 billion (NYSE). 1,000 employees.
Leftoverswap (US) http://leftoverswap.com/	P2P NFP food sharing	US/ US (Localised in a few cities)	Not applicable	Leftoverswap is a mobile app that enables its users to offer their leftovers to locals in their community, allegedly reducing waste, enabling local eating, and building relationships within the community.
Lingjob	P2B OLM/micro-tasking	Lithuania/Lithuania	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 3,000 registered 'contractors'.
Luxe Valet http://www.luxevalet.com/	P2P mobile unskilled home and personal service	US / Only present 9 cities	\$ 5 per hour	Platform matching 'valets' (independent contractors) with individuals in need to drop their car and having it returned anywhere in a city. Platform rents its own parking space. Average Luxe hourly pay is approximately \$15.92 per hour

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Lyft (US) www.lyft.com/	P2P ride services	US/ US (Localised in 65 US cities)	Transaction Fee	Platforms matching individuals needing a ride services with drivers; 60,000 registered drivers (independent contractors). Private Company valued at \$ 2.5 billion; Employees category: 1000-2500 (Source: VB Profiles).
Kickstarter www.kickstarter.com	P2P crowdfunding	US/Global	Transaction Fee	Platform matching individuals with projects (creative, entrepreneurial, or related to a cause) with all sorts of funders. Raised \$ 10 million in venture capital (Source: VB Profiles)
MinbilDinbi https://minbildinbil.dk	P2P car sharing (rental)	Denmark/Denmark	Transaction Fee	Peer-to-peer car-sharing platform
Mi Trastero www.mitrastero.org	P2P market place	Spain/Spain	Transaction fee	Platform for sale of second-hand goods
MuniRent (US) www.munirent.co/	G2G equipment sharing (rental)	US/US	Transaction fee	The platform allows municipalities to share under-utilised heavy-duty equipment (excavators, vector trucks, street sweepers, bucket trucks and aerial lifts)
Neighborgoods neighborgoods.net/	P2P NFP goods exchange	US/US	Not applicable	Community platform where people can save money and resources by sharing stuff with their neighbours. Tools, toys, bicycles, etc. can be shared.
Oltretata www.oltretata.it	P2P mobile unskilled home and personal services	Italy/Italy	Subscription	Platforms connecting families with nannies and baby-sitters
Parkinghood www.parkinghood.com	P2P space sharing (parking space rental)	Spain/ Spain	Transaction fee	Platform for the renting of private parking space.
Postmates	P2P mobile unskilled home and personal services	US/US	Service fee	Same day delivery (anything delivery) platform with 400,000 contractors working as couriers. Private company raised \$ 138 million in venture capital; employee category: 250-500 (Source: VB Profiles)
Prosper www.prosper.com/	FP/asset utilisation/ money (lending)/ P2P	US/US	Transaction and service fee	Consumer credit platform connecting borrowers and lenders Over the past six years, more than \$2.5 billion in personal loans have originated through the Prosper platform. Private Company valued at \$ 1.7 billion (Source: VB Profiles)

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Peerby www.peerby.com	NFP P2P goods sharing (borrowing)	NL/NL	Not applicable	Peerby is a small Dutch company supporting people to borrow from each other avoiding unnecessary consumption
Relay Rides www.relayrides.com/	P2P Car sharing (rental)	US/US	Transaction fee	Platform of car sharing (rental) available in 2100+ cities and 300+ airports throughout the United States.
Sailsquare www.sailsquare.com	P2P sail sharing	Italy/International	Transaction fee	Sailsquare connects people who have a sailboat with people who want to have an experience at the sea. Through a "peer-to-peer" platform, users can join boating trips that are directly offered by private boat owners
Sfinz http://www.sfinz.com/	P2P MLM/ generic services	Italy / Italy	Transaction fee	Labour market for generic services connecting contractors to consumers in need of most disparate type of services (Italian version of TaskRabbit, see <i>infra</i>).
Shared Desk www.sharedesk.net/	P2P space sharing (office space rental)	US/International	Service fee	Platform connecting mobile professionals with productive work and meeting spaces enabling collaborative work and production; 4,500 venues in 440 cities across 70 countries.
Sharemystorage www.sharemystorage.com/	P2P space sharing (storage space rental)	US/international	Transaction fee	Platform connecting those who have spare space and those who need spare space for storage.
Shareyourmeal www.shareyourmeal.net/	NFP P2P food sharing	NL/NL	Not applicable	Shareyourmeal.net makes possible to someone to share his/her cooking with people in the neighbourhood. It has already shared more than 120,000 meals
Sidecar www.sidecar.com	P2P ride services	US/US	Transaction Fee	Platforms matching individual needing a ride services with drivers; 6,000 registered drivers (independent contractors)
Smart Host www.smarthost.me/	B2P home rental optimisation services	US/US	Service fee	Platform targeting hosts (i.e., of Airbnb and similar) with services to optimise property rentals. Intelligent algorithm analyses one's listing and the surrounding marketplace to determine an optimal price.
SherpaShare www.sherpashare.com/	B2P home rental drivers optimisation services	US/US	Service fee	Platform targeting independent contractors track their earnings, expenses, taxes and working opportunities in one single cloud. SherpaShare is integrated with Uber, Lyft, Sidecar, Postmates, and other popular on demand services.

