

DIGITALISATION FOR A MORE SUSTAINABLE ECONOMIC GROWTH

Izabella Gyürüsi; Dennis Gabor College

feierabend@gdf.hu

Keywords: sharing economy, sustainability, consumer behavior

1. THEORETICAL FRAMEWORK

Environmental policy faces the impossible trinity of addressing climate change, maintaining a stable economic growth and at the same time guaranteeing high living standards. It supposes that consumers should not necessarily restrict consume or give up their standard of living, they should not be forced to consume less due to higher prices (this would reduce consumer utilities) policy should rather foster a progressive change in consumer patterns. On the other hand, producers may take into consideration the environmental aspects of the economic activity to a greater extent. It is possible to achieve a more environment friendly way of functioning, without entailing high extra production costs. Digitalisation and smart solutions can contribute to a more rational and a more dynamic economic activity.

In this paper I will assess in what way could the digitalisation and “sharing economy” contribute to sustainable growth, to maintain current consumer utility levels meanwhile reducing the environment pressure.

Environmental policy instruments traditionally focus on formal institutions: on price (environmental taxes and/or subsidies) and quantity (cap-and-trade, emission trading schemes) instruments in order to reduce greenhouse gas emissions. Less analysed but not less important part of market-based instruments, which take into consideration the behavioural aspects of consumption assessing the dynamically changing consumer attitude, influenced a lot by the new trends in information society. Therefore companies, the legislator, and consumers have a great responsibility to direct technological changes towards a more sustainable economic growth.

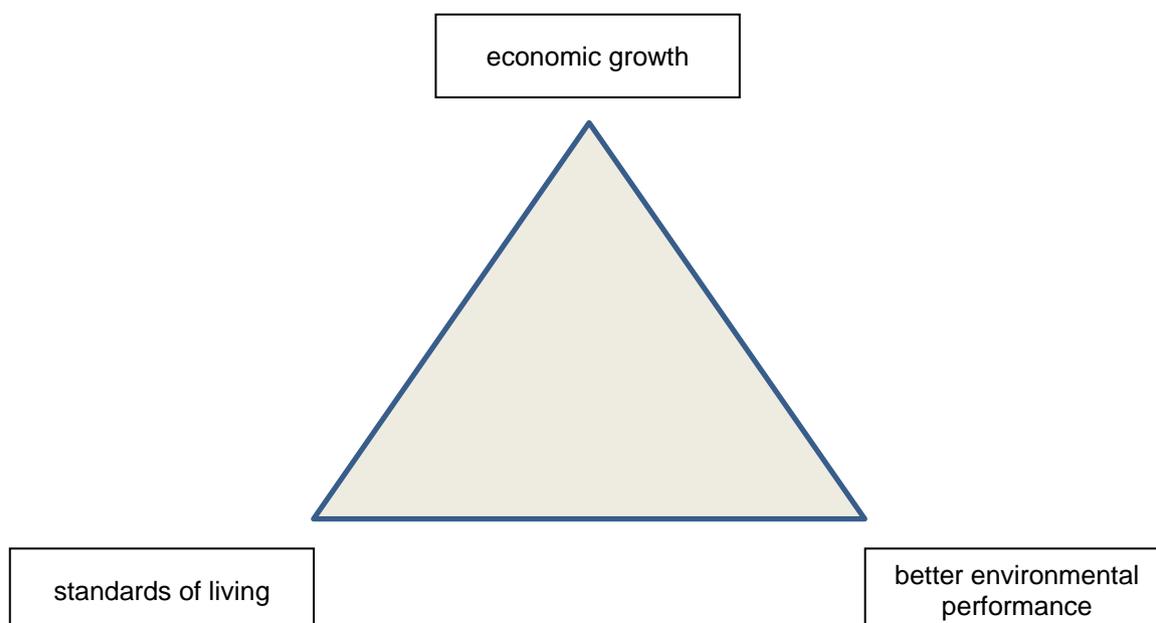


Figure1.
The impossible trinity of economics of climate change
Source: Author

In my argument I will cite institutional economics and behavioural economics literature to describe consumer behaviour, and I will analyse the latest surveys and statistics measuring sharing economy to be able to assess if collaborative economy can contribute to sustainable development goals.

In the first part of this paper I will give a short literature review on behavioural economics and the possibilities of applying these concepts in the field of environmental policies (especially affecting the demand side). Although the green market is usually defined as a supply-oriented sector, the demand problems should also be studied yet companies must fulfil consumer needs, therefore changing consumer habits, directing consumers towards a more environmentally conscious way of consume should be an equally important policy goal. In the second part I will analyse the market effects of collaborative economy, altering consumer patterns and leading to more sustainable (or more unsustainable) future.

