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The Origin of the Sharing Economy Meets the Legacy of Fractional Ownership

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The Origin of the Sharing Economy meets the Legacy of Fractional Ownership*

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Abstract

The sharing economy is changing the consumption and ownership of goods. As consumption becomes more and more characterised by sharing and access-based consumption, ownership is becoming more concentrated. The literature on the sharing economy focuses almost exclusively on shared consumption practices and rather overlooks the question of ownership despite a substantial body of work on forms of shared ownership, that is, fractional ownership. In this paper, I study the extent of the linking between these two streams of work and whether they have a common conceptual base. I analyse the citations networks of these academic literatures, using the Leiden algorithm of community detection and main-path analysis. I find that the sharing economy literature originated in consumer research that debates over sharing as opposed to possession, and in work on transaction costs. I draw on the strand of work on fractional ownership and identify three sharing economy aspects: psychological ownership, anticommons and exclusion of group cooperation. The findings allow a better understanding of the characteristics of the sharing economy and open avenues for future research on fractional ownership models in the sharing economy.

Keywords: Sharing Economy; Fractional Ownership; Leiden Community Detection, Main-Path Analysis, Citation Network

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1 Introduction

In the last ten years, the emergence of a sharing economy has modified the way goods are consumed and owned. The sharing economy is generally understood as all borrowing, lending, renting, sharing, bartering and swapping practices mediated by digital platforms (Botsman & Roger 2010). In practical terms, consumers give temporary access to the goods they own, but which are under-utilised, in exchange for a fee, but involving any transfer of ownership (Belk 2007, Bardhi & Eckhardt 2012, Frenken & Schor 2017). This access-based consumption characterises sharing practices in the sharing economy. The novelty of the sharing economy is the temporary access granted by the owner of the good (the provides) via a digital platform. All the actors involved seem to benefit: consumers pay a low price to gain access to a good that they might not be able to afford to buy on their own, providers generate extra income by selling access to privately owned goods that are being under-utilised, and platforms exploit this new business model. Moreover, the shared consumption reduces idle capacity of goods making their consumption more efficient and sustainable.

The sharing economy promotes collaborative consumption of under-utilised goods that exhibit systematic overcapacity, which allows them to be shared (Benkler 2004, Botsman & Roger 2010, Hamari et al. 2016). Consumers use the same good at different points in time, which is slightly different from the collaborative consumption which was defined as “those events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others” (Felson & Spaeth 1978, p.614). This highlights the importance of joint activities and engagement in collaborative consumption. Consumption in the sharing economy is not collaborative; it does not require engagement in a joint activity. It can be described as pseudo-sharing characterised by short-term rental activity and the absence of a sense of community (Belk 2014b,a, Eckhardt & Bardhi 2015).

Also, ownership of the shared good in the sharing economy is individual, determining polarisation of ownership, accumulation of resources and risk of rising inequalities (Richardson 2015, Slee 2017). Ownership is individual whether the shared good is owned by an individual (i.e., an apartment, a car, a drill) or is a company asset (i.e., a fleet of shared cars or bicycles). For instance, *AirBnB* allows homeowners to share their house with others. Similarly, *Couchsurfing* provides accommodation for travellers in individually owned (or temporally owned) apartments. *BlaBlaCar* allows the driver of a car, who often is the car’s owner, to share the car journey with others while *Uber* drivers use their cars to transport people from one place to another. Companies such as *Zipcar* and *ShareNow* make the fleets of cars they own available to subscribers for short-term usage.

I believe that the absence of cooperation and collaboration in both consumption and ownership in the sharing economy, merits further investigation. The literature on the sharing economy mostly does not discuss the situation where a group of people autonomously organise and coordinate, to share ownership and consumption of a common resource and enjoy the benefit of a collective action (Olson 1965, Hardin 1982). These cases can be described as fractional ownership, such as sharing the ownership of a luxury good, collective ownership and utilisation of land and agricultural infrastructure, cooperatives and employee-owned enterprises, or community ownership in a local energy initiative.

So why are these fractional ownership practices not a part of sharing economy research? Does the sharing economy literature have links to work on fractional ownership? What might we learn from fractional ownership about the origins of the sharing economy? Our understanding of the sharing economy would be increased by a more systematic investigation of fractional ownership and why certain aspects of social coordination and cooperation seem not to typify the sharing

economy.

I address these questions by constructing a citation network drawing on scholarly work on fractional ownership and the sharing economy. Publications are interesting because they link each other via citations. Therefore, analysis of these citations allows the construction of citation network. To analyse these two bodies of work I use bibliometrics techniques. First, I apply the Leiden algorithm for community detection (Traag et al. 2019) to group the publications into scientific community clusters. The links between these communities suggest that fractional ownership and sharing economy have a common conceptual base. Second, I apply Main-Path Analysis (MPA) (Hummon & Dereian 1989) to trace the historical development of these two literatures and identify publications which link fractional ownership and sharing economy.

The strand of work on fractional ownership is a fairly well established body of research related mostly to economics and finance. Work on the sharing economy, which is more recent, draws on several areas, such as consumer research, transport, business and management. I identified three main theoretical aspects of fractional ownership that have contributed to shaping the sharing economy literature: psychological ownership, the tragedy of the anticommons and (negation of) group cooperation. Psychological ownership refers to the exploitation of a temporary feeling of ownership perceived by sharing economy users when accessing and using the shared good for a limited time. The tragedy of the anticommons suggests that individual ownership in the sharing economy endows right of exclusion and exclusive privileged use of the shared goods. The negation of group cooperation refers to the fact that in the sharing economy the benefit of group cooperation to increase access to a good and reduce its cost by cost-sharing is undermined. These aspects add to the narratives related to the sharing economy and how it is portrayed in the literature.

The rest of the paper is organised as follows. Section 2 reviews key aspects of the sharing economy and discusses the concept of ownership in the sharing economy; it touches on fractional ownership and highlights what fractional ownership has in common with the sharing economy. Section 3 describes the five step process involved in constructing the citation networks for the two strands of work: keywords, data collection, exclusion of false positives, data humanisation and inclusion of false negatives. It describes the bibliometrics techniques applied to systematically analyse the citation networks. Section 4 describes the citation network and presents descriptive statistics for these strands of work. It presents the results of the Leiden algorithm and the MPA. The networks are first analysed separately and then in combination in order to identify connections. Section 5 discusses the main findings and section 6 concludes the paper.

2 Literature Review

Key Aspects of the Sharing Economy

Research on the sharing economy has increased since 2010. New types of interaction between consumers and providers and a modified approach to consumption and ownership have promoted interest in the sharing economy. Digital platforms play a critical role in the sharing economy and create business opportunities and space for market interactions between providers and consumers (Matzler et al. 2015, Schor & Fitzmaurice 2015, Puschmann & Alt 2016, Benoit et al. 2017, de Rivera et al. 2017).

On the one side, digital platforms mediate the transactions that allow providers to grant access to consumers, in faster and cheaper ways than in the past. Almost anyone can sell access to the resources he or she owns which are under-utilised. However, these new entrepreneurial activities are challenging the incumbents, for example *Uber* and *Airbnb* have disrupted the taxi and hotel

sectors (Tussyadiah 2016, Tussyadiah & Pesonen 2016, Zervas et al. 2017). On the other side, consumers are becoming more interested in sharing goods, and access to these goods is facilitated by digital platforms. Sharing has become more appealing than in the past (Botsman & Roger 2010, 2011, Bardhi & Eckhardt 2012), particularly among younger people for whom ownership is less important than for older people (Godelnik 2017, Amaro et al. 2019).

The new mode of connection between the contracting parties, based on digital and distant interactions (multi-sided platforms) is, arguably, one of the main reason behind the popularity of the sharing economy. However, these organisational changes are triggering societal tensions (Rauch & Schleicher 2015, Edelman et al. 2017) and questions about workers' right (Morozov 2013, Codagnone, Abadie & Biagi 2016, Newlands et al. 2018) and inequality (Richardson 2015, Schor et al. 2016). For these reasons, policy-makers are making efforts to regulate the sharing economy and to ensure both equal rights and fair market competition (Witt et al. 2015, Codagnone, Biagi & Abadie 2016, Hartl et al. 2016, McKee 2017).

The main characteristic of the sharing economy is that goods are used by more than one person without a change in direct ownership. This has two positive effects. First, on the consumer side, the reduction or elimination of ownership costs allows savings which can be used for other purposes. Collaborative consumption was boosted by the 2008-09 financial and economic crisis, which resulted in many consumers suffering from loss of goods and shortage of resources and this focused attention on how to avoid unnecessary expenses (Rauch & Schleicher 2015, Schor 2016). Sharing has become a viable option to reduce scarcity and increase access to goods, particular to those not affordable to most individually (Lamberton & Rose 2012, Fraiberger & Sundararajan 2015, Hamari et al. 2016). Second, goods are used more efficiently. Shared consumption allows exploitation of idle capacity which may be abundant if the goods are owned and used individually (Frenken & Schor 2017). Advocates of the sharing economy highlight its positive impact on the environment and more sustainable consumption (Heinrichs 2013, Piscicelli et al. 2015, Martin 2016), particularly in relation to the specific case of car sharing and car pooling (Firnborn & Müller 2011, Baptista et al. 2014, Hartl et al. 2020).

However, the individual ownership characterising the sharing economy can be controversial. Richardson (2015) argues that the sharing economy creates new forms of inequality and polarisation of ownership, Schor et al. (2016) argue that class and other forms of inequality operate within this type of economic arrangement, Acquier et al. (2017) suggest that the sharing economy may not deliver on its promise and shows contradictions and Murillo et al. (2017) point to the potential for intensification of the unequal distribution of wealth. Add to these aspects is the higher democratisation of ownership and the governance of the platforms enabling the sharing of goods (Scholz 2016, Schor 2016), and it becomes evident that the sharing economy has not reached its full potential and needs further adjustment to increase social equity and widespread well-being.

Ownership in the Sharing Economy

The rise of the sharing economy has shifted the focus of traditional business models based on individual ownership, to new models of access without ownership (Gansky 2010, Belk 2014b). The post-ownership model of consumption modifies the traditional presupposition that links possession to the extended self (Belk 1988). In the past, ownership has been studied as an important determinant of social status (Furby 1980, Dittmar 1992, Beggan & Brown 1994), and possession the ultimate expression of consumer desire (Chen 2009). From this perspective, ownership is a crucial determinant of individual behaviour and social interactions, particularly for individuals who identify with the owned objects, their value and the socio-economic status they endow (Rudmin 1991, Beggan 1992).

In the sharing economy, ownership is a perceived feeling. Psychological ownership is perceived in relation to both physical goods (Atasoy & Morewedge 2018) and shared experiences (Kovacheva & Lamberton 2018), which latter are extremely relevant in the sharing economy (Paundra et al. 2017, Helm et al. 2019, Lee et al. 2019, Kim & Jin 2020). The temporality aspect of ownership is the main novelty brought by the sharing economy. It not only modifies consumers' behaviour it has also shapes consumers' perception of ownership. The sense of ownership in the sharing economy is mainly an individual feeling, which arises when the user gets access to a good and uses it (i.e. drives a shared car). This is different from the perception of collective psychological ownership, which refers to the collectively held sense (feeling) that this target of ownership (or a piece of that target) is collectively 'ours' (Pierce & Jussila 2010, p.812). The collective feeling of ownership is a psychological construct which leads to co-ownership, since it intensifies cooperation, social relationships and sense of community, despite being driven self-interest (Mitchell et al. 2012).

Sharing ownership of an asset eliminates the need for formal agreements that characterise individual ownership and, which, in the sharing economy, allow an owner to grant access to others. Shared ownership can involve family members, for example, in relation to a sofa, food and domestic equipment that is available to all members of the household and does not involve formal permission being sought for their use (Belk 2007, 2010). The goods are seen as *ours*, they belong to the entire group and can be categorised as *common-pool resources*, since they are non-exclusive, but rival.

In contrast, individual ownership of an object defines full control (Kanngiesser et al. 2010), enabling the right of exclusion and formal permission for its utilisation (Neary et al. 2009). The sharing economy, ultimately, is characterised by individual ownership. Access to goods is granted formally in exchange for money, making the shared goods excludable and rivalrous. Some scholars wrongly associate collaborative consumption of goods in the sharing economy to the case of a common good (Bradley & Pargman 2017, Albergaria & Jabbour 2019). This association does not hold because the sharing economy rarely leads to the social dilemma of the tragedy of commons (Hardin 1968).

Literature on Fractional Ownership

Sharing resources with others is not a completely new model of consumption; it has existed for decades as a way to govern the commons (Bowles 2004, Ostrom 1990, Ostrom et al. 1994). Buchanan (1965) and Lindenberg (1982) suggest that sharing groups are the optimal formation to control and access a club good and to benefit from cost-sharing. For similar reasons, Bardhan (1993a,b, 2000) consider the agricultural infrastructure a common asset that tends to be managed in common by local farmers, Thornton (2009) shows that community-based agriculture secures ownership rights to rural groups and alleviates poverty and Sims & Kienzle (2016) suggest that group ownership can accelerate agricultural production. Fractional ownership is another option to achieve cost-sharing and efficient shared utilisation of luxury goods, such as holiday homes, private jets and yachts (Hastings et al. 2006, Yang et al. 2008, Lawson 2010), whose ownership individually is not affordable for most people.

Fractional ownership favours the formation of local communities to manage social projects, reduces poverty and increases access to critical resources. The US *Community Land Trust* is an alternative land- and home- ownership structure, run by nonprofit communities, aimed at providing affordable housing to people on low incomes (Gray 2008). In 2014, the UK government launched its *Shared Ownership Framework*, to exploit synergies between companies and local communities to allow shared ownership of renewable energy projects (Goedkoop & Devine-Wright 2016), which supports the argument that fractional ownership may be important for the green transition (Hasanov

& Zuidema 2018, Pasimeni 2019). However, there is no consensus in the literature on the benefits of local cooperation (Benkler 2011, Sharzer 2012), and the formation of sharing communities faces coordination problems which do not arise if goods are used and owned individually (Pasimeni & Ciarli 2018).

The sharing economy literature related to shared mobility initially focused on fractional ownership as a sub-model of car-sharing (Shaheen & Cohen 2013, Shaheen & Chan 2016) and then was extended to cases of “true sharing” with specific reference to the case of *Göteborgs Bilkoop* in Sweden, (Belk 2017, Dreyer et al. 2017, Czakó et al. 2019). Bilkoop involves members of a cooperative who own a fleet of cars and share their use and is a good example of fractional ownership: cooperation and coordination permit shared ownership and consumption of shared resources via a community based on long-term relationships and mutual trust (Hofmann et al. 2017, Crucke & Slabbinck 2019). These cases show that there are situations when fractional ownership is a good way to organise communities and to manage ownership and collaborative consumption of shared resources. There is a small strand of work on the sharing economy in relation to fractional ownership, which suggests a common conceptual base.

Common basis between Fractional Ownership and Sharing Economy

Both fractional ownership and the sharing economy focus on shared consumption as a way to increase efficient utilisation of goods and promote sustainable models of consumption. Both enable temporary access to allow consumption, but in the sharing economy this is time limited depending on the access granted and paid for. In the case of fractional ownership, this is time limited only by the fact that the good is shared by a group so its use requires some coordination within the group.

The temporal aspect of consumption generates a perceived feeling of ownership in the case of both fractional ownership and sharing consumption. While in the former it is a collective psychological ownership because it is shared with others, in the latter psychological ownership is individual and, again, lasts for as long as the duration of the access to the good is granted (or paid for). In fact, ownership in the sharing economy ultimately is individual; the good does not belong to the consumers. Ownership in fractional ownership is shared among a group of individuals who organise exactly for that purpose. One of the main differences related to these two modes is that the sharing economy is mediated by a digital platform while in fractional ownership it may not be necessary, but could be used to match consumers potentially interested in fractional ownership (Lowies et al. 2018).