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Shyp https://www.shyp.com/	P2P mobile unskilled home and personal services	US/US	Service fee	Same day package delivery platform with contractors that since 2015 have been reclassified as employees.
Swapstyle.com www.swapstyle.com/	P2P NFP goods exchange	US/International	Not applicable	SwapStyle is the world's longest standing FREE online fashion swap marketplace. Women from all around the world use SwapStyle to swap clothes online and save \$\$\$ in the process; 55,000 participants and more than 4 million completed trades
TaskRabbit www.taskrabbit.com	P2P MLM / generic services	US/ International	Transaction Fee	Labour market for generic services with 30,000 registered 'taskers' (i.e. contractors) providing any kind of services consumers (posters). The five largest categories between 2009 and mid 2014 were shopping and delivery (24%), moving help (12%), cleaning (9%), home repairs (6%), and furniture assembly (4%).
Time Bank ww.timebanks.org/	P2P NFP service exchanges	US/International	Not applicable	Platform for giving and receiving services networks and strong communities exchanging time on equal basis. One hour helping another earns one Time Bank Hour (also called time credits). The platform works with Time Banks leaders across the US and internationally to strengthen and rebuild community, and use Time Banks to achieve wide-ranging goals such as social justice, bridges between diverse communities, and local ecological sustainability.
Trademe www.trademe.co.nz/	P2P marketplace	New Zealand / International	Transaction fee plus advertising	Online marketplace and classified advertising platform spanning auctions and fixed price sales for new and used goods. Private Company currently valued at \$ 1.4 billion (Source: VB Profiles)
Topdesigner.cz	P2B OLM/micro-tasking	Czech/Czech	Transaction fee	Online labour market for micro-tasking (objects classification, tagging, transcriptions, marketing spam, data entry, content review, editing, website feedback, and many more) matching employers and on demand workers; about 3,900 registered 'contractors'.
TransferWise (UK) www.transferwise.com	P2P money transfer	UK/ Global	Transaction fee	Money transfer platform whose pricing and operating model are a substantial departure from standard practice in the money transfer sector; it provides customers with a lower-cost alternative to traditional means of moving money internationally. Private Company currently valued at \$ 1 billion (Source: VB Profiles)

Name/ url	Type	Origin/coverage	Main revenue stream	Description plus metrics (where available)
Uber www.uber.com/	P2P ride services	US/International	Transaction fee	Platforms matching individuals needing a ride services with drivers; 160,000 registered drivers (independent contractors). Coverage: 230 Cities in 58 countries. Estimates of revenues in 2014 between 1.5 and 2 billion \$. Private Company currently valued at \$ 41.2 billion (Austin et al 2015)
Upwork (www.upwork.com)	OLM/macro-tasking	US/ Global	Transaction fee	Online labour market for macro-tasking (software development, engineering and data science, creative services such as graphic design and writing, business and administrative activities such as clerical and secretarial work) matching employers and on demand workers; about 10 million registered 'contractors'. Private company currently valued at about \$ 500 ; about 300 employees
Wegolook (Wegolook)	P2P mobile unskilled business services	US / US, Australia, Canada, UK	Transaction fee	Platform connecting 20,000 'inspectors' with businesses in various sectors (i.e. onsite verifications and inspection services for buyers of online and distant items such as automobiles, real estate, and high value goods in need field inspections).

Notes

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- i Time banks are initiatives that emerged in the 1980s and 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).
- ii Additional indications of this type include, for instance, the fact that Zipcar, one of the 'sharing economy' first movers, was bought already in 2013 by Avis for the astronomical amount of \$ 500 million (Geron, 2013). As reported by Belk (2014b, pp. 1597-1598), the popularity of car sharing has triggered action also by automobile manufacturers which now offer their own programmes (i.e. Daimler Benz's: Car2Go; BMW's DriveNow; Volkswagon's Quicar; and Peugeot's Mu) or acquire start-ups like in the case of General Motors the acquisition of Relay Rides. Etsy, a marketplace facilitating contact to make and/or sell/buy bespoke goods, has 1.4 million active sellers and 20.8 million Active buyer (Etsy, 2013) and is currently valued at 2.7 \$ billion (Owyang, 2015c; VB Profiles & Crowd Companies, 2015). Allegedly, users of service exchange platform TaskRabbit can make up to 7,000 \$ per month by running errands, assembling Ikea furniture, and performing many other kinds of activities (Brown, 2015; Zimmermann, 2015).
- iii 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
- iv Reported, for instance, in the overview on competition law and the sharing economy published by the blog 'Out-Law.com' (<http://www.out-law.com/en/articles/2015/april/the-role-of-competition-law-in-innovation-markets/> .Retrieved 15-05-2016).
- v See, for instance, the speech "The Digital Single Market, consumers and EU competition policy", delivered on September 21 2015 during the Competition and Consumer Day, Luxembourg Presidency event. (http://ec.europa.eu/competition/speeches/text/sp2016_01_en.pdf, retrieved 10-05-2016)
- vi The reference is to the following text "*Those who have handled sciences have been either men of experiment or men of dogmas. The men of experiment are like the ant, they only collect and use, the reasoners resemble spiders, who make cobwebs out of their own substance. But the bee takes a middle course: it gathers its material from the flowers of the garden and of the field, but transforms and digests it by a power of its own.*" Bacon, *First Book of Aphorisms* (1620).
- vii A-critical empiricism is vulnerable to the idea that truth is never prior to all interpretation. This is exactly the corrosive critique that pragmatism has mounted on logical positivism as best presented in Quine's famous essay 'Two Dogmas of Empiricism' (Quine, 1951). To describe what we experience we must apply concepts and concepts are never merely dictated by phenomena, since they are involved in classifying the phenomena themselves. The pragmatist critique departs from the self-evident observation that the mind is always active in deciding what counts as knowledge.
- viii The expression 'empirical idealism' is a variation on the 'practical idealism' that has been deemed as the approach inspiring the entire work of Albert Hirschman (Adelman, 2013). Idealism should be intended only as to convey the fact that ideas are given an autonomous and essential explanatory role. Because humans behave essentially as the bees in Bacon's quotation, this means that they do not filter experience through concepts and values but they also can be distinguished from other living beings (according to the hermeneutic tradition) because their actions have meaning (in the double sense that actions have meaning both from inside and from outside); they are informed by ideas and 'theories' that humans hold about the nature of things. The meaning and objectives of many actions depends on the model of the social world that is in the actors' heads. More often than not the ideas and theory used in everyday practices are filtrated and informed by the social sciences themselves. Or better there is an interaction between common sense, media accounts, and the social science.