2. CONSUMER BEHAVIOUR AND DIGITALISATION

In mainstream economic theory consumers are described as totally rationally thinking, utility-maximizing economic actors, who make their decisions according to their preferences (which are stable on time). However, these assumptions are not that perfect to describe the reality, this so-called homo oeconomicus does not exist, but mainstream assumptions shouldn't be totally neglected. Consumers maximize their utility, although their preferences can change dynamically over time horizon. As Herbert Simon [Simon, 1955] pointed out, consumers face some cognitive boundaries that obstruct them making a totally rational decision. This is called "bounded rationality". It means that external conditions, irrational circumstances can alter consumer behaviour from the neoclassical optimum of consumer choice. It also means that policy makers have some efficient means at their hands which can be used for good purposes. There is a broad literature of behavioural economics that could be cited here, however, this is not the main topic of my argument. I will just point out some behavioural economics considerations which could be efficiently adapted. The framing effect (often used and abused by marketing strategies) means that the success of a marketing or in this case an environmental policy is how it is explained, proposed and interpreted for the public. [Hámori,

2003] As information is costly [Buchanan, 1967] usually consumers do not want to invest too much time in obtaining all the relevant information about a product or service, they often choose the decision which seems to be the most rational and supposes less efforts invested. Public campaigns (informative posters placed at public places) promoting public transport or water and energy saving can be effective if citizens are addressed as a part of a community, for which they are responsible. (see madrid.org) In my opinion formal institutions (defined as the rules of the game by Douglas North, 1991) such as environmental regulations can be more easily implemented if it is accepted and supported by the citizens. This can be more efficiently achieved if people regard themselves as competent, and responsible in the topic.

The digitalisation, the emerge of the Big Data, has changed market patterns to a great extent. [Shapiro & Varian, 1998], [Hámori & Szabó, 2006]

First, it has made transactions easier with less transaction costs¹, are transactions have become more accelerated and they are realized at a global level. Every – economic – exchange entails transactions costs, starting with getting information about what we would like to exchange, negotiating, contracting, maintaining the confidence of transactions and monitoring etc. [Pejovich, 1998] As information is costly, transaction costs do matter, and they can be significant. The information technology, the internet revolution by reducing the costs of getting information, and simplifying, facilitating real time worldwide transactions has contributed to the reduction of transaction costs. Sharing economy platforms (described later) can further reduce transactions costs facilitating consumers to meet their needs, producers to meet buyers, service providers to meet users, innovators to get funds.

Other market efficiency problem is information asymmetry [Akerlof, 1970] which can cause the proliferation of the market of "lemons" (the broad supply of lower quality products abusing the information asymmetry between seller and the buyer) is now reduced due to the existence of forums, consumer reviews, and the accelerated exchange of information. As a consequence, producers are (not only legally) obliged to offer better quality products, and respect consumer rights and to compete not only in prices but also in quality. On the other hand, consumers will have more confidence at realizing transactions.

¹ Transactions costs are referred to in the Coasian meaning see R. Coase, *The Firm, the Market, and the Law*, Chicago: University of Chicago Press, 1988, p. 175

Second, the IT revolution gave birth to the so-called sharing economy. In sustainability transitions research the digital innovations and the sharing economy niche has brought a new perspective for analysis. The accelerated changes of the socio-economic and technical system can reshape traditional relationships between powerful producers, service providers, states and consumers, bringing new patterns for transactions, making them more direct and immediate, therefore bringing changes to market institutions, and mobilising collective action movements [Franceschini and Pansera, 2015, p.70; Smith and Raven 2012]

3. SHARING ECONOMY AND SUSTAINABILITY

3.1. Definition of sharing economy

It is rather difficult to give a proper definition for sharing economy. In the international literature sharing economy is often mentioned as collaborative economy, emphasizing the community-based feature of sharing economy. However, it is necessary to set some prerequisites to know when we are dealing with a sharing economy transaction to be able to measure its size and assess its effects. In this paper I will use the UK Office for National Statistics' definition of sharing economy. According to this definition the main characteristics of sharing economy activities are the following:

- “operating through an online platform through a website or an app
- enabling consumer-to-consumer transactions
- temporarily providing access to a good or service with no transfer of ownership; this excludes the second hand
- economy in which goods are resold
- utilising an under-used asset” (Office for National Statistics, UK, 2017, p.2.)

Sharing is not a new phenomenon at all. Societies, families historically exchanged goods, shared services, the fruits of their land, machinery etc on the basis of reciprocity. [Polányi, 1976] New technology innovations have made it possible to realize consumer-to-consumer transactions, exchange goods, access goods and services at a global level.

According to the type/field of sharing economy activity we can distinguish the following platforms: “accommodation sharing platforms; car and ride sharing platforms; peer-to-peer employment markets; and, peer-to-peer platforms for sharing and circulating resources” [Martin, 2016]. Peer-

to-peer exchange means consumer to consumer interactions. We can imagine the platform as a marketplace, an intermediary institution enabling that demand and supply meet.