Fractional ownership and sharing economy are separate concepts, but they have many similarities. Therefore, I argue that there is a need to understand why fractional ownership is not more prominent in the sharing economy literature. I believe that a better understanding of fractional ownership would increase our understanding of the origins of the sharing economy. Analysis of these two literature strands should provide evidence of connections between fractional ownership and sharing economy. The academic literatures includes publications which are linked via cross citations, which makes it possible to build a citation network and identify the links between these bodies of work. The next section describes the method of analysis.

3 Method

I describe the procedure followed to build the citation networks for the academic literatures related to fractional ownership (FO) and sharing economy (SE) (section 3.1). This involves five steps which are described below. The first step consisted of identifying keywords needed to find relevant

publications. The second step was data collection. The third step was checking the dataset to exclude publications not related to FO or SE (i.e., false positives). The fourth step involved data harmonisation, to eliminate data inconsistencies. The fifth step extended the dataset by including publications in the search communities of FO and SE not detected using the keyword search in the first step (i.e., including false negatives to ensure high recall).

Having defined the scientific publications dataset, I built the citation networks for the two literatures. In these citation networks, nodes are publications and links represent the directed relationships among them, where one node cites another or, in the opposite direction, a node that is cited by another node. In the network, publications that are cited, but that do not cite are source nodes, while publications that cite, but that are not cited are sink nodes.

At the end of this section, I present the two bibliometric methods (the Leiden community detection algorithm and the MPA) applied to systematically analyse the citation networks (section 3.2).

3.1 Building the Citation Network

Step 1: Keywords

Keywords related to the FO literature were selected to extract publications that study ownership of material goods. Ownership is shared among a group of people, where participants concur via a monetary contribution. To identify this literature, I used various synonyms for the words *Fractional* and *Shared* which were selected and associated to the word *Ownership*. I also used *Employee Ownership* because this refers to employees who contribute to jointly own and manage an organisation. I included *Timeshare* which defines fractional ownership of holiday homes. I excluded from the list of FO keywords, terms related to publications studying shared production of services, software, publications or algorithms that do not refer to shared ownership of material goods. However, if other literatures contributed to FO, the inclusion of false negatives would ensure they were captured and included in the dataset (the fifth step).

For SE, the keywords were selected from those proposed in the literature (WEF 2017, Ertz & Leblanc-Proulx 2018, Görör 2018, Botsman 2019, Curtis & Lehner 2019).¹ To make the SE and FO literatures comparable, the selected keywords were aimed at extracting publications on access to material goods and shared consumption (*Access Economy*, *Access-Based Consumption*, *Collaborative Consumption* and *Collaborative Economy*) and sharing practices mediated by digital platforms (*Gig Economy*, *On-demand Economy*, *Peer Economy*, *Peer-to-Peer Economy* and *Platform Economy*). *Gift Economy* identified publications analysing consumers' attitudes to ownership compared to traditional forms of possession and transfer of ownership. *Car Sharing*, *Ride Sharing* and *Shared Mobility* identified work in the SE literature on shared mobility which considers fractional ownership practices. I did not include keywords related to the digital infrastructure enabling implementation of sharing practices or work that referred only to the act of engaging with others, but not shared consumption.

Table 1 lists keywords chosen to extract publications of the literature on FO and SE.

Step 2: Data Collection

The publications were downloaded from all the databases included in the Web of Science (WoS) core collections, and Scopus, the cross disciplinary database provided by Elsevier Science. WoS and Scopus are not completely overlapping and so widened the spectrum of publications; use of

¹I also thank Prof. Koen Frenken for his suggestions.

FO-keyword		SE-keyword	
Co-Ownership	Employee Ownership	Access Economy	Peer Economy
Collaborative Ownership	Fractional Ownership	Access-Based Consumption	Peer-to-Peer Economy
Collective Ownership	Group Ownership	Car Sharing	Platform Economy
Combined Ownership	Joint Ownership	Collaborative Consumption	Ride Sharing
Common Ownership	Mutual Ownership	Collaborative Economy	Share Economy
Communal Ownership	Shared Ownership	Gift Economy	Shared Economy
Cooperative Ownership	Sharing Ownership	Gig Economy	Shared Mobility
CoOwnership	Timeshare	On-demand Economy	Sharing Economy

Notes: FO and SE keywords searched within article titles, abstracts and keywords. The keyword search was run in Web of Science and Scopus, limiting publications published up to 2019. From the dataset of publications in both literatures, false positives are excluded (precision) and false negative included (recall).

Table 1: Selected keyword for fractional ownership and sharing economy

just one or the other could overlook or exclude relevant papers (Gavel & Iselid 2008, Archambault et al. 2009, Vieira & Gomes 2009, Mongeon & Paul-Hus 2016, Van Eck & Waltman 2017). Publications were downloaded in February 2020, limiting results to publications published up to 2019.

In WoS and Scopus, I ran a multi-keyword query to search on the selected keywords (Table 1) within article titles, abstracts and keywords. Bibliographic information were obtained for all the publications extracted, such as author(s) names, publication year, article title, type of publication, journal title, volume, page, DOI. The identified publications from WoS and Scopus were merged to produce a unique list. I checked for duplicates by matching DOI, then title and eventually the string combining author(s)' name, publication year, volume and page.

Publications extracted through the keyword search are the nodes in the citation networks. These are called Citing Publications (CP) because they refer to previous work, by citing another publication. Backward citations, or Cited References (CR), of CP publications were also downloaded from WoS and Scopus. CR publications are additional nodes introduced in the networks, each one linked to its own CP. A CP node can also be a CR node if it is cited by another CP publication. Also, several CP nodes can cite (i.e., can be linked to) a CR publication.

CP in under the following categories are maintained in the network, being part of the academic literature: journal articles, proceedings or conference papers, book chapters, reviews, editorial materials. Book reviews, meeting abstracts, news items and discussion or correction papers were excluded. From the list of CR publications, I excluded grey literature (i.e. press articles, government or institution documents, policy literature, reports and other documents not part of the academic literature). Books in both CP and CR were retained given their relevance in the academic literature, although it was not possible to extract their citations from either WoS or Scopus. Hence, books in the citation network are source nodes.

Step 3: Precision - Exclusion of False Positives

The keywords in Table 1 could result in false positives, that is, CP not related to the two literatures. To detect and eliminate false positives and to increase the precision of the two datasets, 10% of the CP extracted based on keywords were assessed (for each keyword) for their relevance to the literature. The assessment was done manually by reading the title and abstract of the publications. If the share of false positive was higher than the 10% threshold, the keyword search was adjusted with additional search conditions. The objective was to obtain a dataset with above 90% precision.

The keyword *Shared Ownership* generated false positives in the FO literature. It retrieved publications studying entry mode choice by multinational corporations in foreign markets, where shared ownership refers to ownership of foreign subsidiaries. It also retrieved publications on the public-private shared ownership of organisations. To increase precision, I excluded publications whose title or abstract included any of the following terms: *foreign ownership*, *foreign acquisition*, *foreign affiliates*, *foreign direct investment*. *Group Ownership* retrieved publications on Radio Frequency Identification (RFID) systems as the protocol for ownership transfer of goods in logistics. These publications are beyond the FO literature and I excluded papers with the terms *radio frequency identification* or *RFID* in the title or abstract.

The keyword *Timeshare* generated false positives in the FO literature. This term is used in publications studying technological aspects not related to fractional ownership of holiday homes. Examples are: display and computer technologies, remote timeshare applications, timeshare systems for analysis and laser optical timeshare. Given the limited number of publications identified using this keyword (around 100) the entire set of publications was assessed and only those referring to shared common property (such as a holiday home) were retained, the rest were excluded.

In the dataset of publications related to SE, *Car Sharing*, *Ride Sharing* and *Shared Mobility* introduce several false positives. These terms identify publications that developed models or algorithms to optimise car sharing or ride sharing systems, including optimal distribution of charging stations for electric vehicle and minimisation of travel distances or relocation efforts. Some publications dealt with intelligent communication systems among autonomous vehicles and human-vehicle. These were excluded from the SE literature since their focus was primarily on the technology infrastructure enabling the functioning of the shared mobility, and car sharing or ride sharing were related solely to technical applications. To systematically detect these false positives, publications in the disciplines of engineering, computer science, mathematics, decision sciences, operations research were excluded.

Step 4: Data Harmonisation

To build the citation networks, it was necessary to identify each unique node/publication. CP and CR publications were labelled with a string composed of the following elements: first author's surname, first letter of first author's name, year of publication, volume number and first page number. Unfortunately, bibliographic information on CR publications are not always reported correctly or are incomplete. Inconsistencies lead to different identification (strings) for the same publication, hence, multiple rather than one node in the network. I manually harmonised bibliographic information to build strings that recognised uniquely both CP and CR publications. Table A1 in Annex A provides an illustrative example of the data cleaning process.

During the process of data harmonisation, references to books are treated differently, specifically if they are second or third or other editions of the original book. Authors produce subsequent editions of books to provide updates and other small improvements. However, subsequent editions do not include substantial changes and maintain the same theoretical frameworks, fundamental ideas and contributions to the literature. Based on this rationale, references to subsequent editions of the same book were harmonised to the original edition.

It should be noted that this harmonisation of book references had no impact on the citation networks. This is because books are source nodes because it was not possible to extract their cited references. So, the harmonisation of subsequent book editions to the original edition reduced the number of source nodes and focused on the original edition, which represents the moment in time when a theoretical novelty was introduced in the literature.

Step 5: Recall - Inclusion of False Negatives

The citation networks of the two literatures was extended further by including false negatives, to ensure high recall. False negatives are publications not detected by keywords in Table 1 but relevant to the literature. Since it is impossible to know a-priori which publications have been left out and which additional keywords might be needed, I followed the approach in Batagelj et al. (2017). This consisted of searching the most cited backward citations (i.e. CR publications) within the search community of a literature. In other words, false negatives emerged autonomously from the relevant literature on FO and SE, already identified in steps 1-4.

To include false negatives in the citation networks, top cited references were included as CP nodes together with their CR publications. These are among the top 1% of the total publications in a given literature, ranked by number of citations received. Bibliographic information was extracted from either WoS or Scopus. Figure A1 in Annex A provides an illustrative example of how the networks expanded with the addition of false negatives.

Backward citations further extended the original networks defined through keywords. This historical extension of the citation networks means that the literature includes previous work that influenced development of the FO and SE literatures. Although this method does not consider forward citations, the more extensive search and knowledge of the two literatures reassured me that the method did not overlook major publications related to FO and SE.

3.2 Bibliometric Methods

The five steps described above allowed the construction of the two separate citation networks for FO and SE, and a combined network. Descriptive statistics help to characterise these bodies of work (i.e., number of publications, top cited publications, top publishing journals, top cited authors). However, to enable their systematic analysis, I apply two bibliometric methods: the Leiden algorithm of community detection and the Main-Path Analysis.

Leiden Algorithm of Community Detection

The Leiden algorithm of community detection (Traag et al. 2019, Waltman & van Eck 2012, Waltman & Van Eck 2013) enables recognition of clusters of network nodes that are highly connected and which have fewer links to other clusters that, instead, closely link other nodes. The algorithm starts with singleton nodes that move iteratively between network partitions, which are refined and aggregated to obtain final communities with the highest levels of connectivity among nodes.

Communities in the citation networks are quasi-independent clusters of publications that contribute to a specific topic. Also, communities link one another. Therefore, by running the community detection algorithm on the citation network merging the two literatures, I can study the connections between clusters of publications related to FO and SE. To label clusters in the citation network, I ran co-word analysis using VOSviewer software (van Eck & Waltman 2010). This scans and extracts all terms present in publication titles and abstracts and creates a co-occurrence map based on text data. The most frequently occurring words are used as labels.

I apply the Leiden algorithm to analyse the citation networks among CP publications only, since CR publications are sink nodes and titles and abstracts were not downloaded and, hence, they cannot contribute to the co-wording analysis. The results of the community detection were visualised using Gephi software (Bastian et al. 2009), which provides a graphical representation of the publications clusters in the citation networks and their proximity.

Main-Path Analysis

MPA was proposed originally by Hummon & Dereian (1989) and was extended by Verspagen (2007). In the citation networks, MPA considers the links between nodes and identifies the historical development or knowledge flows, in a particular literature, allowing graphical visualisation to ease interpretation of the results. I use MPA to follow the historical development of FO and SE, based on the most important path from source to sink nodes/publications. In the combined analysis, the MPA identifies key publications which connect FO and SE.

The objective of MPA is to identify relevant links in the network and, consequently, relevant nodes, which define the main-path or the main search stream in the literature. Batagelj (2003) proposed Search Path Count (SPC) as a way to quantify the level of connectivity among nodes. SPC counts how many times a link is crossed by all possible paths in the network. A path starts chronologically from a source node and ends in a more recent sink node. This value is the accumulated traversal count of a link and measures the indirect influence of each publication in the historical development of the literature, regardless of how many times it is cited. I use local key-route MPA (Liu & Lu 2012) to detect the historical development of a literature. First, it selects the top 40 links in the network, ranked by their traversal or SPCs and then connects these links (backward and forward) to other links to reach a source node and a sink node. Local key-route MPA produces a broader pattern of the knowledge flows within a literature and allows for multiple paths. Figure A2 in Annex A provides an illustrative example of how the traversal count is computed and how the key-route main-path is selected in a network.

The MPA is run in Pajek (Batagelj 2003, Mrvar & Batagelj 2016). By definition, a citation network should be acyclic, since a more recent publication cites necessarily an older one, or a publication in the same year. However, if two publications in the same year cite each other (for example, it may occur when these are forthcoming) the network becomes nonacyclic, breaking the temporal consequentiality rule of the development of a literature. Therefore, before starting the traversal counts, in Pajek it is necessary to run a preprint transformation. This transformation adds preprint publications to publications that cite each other and are published in the same year. The original node cites its own and the preprint version of the other publication. Figure A3 in Annex A provides an illustrative example of preprint transformation.

Different disciplines could have contributed to the development of the FO and SE literatures; the citation rate of these disciplines may be not the same. The divergence in the citation rates of different disciplines will have an impact on the descriptive network statistics, such as top cited article, journal or authors, but will have no impact on the outcome of the two bibliometric methods. The community detection algorithm considers only if there is a link between two publications to determine clusters of publications with high level of connectivity. Similarly, the MPA considers the traversal counts of all the links in the network and then searches for the main-path. Neither method considers how many times a publication is cited.

4 Results

In this section, I present the citation networks (section 4.1 and the descriptive statistics for the two literatures (section 4.2). I analyse the citation networks using two bibliometric methods: the Leiden algorithm of community detection (section 4.3) and MPA (section 4.4). In both cases, I analyse the two citation networks in isolation and then merge them to find the connections between FO and SE.

4.1 Citation Network

The FO literature includes 2,356 CP (2,072 of them identified through the keyword search and cleaned of false positive, and 284 added as highly cited false negatives) and 68,709 CR publications. The SE literature includes 4,241 CP (3,898 plus 343) and 109,889 CR publications. The two literatures have 32 CP in common, 9 of them retrieved by the first keyword search and 23 added as highly cited false negatives.

Figure 1 depicts the full network of publications/nodes for the merged FO and SE literatures. Nodes are organised chronologically, meaning that those at the bottom are more recent publications and those at the top are the older publications. The network shows that there are eight categories of publications.

The red nodes on the left of the figure are CP from the FO literature, which cite only or are only cited by other FO publications. The light red nodes are CR publications cited only by red nodes. The blue nodes are CP in the SE literature that cite or are cited by other SE publications. The light blue nodes are CR publications cited only by CP nodes in the SE literature. The green nodes are the 32 publications common to both literatures and the light green nodes are CR publications cited by CP nodes in both the FO and SE literatures. The orange and azure coloured nodes are CP related respectively to the FO and SE literatures; these publications cite the common literature (green and light green nodes) or cite each other.