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- ix In the past five years criticisms in the media have shattered the scientific enterprise (Glenn Begley, 2013); *Nature* published a piece containing 20 tips for politicians to interpret scientific claim where the key message is that uncertainty and measurement errors are always present in any scientific work (Sutherland *et al.*, 2013). There are doubts that science can inform policy as in the classical linear model of the relations between evidence and policy (Pielke, 2007, pp. 12-14); accordingly, the idea of 'speaking truth to power' (Wildavsky, 1979) by way of scientific advice to politicians and policy makers is under serious reconsideration.
- x Situations when facts are uncertain, values disputed, stakes high, and decisions urgent would require, according to the epistemology developed within the field of Science and Technology Studies (STS) a quarter of a century ago, a 'post-normal science' approach. It has been introduced and further developed in various works of Functowicz and Ravetz (Funtowicz & Ravetz, 1990, 1991, 1993, 2008; Ravetz, 1990). Useful systematic reviews of the application of this and of other critical approaches to the relation between science and policy can be found in Carrozza (2015) and in Hessels & van Lente (2008).
- xi Often there are attempts to turn all policy-making into technical exercises that obviate the need for political debate in what has been called technocracy or scientisation (Jasanoff, 1990; Ravetz, 1990; Sarewitz, 2000, 2004). Under conditions of uncertainty, a detached 'pure science' approach is nothing more than 'stealth issue advocacy' (Pielke, 2007, chapter 5).
- xii A partial modelling simulation has been disseminated and trumpeted in the press under the headline 'Sharing Economy benefits lower income groups' (Bradshaw, 2015).
- xiii For instance: Peers (US based, funded by big commercial platforms); OuisShare (based in Paris, mostly a European network of advocates); Sharable (US based, advocacy and knowledge sharing NGO); Collaborative Consumption (Australia, advocacy group chaired by Rachel Botsman).
- xiv For instance, the paper by Hall & Krueger (2015) was included because it is the only source based on internal administrative data from Uber; although it was obviously not conducted by a disinterested third party given that one of the author is an employee of the platform. Other exceptions include a number of reports from free-market think tanks that were included to illustrate one particular view on the issue of regulation and self-regulation.
- xv The '*sharing economy*' is preferred to the expression 'collaborative economy', currently prevailing in the European Commission vocabulary, since it is used in most of the reviewed source.
- xvi In written comment sent to a public consultation launched in the US by the Federal Trade Commission Relay Rides makes a clear case for distinguishing its business model – defined as a person-to-person car-sharing platform, connecting car owners who rent out their idle vehicles to travellers – from ride services business models such as Uber or Lyft. On this basis, the platform asked policy makers not to take a 'one size fits all' approach to regulation. The comment can be retrieved at: https://www.ftc.gov/system/files/documents/public_comments/2015/07/02031-96671.pdf. The various differences in business models in the broadly defined transportation sector are summarised in Evidence Box 5.
- xvii In a written evidence Airbnb presented to the UK House of Lords inquiry into the Commission DSM strategy it explicitly stated that given the diversity of business models 'An effective single regulatory framework suited for such varied models would be impossible to conceive there are significant differences that require bespoke approaches' (House of Lords, 2016, p. 25). This aspect was reiterated in public oral auditions by Patrick Robinson, Head of Public Policy Europe and Canada, Airbnb, and Mark McGann, Head of Public Policy EMEA, Uber (House of Lords, 2016, pp. 37-50).
- xviii Typologies are conceptual and mainly used in the social sciences, whereas taxonomies are empirically grounded, hierarchical, and most commonly used in the natural sciences. In reality, however, the two can be re-compacted (a typology can be applied to empirical reality or can be derived inductively from data via cluster analysis) and the two terms are often used interchangeably. Moreover, though only conceptually and *ex ante*, typologies can also include within each type a hierarchical order of super and sub-types. Probably the most distinguishing element between typologies and taxonomies is in that the former uses monothetic classes derived from discrete/nominal dimensions/variables and the latter instead uses polythetic classes derived from continuous dimensions/variables. Monothetic classes contain cases that