It is important to emphasize that in case of collaborative economy, in most transactions, ownership conditions do not change, consumers access the usage of goods by renting or borrowing. Ownership especially among young people becomes less important, they are more willing to use car-sharing services, due to the maintenance of an own car is costlier. In case of exchange of second-hand goods ownership changes, however not all the online second-hand goods exchange can be seen as a sharing economy transaction.

In business to consumer (b2c) transactions consumers buy access to goods from a company, while the company maintains the ownership. The famous car sharing services like Green Go or MOL Limo in Hungary belong to b2c models.

Platforms which enable that individual service providers match those who need those services are referred to as on-demand economy in the typology of Frenken [Frenken, 2017]. Individuals offering their services, their work force (usually in a flexible way, as atypical employment) share their time or qualities, knowledge. In this case ownership problems do not emerge but contracting might differ from traditional labour contracts or contracting freelancers. Motivation is not making usage of under-utilized assets, but individuals many times must face the difficulty of finding a sufficiently flexible job which meets their needs in different life circumstances. This can give a response to another important efficiency problem of the economy, namely the integration of less favoured social groups (for example women after having children or disabled people) in work, reducing unemployment and contributing to sustainable development goals.

What are the main motivations of individuals to use sharing economy services? According to an ING survey [ING, 2015] the main reasons to use collaborative platforms are to be able to earn an extra money, to save money. 53% of respondents use sharing economy because it is good for the environment, while 47% thinks important its community building feature. The Eurobarometer (2018) shows that European citizens prefer collaborative economy because, as traditionally described by Polányi, they can change goods or services on the basis of reciprocity, like barter trade, without paying for it. Accommodation platforms and car sharing, or ride sharing platforms are the most visited and well-known collaborative economy platforms. [Eurobarometer, 2018]

Digitalisation can contribute to the growing confidence of consumers. The EU survey found that one of the reasons for not using sharing economy services according to respondents' opinion is that they don't trust service providers of sharing economy platforms, and that's why they prefer traditional channels (hotels in spite of Airbnb). The protection of personal data is another core issue which must be dealt with. Reviews and forums mentioned before can raise confidence although it is mentioned by a minority of respondents that opinions on service providers are not always reflect the reality. Policy makers through regulatory frameworks and new institutional mechanisms can enhance the transparency of sharing economy platforms and provide legal guarantees offering safer transactions for consumers. The choice of proper regulation assets is a rather complex question, in this paper I would not like to discuss the market regulation or liberalisation debate, however it must be mentioned that as we deal with a completely new market phenomenon some new institutional framework is needed providing guarantees without restraining the development of collective economic activities. (That is, I suggest that some control might be needed without prohibiting. In those countries where sharing economy regulations are more lax, collective economy can grow more rapidly and consequently sustainability goals might be achieved to a greater extent)

Not only the definition is complicated, but also the assessment of the size of sharing economy is a rather difficult question. On one hand because of the existence of different definitions, on the other hand due to the diversity of different regulations. The UK Office for National Statistics proposed a working definition cited above and an algorithm (Figure 2) to be able to decide whether a digital economic transaction is sharing economy transaction or not, however the dynamism, diversity and the rapid growth of digital economy is making these distinctions a difficult task moreover when not all kinds of services and product exchanges are taxed. The main criteria for sharing economy

is to have a web site or an application which is the only platform to organise its businesses. If these platforms are providing temporary access for goods and services without the transfer of ownership it is likely to be a sharing economy platform, therefore measuring the revenues collected by the operators of these platforms, the size of sharing economy can be approached from the supply side. Measuring sharing economy would be of high importance to be able to assess it's effect on sustainable growth.

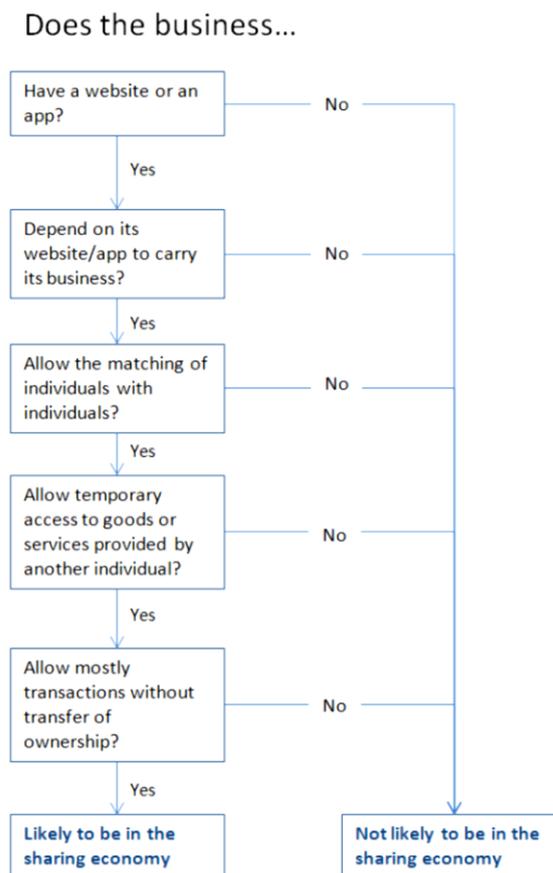


Figure 2. How to define an economic transaction as sharing economy transaction? Source: Office for National Statistics UK (2017)