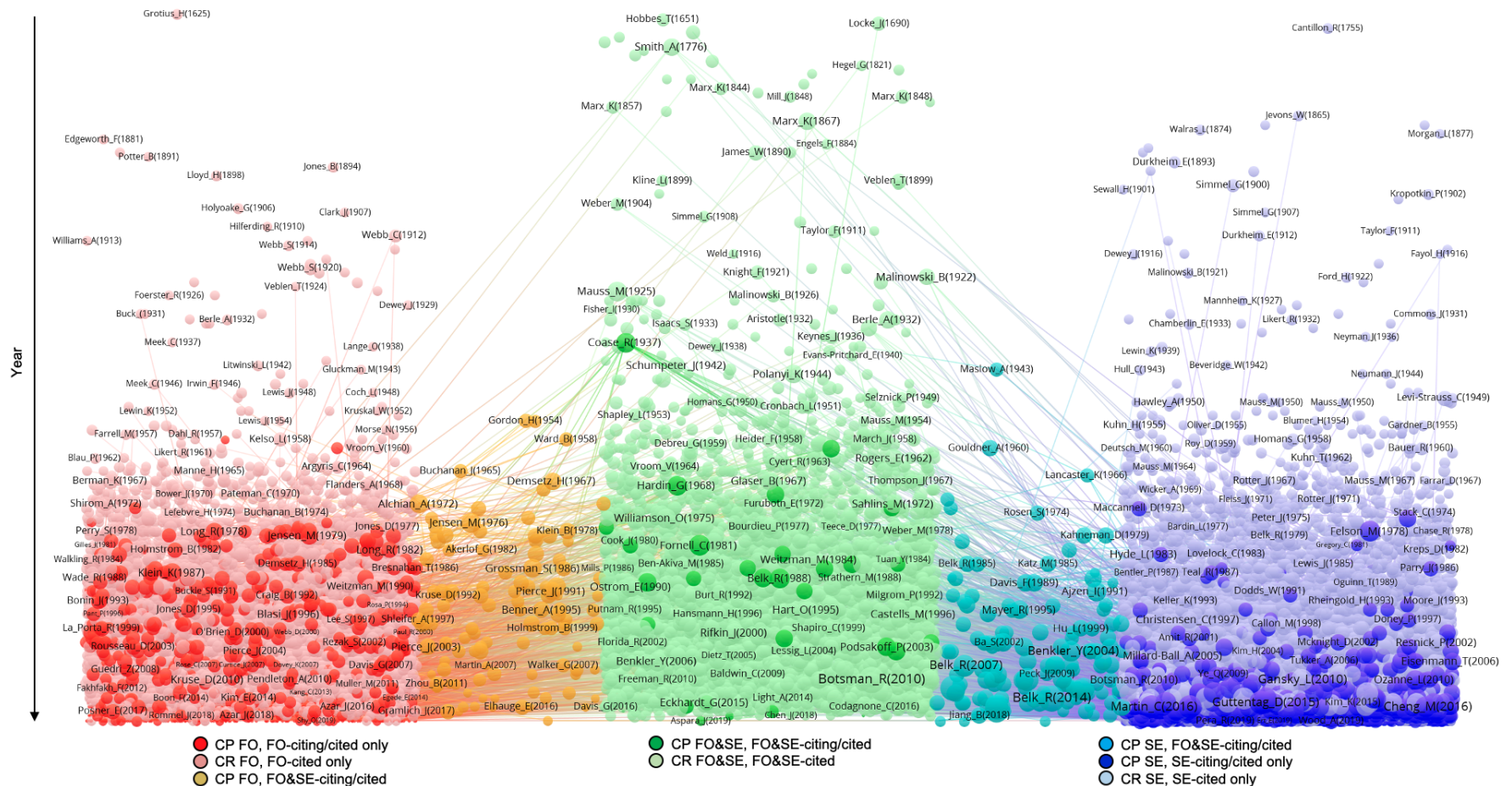
On average, the FO publications (red and red light) are older than the SE publications (blue and blue light): average publication year for the red nodes is 2008 and for the blue nodes is 2016 (Table 2). Red nodes are more distributed across time, while the blue nodes are concentrated towards the bottom of the figure. Green and light green nodes are the circa 5,000 publications cited by both the orange and azure nodes, with an average publication year of 1993 feeding both the FO and SE literatures. The orange and azure nodes are older than the red and blue nodes in the respective literatures (1995 for orange nodes and 2003 for azure nodes) and have the highest ratio of citations per node in the respective bodies of work, indicating their high relevance to the topic (Table 2).

Literature	Type	Avg. Year	Num. Nodes	Total Cit.	Cit. per node
FO	Red	2008	2215	3781	1.71
FO	Red light	1996	5123	14345	2.80
FO	Orange	1995	109	1719	15.77
FO & SE	Green	1993	32	1389	43.41
FO & SE	Green light	1993	4758	23424	4.92
SE	Azure	2003	136	6583	48.40
SE	Blue light	2007	15227	51251	3.37
SE	Blue	2016	4073	18399	4.52

Notes: Characteristics of the eight categories of nodes in the citation network. These are: the average publication year, the number of nodes/publications, the total number of citations that publications have received, and the ratio of citations per node in each category.

Table 2: Characteristics of the eight categories of publications in FO and SE literatures

For example, the orange nodes include seminal work on the ownership structure of firms and their governance (Jensen & Meckling 1976, Shleifer & Vishny 1997, Grossman & Hart 1986) and the role of psychological ownership in organisations (Pierce et al. 1991, 2003, Van Dyne & Pierce 2004). Similarly, azure nodes group key SE publications which have contributed to framing the sharing economy (Benkler 2004, Belk 2010, Bardhi & Eckhardt 2012, Belk 2014*b*, Hamari et al. 2016) and to developing peripheral, but important theories such as planned behaviour (Ajzen 1991) and technology acceptance (Davis 1989). This suggests that key publications in both literatures



Notes: The figure shows the citation network that merges FO and SE literatures. Nodes on the left (red, light red and orange) are FO publications. Nodes on the right (blue, light blue and azure) are SE publications. Nodes in the centre (green and light green) are publications in common to the two literatures. Years are on the vertical axis: nodes at the bottom are most recent publications. For visualisation purposes, not all links between nodes and CR publications with one citation only are excluded. VOSviewer is used to create and visualise the citation network (van Eck & Waltman 2010)

Figure 1: Citation network combining the literature of FO and SE

build on similar references and they cite each other, which is the first indication of a connection between the two literatures.

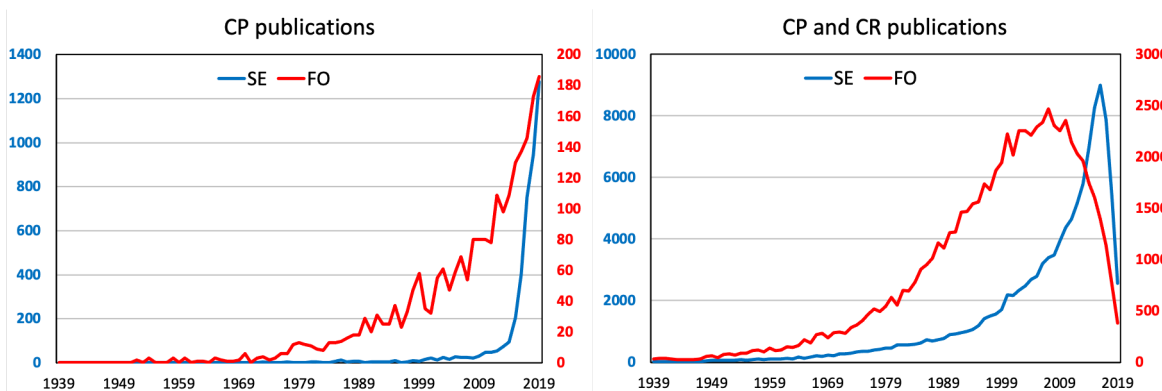
Among the green nodes, nine publications are common to both literatures (and were extracted by the multi-keyword search based on both the FO and SE keywords). A review of these nine publications indicates that certain research areas have analysed cases of fractional ownership in the context of the sharing economy. These include housing sector, shared mobility, organisation of digital content and firm structure research. Furthermore, shared ownership in the sharing economy is seen as occurring more frequently in local rather than global contexts, and as a modern example of reciprocity. This gives an initial understanding about which research areas are more likely to embody both topics.

4.2 Descriptive Statistics

The left side of Figure 2, plots the number of CP related to the two literatures (FO in red, SE in blue) by publication year, that is how many publications are published every year. On the right, curves plot the sum of CP and CR publications for the two literatures by publication year. This indicates the number of publications (including their citation) that each year are added to the two citation networks.

The curves on the left in Figure 2 indicate that earlier CP of FO literature are published in the 50's. Since then the number of CP in FO literature continues to grow, until 2019 when the number of publications reaches about 190. SE literature is much younger than FO. CP concentrate almost entirely in the last 5 years, with a much larger quantity compared to FO. SE publications continue to increase each year, up to about 1300 published only in 2019. Despite its infancy, the SE literature has more publications than FO: in total, it includes about twice the number of CP.

The curves on the right side of Figure 2 show the difference in how the two citation networks develop over time. FO shows a publications peak (about 2,500) in 2000 while SE publications reach a high in 2017 (about 9,000) and can be expected to continue to increase. The early decline in FO publication is indicative that this literature stream has reached maturity and that recent publications cite older work very frequently. In contrast, the number of SE-nodes continues to grow; the final fall in the curve is due to the citation time lag between year of publication and time needed to be cited.



Notes: Trend of publications in the citation network of the two literatures (FO in red, SE in blue) published from 1939 to 2019. Plot on the left shows the number of CP publications, while plot on the right shows the number of both CP and CR publications.

Figure 2: Trend of the number of CP and CR publications in FO and SE literatures

Table 3 lists the top 10 cited publications in the two literatures. The number of citations counts

publications cited by CP, since CR publications are sink nodes and their citations are not extracted. In the FO literature, the most recent and highly cited publication was published in 1990, confirming the earlier origins of this literature compared to the strand of work on SE. The latest SE publication year among the top 10 cited publications is 2016. The most cited FO publication has 102 citations, five times less than the most cited SE publication (581 citations).

A review of these publications suggest that the top FO publications focus on the theory of the firm and the theory of the commons. They also study the ownership structure of organisations, analysing whether collaborative ownership by employees might represent an opportunity or a threat for the firm. The top SE publications tend to define the sharing economy and use consumer research to explain the emergence of collaborative or access-based consumption and the drivers of sharing attitudes among consumers.

Author(s)	Year	Title	Type	Cit.
FO				
Jensen & Meckling	1976	Theory of the firm: managerial behavior, agency costs and ownership structure	Article	102
Alchian & Demsetz	1972	Production, information costs, and economic organization	Article	85
Pierce et al.	1991	Employee ownership: A conceptual model of process and effects	Article	75
Grossman & Hart	1986	The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration	Article	72
Williamson	1975	Markets and hierarchies	Book	72
Williamson	1985	The economic institutions of capitalism: Firms, Markets, Relational Contracting	Book	71
Hardin	1968	The Tragedy of the Commons	Article	69
Klein	1987	Employee stock ownership and employee attitudes: A test of three models	Article	68
Ostrom	1990	Governing the Commons. The Evolution of Institutions for Collective Action	Book	68
Hart & Moore	1990	Property Rights and the Nature of the Firm	Article	63
SE				
Belk	2014 ^b	You are what you can access: Sharing and collaborative consumption online	Article	581
Botsman & Roger	2010	What's Mine Is Yours: The Rise of Collaborative Consumption	Book	581
Hamari et al.	2016	The Sharing Economy: Why People Participate in Collaborative Consumption	Article	511
Bardhi & Eckhardt	2012	Access-Based Consumption: The Case of Car Sharing	Article	427
Guttentag	2015	Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector	Article	315
Belk	2010	Sharing	Article	301
Möhlmann	2015	Collaborative consumption: determinants of satisfaction and the likelihood of using a sharing economy option again	Article	299
Botsman & Roger	2011	What's Mine Is Yours: How Collaborative Consumption is Changing the Way We Live	Book	277
Sundararajan	2016	The sharing economy: The end of employment and the rise of crowd-based capitalism	Book	267
Ert et al.	2016	Trust and reputation in the sharing economy: The role of personal photos in Airbnb	Article	266

Notes: Top 10 cited publications in the citation network of the two literatures, FO (top) and SE (bottom). The number of citations only counts publications cited by CP publications, since citations of CR publications are not downloaded.

Table 3: Top 10 cited publications in FO and SE literatures

Table 4 lists the top 10 publishing journals, ranked relative to the number of distinct publications

contributing to the two literatures, including both CP and CR publications. This gives an idea of the top disciplines that contributed to the FO and SE literatures. The FO literature centres on journals publishing on economy and finance, and management and business. Interestingly, the *Journal of Applied Psychology* is among the top journals publishing work on FO. This is linked to the perceived feeling of ownership (psychological ownership), which is an important topic in the FO literature, as discussed in section 2.

In the SE literature, the *Journal of Cleaner Production* is the top publishing journal, followed by the *Journal of Consumer Research*. This suggests that understanding why consumers participate in the sharing economy and the impact of more sustainable consumption are major research areas. Consumers and their choices are central in the SE literature, leading other disciplines to study the sharing phenomenon, for example, tourism, transport, marketing, business and management.

FO top journal	Publ.	SE top journal	Publ.
American Economic Review	457	Journal of Cleaner Production	664
Journal of Financial Economics	457	Journal of Consumer Research	569
Journal of Finance	404	Tourism Management	497
Academy of Management Journal	373	Management Science	478
Strategic Management Journal	302	Journal of Business Research	448
Academy of Management Review	285	Journal of Marketing	443
Journal of Applied Psychology	265	Transportation Research Record	435
Journal of Political Economy	236	Transportation Research Part A	430
Administrative Science Quarterly	234	Harvard Business Review	420
Quarterly Journal of Economics	229	Annals of Tourism Research	410

Notes: Top 10 publishing journals in the citation network of the two literatures, FO (left) and SE (right). The total number of publications published by journals counts both CP and CR publications.

Table 4: Top 10 publishing journals in FO and SE literatures

Table 5 lists the top 10 cited authors in both literatures, based on name of first author. The top 10 cited FO authors account for about 2.68% of total citations in the FO literature and the top 10 cited SE authors account for 3.98% of the total citations in the SE literature. The top FO cited author accounts for around 20% of the citations received by the top SE author.

The academic provenance of the top authors and their field of expertise can be used to qualitatively categorise the two literatures. Almost all of the top FO authors are American economists with a major influence on economic sciences. Three are also Nobel Prize winners, namely Williamson Oliver E., Hart Oliver and Ostrom Elinor, who contributed to economic governance, contract theory and the theory of the commons. FO authors are responsible for pioneering studies on financial economics, political economy, worker cooperatives and employee ownership and profit-sharing. The top 10 SE cited authors are equally distributed between the USA and Europe in terms of academic affiliation. Their fields of expertise are diverse, reflecting the number of disciplines that contribute to work on the SE. They include: business, marketing, ecology, sociology, information and communication technology, engineering, tourism management and transport.

The descriptive statistics show that FO is an older and smaller literature than the work on SE. Considering only the top ranked publications, publishing journals and authors, fewer disciplines contribute to FO literature, but they study several different aspects (i.e., economy and finance which examine the theory of the firm, the theory of the commons and the ownership structure of worker cooperatives). SE includes several disciplines, but most focus on framing the sharing economy (i.e., business, marketing, sociology, tourism management and transport which analyse the characteristics of SE). The next two sections look at the connections between FO and SE.

FO top authors	Cit.	SE top authors	Cit.
Williamson Oliver E.	312	Belk Russell W.	1673
Jensen Michael C.	291	Botsman Rachel	1175
Jones Derek C.	278	Shaheen Susan A.	874
Blasi Joseph	266	Schor Juliet B.	670
Kruse Douglas L.	238	Hamari Juho	607
Long Richard J.	237	Zervas Georgios	571
Pierce Jon L.	236	Tussyadiah Iis	566
Hart Oliver	221	Bardhi Fleura	484
Rosen Corey M.	181	Guttentag Daniel	475
Ostrom Elinor	178	Sundararajan Arun	390

Notes: Top 10 authors in the citation network of the two literatures, FO (left) and SE (right). To count the number of citations, only the first author of each publication is considered.

