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Pairing sharing practices with part time work

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1 INTRODUCTION

Sharing practices have gained attention and are often portrayed as potential means of achieving more sustainable consumption patterns. Which activities are included in sharing varies between different scholars. In this paper we include peer-to-peer sharing as well as the second-hand market since they both involve different users of a certain item, either alternating during the same life cycle stage or at different stages of the life cycle.

The sharing economy can replace traditional consumption in many different areas, e.g. clothing, tools, personal transportation and lodging while on vacation. The direct environmental impact is typically positive. Sharing tools or buying second hand clothes can reduce material consumption and thus save resources and reduce negative environmental impact from production. Sharing cars in a car-pool typically reduces driving compared to having a personal car and renting an un-used living space instead of a hotel room can reduce environmental footprint.

However, these examples typically mean that the users also save money. This money may soon be spent on something else or saved (postponed consumption) and will consequently cause environmental impact, something that is called an indirect rebound effect. The environmental impact from the indirect rebound effect varies depending on what is consumed with the saved money. The total environmental impact depends on how emissions intensive the “new” consumption category is in relation to the “avoided” consumption. The net environmental impact can be:

- positive, e.g. if less money is spent on car driving and instead used on things like eating out or personal services,
- neutral, if the “avoided” consumption have about the same environmental impact as the “new” consumption,
- negative, e.g. if money is saved on buying second-hand clothes and staying in cheap private lodging, and that this money instead is used on buying air tickets.

The very environmentally conscious consumer can minimise the rebound effect by consequently buying services with a low environmental impact or few but expensive products. However, in most cases the rebound effect from sharing practices is likely to be a serious problem from an environmental perspective.

In this paper the approach of combining sharing practices with the practise of working part time is explored. There are several reasons why this combination is of interest. First, shorter work time and hence lower income and total expenditures provides a way to harvest the full environmental benefits of sharing by avoiding rebound effects. Second, sharing and second-hand could function as enablers of part time work by facilitating a relatively high material standard despite a lower income. Part-time work means more leisure time, but it may also cause feelings of relative poverty or financial stress that can be partly mitigated by sharing and second hand. Third, part time work may also enable sharing and second-hand since these types of consumption practices typically require more time than traditional purchases.

One major hindering factor for this potentially sustainable and attractive lifestyle is that reducing one's work time is usually not an option in one's current job position, and switching to a part-time job, perhaps with a lower hourly pay and less stimulating work tasks, is not appealing. A possible way is to implement a reform that gives employees the right to reduce their work time, with a reduction in pay, at their current job. Such a part-time right has been implemented at the national level in the Netherlands, where all employees have the legal right to reduce their work hours if their employer is unable to show that it would cause unreasonable consequences (Visser, 2002). A similar right has recently been implemented at the organisational level for the city of Gothenburg, Sweden.

The conceptual reasoning above is in this paper empirically scrutinized in two different ways. In the next section a model for examining the net environmental effect of sharing practices is presented and applied using Swedish data on embodied greenhouse gases emissions from different consumption categories. In the following section part-time work in Gothenburg, Sweden is analyzed based on the part time right that was implemented in 2015 for all employees working for the municipality. The subjective well-being effects for the part-timers are analyzed based on a survey among about 1000 employees.

2 ENVIRONMENTAL EFFECTS OF SHARING PRACTICES

The carbon footprint *CF* ($kgCO_2e$) of an individual or household can be simply expressed as the product of GHG emissions intensities c_i ($kgCO_2e/€$) and expenditures e_i (€) summed over all consumption categories of products and services *i*:

$$CF = \sum_{i=1}^{N} c_i e_i$$

If product 1 is sharing (S) instead purchased (P) in the traditional sense, then this typically implies a relative reduction of expenditures in that consumption category $(e_1^P - e_1^S)$ and hence reduced emissions by $c_1(e_1^P - e_1^S)$. The reduction in expenditure, however, also implies the opportunity to increase expenditures in the other consumption categories (2, 3, .. , N) causing a rebound effect of emissions (Nässén & Holmberg, 2009). If the total increase in emissions in the other categories is equal to the reduction in consumption category 1, then we talk of a rebound effect of 100 percent which means that there is no net environmental benefit. The extent of the rebound effect naturally depends on how the new opportunity for consumption is used; petrol, air tickets, services, reduced paid overtime at work or increased bank savings? This is essentially an empirical question that we do not have any real data on. For sure, there will be individual differences and perhaps there could also be specific patterns of marginal consumption in groups that prioritize sharing and second hand.

As a first proxy, we may look at the overall marginal consumption in the entire population. The elasticity of GHG emissions with respect to total expenditures has been estimated to 0.85 in Sweden (Nässén, 2014), and similarly 0.84 in the Netherlands (Kerkhof et al., 2009) and 0.91 in Spain (Roca & Serrano, 2007). An elasticity of 0.85 means that the marginal consumption is 85 percent as GHG intensive as the average consumption. Data from Statistics Swedens' Environmental Accounts on expenditures and emissions in 107 consumption categories give that the average GHG intensity of consumption was 0.35 $kgCO_2e/€$ in 2014 and the marginal emissions intensity would then be around 0.30 $kgCO_2e/€$.