Sector	Revenue 2015 (m)	Value 2015 (m)
P2P Accommodation	€ 1,150	€ 15,100
P2P Transportation	€ 1,650	€ 5,100
On-demand household services	€ 450	€ 1,950
On-demand professional services	€ 100	€ 750
Collaborative Finance	€ 250	€ 5,200
Total	€ 3,600	€ 28,100

Table 1. Revenues and transaction values facilitated by collaborative economy platforms in Europe (€m, 2015) Source: PwC analysis for the European Commission (2016)

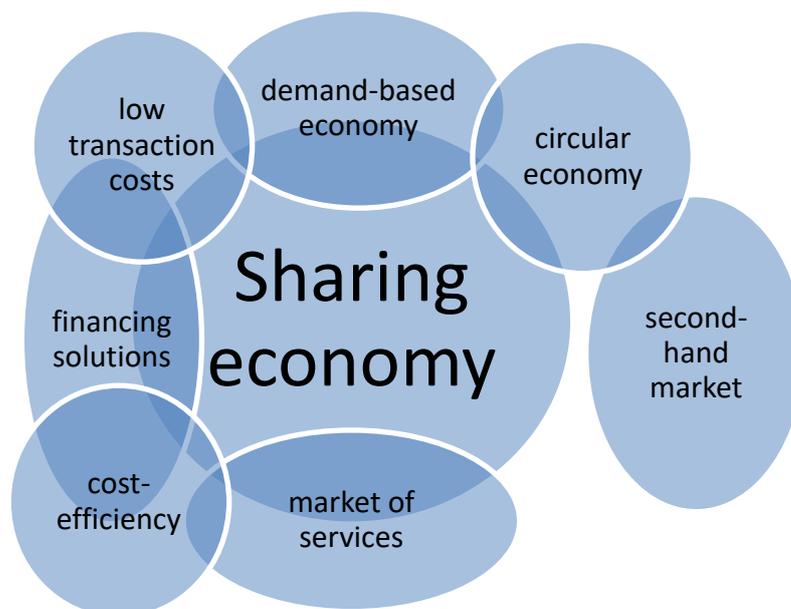


Figure 3.
Sharing economy restructuring traditional market institutions
Source: Author

Another way of measuring sharing economy is observing the values generated and revenues facilitated by sharing economy platforms. (see Table 1)

A substantial growth can be observed in the sharing economy sector with almost 100% growth of revenues generated from 2014 to 2015 [PwC, 2016]. From an environmental point of view the question is whether these revenues are spent on consume, or has contributed to savings and investments.

3.2. Sharing economy and resource efficiency

According to behavioural economics literature (this is the phenomenon called endowment effect) consumers tend to stick to the goods they own, and they often fear from the new. [Khanemann & Knetsch & Thaler, 1991] They prefer to own what they actually have at the present in spite of receiving something new in the future, due to loss aversion. It can also be regarded as a country or culture-specific feature (path dependency) to what extent consumers prefer to be owners of their consumer goods, or they prefer to rent. This mentality on one hand gives a constant demand for production on the other hand more waste is generated, and unnecessary products are purchased.

One of the core difficulties of the sustainability problem is the waste-management. When consumer goods become out of use, although in good conditions, generate waste. Sharing

economy platforms can offer a possibility to get rid off these consumer goods, reducing waste, and making possible that others benefit from them. The framing of sharing economy, as a new, high tech, trendy, community-forming possibility has brought the attention of the public and collective economy has become more and more popular. According to the status quo theory [Samuelson – Zeckhauser, 1988] consumers do not really stick to specific products, but they rather maintain decision-making patterns which they wouldn't like to change. The emergence of sharing economy, however, has changed the behaviour of consumers in many aspects. Later on I will analyse the different segments of sharing economy assessing its effect on consumption and sustainability.

On the figure above I would like to demonstrate how sharing economy can play a role in rationalizing the economy and lower transaction costs and emissions.

On Figure 3 we can observe how sharing economy can achieve an efficiency-improvement in the different fields of the economic system by interactions between consumers and service providers meeting consumer needs. I will get into a detailed analysis.