Table 5: Top 10 authors in FO and SE literatures

4.3 Community Detection

This section presents the results of the Leiden algorithm of community detection. The algorithm generates communities of nodes in the citation network that represent clusters of publications in a literature, which are highly connected via direct citations. It can be assumed that clusters contribute to the same topic in a literature, although they may have weak links to other topics. The Leiden algorithm is run to detect communities, first, in the two isolated citation networks (FO and SE) and then in the merged network, to detect connections between clusters. Clusters are ranked by summing the number of citations received by the publications included in those communities, and the top 15 are analysed. Clusters are labelled based on the results of the co-wording analysis, which extracts the most frequently occurring terms in the titles and abstracts of the publications in each cluster. These are presented in Table A2 and Table A3 in Annex A.

Communities in Fractional Ownership Literature

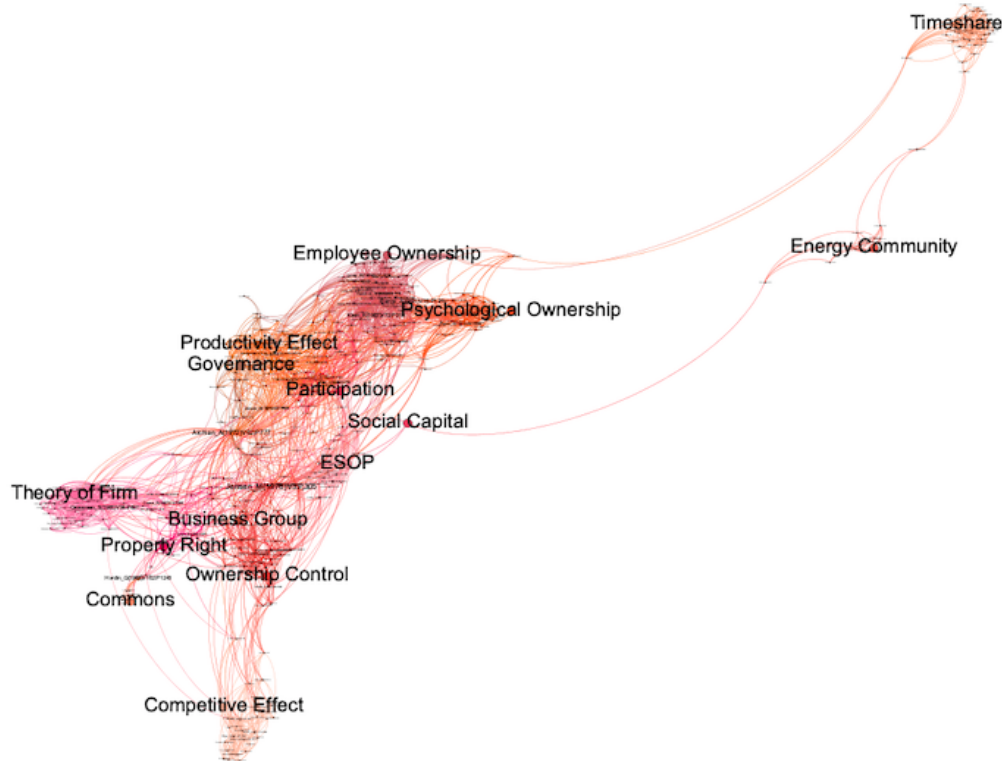
Figure 3 depicts the top 15 clusters in the FO literature. Publications related to employee ownership are the densest cluster and are in close proximity to another dense cluster of publications focused on psychological ownership. This part of the FO literature studies the functioning of employee-owned organisations in relation to perceived feeling of ownership among workers. The workers participate in the governance of the organisation and this direct involvement can have a positive impact on productivity. Therefore, publications on social capital are directly connected to these clusters.

Publications on Employee Stock Ownership Plans (ESOP) are connected to publications that focus on business activity whose ownership control is shared among a group of people. These, in turn, are linked to the cluster studying the competitive effect of this organisational structure in the market. Businesses based on group ownership are linked closely to work on property rights, which relate to the cluster studying the commons. These clusters are linked to publications that focus on the theory of firm, which is another dense cluster in the FO literature.

There are two peripheral clusters in the FO literature: timeshare and energy community (top-right in Figure 3). Both are linked to the cluster on social capital and direct involvement in ownership. Timeshare and energy community are examples of fractional ownership where people organise to achieve shared ownership and consumption of a common asset. Timeshare refers to sharing ownership of holiday accommodation among several people. Publications in the energy

community cluster focus on local level projects, to manage and take advantage of small-scaled energy production to share the cost and enjoy the benefits of renewable energy.

Overall, figure 3 shows that the FO literature concentrates on topics broadly related to the separation of ownership and control in firms. However, it also analyses the role of social capital, implying that social relationships and social structures are pivotal to effective functioning of cooperative and collaborative groups such as energy communities and shared holiday home ownership.



Notes: Top 15 clusters of publications in the citation network of FO literature identified via the Leiden community detection algorithm. Clusters are ranked by summing the number of citations received by the publications included in those communities. Clusters are labelled based on the results of the co-wording analysis, which extracts the most frequently occurring terms in the titles and abstracts of the publications in each cluster.

Figure 3: Top 15 clusters of publications in the FO literature

Communities in Sharing Economy Literature

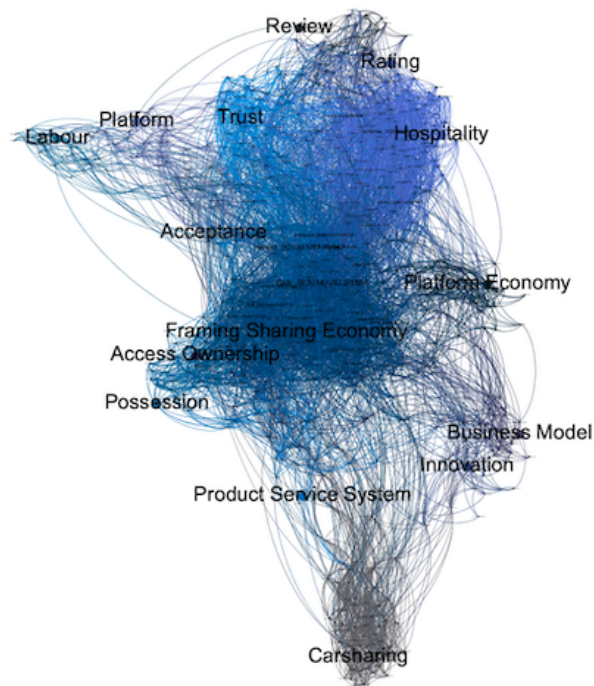
Figure 4 depicts the top 15 clusters in the SE literature. The higher number of publications in the SE literature generates clusters that are denser than those in FO literature. The central cluster groups publications contributing to framing the concept of the SE. Around this central cluster are clusters of publications that focus on important topics in the SE literature.

These include work on access ownership which is linked to work on possession. This indicates that the discussion on access-based consumption in the SE literature is linked to studies of consumers' attitudes to ownership, traditionally based on feelings of possession and materialism. Linked closely to the central cluster, is a group of publications dealing with the platform economy which emerges in the SE literature in relation to the diffusion of digital technologies.

At the top-right of Figure 4 we find a cluster of publications analysing the hospitality sector (the second most dense cluster in the SE literature), which is in close proximity to publications related to trust and feedback mechanisms (reviews and ratings). At the top-left are publications dealing with platforms which are linked to the cluster on labour and technology acceptance. This part of the citation network indicates that the SE literature studies specific topics linked to social and economic sectors where digital technologies play a crucial role.

The central cluster in Figure 4 links on the bottom-right to publications analysing business models which are connected to the cluster of publications studying innovation. At the bottom of the figure, are publications on car-sharing, which link to the cluster on product-service systems. This indicates that the SE literature deals with innovative business models which contribute to making provision and consumption of products and services more cohesive and sustainable.

In summary, Figure 4 shows three main areas in the SE literature: the impact of digital technologies (clusters at the top), access-based consumption (clusters in the centre) and provision of sustainable consumption alternatives (clusters at the bottom).



Notes: Top 15 clusters of publications in the citation network of SE literature identified via the Leiden community detection algorithm. Clusters are ranked by summing the number of citations received by the publications included in those communities. Clusters are labelled based on the results of the co-wording analysis, which extracts the most frequently occurring terms in the titles and abstracts of the publications in each cluster.

Figure 4: Top 15 clusters of publications in the SE literature

Linking Communities in Fractional Ownership and Sharing Economy Literatures

Figure 5 shows the links among the top 15 clusters in both literatures. Overall, these literatures are separate with a few connected clusters, fundamental to understand the topics contributing to a common conceptual basis between FO and SE. Work on psychological ownership are linked strongly to the SE literature, indicating that the perceived feeling of ownership is an important the-

oretical element explaining access-based consumption in the SE. It is important, also, to note that clusters of publications relative to social capital, property rights and the commons are connected to the SE clusters possession and product service systems.



Notes: The figure shows the top 15 clusters of publications in both FO and SE literatures that are merged via the Leiden community detection algorithm. Clusters are ranked by summing the number of citations received by the publications included in those communities. Clusters are labelled based on the results of the co-wording analysis, which extracts the most frequently occurring terms in the titles and abstracts of the publications in each cluster.

Figure 5: Connections between of top clusters of publications in the FO and SE literature

Figure 5 highlights another important connection. This is the link between the clusters of publications studying innovation and energy communities. While previous connections relate mostly to the theoretical conceptualisation linking the SE and FO literatures, this connection sheds lights on

real cases of FO linked to the SE literature. The innovation literature (related to SE) studies energy communities as a form of grassroots innovation, where fractional ownership is a bottom-up process leading local communities to enjoy social and economic benefits of undertaking sustainable common actions.

The cluster of publications dealing with car sharing merits a final observation. In the list of SE keywords (Table 1), I included words related to shared mobility (*shared mobility*, *car sharing* and *ride sharing*) since this stream of work studies fractional ownership as sub-model of car sharing. However, the community detection in Figure 5 finds no connections between this cluster and the FO literature which suggests that work on car sharing does not analyse ownership in relation to the FO literature, possibly because, as discussed in section 1, car sharing is a form of pseudo-sharing consisting of short-term renting of a car and no community engagement.

4.4 Main-Path Analysis

To identify the historical development or knowledge flows in the SE and FO literatures and how they have evolved over time, this section presents and discusses the results of the MPA. The analysis was run separately for both literatures (FO and SE) and then run on the citation network based on merging the two.

This section follows the identification pattern red nodes FO publications, blue nodes SE publications and green nodes common publications in the FO and SE literatures. In addition, clusters of publications in the main-paths are coloured and labelled based on the results of the community detection analysis. In the main-paths, the arrows represent links between publications: the direction of the arrow indicates that a publication cites the publication the arrow points to. The thickness of arrow connecting two nodes is proportional to their traversal count: the thicker the line, the higher the relevance of that link in the citation network. Nodes are ordered by publication year, from the oldest (bottom) to the newest (top). Nodes are labelled by strings composed of the following bibliographic elements of the publication: first author's surname, first letter of first author's name, year of publication, volume number and first page number.

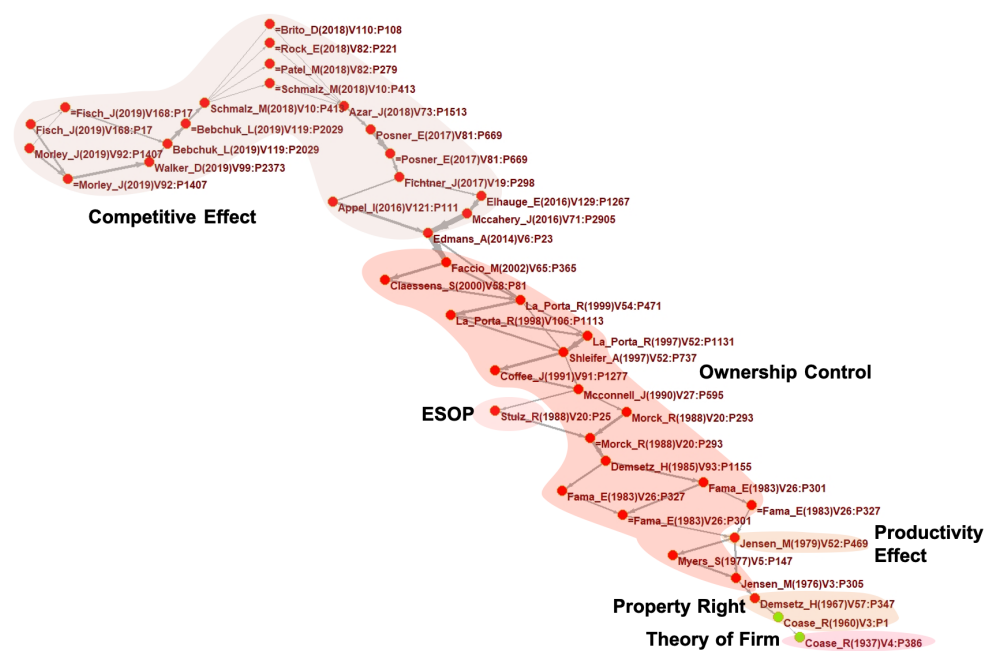
Main-Paths in Fractional Ownership Literature

The FO main-path in figure 6 starts from Coase's seminal work on the nature of the firm (Coase 1937) and follows through to his study on social costs (Coase 1960) and work on property rights (Demsetz 1967). These papers provide the basis for the theory of the ownership structure of the firm (Jensen & Meckling 1976). The focus on separation and control in firms is the overarching area of research in the first part of the main-path, and is analysed from different perspectives. For example, Myers (1977) analyses the determinants of corporate borrowing in relation to the market value of the firm, and Jensen & Meckling (1979) examines the productivity effect of firms in relation to the structure of the property and contracting rights. These ideas were developed by studying the agency problem (Fama 1980, Fama & Jensen 1983) and analysing how the firm structure affects corporate ownership (Demsetz & Lehn 1985).

The FO literature evolved by considering the value and control of corporations via voting rights (Morck et al. 1988, Mcconnell & Servaes 1990, Coffee 1991), with reference to employee stock ownership plans (ESOP) (Stulz 1988). Corporate governance is central to the historical development of this literature (Shleifer & Vishny 1997) and this topic opens directions for new research on legal protection of investors (La Porta et al. 1997, 1998, 1999). Case studies figure in the historical development of this literature, specifically in relation to the separation of ownership and control in corporations in East Asia (Claessens et al. 2000) and Western Europe (Faccio & Lang 2002).

Building on the knowledge on ownership control, the FO literature developed by analysing the competitive effect of common ownership in the market. New forms of organisational separation and control are analysed, including blockholdings (Edmans 2014), modern governance mechanisms (Mccahery et al. 2016) and horizontal shareholdings (Elhaug 2016). The literature also studies the impact of institutional investors on market competition (Appel et al. 2016, Fichtner et al. 2017, Posner et al. 2017, Azar et al. 2018). In more recent years, the FO literature has focused on two topics. The first relates to the competitive effect and the market outcome of common-ownership structures (Brito et al. 2018, Rock & Rubinfeld 2018, Patel 2018, Schmalz 2018). The second focuses on large voting power in investments corporations and the impact on the governance and performance of those corporations (Bebchuk & Hirst 2019, Walker 2019, Fisch et al. 2019, Morley 2019).

MPA indicates that the main historical development in the FO literature started with the theory of the firm, to a focus on the separation of control and ownership and corporate finance, including notions related to legislation, antitrust and market competition. The bulk of the main-path includes publications belonging to only two of the top 15 clusters identified in Figure 3, which are not connected to the SE clusters (Figure 5). This means that FO publications linked to work on SE are not part of the main knowledge flow in the FO literature. However, it should be noted that the initial two nodes in the FO main-path (Coase 1937, 1960) are green nodes, meaning that these publications are common to both literatures.



Notes: The figure illustrates the local key-route main-path in the citation network of FO literature, considering the first 40 links in the network, ranked by their traversal count. Red nodes represents FO publications and green nodes common publications in the FO and SE literatures. Clusters of publications are coloured and labelled as for the community detection analysis. Arrows represent links between publications: a publication cites the publication the arrow points to. The thicker the line of an arrow, the higher the traversal count of the link. Nodes are ordered by publication year, from the oldest (bottom) to the newest (top). Nodes are labelled by strings composed of: first author's surname, first letter of first author's name, year of publication, volume number and first page number.