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- must be identical on all the dimensions used for the classification. Polythetic classes contain groups of cases aggregated by the overall greatest similarity. To put it differently monothetic classes must include cases to have a set of properties that are both necessary and sufficient. A polythetic class A instead is one where cases share as much as possible although they are not entirely identical: a) in a given class defined by X properties each case possesses a large number of such properties; b) each properties in the class is possessed by a large number of cases; but c) none of the properties defining A is possessed by all cases in aggregate (that is in all the other classes of the classification), otherwise such property would no longer be defining. On the process of classifying in the social sciences and on the difference between typologies and taxonomies see for instance Bailey (1994).
- xix Classifying together similar cases allows to focus the analysis on them and not lose time on very different cases of no interest, or alternatively to differentiate between different cases so as to treat them separately in the analysis instead of leaving them mixed together
- xx Intensional definitions are clear-cut in that they establish the necessary and sufficient conditions for a 'thing' being a member of a specific set. The advantage of intensional definitions is that they automatically produce mono-dimensional classifications. The disadvantage is that empirical reality is always more complex and nuanced than an intensional definition could capture; using the intensional approach may entail excluding items from a specific set of 'things' in ways that may appear artificial or arbitrary, especially when this contrasts with how players self-define themselves or are defined by others in practice. Ostensive definitions more pragmatically denote just a few key features and complement them with exemplifications. The advantages are that they are more inclusive (reducing hard clear-cut choices and exclusions) and fairly easy to be produced. The clear disadvantage is that, if they are too loose and encompassing, they become trivial with limited descriptive power and do not reduce complexity as they group together entities that are similar with regard to very few characteristics (possible not the most relevant ones) and very dissimilar with regard to a much larger number of relevant ones.
- xxi There are some more intensional definitions, but they either exclude many platforms counterintuitively with respect to common practices or are used inconsistently. Belk's definition of 'true sharing' (2014b) is admittedly more precise but excludes all commercial platforms. Definitions focussing on access exclude many commercial platforms where there is a definitive transfer of ownership (i.e. Etsy, eBay, etc.). Definitions focussing on the peer-to-peer (P2P) or consumer-to-consumer (C2C) connotation also have some inconsistencies and difficulties. First, they are used to indicate platforms such as oDesk or Freelancers where single individuals offer their work to firms and obviously these relations are not peer-to-peer (possibly they can be described as P2B). Second, C2C definitions exclude well-known platforms that are Business-to-Consumers (B2C). Third C2C and P2P are not necessarily the same thing: in many cases, one side is a consumer and the other a provider (i.e. TaskRabbit). Obviously, there are other more encompassing definitions that capture all the platforms. However, these greatly expand the boundaries of the definition, almost to the point where it becomes difficult to argue why other well-known digital platforms are not included under the label of the '*sharing economy*'. The object-based categorisations (see Section 6.2.2 in the Technical Annex) group together very different platforms that only have a minimum common denominator and differ in many important respects. One example will suffice here. Exchanging under-utilised medical equipment (i.e. Cohealo) and under-utilised living space (i.e. Airbnb) are similar activities with respect to the criteria of 'increased asset utilisation' but are very dissimilar in very crucial respects. They differ with regard to the type of players involved, the regulatory and policy implications and the relevant jurisdiction, the extent to which incumbent industries are disrupted or damaged, the risks and liabilities involved, and much more. The same reasoning applies to other sector-based categorisations (see Section 6.2.3 in the Technical Annex). In all definitions and categorisations, radically different activities can be found in terms of both the modality (P2P, P2B, C2C, B2C, B2B, G2G) and the substantive kind of economic function addressed. The broad categorisations are obfuscated by, for instance, the narrative of 'underutilised assets.' They make no effort to clearly distinguish what these assets are (i.e. there is an evident difference between real estate or money and free time as assets). In the same way, the original idea of true sharing leads to talk of