One of the most important aspects of sharing economy is that it enables demand to meet supply. One of the core problems of economic efficiency is the under-utilized resources. Resource efficiency can be enhanced if inhabited

apartments are rented, or unemployment can be reduced by atypical, flexible employment solutions. Sharing economy can give an answer to these efficiency problems by offering platforms to enable access to durable consumer goods, or different services. Although second-hand market as a whole does not form part of sharing economy, however there are platforms for example Freecycle which makes possible the give-away (without financial transaction) of unused consumer goods. One product during its lifecycle can serve the needs of various consumers, therefore less products can meet the same level of demand. In this sense these platforms contribute to circular economy objectives. An environmental policy assumption promoting transition to circular economy can be the regulation of municipal waste fees in function of the quantity of waste generated. Consumers will be more motivated to recycle waste at home, and to donate products for those who need it reducing household waste. 51% of sharing economy users regard these possibilities as a more sustainable and efficient use of assets. [Eurobarometer, 2018]

The most important reasons among European consumers for using sharing economy services is that they are free of charge or at least cheaper than traditional service channels, easily accessed and they can meet interesting people, and have community experience. Offering services has also become more and more popular among EU citizens.

The Eurobarometer survey found that according to 76% of respondents sharing economy platforms offer a better access to services compared to traditional channels, this supports the assumption that sharing economy can lower transaction costs in the market of services. [Eurobarometer, 2018]

On Figure 2 I refer to it as cost-efficiency which can be experimented in case of service and in project financing either.

Sharing economy in the framework of crowdfunding or peer-to-peer lending can offer financing solutions for projects, which otherwise couldn't be achieved. In case of high financing costs this can be a real opportunity for start-up companies or entrepreneurs. The sharing economy platforms has also come into existence due to incubator networks and has lived an extremely rapid growth. The promotion of innovations is essential to achieve global environmental goals, yet small changes in production processes or consumer habits at a long run can make significant difference. In case of green innovations, the main problem is the lack of capital, and the costliness

of financing solutions yet the initial investment cost might be so high that it prevents SMEs or micro enterprises from adapting or developing new technologies.

Open source projects also play an important role of sharing ideas, many companies make open source some new developments, programme codes, platforms to enable knowledge transfer in many cases as part of their CR strategy. These possibilities help those companies who do not have enough capital to develop software on their own or to pay for developing and support for a partner company. I will just give here one example when an IT sector company offers it knowledge for all users. Most people know google open source applications and different toolkits, learning possibilities. (see at <https://opensource.google.com/projects/explore/featured>) Ericsson published an open source software, Ericsson github (<https://github.com/Ericsson>) which offers free access to IT solutions, and also makes possible a community coding, programmers worldwide can develop and enhance the programmes and applications. Open source solutions, like OpenHAB can contribute to diffusion of smart home solutions which makes possible energy savings and per se can reduce greenhouse gas emissions.

At a global level sharing economy organisations emerged promoting networking and knowledge sharing among entrepreneurs facilitating entrance on this new market for example "innovation intermediaries and funders promoting the development of the sharing economy (e.g. Nesta and the Nominet Trust [in the UK]); and, national associations of sharing economy organisations seeking to develop best-practice (e.g. ShareCo in the UK)". [Martin et al., 2015 p.243]

Technology transfer is also an important goal of environmental management for those companies who would like to build a green image, and they have social and environmental performance as a core strategic goal. At the same time, it must be seen that this is not only an altruist measure but also a good marketing opportunity to get more known and have a better reputation and image that is more attractive for consumers or business partners.

Although motivations for knowledge transfer can be different undoubtedly is the fact that it has positive spill over effects on economic rationalisation, restructuration and consequently enables a shift to a more resource-efficient, sustainable economic system.

Groups of innovation	Corresponding regimes	Examples of sharing economy platforms	Description
Accommodation sharing platforms	Tourism, ICT	Airbnb Couchsurfing	A peer-to-peer marketplace for people to rent out residential accommodation (including their homes) on a short term basis. An online community of people who offer free short-term accommodation to fellow community members. Peer-to-peer car rental platforms.
Car and ride sharing platforms	Mobility, ICT	Easy Car Club and Relayrides Lyft and Uber Zipcar	Peer-to-peer platforms providing taxi and ridesharing services. A business-to-consumer vehicle rental platform offering per hour rental of vehicles located within communities.
Peer-to-peer employment markets	Employment, ICT	PeoplePerHour and Taskrabbit	Peer-to-peer marketplaces for micro employment opportunities (i.e. piecemeal contracts or hourly work).
Peer-to-peer platforms for sharing and circulating resources	Waste disposal, production-consumption, ICT	Freecycle Peerby and Streetbank Ebay	A peer-to-peer platform which enables people to freely and directly give unwanted and underutilised items to others in their local area. Peer-to-peer platforms which enable communities to freely share durables goods, skills and knowledge. An online marketplace for people to sell their second-hand items to others.

Table 2.
Typology of sharing economy innovations
Source: Martin [2016]

3.3. Environmental aspects of different sharing economy platforms

Sharing economy, as a whole, cannot be assessed from the sustainability point of view due to its variability of transactions and the wide range of products and services which collective economy platforms offer. I will focus on the tourism, transport and second-hand segments of sharing economy yet these kinds of platforms entail various environmental externalities. On Table 2. we can see a categorisation of different sharing economy platforms worldwide to which I will refer in my analysis.