Figure 6: Local key-route main-path in the FO literature

Main-Paths in Sharing Economy Literature

Figure 7 shows the main-path of the SE literature. Similar to the FO literature, Coase's seminal work on the nature of the firm inspired the main knowledge flow in this literature (Coase 1937). It continued by studying transaction costs (Williamson 1981) and the problem of embeddedness in interpersonal relations and institutions (Granovetter 1985). These are green nodes, that is, common to both literatures. In the bottom left part of the main-path, publications on materialism, possession and extended self spurred another initial path in the SE literature (Belk 1985, 1988, Richins 1994, Kleine et al. 1995). These works focus on consumers' attitudes to ownership and consumption and provide relevant background to the development of the SE literature.

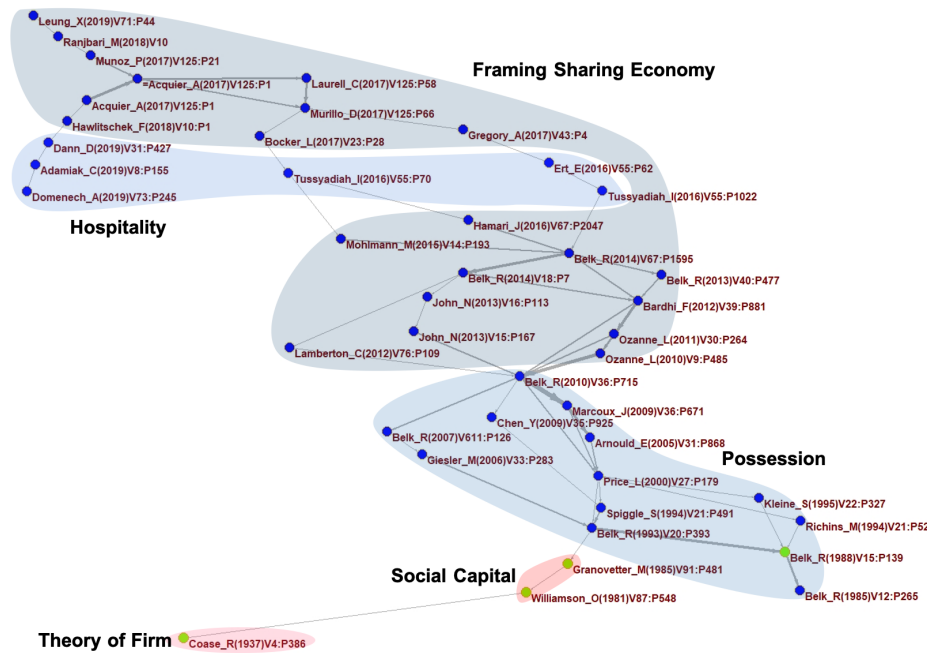
The two initial paths converge in studies in the SE literature on the theoretical contrast between sharing and gift-giving (Belk & Coon 1993, Spiggle 1994, Price et al. 2000, Arnould & Thompson 2005, Giesler 2006, Belk 2007, Chen 2009, Marcoux 2009). In 2010, Belk (2010) defined the concept of sharing, framed in contrast to gift giving and commodity exchange. While the latter two involve possession and transfers of ownership, sharing involves a feeling of community, cooperation and unity. This publication opens up new directions for SE research by providing a conceptualisation of sharing which led to the cluster of publications on the framing of the sharing economy.

Sharing was studied initially as a form of anti-consumption (Ozanne & Ballantine 2010, Ozanne & Ozanne 2011) that motivates consumers to share rather than to own and enables access-based consumption (Bardhi & Eckhardt 2012). The SE literature developed by studying the extended-self in the digital era (Belk 2013) and analysing sharing practices in the Web 2.0 context (John 2013a,b) that generate forms of pseudo-sharing (Belk 2014a). These SE literature streams converge in the work of Belk (2014b), who defined the post-ownership economy as a situation where people identify themselves in relation to what they can access and what they can share. This was another pivotal publication in the SE literature which led to subsequent work on consumers' attitude to sharing practices in the sharing economy.

One branch of this literature studies how trust and reputation affect hospitality and travel behaviours (Tussyadiah & Pesonen 2016, Ert et al. 2016) and public relations (Gregory & Halff 2017). The other focuses on the motivations for participating in the sharing economy (Hamari et al. 2016, Böcker & Meelen 2017) and on factors related to consumer satisfaction (Möhlmann 2015, Tussyadiah 2016). There is a strand of the SE literature which studies promises and paradoxes related to the SE, uncovers some controversies and analyses the tensions between a market and a non-market logic (Acquier et al. 2017, Murillo et al. 2017, Laurell & Sandström 2017).

The most recent SE publications fall into two types. The first includes publications on tourism and hospitality management and consumers' attitudes to participating in sharing practices (Hawlitschek et al. 2018), leading to a specific focus on *AirBnB* (Dann et al. 2019, Adamiak et al. 2019, Domènech et al. 2019). The second includes publications which help to frame and conceptualise the sharing economy with a focus on sustainability and business models (Muñoz & Cohen 2017), and considering the current socio-economic context (Ranjbari et al. 2018, Leung et al. 2019).

MPA shows that the historical development of the SE literature started with publications related to consumer research which analysed consumers' attitudes to ownership and consumption and was extended by work on the theory of the firm and social capital. These initial concepts contributed to framing the notion of sharing. Following this, the SE literature focused on analysing sharing practices which deviate from the idea of ownership, which is not debated further in the SE main-path.



Notes: The figure illustrates the local key-route main-path in the citation network of SE literature, considering the first 40 links in the network, ranked by their traversal count. Blue nodes represents SE publications and green nodes common publications in the FO and SE literatures. Clusters of publications are coloured and labelled as for the community detection analysis. Arrows represent links between publications: a publication cites the publication the arrow points to. The thicker the line of an arrow, the higher the traversal count of the link. Nodes are ordered by publication year, from the oldest (bottom) to the newest (top). Nodes are labelled by strings composed of: first author's surname, first letter of first author's name, year of publication, volume number and first page number.

Figure 7: Local key-route main-path in the SE literature

Linking Main-Paths in Fractional Ownership and Sharing Economy Literatures

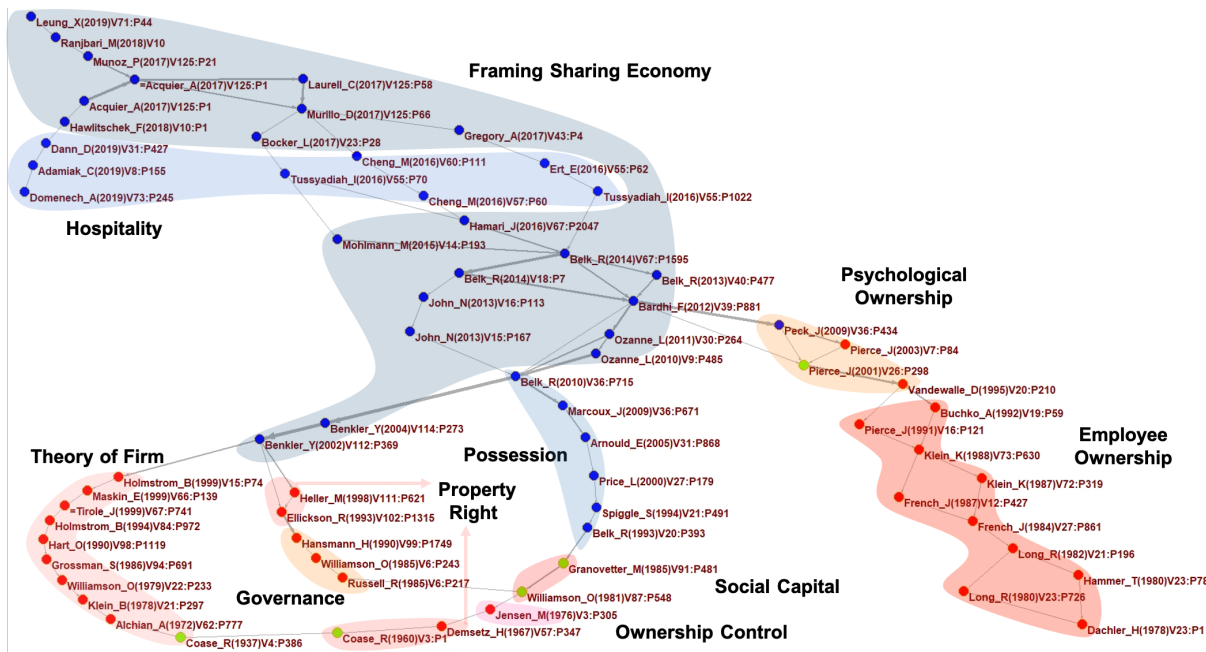
Figure 8 shows the main-path in the literature based on merging the FO and SE citation networks. The red highlighted publications belong to the FO clusters/literature, and the blue ones to the SE clusters/literature. It can be seen that FO and SE do not overlap, meaning that the publications related to one literature do not appear on the main-path of the other literature. Instead, the literatures are complementary and, more important, the origin of SE literature is linked to the earlier FO publications.

There are three main parts in the FO literature which inspired the SE literature. At the bottom-left of Figure 8, are FO publications related to the theory of the firm, property rights, governance and ownership control which are cited by SE publications. At the bottom-right, we can see that the SE literature is connected to FO publications on psychological ownership, which, in their turn, are linked to employee ownership. As in Figure 7, SE publications related to possession are linked to publications in the social capital cluster. More recent publications, top-left of the main-path, are the same blue nodes in the SE main-path and belong to the clusters framing the SE and hospitality. This indicates that the more recent SE literature has not been influenced by the FO literature.

I next examine the blue and red nodes linking publications in the FO and SE literatures, to identify the topics linking them. At the bottom-right, the SE publication by Bardhi & Eckhardt (2012) is connected to FO publications on psychological ownership (Peck & Shu 2009, Pierce et al. 2001). Bardhi & Eckhardt argue that access-based consumption generates a temporary

perception of ownership in the consumer without the need for actual ownership. This is one of the main driver of access-based consumption in the SE. This connection shows that the main historical development in the SE literature originated from the idea that the sense of perceived ownership motivates consumers to engage in access-based consumption, even though this is a temporary feeling which lasts for only as long as their temporary access.

The bottom-left part of the main-path indicates that the definition of sharing (Belk 2010) is the result of two main streams of research, involving both FO and SE publications, which originates from work on the nature of the firm (Coase 1937). Starting with this initial publications, one path goes through FO publications on property rights, ownership control and transaction costs and ends with problems related to embeddedness in the social structure. The study on social capital connects the FO literature to SE publications on consumers' attitudes to possession, gift and market exchanges, which are the eventual basis of the definition of sharing.



Notes: The figure illustrates the local key-route main-path in the citation network that merges both FO and SE literature, considering the first 40 links in the network, ranked by their traversal count. Red nodes represents FO publications, blue nodes SE publications and green nodes common publications in the FO and SE literatures. Clusters of publications are coloured and labelled as for the community detection analysis. Arrows represent links between publications: a publication cites the publication the arrow points to. The thicker the line of an arrow, the higher the traversal count of the link. Nodes are ordered by publication year, from the oldest (bottom) to the newest (top). Nodes are labelled by strings composed of: first author's surname, first letter of first author's name, year of publication, volume number and first page number.

Figure 8: Local key-route main-path in the FO and SE literature

The second FO literature stream Belk (2010) links backward to the concept of shareable goods, proposed by Benkler (2004), based on a study of transaction cost theory and the motivations to share. Shareable goods are “lumpy” goods, with idle capacity whose access can be granted to others for money. Benkler (2002) links the FO and SE literatures directly by analysing common-based peer production in connection to the topic of property rights. Specifically, he links to the notion of anticommons (Heller 1998) and land property rights (Ellickson 1993). The first link indicates that the sharing economy allows for exclusion with no exclusive use privileges. This determines the

paradoxical tragedy of the anticommons leading to underutilised resources, which is one of the dynamics driving the SE. The second link connects to the idea that close-knit groups can choose to coordinate to minimise living costs and achieve more efficient land utilisation.

To conclude, MPA shows that the FO literature is important to understand the origins of the SE literature. There are two main FO topics which link to the SE literature. The first concerns psychological ownership and the second one concerns the connection between transaction costs, property rights and social relations. Compared to the FO MPA (Figure 6), FO publications on ownership control and competitive effects do not emerge in the combined analysis. This is not surprising since these topics are not relevant to SE. However, this lack of connection is the reason why the recent SE literature does not debate FO: the main knowledge flow in FO is unrelated to the SE.

5 Discussion

This paper provides a better understanding of the origins of the SE and sheds light on its relations to FO. Systematic analysis of the citation networks built on the FO and SE academic literatures identifies their common conceptual base.

Compared to work on the SE, the earlier FO literature includes fewer publications. Economy, finance and applied psychology are the main disciplines in the FO literature. The SE literature involves several disciplines such as transport, consumer research, marketing, business and management.

The main historical development of the FO literature shows no links to the SE. In fact, the MPA focuses on the theory of firm, specifically, on organisations where ownership and control is shared among several actors, and on corporate finance. However, there are other clusters of publications in the FO literature that study the role of social capital in firms. In particular, this literature shows that employees' participation in the ownership of an organisation generates a feeling of collective psychological ownership (Pierce & Jussila 2010) that is similar to the sense of community generated when people organise to manage a common good. People engage in common actions and build social relationships to share the values and norms required necessary to create mutual trust and enhance cooperation and collaboration in the group. These social structures are fundamental for effective functioning of practices based on FO.

When analysed independently, the main historical developments in the SE literature show its lack of links to FO. It originated from work on two main topics, which was modified and adapted in line with the evolution of the marketplace in which the SE occurs. The first topic is the theory of the firm, which, by embracing the notions of transaction costs and social capital, leads to the second topic on consumers' attitudes to possession, materialism and ownership.

In contrast to the origins of FO, the theory of the firm and the role of social capital help to explain how the SE operates in the digital space. Here, market exchanges are facilitated by digital platforms, with business models allowing connection between the contracting parties, who may not be proximate and who never interact face-to-face. On the one side, digital platforms reduce the transaction costs involved in accessing a shared good, by eliminating the intermediaries between provider and consumer. On the other side, since the platforms are acting as intermediaries and obtain a marginal profit from these transactions, they can increase their profit by operating at the global level to achieve economies of scale.

The second origin of the main historical development of the SE literature refers to consumer research. This strand of work explains that the SE has generated new forms of consumption behaviour in opposition to possession, thereby downgrading the importance of ownership as the

identification of the extended-self. In other words, the SE emphasises the post-ownership model of consumption in which possession is no longer the ultimate goal of the consumer. Instead, consumers are more inclined to favour access-based consumption of goods that are not directly owned.

When the two literatures were merged and analysed together, three topics in the FO literature were shown to be at the roots of the SE literature: psychological ownership, anticommons and group cooperation. As discussed above, in the SE, ownership is not the ultimate desire of consumers. The connection to psychological ownership clarifies this: consumers are motivated towards access-based consumption because it satisfies a need through the use of a shared good, leading to a temporary feeling of ownership (Bardhi & Eckhardt 2012).

The second aspect of FO which inspired the literature on the SE is the characteristic that the shared goods are under-utilised and, hence, shareable (Benkler 2004). Some scholars studying the SE identify shared goods as common goods. The theory of common goods says that utilisation is privileged and there are no rights of exclusion, leading to the tragedy of commons when the common good is overused and, thus, becomes scarce. However, this theory does not hold in the context of the sharing economy, which, instead, is inspired by the tragedy of the anticommons (Heller 1998). It includes rights of exclusion and no effective privileged utilisation and, if exclusion is enforced, the resources become underutilised.