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- 'exchange of services' when in many cases the platforms included in this category are simply for profit markets where skilled or unskilled work is sold and bought.
- xxii Lamberton & Rose (2012), using the principle of public economics, propose an interesting typology with rivalry (rival and non-rival goods) and exclusivity (high and low level of exclusivity) as dimensions. Yet, within each of four quadrants identified platforms are grouped together that have very different regulatory and policy implications. The typology presented by Cohen & Muñoz (2015) is interesting but too specific to distinguish the contribution of different activities to sustainable production and consumption within cities. Schor (2014) typology used two dimensions – profit orientation (NFP versus commercial platforms) and type of interaction (P2P vs B2P) – and identify four types used as a good starting point in the process followed in this essay to arrive at the proposed typology; it fails, however, to consider other interaction modalities (i.e. P2B as in digital labour platforms).
- xxiii Local level exchange of services for money (i.e. TaskRabbit) and similar but not-for-profit activities (i.e. Time Banking) have little in common in terms of policy implications (the former has pressing implications for labour regulation, the latter may be of interest for social innovation and inclusion policies).
- xxiv Some have a users' base of a few hundreds or thousands of individuals and others of millions of people. In terms of dimensional relevance, for instance, makers' spaces and collaborative production platforms are currently much smaller than transactional (i.e. Airbnb) and labour (i.e. Upwork or Freelancers) platforms; the latter are a more immediate sources of regulatory concerns, whereas innovation policy support measures may enable the former to scale up.
- xxv The modalities of the exchange are different as some of the largest platforms (i.e. Airbnb) are pure P2P (where peer stands for a physical person as opposed to juridical persons), others are P2P (i.e. where individuals provide work to businesses as in Upwork or Freelancers), still others are B2C (i.e. Zipcar), G2G (i.e., MuniRent) or B2B (i.e., Cohealo). B2C platforms, no matter how innovative their business model (i.e. Zipcar), are fully regulated by existing legislation; the modality of exchanges and the players involved have different implications with respect to taxation concerns, which are obviously more important both in terms of what rules to apply and how to enforce them when platforms enable monetary exchanges between peers (i.e. taxation is an issue for Airbnb but a non-issue for Zipcar).
- xxvi Hospitals renting under-utilised medical equipment from each other (i.e. Cohealo) or municipalities renting under-utilised heavy duty equipment from each other (i.e. MuniRent), as compared to renting under-utilised living space (i.e. Airbnb), have in common again a trivial characteristic but differ widely with respect to the kind of players involved, the regulatory and policy implications, the relevant jurisdiction, the extent to which incumbent industries are disrupted or damaged, the risks and liabilities involved, etc. The former types are small and have a great prospective potential from the perspective of policies in support of healthcare and public sector innovation, whereas the latter is big and raises short term regulatory concerns (i.e. taxation, consumer protection and liability).
- xxvii For instance, ride services (i.e., Uber), as compared to ride sharing (i.e., BlaBlaCar) and car sharing (i.e., RelayRides), differ in several ways: a) ride services are labour intensive, car and ride sharing are not; b) ride services raise issue of market access (i.e. licensing) and provoked strong protests from incumbents, car and ride sharing don't; c) car and ride sharing create much less problems for what concerns liability and insurance. All of these transportation-centred services have obviously different implications compared to space rental, or re-sale of goods. Digital labour platforms in turn present their own peculiarities.
- xxviii In Quadrant (2) rental of spaces and cars or ride sharing correspond to the provision of services entailing mobility and encounters that are not contemplated in the exchange of goods (i.e. safety is not a concern for goods exchange). In Quadrant (3), TaskRabbit is a mobile labour market that matches individuals with free time to run errands and all kinds of generic services that consumers request, whereas Uber or Lyft provide only ride services, and other platforms send contractors to do home services or make deliveries. In Quadrant (3), there is a clear difference between platforms sending contractors into the field to do inspections and other activities that require mobility and other platforms working as labour markets for the remote delivery of digitalised and routinised micro-task. Furthermore, regardless of the difference between skilled and unskilled work placing them in (4) or (1), platforms

such as Mechanical Turks or Upwork are both online labour markets where the entire process (job posting, bidding, matching, and delivery) is accomplished digitally with no requirement for mobility or face-to-face interaction. They differ from mobile labour markets such as TaskRabbit where the process is also almost entirely digitalised except the fact that the final delivery of work requires mobility and face-to-face interaction. As a matter of fact, the typology entails a third dimension distinguishing online from mobile labour markets and service delivery.

xxix This estimate by PwC has been spun around in the last two years and reified as a true 'quantification'. Few of those citing this estimate bothered, as the authors of this essay did, to dig into how these figures were constructed to discover they are based on a shaky methodology and a controversial inclusion of sectors and players, such as for instance Netflix and Spotify. Netflix and Spotify are resellers and have nothing in common with platforms such as Airbnb or Uber classically typifying the 'collaborative' or *'sharing economy'*.