3.3.1. Accommodation platforms

The two main accommodation sharing platforms are Airbnb and Couchsurfing where people can rent their own apartment for a short term. In case of the latter accommodation is offered without any charge, on the basis of reciprocity. Among sharing economy users, accommodation platforms are the most popular.

Real estate is regarded as an investment in macroeconomics, yet it can be or habited by the owner or rented to a third party to generate income. If such buildings are inhabited, resources are under-utilized, resulting in an efficiency loss. A Pareto-improvement can be made if owners make use of these flats, by rental or by living them.

Let's state that on accommodation platforms under-used residential houses are offered for tourists, seeking a short-term accommodation. Comparing the environmental impact of short-run rentals via sharing economy platforms like Airbnb with long-run rentals, the balance does not definitely favour collaborative economy. In case of

a short-run rental solution transaction costs are higher. The proprietor must visit the apartment/house more frequently than in case of a one-year or longer-term rent. This entails higher GHG emissions due to transport, moreover, more cleaning costs arise, and using more detergents is needed, which results in a higher environmental impact. The main reason for short-term rental from the point of view of proprietors is the possibility to earn extra money. The price per day of short-term rentals has become closer to the price of hotel sector (especially in the city centres), therefore it is lot more profitable (despite of higher transaction costs) for owners to get started with sharing economy platform solutions. The next controversial question is on what owners will spend the money earned from sharing economy rentals. It depends a lot on consumers' propensity to consume. If consumers spend the extra money on consumer goods, generating more consumption, and consequently more waste, the environmental balance of accommodation platforms will worsen. If consumers have more intentions to generate savings from the extra benefit, environmental impacts will be less.

On the other hand, sharing economy platforms (like Airbnb) have distorted the real estate markets especially in the residential area, in the centre of more touristic cities. As more and more investors have realized the business opportunity in short-term rentals via accommodation platforms, demand has grown substantially for apartments in the touristic areas pushing prices higher on the real estate and the long-run rental market as well. (Naturally other economic processes lay behind the inflation experimented in housing sector, which do not form part of my analysis.)

Studying the demand side of short-term rentals, the alternative to sharing economy platform solutions are the traditional accommodation solutions, that is, hotels, hostels, apartments. A recent study published by the Nordic Council of Ministers [Skjelvik, Erlandsen and Haavardsholm, 2017 p.9.] cited an Airbnb study stating that Airbnb guests use 88% less energy than hotel guests. Yet this Airbnb study is not available, I cannot assess its methodology, however it might be true that accommodation sharing can reduce energy usage although the comparison between Airbnb guests and hotel guests is not the best one, as for those consumers who opt for accommodation sharing the “close substitute” would be hostels with similar price and conditions. In case of hostels energy intensity is less than in hotels. Another aspect is that hotels also aim at having better environmental performance, reducing emissions and sensitising hotel guests to take environmental aspects into considerations. The whole apparatus, maintenance of hotels also entail significant CO₂ emissions. In this sense private accommodations can result more sustainable. If we assume that “sharing economy” guests behave in a different way than hotel guests, as if they were at home, this could mean that they follow the same patterns as in their own house, moreover if they are involved in accommodation exchange (like couchsurfing) then the determinant aspect is the mentality they have. Other controversial argumentation [Skjelvik, Erlandsen and Haavardsholm, 2017 p.9.] is that private home rental can substitute to some extent the demand for hotel rooms, therefore the declining demand for hotels will make it unnecessary to build new hotels and consequently less building materials will be used, generation less waste from constructions. One of the weaknesses of this argumentation is, if more apartments are rented, more people will move to the suburban areas, or to the green belt, fostering constructions on those areas. If new hotels were built using sustainable building materials and with low energy intensity covering energy need by renewable energy sources they would not definitely have a worse environmental performance compared to new residential buildings.

We unfortunately cannot give a definite answer whether sharing economy platforms contribute to emission reduction in the tourism sector, because on the one hand, private accommodations can gain energy savings compared to hotels, but due to higher transaction costs and transportation costs (causing higher GHG emissions) the alleged energy savings can be questioned. At the same time the distortion of housing sector supposes significant negative externalities obstructing the achievement of sustainability goals, resulting in a substantial welfare redistribution between proprietor and renters,

hampering the possibilities of the latter to find a long-run rental for an affordable price.