The connection to the tragedy of the anticommons helps to explain two characteristics of the sharing economy. On the one hand, anticommons determines idle capacity of resources, thereby favouring sharing practices. On the other hand, shared goods are privately owned and access to them is granted by their owners. Therefore, the concentration of ownership enables the rights of exclusion, often in relation to goods or services which are fairly essential to consumers, such as accommodation or transport. In the SE, owners that grant access to goods or services have no legal obligations to maintain this provision. They respond to market dynamics and can discontinue provision for any economic, financial or business-driven reasons. Also, consumers have no rights related to continuity of provision. The link to FO shows the difficulty involved in the SE of combining market-driven dynamics with promises of social equity (Richardson 2015, Schor et al. 2016, Acquier et al. 2017, Murillo et al. 2017, Laurell & Sandström 2017).

The third connection between the FO and SE literature is related to the concept of close-knit groups and group ownership (Ellickson 1993). Developed in the context of property rights in land, close-knit groups refer to social entities based on cooperation, power distribution and continuous face-to-face interactions among members. The group is formed to enable collective living on shared land, to increase members' benefits, to minimise their costs and to adapt to changing economic conditions. This strand of work suggests that informal social control could avoid the tragedy of the commons. Within a market economy, the idea of cooperative groups becomes appealing only if it generates higher benefits than those resulting from market dynamics (i.e., reduced costs). However, if the market offers better conditions, the reason for a close-knit group disappears. The SE enables access to goods at very competitive prices, discouraging possible formation of close-knit groups. Collective action and shared ownership in the SE emerge only if the cost of owning a common good is lower than the market cost. For example, people could jointly buy and own a car and share its use, but access to cars provided by car-sharing platforms is cheaper. Also, the legal standards for group ownership often do not exist (e.g., shared car insurance).

6 Conclusions

This paper sheds light on fractional ownership to provide a better understanding of the origins of the sharing economy. The analysis of the combined citation networks of the two literatures provides evidence that the sharing economy literature focuses mainly on access-based consumption of goods, which, ultimately are owned individually. This explains the rising ownership polarisation and the difficulties related to the emergence of fractional ownership models in the context of the sharing economy.

Consumer preferences for access rather than ownership, reduce the possibility for fractional ownership where ownership is important if it is shared. Access-based consumption reduces identification of consumers with the shared good, since consumers in the sharing economy are self-interested, lack a sense of community, demonstrate negative reciprocity and do not trust other (Belk 2014a). The temporary feeling of ownership perceived by consumers in the sharing economy rejects the positive impact of the collective psychological ownership perceived by participants if the good is owned by the group, which weakens fractional ownership in the sharing economy.

However, combined analysis of the two literatures showed that the sharing economy has resulted in emergence of the topic of energy communities, which is a case of fractional ownership. Publications on innovation in the sharing economy literature define energy communities as forms of grassroots innovation (Seyfang et al. 2007, Seyfang & Haxeltine 2012). Local energy communities are examples of close-knit groups – often of neighbours – who organise to take responsibility for providing energy at the local level. Driven by the social structure (e.g., shared values and norms, mutual trust, group cooperation and collaboration), the participants in these communities enjoy the social and economic benefit of engaging in sustainable common actions. There are several real experiences of energy communities, and this is a very positive signal suggesting that fractional ownership could be instrumental in alleviating energy poverty (Seyfang et al. 2014, Goedkoop & Devine-Wright 2016, Müller & Welppe 2018). Energy legislation is developing to include regulation of interactions between energy communities and the private sector, to diffuse new climate neutral technologies.

Inspired by the study of energy communities, future research on the sharing economy could be based on fractional ownership models adapted to include self-organising communities to share the purchase, ownership and use of a common asset. More research is needed on mobility in urban areas, where less private car ownership is needed to make city spaces more sustainable (Meelen et al. 2019). Sharing ownership of a car could be a valid alternative for consumers whose budget does not allow purchase of an individual car and who prefer to avoid public transport (or car-sharing schemes) either because they can become congested or because they do not serve all city districts. Communities can have a positive societal impact by increasing access to and ownership of goods or services not affordable individually, thereby alleviating scarcity and reducing poverty. It is important to examine the conditions that might favour the formation of communities and the complex and dynamic interactions among individuals.

References

- Acquier, A., Daudigeos, T. & Pinkse, J. (2017), 'Promises and paradoxes of the sharing economy: An organizing framework', *Technological Forecasting and Social Change* **125**(July), 1–10.
- Adamiak, C., Szyda, B., Dubownik, A. & García-Álvarez, D. (2019), 'Airbnb offer in Spain-Spatial analysis of the pattern and determinants of its distribution', *ISPRS International Journal of Geo-Information* **8**(3), 155.
- Ajzen, I. (1991), 'The theory of planned behavior', *Organizational Behavior And Human Decision Processes* **70**(2), 179–211.
- Albergaria, M. & Jabbour, C. C. J. (2019), 'The role of big data analytics capabilities (BDAC) in understanding the challenges of service information and operations management in the sharing economy: Evidence of peer effects in libraries', *International Journal of Information Management* **51**(September 2019), 102023.
- Alchian, A. A. & Demsetz, H. (1972), 'Production, Information Costs, and Economic Organization', *The American Economic Review* **62**(5), 777–795.
- Amaro, S., Andreu, L. & Huang, S. (2019), 'Millenials' intentions to book on Airbnb', *Current Issues in Tourism* **22**(18), 2284–2298.
- Appel, I. R., Gormley, T. A. & Keim, D. B. (2016), 'Passive investors, not passive owners', *Journal of Financial Economics* **121**(1), 111–141.
- Archambault, É., Campbell, D., Gingras, Y. & Larivière, V. (2009), 'Comparing Bibliometric Statistics Obtained From the Web of Science and Scopus', *Journal of the American Society for Information Science and Technology* **60**(7), 1320–1326.
- Arnould, E. J. & Thompson, C. J. (2005), 'Reflections Twenty Years of Research', *Journal of Consumer Research* **31**(4), 868–882.
- Atasoy, O. & Morewedge, C. K. (2018), 'Digital goods are valued less than physical goods', *Journal of Consumer Research* **44**(6), 1343–1357.
- Azar, J., Schmalz, M. C. & Tecu, I. (2018), 'Anticompetitive Effects of Common Ownership', *Journal of Finance* **73**(4), 1513–1565.
- Baptista, P., Melo, S. & Rolim, C. (2014), 'Energy, Environmental and Mobility Impacts of Car-sharing Systems. Empirical Results from Lisbon, Portugal', *Procedia - Social and Behavioral Sciences* **111**, 28–37.
- Bardhan, P. (1993a), 'Analytics of the Institutions of Informal Cooperation in Rural Development', *World Development* **21**(4), 633–639.
- Bardhan, P. (1993b), 'Symposium on Management of Local Commons', *The Journal of Economic Perspectives* **7**(4), 87–92.
- Bardhan, P. (2000), 'Irrigation and Cooperation: An Empirical Analysis of 48 Irrigation Communities in South India', *Economic Development and Cultural Change* **48**(4), 847–865.
- Bardhi, F. & Eckhardt, G. M. (2012), 'Access-Based Consumption: The Case of Car Sharing', *Journal of Consumer Research* **39**(4), 881–898.

- Bastian, M., Heymann, S. & Jacomy, M. (2009), Gephi: an open source software for exploring and manipulating networks, *in* 'International AAAI Conference on Weblogs and Social Media'.
- Batagelj, V. (2003), 'Efficient Algorithms for Citation Network Analysis', *arXiv:cs/0309023v1* pp. 1–27.
URL: <http://arxiv.org/abs/cs/0309023>
- Batagelj, V., Ferligoj, A. & Squazzoni, F. (2017), 'The emergence of a field: a network analysis of research on peer review', *Scientometrics* **113**(1), 503–532.
- Bebchuk, L. & Hirst, S. (2019), 'Index funds and the future of corporate governance: Theory, evidence, and policy', *Columbia Law Review* **118**(8), 2029–2145.
- Beggan, J. K. (1992), 'On the Social Nature of Nonsocial Perception: The Mere Ownership Effect', *Journal of Personality and Social Psychology* **62**(2), 229–237.
- Beggan, J. K. & Brown, E. M. (1994), 'Association as a Psychological Justification for Ownership', *The Journal of Psychology* **128**(4), 365–380.
- Belk, R. (1985), 'Materialism: Trait Aspects of Living in the Material World', *Journal of Consumer Research* **12**(3), 265.
- Belk, R. (1988), 'Possessions and the Extended Self', *Journal of Consumer Research* **15**(2), 139–168.
- Belk, R. (2007), 'Why Not Share Rather than Own?', *The Annals of the American Academy of Political and Social Science* **611**(May 2007), 126–140.
- Belk, R. (2010), 'Sharing', *Journal of Consumer Research* **36**(5), 715–734.
- Belk, R. (2014a), 'Sharing versus pseudo-sharing in web 2.0', *Anthropologist* **18**(1), 7–23.
- Belk, R. (2014b), 'You are what you can access: Sharing and collaborative consumption online', *Journal of Business Research* **67**(8), 1595–1600.
- Belk, R. (2017), 'Sharing without caring', *Cambridge Journal of Regions, Economy and Society* **10**(2), 249–261.
- Belk, R. W. (2013), 'Extended Self in a Digital World', *Journal of Consumer Research* **40**(3), 477–500.
- Belk, R. W. & Coon, G. S. (1993), 'Gift Giving as Agapic Love: An Alternative to the Exchange Paradigm Based on Dating Experiences', *Journal of Consumer Research* **20**(3), 393.
- Benkler, Y. (2002), 'Coase's Penguin, or, Linux and The Nature of the Firm', *Yale Law Journal* **112**(3), 369–446.
- Benkler, Y. (2004), 'Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production', *The Yale Law Journal* **114**(2), 273–358.
- Benkler, Y. (2011), *The penguin and the leviathan: How cooperation triumphs over self-interest*, Crown Business.

- Benoit, S., Baker, T. L., Bolton, R. N., Gruber, T. & Kandampully, J. (2017), 'A triadic framework for collaborative consumption (CC): Motives, activities and resources & capabilities of actors', *Journal of Business Research* **79**(May), 219–227.
- Böcker, L. & Meelen, T. (2017), 'Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation', *Environmental Innovation and Societal Transitions* **23**, 28–39.
- Botsman, R. (2019), 'The sharing economy: dictionary of commonly used terms'.
- Botsman, R. & Roger, R. (2010), *What's Mine Is Yours: The Rise of Collaborative Consumption*, Harper Collins.
- Botsman, R. & Roger, R. (2011), *What's Mine Is Yours: How Collaborative Consumption is Changing the Way We Live*, HarperCollins Business.
- Bowles, S. (2004), *Microeconomics: behavior, institutions, and evolution*, Princeton University Press.
- Bradley, K. & Pargman, D. (2017), 'The sharing economy as the commons of the 21st century', *Cambridge Journal of Regions, Economy and Society* **10**, 231–247.
- Brito, D., Ribeiro, R. & Vasconcelos, H. (2018), 'Quantifying the coordinated effects of partial horizontal acquisitions', *European Economic Review* **110**, 108–149.
- Buchanan, J. M. (1965), 'An Economic Theory of Clubs', *Economica* **32**(125), 1–14.
- Chen, Y. (2009), 'Possession and Access: Consumer Desires and Value Perceptions Regarding Contemporary Art Collection and Exhibit Visits', *Journal of Consumer Research* **35**(6), 925–940.
- Claessens, S., Djankov, S. & Lang, L. H. (2000), 'The separation of ownership and control in East Asian Corporations', *Journal of Financial Economics* **58**, 81–112.
- Coase, R. H. (1937), 'The Nature of the Firm', *Economica* **4**(16), 386–405.
- Coase, R. H. (1960), 'The Problem of Social Cost', *The Journal of Law & Economics* **56**(4), 837–877.
- Codagnone, C., Abadie, F. & Biagi, F. (2016), 'The Future of Work in the 'Sharing Economy'', *JRC Science for Policy Report* **JRC101280**.
- Codagnone, C., Biagi, F. & Abadie, F. (2016), 'The passions and the interests: Unpacking the 'sharing economy'', *JRC Science for Policy Report* **JRC101279**.
- Coffee, J. C. J. (1991), 'Liquidity versus Control: The Institutional Investor as Corporate Monitor', *Columbia Law Review* **91**(6), 1277–1368.
- Crucke, S. & Slabbinck, H. (2019), 'An Experimental Vignette Study on the Attractiveness of Ownership-Based Carsharing Communities: A Social Capital Theory Perspective', *Environment and Behavior* .
- Curtis, S. K. & Lehner, M. (2019), 'Defining the sharing economy for sustainability', *Sustainability (Switzerland)* **11**(3).

- Czakó, K., Szabó, K., Tóth, M. & Fekete, D. (2019), 'Differences, Constraints and Key Elements of Providing Local Sharing Economy Services in Different-Sized Cities: A Hungarian Case', *Resources* **8**(3), 1–15.
- Dann, D., Teubner, T. & Weinhardt, C. (2019), 'Poster child and guinea pig – insights from a structured literature review on Airbnb', *International Journal of Contemporary Hospitality Management* **31**(1), 427–473.
- Davis, F. D. (1989), 'Perceived usefulness, perceived ease of use, and user acceptance of information technology', *MIS Quarterly* **13**(3), 319–339.
- de Rivera, J., Gordo, Á., Cassidy, P. & Apesteguía, A. (2017), 'A netnographic study of P2P collaborative consumption platforms' user interface and design', *Environmental Innovation and Societal Transitions* **23**, 11–27.
- Demsetz, H. (1967), 'Toward a Theory of Property Rights', *American Economic Review* **57**(2), 347–359.
- Demsetz, H. & Lehn, K. (1985), 'The Structure of Corporate Ownership: Causes and Consequences', *Journal of Political Economy* **93**(6), 1155–1177.
- Dittmar, H. (1992), *The social psychology of material possessions: to have is to be*, Harvester Wheatsheaf and St. Martin's Press, Hemel Hempstead.
- Domènech, A., Larpin, B., Schegg, R. & Scaglione, M. (2019), 'Disentangling the geographical logic of Airbnb in Switzerland', *Erdkunde* **73**(4), 245–258.
- Dreyer, B., Lüdeke-Freund, F., Hamann, R. & Faccar, K. (2017), 'Upsides and downsides of the sharing economy: Collaborative consumption business models' stakeholder value impacts and their relationship to context', *Technological Forecasting and Social Change* **125**, 87–104.
- Eckhardt, G. M. & Bardhi, F. (2015), 'The Sharing Economy Isn't About Sharing at All', *Harvard Business Review* **28**(1).
- Edelman, B., Luca, M. & Svirsky, D. (2017), 'Racial discrimination in the sharing economy: Evidence from a field experiment', *American Economic Journal: Applied Economics* **9**(2), 1–22.
- Edmans, A. (2014), 'Blockholders and Corporate Governance', *Annual Review of Financial Economics* **6**, 23–50.
- Elhauge, E. (2016), 'Horizontal Shareholding', *Harvard Law Review* **129**(5), 1267–1317.
- Ellickson, R. C. (1993), 'Property in Land', *The Yale Law Journal* **102**(6), 1315–1400.
- Ert, E., Fleischer, A. & Magen, N. (2016), 'Trust and reputation in the sharing economy: The role of personal photos in Airbnb', *Tourism Management* **55**, 62–73.
- Ertz, M. & Leblanc-Proulx, S. (2018), 'Sustainability in the collaborative economy: A bibliometric analysis reveals emerging interest', *Journal of Cleaner Production* **196**, 1073–1085.
- Faccio, M. & Lang, L. H. (2002), 'The ultimate ownership of Western European corporations', *Journal of Financial Economics* **65**(3), 365–395.