xxx Among the sources reviewed formally only one article, based on a Delphi study involving 25 experts, was entirely focussed on drivers (Barnes & Mattsson, 2015); the most cited driver for the sharing economy was the need to save in the context of the crisis (followed by technology, and socio-cultural changes), whereas environmental drivers did not emerge as very important. It is worth noting that also critical observers argue that the fact that the crisis started in 2007 and continued for the next eight years is among the key drivers for the current sharing economy boom (see for instance an academic (Schor, 2014) and a media (Roose, 2014) discussion of this kind of explanation). On the other hand, references to drivers were found in various other sources. Cohen & Muñoz (2015), for instance, stressed the combination of increased urbanisation and the need for new forms of Sustainable Production and Consumption (SCP). Indeed, in 2008 for the first time in history more people were living in cities than in rural areas and by 2030 5 billion people will live in urban areas (Dobbs et al., 2012; Dobbs et al., 2011; UNDESA, 2014); this puts great pressure on mobility and logistics (i.e. with clear implications for ride sharing, space sharing, etc.) and creates a further push to increase access to shareable assets and to go toward circular and shared modes of both consumption and production (WEF, 2014). The importance of technology is found in most sources, and two in particular stress the advances made in the capacity to create digital matching markets and harness trust among strangers (Edelman & Geradin, 2015; Horton & Zeckhauser, 2016). Technological innovation and adoption has several economic, social, and cultural impacts. Access to technology increases the possibility and empowerment for both access-based consumption and for collaborative production; it also allegedly has a further impact on social capital and trust. For instance, whereas digital natives seem to trust people less (Pew, 2014), when they have used social networking sites they become three times more likely to think that most people are trustworthy and this also applies to other population groups (Hampton et al., 2011). It is further argued that connected consumers are much more likely to trust strangers online and, as they will become the overwhelming majority of the population, this ensures that the sharing economy would further develop and consolidate (Vaughan & Hawksworth, 2014). At the socio-cultural level, various consumption theorists see the irreversible advent of the switching from ownership to access as consumers are becoming more comfortable with this practice and with sourcing trust through peer-review systems (Baumeister & Wangenheim 2014); this trend is allegedly reinforced by surveys cited in various policy reports (Barbezieux & Herody, 2016; EESC, 2014; Observatorio Cetelem, 2013; PIPAME, 2015) conducted in various European countries suggesting that consumers are increasingly in favour of access over ownership. In addition, according to the more optimistic and utopian analysts there is an increasing desire for community (Gansky, 2010: p. 50) and for richer small world experiences (Owyang, 2013, p. 5). These socio-cultural changes apparently interact with other behavioural and economic aspects. In France, for instance, it has been estimated that potentially shareable goods account for about 25% of expenditure and for about one third of household waste (Demailly & Novel, 2014); alternatively it has been calculated that on average each French family holds 70 unused object and this makes a potential recirculation market worth € 12 billion (PIPAME, 2015, p. 27). Imbalances among different parts of the global economy have created and will continue to create accumulation of cheap imports in wealthy nations, that is seen as one of the drivers for the uptake of platforms enabling the recirculation of goods (Schor 2004; Schor & Fitzmaurice 2015).

Developments at socio-cultural and socio-economic level are in clear relation with the environmental pressures that allegedly will make the transition from consumption to access irreversible (Vaughan & Hawksworth, 2014; WEF, 2014).

xxxii The roots of social utopianism for the '*sharing economy*' are to be found in the narratives about crowdsourcing and the 'commons' that chronologically preceded the 'sharing' boom. The optimism on crowdsourcing originated with the popularisation by Howe (2006, 2008) of the 'wisdom of crowds' narrative (Surowiecki, 2004). A well-known narrative on creativity of the commons concerns collaboration among large number of individuals effectively cooperating and coordinating for the provision of information, knowledge, and cultural goods without having to rely on market mechanisms or managerial hierarchies (Benkler, 2004, 2006). In this optimistic vein one can also find the democratising effect of the 'long tail' (Anderson, 2006), the generosity stemming from 'cognitive surplus' (Shirky, 2010), the celebration of crowdsourcing as a model for problem solving (Brabham, 2013; Brabham, 2008; Gehl, 2011), the philosophical praise of its virtues (Benkler & Nissenbaum, 2006), and the promise of increased efficiency (Chandler & Kapelner, 2013; Djelassi & Decoopman, 2013; Satzger et al., 2013). Moving to narratives more directly related to the sharing movement, they can be summarised as promising triple benefits including greener commerce, greater profits, and rich social experiences (community revival and strengthening of social capital). It was predicted, for instance, that the 'hyper-consuming' 20th century would be followed by a new 21st century where community, reputation, sharing, collaborative and access-based consumption would rise in prominence (Leadbeater, 2009). The interest in sharing was interpreted as a new positive socially oriented reaction neoliberal blind faith in the power of economic self-interest (Grassmuck, 2012). The emerging sharing platforms led to affirm that social networking, which was criticised as causing the decline of social capital and community, was instead the source of new forms of socially oriented collaboration bridging digital boundaries once considered as sealed (O'Regan, 2009). Digital sharing was seen as producing both social exchanges and distribution and dissemination (Wittel, 2011). Anthropological and neuroscience contributions are cited in several of the reviewed contributions to argue that sharing is an evolutionary and cultural traits of human beings (Agyeman, *et al.*, 2013). Two cited sources are based on experiments supposedly showing that sharing, fairness expectations, and altruistic behaviours are embedded in human nature (Schmidt & Sommerville, 2011; Tomasello & Warneken, 2008). The increasing attention given to the sharing economy was also see as a potential for bringing together social and academic practices interested in reframing economic activities toward transformative social innovations (Heinrichs, 2013). Even among essays focussing on regulation one can find optimistic views on how to enlist the '*sharing economy*' for the provision of local public services (Rauch & Schleicher, 2015). These authors envisage that, as sharing economy firms move from being start-ups to become important and permanent players in key urban industries (transportation, hospitality and dining), local and state governments can adopt a strategy to make platforms contribute to the provision of local public services by: (1) subsidising sharing firms to encourage expansion of services that produce public goods, generate substantial consumer surplus and/or minimise the need for excessive regulation of the property market; (2) harnessing sharing firms as a tool for redistribution; and/or (3) contracting with sharing firms to provide traditional government services. Morgan & Kuch, (2015) combining the analysis of legal consciousness, the law, and diverse forms of economic activities conceive non-commercial platforms as the locus of radical transactionalism, where legal building blocks of property and capital can be reimagined and reconfigured, helping to construct a shared infrastructure for the exercise of collective agency in response to disadvantage sustained by law.