3.3.2. *Transport sector and mobility platforms*

Transport sector is one of the biggest contributors to air pollution [European Environment Agency, 2018] and as a consequence it is one of the core sectors where environmental policy should act. There are many expectations for the GHG reduction capacity of sharing economy by reducing car ownerships. At the beginning of this section we must make a distinction between car-sharing and ride-sharing platforms. In the first case, companies are offering vehicle rental for consumers on a per hour or per minute basis. The target group of these business to customer platforms are those individuals who only need car for a short distance, and not on a regular basis it is only profitable on dense urban markets. As the operating territory of these companies is restricted to the centre part of cities (for example in Budapest, peripheries are not covered by these services) commuters cannot make a use of car-sharing services. Nevertheless car-sharing can offer a real opportunity to give up personal vehicles for those who live in the city centre and would use the car for short distances, for example to work. According to different surveys, car-sharing fleets can substitute 3 to 8 personal cars [Skjelvik, Erlandsen and Haavardsholm, 2017 p.50.] In urban areas, where parking is complicated, garage rentals are costly maintenance costs of personal cars are relatively high, and for these consumers car-sharing services can provide a real alternative to personal car. Furthermore, if the fleet of car-sharing operator consists of electric vehicles CO₂ emissions can be further reduced. (For example, Green go in Budapest operates exclusively with electric cars.) Car-sharing in this sense can contribute to the spread of electric vehicles, reducing the endowment or status quo effects described before. Aversion from the new is often a reason for consumers to stick to the well-known consumer patterns. By having the possibility of trying out electric vehicles for a relatively low price, they might opt for this kind of personal car instead of a gasoline or diesel one, especially if environmental policy fosters this consumer pattern change through positive and negative incentives (taxes for traditional cars and subsidies for hybrid and electric vehicles). Consumers can have a positive driving experience and can be convinced of the performance of electric cars. Therefore, if demand for new cars is declining (to whatever extent), or consumption is redirected to a more sustainable solution, with less CO₂ emissions, car-sharing can contribute to sustainability goals. According to Boston Consulting Group (2016) the number of vehicles purchased by car-sharing companies will offset the foregone sales from individual car

purchases consequently, the automotive industry won't suffer the losses from personal vehicles substituted by sharing economy services. [Boston Consulting Group, 2016]

Nevertheless, for those consumers who use their cars for long distances on a regular basis. For long-distance rides ride-sharing can offer a good alternative. In this case there is no doubt that marginal emission can be reduced by not one person driving a car but offering free places for passengers, who instead of driving their own car can travel with others with the same destination. In Hungary Oscar telekocsi is a successful ride-sharing platform offering more flexibility for long-distance drives than public transport, and lot more affordable than driving our own car as consumers can share the costs, and at the same time they have community experience. Ride-sharing platforms has also given rise to some controversies with regard to regulation, especially the Uber, the platform which has been prohibited in some countries (for example in Hungary) yet it a fore profit platform of ride-sharing. Meanwhile it is about that drivers offer the free seats in their car, and they are not using the car only for earning money like taxis, it can reduce CO₂ emissions. However if Uber drivers, acting as freelancer taxi drivers, and they drive only to satisfy the demand of consumers, and for their own purposes, it is doubted that this solution could reduce emissions, moreover, people who would otherwise opt for public transport, will use Uber because it is affordable.

3.3.3. *Platforms for circulation of goods and give-away of unused consumer goods*

In my previous argument I have précised that sharing economy can contribute to circular economic goals by enabling the second-hand market for unused products. Platforms, like Freecycle makes consumers possible to give away consumer goods which they do not use any more and would only generate waste. On these platforms consumers can freely give unwanted goods to other who can benefit from it, in this sense the quantity of waste is reduced, consumer needs are satisfied by a second-hand product, so some consumers are not obliged to hire or purchase these goods. During its lifecycle one consumer good can meet the demand of various consumers, recycling unused goods by giving them for those who need them, everyone can benefit from it.

One of the consequences of recent economic crisis was the change in consumer behaviour with regard to spending, seeking for cheaper options with maintaining the same living standards by simply not owning but hiring consumer goods. Hiring is also a double-ended sword from an

environmental point of view due to the fact that consumers (in function of the frequency they need that specific good) need to travel to get the product and after the term of hiring they have to travel once again to devolve it. This eventually causes CO₂ emissions by the transport, but if one durable product can address the need of various consumers during its life-cycle, less production will be able to satisfy the same consumer needs.

4. CONCLUSION

The message of this paper is that we can observe an overall positive effect of sharing economy for sustainable growth however the picture is rather ambiguous. The environmental effects of sharing economy depend, to a great extent, on the size of sharing economy sector, which has seen a dynamic growth recently. I find the main positive influence of sharing economy in its contribution to the change in consumer behaviour, promoting recycling, giving away unused durable goods consequently fostering transition to circular economy. Other important effect is the restructuring possibility and substantial CO₂ reduction in the transport sector. One car can also satisfy the transport service demand of various consumers. Car-sharing can meet the transport needs of consumers offering them short-term rides making car ownership unnecessary for a specific group of consumers. This also entails a step forward to circular economy goals. Further quantitative research would be needed to discover consumer behaviour with regard to a possible growing demand for electric cars as a consequence of trying out them by using car-sharing. Ride-sharing in case of offering free seats in a car during a planned journey, can have a definitely positive balance in reducing emissions.

The innovation-boosting capacity of sharing economy is also considerable, and it might have a positive effect on environmental performance, by green investments, and by moving the structure of economies towards a more service-based economy.