- Fama, E. F. (1980), 'Agency Problems and the Theory of the Firm', *Journal of Political Economy* **88**(2), 288–307.
- Fama, E. F. & Jensen, M. C. (1983), 'Chicago Separation of Ownership', *Journal of Law & Economics* **26**(2), 301–325.
- Felson, M. & Spaeth, J. L. (1978), 'Community structure and collaborative consumption: A routine activity approach', *American Behavioral Scientist* **21**(4), 614–624.
- Fichtner, J., Heemskerk, E. M. & Garcia-Bernardo, J. (2017), 'Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk', *Business and Politics* **19**(2), 298–326.
- Firkorn, J. & Müller, M. (2011), 'What will be the environmental effects of new free-floating car-sharing systems? The case of car2go in Ulm', *Ecological Economics* **70**(8), 1519–1528.
- Fisch, J., Hamdani, A. & Solomon, S. (2019), 'The New Titans of Wall Street: A Theoretical Framework for Passive Investors', *University of Pennsylvania Law Review* **168**(1), 17–72.
- Fraiberger, S. P. & Sundararajan, A. (2015), 'Peer-to-Peer Rental Markets in the Sharing Economy', *NYU Stern School of Business Research Paper* pp. 1–44.
- Frenken, K. & Schor, J. (2017), 'Putting the sharing economy into perspective', *Environmental Innovation and Societal Transitions* **23**, 3–10.
- Furby, L. (1980), 'The Origins and Early Development of Possessive Behavior', *Political Psychology* **2**(1), 30.
- Gansky, L. (2010), *The Mesh: Why the Future of Business Is Sharing*, Penguin.
- Gavel, Y. & Iselid, L. (2008), 'Web of Science and Scopus: a journal title overlap study', *Online information review* pp. 8–21.
- Giesler, M. (2006), 'Consumer Gift Systems', *Journal of Consumer Research* **33**(2), 283–290.
- Godelnik, R. (2017), 'Millennials and the sharing economy: Lessons from a 'buy nothing new, share everything month' project', *Environmental Innovation and Societal Transitions* **23**, 40–52.
- Goedkoop, F. & Devine-Wright, P. (2016), 'Partnership or placation? the role of trust and justice in the shared ownership of renewable energy projects', *Energy Research and Social Science* **17**, 135–146.
- Görör, G. (2018), 'The Definitions of Sharing Economy: A Systematic Literature Review', *Management* **13**(2), 175–189.
- Granovetter, M. (1985), 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology* **91**(3), 481–510.
- Gray, K. (2008), 'Community land trusts in the United States', *Journal of Community Practice* **16**(1), 65–78.
- Gregory, A. & Halff, G. (2017), 'Understanding public relations in the 'sharing economy'', *Public Relations Review* **43**(1), 4–13.

- Grossman, S. J. & Hart, O. D. (1986), 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration', *Journal of Political Economy* **94**(4), 691–719.
- Guttentag, D. (2015), 'Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector', *Current Issues in Tourism* **18**(12), 1192–1217.
- Hamari, J., Sjöklint, M. & Ukkonen, A. (2016), 'The Sharing Economy: Why People Participate in Collaborative Consumption', *Journal of the Association for Information Science and Technology* **67**(9), 2047–2059.
- Hardin, G. (1968), 'The Tragedy of the Commons', *Science* **162**, 1243–1248.
- Hardin, R. (1982), *Collective Action*, Johns Hopkins University Press.
- Hart, O. & Moore, J. (1990), 'Property Rights and the Nature of the Firm', *Journal of Political Economy* **98**(6), 1119–1158.
- Hartl, B., Hofmann, E. & Kirchler, E. (2016), 'Do we need rules for "what's mine is yours"? Governance in collaborative consumption communities', *Journal of Business Research* **69**(8), 2756–2763.
- Hartl, B., Kamleitner, B. & Holub, S. (2020), 'Take me on a ride: The role of environmentalist identity for carpooling', *Psychology and Marketing* pp. 1–14.
- Hasanov, M. & Zuidema, C. (2018), 'The transformative power of self-organization: Towards a conceptual framework for understanding local energy initiatives in The Netherlands', *Energy Research and Social Science* **37**(September 2017), 85–93.
- Hastings, E., Wong, S. & Walters, M. (2006), 'Governance in a co-ownership environment. The management of multiple-ownership property in Hong Kong', *Property Management* **24**(3), 293–308.
- Hawlitshchek, F., Stofberg, N., Teubner, T., Tu, P. & Weinhardt, C. (2018), 'How corporate sharewashing practices undermine consumer trust', *Sustainability (Switzerland)* **10**(8), 1.
- Heinrichs, H. (2013), 'Sharing Economy: A Potential New Pathway to Sustainability', *GAIA: Ecological Perspectives for Science and Society* **22**(4), 228–231.
- Heller, M. A. (1998), 'The Tragedy of the Anticommons: Property in the Transition from Marx to Markets', *Harvard Law Review* **111**(3), 621.
- Helm, S., Bhappu, A. D., Yang, H. & Qiu, R. (2019), 'Zone of Optimal Distinctiveness: Provider Asset Personalization and the Psychological Ownership of Shared Accommodation', *Advances in Service Science* **73**.
- Hofmann, E., Hartl, B. & Penz, E. (2017), 'Power versus trust – what matters more in collaborative consumption?', *Journal of Services Marketing* **31**(6), 589–603.
- Hummon, N. P. & Dereian, P. (1989), 'Connectivity in a citation network: The development of DNA theory', *Social Networks* **11**(1), 39–63.
- Jensen, M. C. & Meckling, W. H. (1976), 'Theory of the firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics* **3**, 305–360.

- Jensen, M. C. & Meckling, W. H. (1979), 'Rights and Production Functions : An Application to Labor-Managed Firms and Codetermination', *Journal of Business* **52**(4), 469–506.
- John, N. A. (2013a), 'Sharing and Web 2.0: The emergence of a keyword', *New Media and Society* **15**(2), 167–182.
- John, N. A. (2013b), 'The Social Logics of Sharing', *Communication Review* **16**(3), 113–131.
- Kanngiesser, P., Gjersoe, N. & Hood, B. M. (2010), 'The effect of creative labor on property-ownership transfer by preschool children and adults', *Psychological Science* **21**(9), 1236–1241.
- Kim, N. L. & Jin, B. E. (2020), 'Why buy new when one can share? Exploring collaborative consumption motivations for consumer goods', *International Journal of Consumer Studies* **44**(2), 122–130.
- Klein, K. J. (1987), 'Employee Stock Ownership and Employee Attitudes: A Test of Three Models', *Journal of Applied Psychology* **72**(2), 319–332.
- Kleine, S. S., Kleine-III, R. E. & Allen, C. T. (1995), 'How is a Possession "Me" or "Not Me"? Characterizing Types and an Antecedent of Material Possession Attachment', *Journal of Consumer Research* **22**(3), 327.
- Kovacheva, A. & Lambertson, C. P. (2018), Whose experience is it, anyway? Psychological ownership and enjoyment of shared experiences, in J. Peck & S. B. Shu, eds, 'Psychological ownership and consumer behavior', Springer, Cham, pp. 195–210.
- La Porta, R., Lopez-de Silanes, F. & Shleifer, A. (1999), 'Corporate Ownership around the World', *The Journal of Finance* **54**(2), 471–517.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A. & Vishny, R. W. (1997), 'Legal Determinants of External Finance', *Journal of Finance* **52**(3), 1131–1150.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A. & Vishny, R. W. (1998), 'Law and Finance', *Journal of Political Economy* **106**(6), 1113–1155.
- Lambertson, C. P. & Rose, R. L. (2012), 'When Is Ours Better Than Mine? A Framework for Understanding and Altering Participation in Commercial Sharing Systems', *Journal of Marketing* **76**(4), 109–125.
- Laurell, C. & Sandström, C. (2017), 'The sharing economy in social media: Analyzing tensions between market and non-market logics', *Technological Forecasting and Social Change* **125**(June 2016), 58–65.
- Lawson, S. (2010), 'Transumers: Motivations of Non-ownership Consumption', *Advances in Consumer Research* **37**, 843–847.
- Lee, H., Yang, S. B. & Koo, C. (2019), 'Exploring the effect of Airbnb hosts' attachment and psychological ownership in the sharing economy', *Tourism Management* **70**(February 2018), 284–294.
- Leung, X. Y., Xue, L. & Wen, H. (2019), 'Framing the sharing economy: Toward a sustainable ecosystem', *Tourism Management* **71**(September 2018), 44–53.
- Lindenberg, S. (1982), 'Sharing groups: Theory and suggested applications', *Journal of mathematical sociology* **9**(1), 33–62.

- Liu, J. S. & Lu, L. Y. Y. (2012), 'An Integrated Approach for Main Path Analysis: Development of the Hirsch Index as an Example', *Journal of the American Society for information Science and Technology* **63**(3), 528–542.
- Lowies, B., Whait, R. B., Viljoen, C. & McGreal, S. (2018), 'Fractional ownership – an alternative residential property investment vehicle', *Journal of Property Investment and Finance* **36**(6), 513–522.
- Marcoux, J.-S. (2009), 'Escaping the Gift Economy', *Journal of Consumer Research* **36**(4), 671–685.
- Martin, C. J. (2016), 'The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism?', *Ecological Economics* **121**, 149–159.
- Matzler, K., Veider, V. & Kathan, W. (2015), 'Adapting to the Sharing Economy', *Mit Sloan Management Review* **56**(2), 71–77.
- Mccahery, J. A., Sautner, Z. & Starks, L. T. (2016), 'Behind the Scenes: The Corporate Governance Preferences of Institutional Investors', *Journal of Finance* **71**(6), 2905–2932.
- McConnell, J. J. & Servaes, H. (1990), 'Additional evidence on equity ownership and corporate value', *Journal of Financial Economics* **27**, 595–612.
- McKee, D. (2017), 'Neoliberalism and the legality of peer platform markets', *Environmental Innovation and Societal Transitions* **23**(February), 105–113.
- Meelen, T., Frenken, K. & Hobrinc, S. (2019), 'Weak spots for car-sharing in The Netherlands? The geography of socio-technical regimes and the adoption of niche innovations', *Energy Research and Social Science* **52**(May 2018), 132–143.
- Mitchell, M. S., Cropanzano, R. S. & Quisenberry, D. M. (2012), Social Exchange Theory, Exchange Resources, and Interpersonal Relationships: A Modest Resolution of Theoretical Difficulties, in K. Törnblom & A. Kazemi, eds, 'Handbook of Social Resource Theory Theoretical Extensions, Empirical Insights, and Social Applications', New York: Springer, pp. 99–118.
- Möhlmann, M. (2015), 'Collaborative consumption: determinants of satisfaction and the likelihood of using a sharing economy option again', *Journal of Consumer Behaviour* **14**(3), 193–207.
- Mongeon, P. & Paul-Hus, A. (2016), 'The journal coverage of Web of Science and Scopus: a comparative analysis', *Scientometrics* **106**, 213–228.
- Morck, R., Shleifer, A. & Vishny, R. W. (1988), 'Management ownership and market valuation. An empirical analysis', *Journal of Financial Economics* **20**(C), 293–315.
- Morley, J. (2019), 'Too Big to Be Activist', *Southern California Law Review* **92**, 1407.
- Morozov, E. (2013), 'The 'sharing economy' undermines workers' rights', *Financial Times* .
- Mrvar, A. & Batagelj, V. (2016), 'Analysis and visualization of large networks with program package Pajek', *Complex Adaptive Systems Modeling* **4**(1).
- Müller, S. C. & Welpel, I. M. (2018), 'Sharing electricity storage at the community level: An empirical analysis of potential business models and barriers', *Energy Policy* **118**(February), 492–503.

- Muñoz, P. & Cohen, B. (2017), 'Mapping out the sharing economy: A configurational approach to sharing business modeling', *Technological Forecasting and Social Change* **125**, 21–37.
- Murillo, D., Buckland, H. & Val, E. (2017), 'When the sharing economy becomes neoliberalism on steroids: Unravelling the controversies', *Technological Forecasting and Social Change* **125**(June), 66–76.
- Myers, S. C. (1977), 'Determinants of corporate borrowing', *Circulation Journal* **5**, 147–175.
- Neary, K. R., Friedman, O. & Burnstein, C. L. (2009), 'Preschoolers Infer Ownership From "Control of Permission"', *Developmental Psychology* **45**(3), 873–876.
- Newlands, G., Lutz, C. & Fieseler, C. (2018), 'Collective action and provider classification in the sharing economy', *New Technology, Work and Employment* **33**(3), 250–267.
- Olson, M. J. (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press.
- Ostrom, E. (1990), *Governing the Commons. The Evolution of Institutions for Collective Action*, Cambridge University Press.
- Ostrom, E., Gardner, R. & Walker, J. (1994), *Rules, Games, and Common-Pool Resources*, Michigan.
- Ozanne, L. K. & Ballantine, P. W. (2010), 'Sharing as a form of anti-consumption? An examination of toy library users', *Journal of Consumer Behaviour* **9**, 485–498.
- Ozanne, L. K. & Ozanne, J. L. (2011), 'A child's right to Play: The social construction of civic virtues in toy libraries', *Journal of Public Policy and Marketing* **30**(2), 264–278.
- Pasimeni, F. (2019), 'Community-Based Adoption and Diffusion of Micro-Grids: Analysis of the Italian Case with Agent-Based Model', *Journal of Artificial Societies and Social Simulation* **22**(1).
- Pasimeni, F. & Ciarli, T. (2018), 'Diffusion of shared goods in consumers' coalitions. An agent-based simulation', *SPRU Working Paper Series (SWPS)* **24**(ISSN 2057-6668), 1–50.
- Patel, M. S. (2018), 'Common Ownership, Institutional Investors, and Antitrust', *Antitrust Law Journal* **82**(1), 270.
- Paundra, J., Rook, L., van Dalen, J. & Ketter, W. (2017), 'Preferences for car sharing services: Effects of instrumental attributes and psychological ownership', *Journal of Environmental Psychology* **53**, 121–130.
- Peck, J. & Shu, S. B. (2009), 'The Effect of Mere Touch on Perceived Ownership', *Journal of Consumer Research* **36**(3), 434–447.
- Pierce, J., Kostova, T. & Dirks, K. (2001), 'Toward a Theory of Psychological Ownership in Organizations', *The academy of management review* **26**(2), 298–310.
- Pierce, J. L. & Jussila, I. (2010), 'Collective psychological ownership within the work and organizational context: Construct introduction and elaboration', *Journal of Organizational Behavior* **31**(6), 810–834.

- Pierce, J. L., Kostova, T. & Dirks, K. T. (2003), 'The State of Psychological Ownership: Integrating and Extending a Century of Research', *Review of General Psychology* **7**(1), 84–107.
- Pierce, J. L., Rubinfeld, S. A. & Susan, M. (1991), 'Employee Ownership: A Conceptual Model of Process and Effects', *Academy of Management Review* **16**(1), 121–144.
- Piscicelli, L., Cooper, T. & Fisher, T. (2015), 'The role of values in collaborative consumption: Insights from a product-service system for lending and borrowing in the UK', *Journal of Cleaner Production* **97**, 21–29.
- Posner, E. A., Scott Morton, F. M. & Weyl, E. G. (2017), 'A Proposal to Limit the Anti-Competitive Power of Institutional Investors', *Antitrust Law Journal* **81**(3), 669–728.
- Price, L. L., Arnould, E. J. & Folkman Curasi, C. (2000), 'Older Consumers' Disposition of Special Possessions', *Journal of Consumer Research* **27**(2), 179–201.
- Puschmann, T. & Alt, R. (2016), 'Sharing economy', *Business and Information Systems Engineering* **58**(1), 93–99.
- Ranjbari, M., Morales-Alonso, G. & Carrasco-Gallego, R. (2018), 'Conceptualizing the sharing economy through presenting a comprehensive framework', *Sustainability (Switzerland)* **10**(7).
- Rauch, D. E. & Schleicher, D. (2015), 'Like Uber, But for Local Governmental Policy: The Future of Local Regulation of the Sharing Economy', *Ohio State Law Journal* **76**(4), 901–963.
- Richardson, L. (2015), 'Performing the sharing economy', *Geoforum* **67**, 121–129.
- Richins, M. L. (1994), 'Special Possessions and the Expression of Material Values Linked references are available on JSTOR for this article : Special Possessions and the Expression of Material Values', *Journal of Consumer Research* **21**(3), 522–533.
- Rock, E. B. & Rubinfeld, D. L. (2018), 'Antitrust for Institutional Investors', *Antitrust Law Journal* **82**(1), 221–278.
- Rudmin, F. (1991), "'To own is to be perceived to own": A social cognitive look at the ownership of property', *Journal of Social Behavior and Personality* **6**(6), 85–104.
- Schmalz, M. C. (2018), 'Common-Ownership Concentration and Corporate Conduct', *Annual Review of Financial Economics* **10**(1), 413–448.
- Scholz, T. (2016), *Platform Cooperativism. Challenging the Corporate Sharing Economy*, Rosa Luxemburg Stiftung, New York Office.
- Schor, J. (2016), 'Debating the Sharing Economy', *Journal of Self-Governance and Management Economics* **4**(3), 7–22.
- Schor, J. B., Fitzmaurice, C., Carfagna, L. B. & Attwood-Charles, W. (2016), 'Paradoxes of openness and distinction in the sharing economy', *Poetics* **54**, 66–81.
- Schor, J. B. & Fitzmaurice, C. J. (2015), Collaborating and connecting: the emergence of the sharing economy, in L. Reisch & J. Thøgersen, eds, 'Handbook of research on sustainable consumption', Edward Elgar Publishing, Cheltenham, UK, chapter 26, pp. 410–425.