xxxii A number of sources present a sort of business-driven optimism (Guttentag, 2013; Heimans & Timms, 2014; Matzler & Kathan, 2015; WEF, 2013, 2014; Woskowsky, 2014). Management gurus (Heimans & Timms, 2014), for instance, propose a normative loaded and speculative distinction between '*new power*' (sharing economy, but also grass-roots political movements) and '*old power*' (big corporations, but also established political parties) where: a) New power is about radical transparency, openness and collaboration, wisdom of crowds, do-it-yourself; and b) old power is about bureaucracy, institutionalisation, managerialism, professionalism, etc. According to a WEF report on the circular economy '*The sharing economy is driven by three*

primary benefits: economic—more efficient and resilient use of financial resources; environmental—more efficient and sustainable use of resources; and communal—deeper social connections among people. All of these are enabled and scaled by technology platforms. All of these systems are enabled by four key principles: trust between strangers, belief in the effective management of common resources, the existence of idle capacity and the build-up of a critical mass of users, customers, consumers, producers and/or members' (2014, p. 24).

- xxxiii Neo-liberal and libertarian economists present the usual narrative on free market and no regulation (Allen & Berg, 2014; Cohen & Sundararajan, 2015; Koopman, *et al.*, 2014, 2015; Sundararajan, 2014; Thierer, *et al.*, 2015). They expect the 'sharing' platforms to: a) increase economic activities and productivity through better use of underutilised assets or 'dead capital', and through lowering transaction costs that expand of trade; b) increase social utility and consumer welfare as a result of more competition; c) create new jobs; d) reduce information asymmetry between consumers and producers thanks to reputational ratings; e) create new markets through disruptive innovations and spur in turn further innovation among incumbent industries; f) produce a new cohort of entrepreneurs if the micro-entrepreneurs who provide services in the platforms acquire the experience and skills to progress and launch their own ventures. Importantly, they argue that no regulation is needed and especially that legislation should not force platforms to hire independent contractors as employees.
- xxxiv Very critical and pessimistic observers have defined crowd employment platforms as the new sweatshops (Uddin, 2012; Zittrain, 2009), and analysed them as new forms of encroachment and exploitation of labour (Carr, 2008; Deuze, 2007), underpaid free work (Kleemann *et al.*, 2008; Scholz, 2013), and of new digitally enabled surveillance (Aneesh, 2009); the debate includes some contributions clearly inspired by the application of Marxian perspectives (Fuchs, 2014; Scholz, 2013). Others see the '*sharing economy*' as a source of social degradation and inequality, and as a rhetorical weapon harnessed for lobbying purpose to enlist the positive view of the sharing movement and mask exploitative activities (Caldararo, 2014; Kuttner, 2013; Lee, 2015; Walker, 2015). Kuttner argued that practices such as those emerging in the sharing economy add to the erosion of the labour contract and to the increase of what economists call 'contingent labour' (2013).
- xxxv A "B Corp is to business what Fair Trade certification is to coffee or USDA Organic certification is to milk; (<https://www.bcorporation.net/what-are-b-corps>, accessed 8-6-2015).
- xxxvi 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*).
- xxxvii Sperling uses objective administrative data from Airbnb on hosting of individuals own house such as average days hosted per year and average earning per host per year, but it is not clear how he attributes this income entirely to middle class since hosts do not provide socio-demographic information to Airbnb.
- xxxviii From this entry in the blog summarising the overall results one can then proceed to access the city specific reports (Airbnb, 2012, 2013a, 2013b, 2013c, 2013d, 2014a, 2014b, 2015a, 2015b; Uber, 2014, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g).
- xxxix The concept of social capital commands an ever-expanding body of literature that cannot be discussed here. General approaches define social capital in slightly different ways depending on the theoretical perspective (Bourdieu, 1986; Coleman, 1988; Coleman, 1990; Putnam, 1993, 2000). At a very basic level it can be said that the concept entails both normative (norms and values) and instrumental dimensions (networks). At macro level social capital can be equated to civic sense entailing norms, social values, trust, and social network (especially participation in association). At a more micro level social capital can be defined as the ensemble of social networks that can enable individuals to gain access to desired resources and outcomes. Another classic distinction is that between weak and strong ties within the overall social capital of an individual, where the latter are typical of close-knit kin relationships whereas the former should actually be the bread and butter of the function of market economies

and democracy. It is, however, most important for the purposes of this essay to consider a bit further the concept of trust and relate it to social capital, as trust is fundamental for the uptake of any sharing economy platform. Trust is the social glue that enables collaborative consumption marketplaces and the sharing economy to function without friction. Scholars of trust distinguish between generalised and particularised trust (Couch & Jones, 1997; Delhey *et al.*, 2011; Freitag & Traunmüller, 2009; Putnam, 1993, 2000; Stolle, 2002; Yamagishi *et al.*, 1998; Yamagishi & Yamagishi, 1994). Particularised trust, also referred to as 'thick trust' (Putnam 2000), concerns a close network of social proximity (i.e. family and friends). Generalised trust is a more abstract attitude toward other people and expectations about their behaviours. It entails some implicit consideration of risk and uncertainty leading to an 'estimate' of the trustworthiness of others (Coleman 1990). In other words generalised trust can be defined as an attitude entailing reliance on the benevolence of human nature (Couch & Jones, 1997; Yamagishi & Yamagishi 1994) or the attitude to give most people the benefit of the doubt (Putnam, 2000, p. 133). Generalised trust is, thus, a critical element of social capital and the foundation of civic behaviour (Stolle 2002), the basis of reciprocity and social connectedness (Delhey et al. 2011), and as a 'bridging' mechanism linking people to engage with others unlike themselves (Stolle & Hooghe, 2004). Obviously, since for sharing economy platforms to scale up transactions among strangers are crucial, generalised trust as a willingness to rely on 'abstract others' is crucial. As shown later, however, also particularised trust can matter as a result of platforms enabling users to see what their 'friends' do and how they rate their experiences. On the other hand, the optimistic expectations about the sharing economy were that it would increase social capital, both in the forms of trusting others and of participating in 'community'-based activities, and that it would create new meaningful friendships and social experiences.