5. REFERENCES

LITERATURE

Books

- [1] Buchanan, James (1967) *Public Finance in Democratic Process: Fiscal Institutions and Individual Choice* The University of North Carolina Press; 1 edition (January 1, 1967)
- [2] Coase Coase (1988) *The Firm, the Market, and the Law*, Chicago: University of Chicago Press, 1988 Pejovich (1998) *Economic analysis of institutions and systems* Springer science and business Media New York

- [3] Polányi, Károly (1976) Az archaikus társadalom és a gazdasági szemlélet. Gondolat, 1976
- [4] Shapiro & Varian (1998) Information Rules: A Strategic Guide to The Network Economy, Harvard Business School Press, Boston
- [5] Hámori, Balázs & Szabó, Katalin (2006): Információgazdaság, Akadémiai Kiadó, Budapest

Book chapters

- [6] Hámori Balázs (2017) Változások a fogyasztók viselkedésében az információs technológiák hatására In: Vilmányi Márton – Kazár Klára (szerk.) 2017: Menedzsment innovációk az üzleti és a nonbusiness szférákban. SZTE Gazdaságtudományi Kar, Szeged, 408–429. o.

Journal Articles

- [7] Akerlof (1970): The Market for “Lemons”: Quality Uncertainty and the Market Mechanism in: The Quarterly Journal of Economics, Vol. 84, No. 3 (Aug., 1970), pp. 488-500
- [8] North, Douglas Journal of Economic Perspectives vol. 5, no. 1, Winter 1991
- [9] Kahneman, Knetsch, Thaler (1991): The Endowment Effect, Loss Aversion, and Status Quo Bias: Anomalies In: Journal of Economic Perspectives, Vol. 5. No. 1. 193–206. o.
- [10] Martin, C.J., Upham, P., Budd, L., (2015) Commercial orientation in grassroots social innovation: insights from the sharing economy In: Ecological Economics 118, 240–251.
- [11] Martin (2016): The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism? In: Ecological Economics 121 (2016) 149–159
- [12] Frenken K. 2017 Political economies and environmental futures for the sharing economy In: Phil. Trans. R. Soc. A 375: 20160367. Available at: <http://dx.doi.org/10.1098/rsta.2016.0367> Accessed: 23.03.2019.
- [13] Samuelson – Zeckhauser, (1988): Status Quo Bias in Decision Making In: Journal of Risk and Uncertainty, 1: 7-59 (1988)
- [14] Simon, Herbert (1955) A Behavioral Model of Rational Choice. In: The Quarterly Journal of Economics, Vol. 69, No. 1. (Feb., 1955), pp. 99-118

WEB PAGES

- [15] Boston Consulting Group (2016) What's Ahead for Car Sharing? Available at: https://circabc.europa.eu/sd/a/d06aca03-fcdc-4e08-b753-316f1f7db80e/%20www.bcg%20perspectives.com_content_articles_automotive-wha.pdf Accessed: 02.04.2019.

- [16] Comunitad de Madrid, Campañas para consumidores (2019) http://www.madrid.org/cs/Satellite?c=FRAME_Contentido_FA&childpage-name=PortalConsumidor%2FFRAME_Contentido_FA%2FPTCS_contenido_Generico&cid=1343066038462&p=1343063945802&pagename=PTCS_wrapper Accessed: 10.04.2019.
- [17] Google open source git-hub <https://opensource.google.com/projects/explore/featured> Accessed: 10.04.2019.
- [18] Ericsson open source git-hub: <https://github.com/Ericsson> Accessed: 10.04.2019.
- [19] Eurobarometer 2018 https://data.europa.eu/euodp/data/dataset/S2184_467_ENG Accessed: 10.04.2019.
- [20] European Environment Agency (2018) Emissions of air pollutants from transport <https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-air-pollutants-8/transport-emissions-of-air-pollutants-6> Accessed: 10.04.2019.
- [21] ING (2015) What's mine is yours – for a price. Rapid growth tipped for the sharing economy Available at: https://www.economics.com/ing_international_surveys/sharing_economy_2015/ Accessed: 03.03.2019
- [22] PwC (2016) Assessing the size of the collaborative economy in Europe Ref. Ares(2016) 2558461 – 02/06/2016, European Commission Available at: <https://publications.europa.eu/en/publication-detail/-/publication/2acb7619-b544-11e7-837e-01aa75ed71a1> Accessed: 02.03.2019
- [23] Skjelvik, Erlandsen and Haavardsholm, (2017) Environmental Impacts and Potential of the Sharing Economy, TemaNord, Nordic Council of Ministers Available at: <https://www.diva-portal.org/smash/get/diva2:1145502/FULLTEXT01.pdf> Accessed: 02.03.2019
- [24] UK Office for National Statistics: The feasibility of measuring the sharing economy: November 2017 progress update Available at: <https://www.ons.gov.uk/releases/thefeasibilityofmeasuringthesharingeconomy-november-2017-progress-update> Accessed: 02.03.2019