- Seyfang, G. & Haxeltine, A. (2012), 'Growing grassroots innovations : exploring the role of community-based initiatives in governing sustainable energy transitions', *Environment and Planning C: Government and Policy* **30**, 381–400.
- Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M. & Smith, A. (2014), 'A grassroots sustainable energy niche? Reflections on community energy in the UK', *Environmental Innovation and Societal Transitions* **13**, 21–44.
- Seyfang, G., Smith, A., Seyfang, G. & Smith, A. (2007), 'Grassroots innovations for sustainable development : Towards a new research and policy agenda Grassroots Innovations for Sustainable Development : Towards a New Research and Policy Agenda', *Environmental Politics* **4016**(February).
- Shaheen, S. A. & Cohen, A. P. (2013), 'Carsharing and Personal Vehicle Services: Worldwide Market Developments and Emerging Trends', *International Journal of Sustainable Transportation* **7**(1), 5–34.
- Shaheen, S. & Chan, N. (2016), 'Mobility and the Sharing Economy: Potential to Overcome First- and Last-Mile Public Transit Connections', *Built Environment* **42**(4), 573–588.
- Sharzer, G. (2012), *No local: why small-scale alternatives won't change the world*, John Hunt Publishing.
- Shleifer, A. & Vishny, R. W. (1997), 'A Survey of Corporate Governance', *Journal of Finance* **52**(2), 737–783.
- Sims, B. & Kienzle, J. (2016), 'Making Mechanization Accessible to Smallholder Farmers in Sub-Saharan Africa', *Environments* **3**(4), 11.
- Slee, T. (2017), *What's yours is mine: Against the sharing economy*, Or Books.
- Spiggle, S. (1994), 'Analysis and Interpretation of Qualitative Data in Consumer Research', *Journal of Consumer Research* **21**(3), 491.
- Stulz, R. M. (1988), 'Managerial control of voting rights. Financing policies and the market for corporate control', *Journal of Financial Economics* **20**(C), 25–54.
- Sundararajan, A. (2016), *The sharing economy: The end of employment and the rise of crowd-based capitalism*, MIT Press.
- Thornton, A. (2009), 'Pastures of plenty?: Land rights and community-based agriculture in Peddie, a former homeland town in South Africa', *Applied Geography* **29**(1), 12–20.
- Traag, V. A., Waltman, L. & van Eck, N. J. (2019), 'From Louvain to Leiden: guaranteeing well-connected communities', *Scientific Reports* **9**(1), 1–12.
- Tussyadiah, I. P. (2016), 'Factors of satisfaction and intention to use peer-to-peer accommodation', *International Journal of Hospitality Management* **55**, 70–80.
- Tussyadiah, I. P. & Pesonen, J. (2016), 'Impacts of Peer-to-Peer Accommodation Use on Travel Patterns', *Journal of Travel Research* **55**(8), 1022–1040.

- Van Dyne, L. & Pierce, J. L. (2004), 'Psychological ownership and feelings of possession: Three field studies predicting employee attitudes and organizational citizenship behavior', *Journal of Organizational Behavior* **25**(4), 439–459.
- van Eck, N. J. & Waltman, L. (2010), 'Software survey: VOSviewer, a computer program for bibliometric mapping', *Scientometrics* **84**, 523–538.
- Van Eck, N. J. & Waltman, L. (2017), Accuracy of citation data in Web of Science and Scopus, in 'ISSI 2017 - 16th International Conference on Scientometrics and Informetrics, Conference Proceedings', pp. 1087–1092.
- Verspagen, B. (2007), 'Mapping technological trajectories as patent citation networks: A study on the history of fuel cell research', *Advances in Complex Systems* **10**(1), 93–115.
- Vieira, E. & Gomes, J. (2009), 'A comparison of Scopus and Web of Science for a typical university', *Scientometrics* **81**(2), 587–600.
- Walker, D. I. (2019), 'Common Ownership and Executive Incentives: The Implausibility of Compensation As an Anticompetitive Mechanism', *Boston University Law Review* **99**(6), 2373–2413.
- Waltman, L. & van Eck, N. J. (2012), 'A new methodology for constructing a publication-level classification system of science', *Journal of the American Society for Information Science and Technology* **63**(12), 2378–2392.
- Waltman, L. & Van Eck, N. J. (2013), 'A smart local moving algorithm for large-scale modularity-based community detection', *European Physical Journal B* **86**(11).
- WEF, W. E. F. (2017), 'What exactly is the sharing economy?'.
URL: <https://www.weforum.org/agenda/2017/12/when-is-sharing-not-really-sharing/>
- Williamson, O. E. (1975), *Markets and hierarchies*, Free Press, New York.
- Williamson, O. E. (1981), 'The Economics of Organization: The Transaction Cost Approach', *American Journal of Sociology* **87**(3), 548–577.
- Williamson, O. E. (1985), *The economic institutions of capitalism: Firms, Markets, Relational Contracting*, Free Press, New York.
- Witt, A., Suzor, N. & Wikström, P. (2015), 'Regulating ride-sharing in the peer economy', *Communication Research and Practice* **1**(2), 174–190.
- Xiao, Y., Lu, L. Y. Y., Liu, J. S. & Zhou, Z. (2014), 'Knowledge diffusion path analysis of data quality literature: A main path analysis', *Journal of Informetrics* **8**(3), 594–605.
- Yang, W., Karaesmen, I. Z., Keskinocak, P. & Tayur, S. (2008), 'Aircraft and crew scheduling for fractional ownership programs', *Annals of Operations Research* **159**(1), 415–431.
- Zervas, G., Proserpio, D. & Byers, J. W. (2017), 'The rise of the sharing economy: Estimating the impact of airbnb on the hotel industry', *Journal of Marketing Research* **54**(5), 687–705.

A Annex A

Data Clean-Up Process

To highlight the issues encountered in the dataset of publication, I will consider the manuscript by Russel Belk published in 2014, entitled “You are what you can access: Sharing and collaborative consumption online” (*Journal of Business Research* vol. 67, p. 1595). Based on this bibliographic information, this publication should be identified uniquely in the network as a node labelled with the string *Belk_R(2014)V67:P1595*. Unfortunately, references to this publication are reported in various ways as shown in Table A1. If raw data are used with no further data harmonisation, the six CR for this publication are represented by four different network nodes, each labelled with a different string. The data cleaning process aimed to harmonise bibliographic information for a given publication in order to obtain a single node labelled uniquely. In the example, all six references are harmonised with the string in the last column of the last row.

Author	Year	Journal	Vol	Page	String
Belk R.	2014	J BUS RES			Belk_R(2014)
Belk R.	2014	J BUSINESS RES			Belk_R(2014)
Belk R.	2014	J BUSINESS RES	V67		Belk_R(2014)V67
Belk Russell	2014	J BUS RES		P1595	Belk_R(2014)P1595
Belk R	2014	J BUS RES	V67	P1595	Belk_R(2014)V67:P1595
Belk Russell	2014	J BUS RES	V67	P1595	Belk_R(2014)V67:P1595

Table A1: Belk’s publication as cited in different ways

False Negative

The historical expansion of the citation network via search communities with false negatives is summarised in Figure A1. Circular nodes represent publications (CP) downloaded using keywords search. Triangular and square nodes (CR) represent works cited by circular nodes. Square nodes are identified as key publications based on the high number of citations. These are transformed to CP, meaning that a further search was run to extract their CR, visualised in the figure as diamond-shaped nodes.

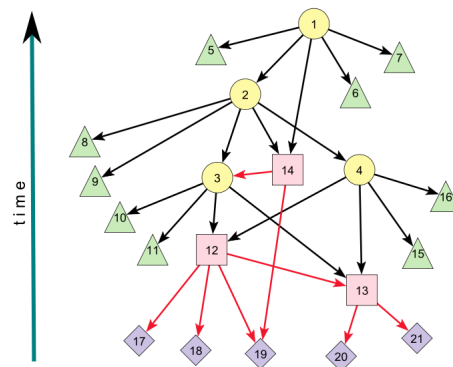


Figure A1: Citation network structure (Batagelj et al. 2017, p.506)

Traversal counts and key-route main-path

Figure A2 illustrates three ways to select the main-path in a network based on traversal counts of the links between nodes. The traversal count of the link B-E has the value 4 since there are 4 paths going through this link: B-E-F-H, B-E-G-H, B-E-G-I and B-E-G-J. The local main-path starts from the source nodes (A and B) and goes to the sink nodes (H, I and J), following the links with the highest traversal counts. The global main-path selects the paths with the highest sum of traversal counts. The key-route main-path first selects the links with the highest traversal counts, for example, those with values higher than or equal to 4, then continues towards the source and sink nodes by going through those links with the highest traversal counts.

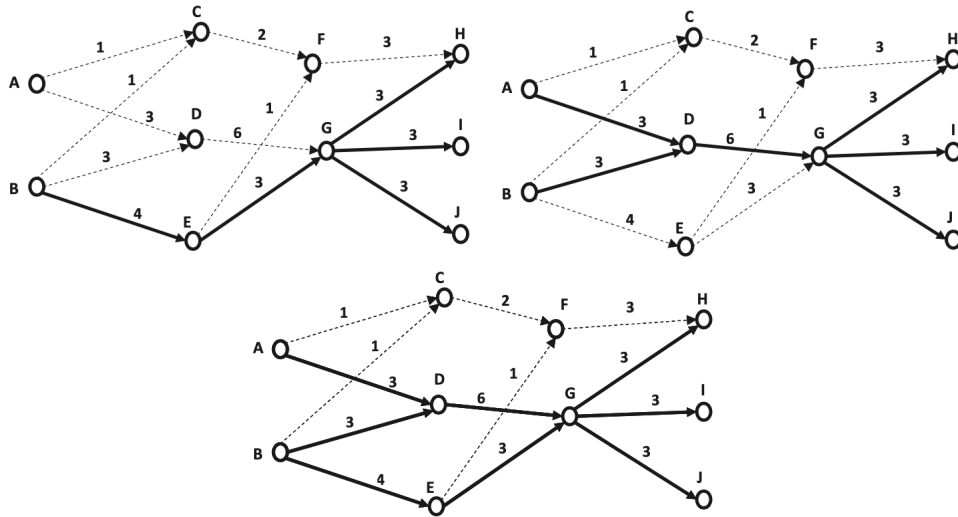


Figure A2: Search Path Count: local (top-left), global (top-right) and key-route (bottom) main-path (Xiao et al. 2014, p.596-597)

Preprint Transformation

Figure A3 illustrates how preprint transformation modifies the network and the links among publications (nodes) citing each other in the same year. This transformation added two preprint publications to the publications that cite each other and were published in the same year. The original publications now cite their own preprint and the preprint version of the other publication.

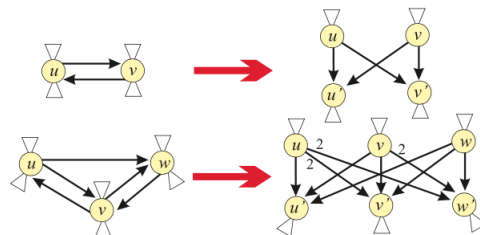


Figure A3: Preprint transformation (Batagelj 2003, p.9)

Labels of Clusters Identified via the Co-Word Analysis

Table A2 and Table A3 presents the list of cluster labels identified by the Leiden algorithm. These are based on the top three most frequent terms in publication titles and abstracts. The table reports, in order from left to the right, the label of the cluster, the total number of citations, the number of nodes (or publications) and their ratio for each cluster.

Label	Cit.	Node	Ratio	Top 3 terms per cluster	Occurrences	Relevance
ESOP	246	24	10.25	Employee Stock Ownership Plan	9	1.29
				ESOP	12	1.24
				Firm	13	1.10
Employee Ownership	910	50	18.20	Effect	17	1.31
				Employee Ownership	28	1.16
				Study	16	0.53
Theory of Firm	530	43	12.33	Ownership	27	1.05
				Theory	19	1.05
				Firm	20	0.89
Psychological Ownership	374	28	13.36	Psychological Ownership	16	1.29
				Ownership	16	1.10
				Organisation	16	0.61
Productivity Effect	675	44	15.34	Firm	28	1.40
				Productivity	15	1.21
				Effect	21	1.18
Commons	95	10	9.50	Common	5	1.33
				Resource	5	0.83
				Tragedy	3	0.83
Ownership Control	550	36	15.28	Ownership	17	1.43
				Firm	17	0.91
				Control	11	0.66
Competitive Effect	277	31	8.94	Competitive Effect	5	2.15
				Effect	10	1.25
				Mutual Fund	7	1.19
Timeshare	207	34	6.09	Study	21	1.39
				Timeshare	14	0.98
				Timeshare Industry	14	0.64
Participation	117	16	7.31	Firm	6	1.62
				Evidence	6	1.58
				Financial Participation	6	0.82
Social Capital	58	6	9.67	Firm	3	1.00
				Social Capital	4	1.00
				Trust	3	1.00
Governance	92	14	6.57	Internal Governance	2	3.93
				Market Economy	2	1.98
				Incidence	2	0.96
Business Group	80	11	7.27	Business Group	2	2.69
				Chile	2	2.69
				Evidence	2	2.69
Property Right	175	15	11.67	Resource	8	1.39
				Property	7	1.37
				Property Right	5	0.24
Energy Community	78	15	5.20	Community	11	1.44
				Renewable Energy	9	0.98
				Paper	6	0.58

Table A2: Labels of clusters in FO literature identified via co-word analysis

Label	Cit.	Node	Ratio	Top 3 terms per label	Occurrences	Relevance
Framing Sharing Economy	6740	113	59.65	Economy	78	1.71
				Study	56	1.35
				Sharing	41	0.85
Hospitality	3217	94	34.22	Study	64	1.54
				Airbnb	58	1.43
				Accommodation	38	0.58
Carsharing	1547	67	23.09	Car Sharing	23	2.25
				Car	44	1.54
				Carsharing	32	1.23
Possession	593	27	21.96	Consumer	12	1.23
				Article	11	1.07
				Possession	9	0.70
Labour	320	27	11.85	Worker	19	1.27
				Work	19	1.13
				Platform	16	0.60
Trust	995	48	20.73	Trust	40	1.76
				Model	24	1.12
				Study	25	0.99
Acceptance	439	19	23.11	Order	3	2.93
				User Acceptance	4	2.04
				Usage	5	1.68
Platform Economy	670	33	20.30	Platform	23	1.43
				Economy	13	0.78
				Firm	13	0.78
Review	320	20	16.00	Review	16	1.41
				Study	15	1.41
				Mouth	9	0.18
Business Model	465	28	16.61	Business Model	26	1.44
				Literature	15	1.13
				Firm	11	0.44
Product Service System	377	24	15.71	Product Service System	18	1.52
				Pss	15	1.37
				Consumption	15	0.61
Access Ownership	324	18	18.00	Access	11	1.29
				Service	10	1.02
				Ownership	8	0.69
Innovation	218	18	12.11	Article	7	1.22
				Change	10	1.22
				Innovation	9	0.56
Platform	686	33	20.79	Study	19	1.37
				Paper	12	0.82
				Platform	16	0.82
Rating	337	19	17.74	Airbnb	6	1.49
				Rating	7	1.49
				Ebay	6	0.02

Table A3: Labels of clusters in SE literature identified via co-word analysis

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