xi Cultural capital and distinctions are used by the authors in the sense specified by Bourdieu (Bourdieu, 1984, 1986).

xii The practical relevance of the two-sided market literature has mostly to do with competition policy implications (see for instance Evans, 2003; Wright, 2004). Many traditional axioms of economic analysis that inspire competition policy do not hold with two-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). Under clear network externalities the presence of indirect network effects promotes larger and fewer competing platforms. The collection and use of users' data can become a source of scaling up and a barrier to entry in two-sided digital platform markets. On the other hand, heterogeneity (of users and objects traded) and possible congestion and matching inefficiencies may reduce the potential for scaling up to dominant market power. Another important aspect of two-sided platforms is the extent to which both sides are 'single-homing' (using only one platform) or 'multi-homing' (using more platforms). If one side of the platform would under perfect conditions opt for multi-homing (i.e. drivers or other labour services providers to maximise income may want to provide services through several platforms) but the other side is single-homing (because of lock in with one platform), then the multi-homing side is vulnerable to market power exploitation especially if one platform scales to dominance, they may be forced to single-home (King, 2015, p. 735). As put by Armstrong *'platforms have monopoly power over providing access to their single-homing customers for the multi-homing side. This monopoly power naturally leads to high prices being charged to the multi-homing side'* (2004, 669-670).

xiii 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.

xliii See <http://www.euro-freelancers.eu/european-sharing-economy-coalition/>

xliv The reference here is the Max Weber's distinction between 'value-freedom' (Wertfreiheit) and 'value-relevance' (Wertbeziehung) with respect to three phases of

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- research: what we research, how we do it, and how results are interpreted (Weber, 1904).
- xliv If for various reasons the range of choices is fixed and not amenable to any controversy or debate and the policy maker presents the scientific adviser with three very technical policy options then one can still play the role of pure scientist or science arbiter. Under conditions of high uncertainty and low value consensus the 'pure scientist' and 'science arbiter' are pure fiction or end up being used to support a particular position but behind the facade of science (i.e. stealth issue advocacy). Apparently, the pure scientist and science arbiter do not seek to compel a particular decision outcome, but in practice they willingly or unwillingly slip into 'stealth issue advocacy'.
- xlvi 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, and is still the case for some current socially-oriented not-for-profit initiatives).
- xlvi https://www.flickr.com/photos/jeremiah_owyang/15928658251/sizes/o/
- xlviii Near Me is a peer-to-peer commerce solution enabling anyone to build their own customisable sharing economy marketplace.
- xlix It means the opposite of off-the-rack. Bespoke clothing is custom-made clothing. It is not made to measure, as featured by many good clothing vendors. A made-to-measure item is a standard one customised at the factory in certain measurements and details.
- i Kitchensurfing is an online marketplace where one can ask chefs to help (paying for the service) craft, for instance, a dinner menu and take care of everything from start to finish.
- ii Platform connecting friends and acquaintances so that things are shipped and delivered to those who need them by those who are travelling.
- iii Bitcoin is a decentralised electronic cash system that uses peer-to-peer networking, digital signatures and cryptographic proof so as to enable users to conduct irreversible transactions.
- liii Mosaic is platform connecting borrowers seeking to finance their solar energy projects with investors seeking steady returns.
- liv All non-empirical contributions including purely conceptual analysis, conceptual-theoretical ones, review essays, and various normative and prescriptive positive or negative essays; regulatory essay and policy analyses have been considered separately because for their very nature they could not be judged with the same presence/absence of empirical analysis.
- lv Articles in peer-reviewed journals, book chapters, working and conference papers; two exceptions are included among the academic contribution, one thesis reporting interesting data on the Netherlands and one on Nordic countries respectively (van de Glind, 2013 and Neeser, 2015), whereas several Phd. and Master theses found on the relevant topics were not included in the review.
- lvi VB Profiles, a partnership between the Spokeintel Network and VentureBeat, is a totally free source of up-to-date and comprehensive information on industries, industry trends, companies and people. It started with an initial database of over 20,000 entities across multiple industries that has expanded widely through a robust crowd-sourced data gathering model, paired with automatically-updated enterprise-specific news (<https://www.vbprofiles.com/about>). VB profile database contains a vast amount of information about the 'sharing economy' and its segments, which has been used to integrate the review of platforms presented in Table 6 of the Annex. In particular, it produces and updates the 'Collaborative Economy 2.0 Honeycomb' representing a radar view on the various economic areas and sectors where broadly defined 'sharing economy' organisations are entering and expanding.

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