The rebound effect of sharing can then be approximated as the ratio between the marginal emissions intensity of consumption and the emissions intensity in the shared consumption category c_1. Figure 1 provides examples of rebound effects in four cases of sharing: car rides (fuel), cars, clothes and tools. Clearly sharing a car ride and hence an expenditure category with very a very high GHG intensity like fuel can be expected to cause small rebound effects (RE=13 percent). However, most products have GHG intensities close to the overall expenditure margin which implies large rebound effects; 65 percent for clothes sharing, 94 percent for tool sharing and 119 percent for car sharing. The estimate for car sharing only includes the effect of re-spending the reduced capital cost, but car sharing also implies indirect environmental benefits due to the higher marginal costs of car usage.

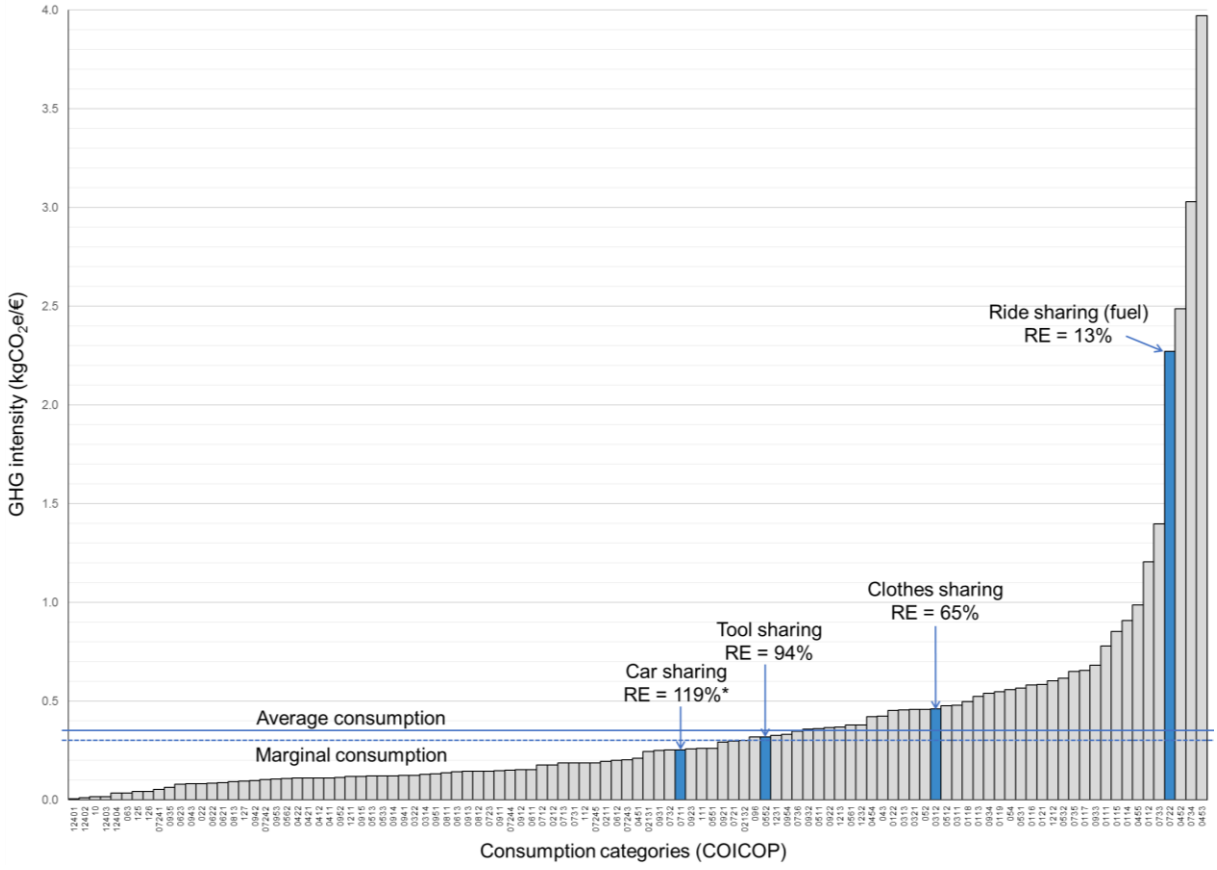

Figure 1. GHG intensities for 107 consumption categories (COICOP) and selected estimates of rebound effects (RE) from sharing. Data for 2014 including both emissions in Sweden and from imports (Statistics Sweden Environmental Accounts). *The estimates of RE from car sharing only includes the effects from lower expenditures on car purchase. Car sharing also implies indirect environmental benefits due to the higher marginal costs of car usage.

The rebound effect calculations above are clearly simplifications, but they illustrate the need for an approach to sustainable lifestyles that addresses the total consumption volume. Pairing sharing practices with a reduction of total consumption creates an entirely different outcome with much larger net environmental benefits.

3 PART-TIME RIGHT AS A POLICY OPTION FOR FACILITATING SUSTAINABLE LIFESTYLES

The previous section illustrates that a reduction of total expenditures is crucial for reaping the full environmental benefits of sharing practices. Work time reduction is a concrete option where purchase power is traded for more leisure time. Starting to work part time is a form of individual work time reduction. In this section, part-time work in Gothenburg Sweden is analyzed based on the part time right that was implemented in 2015 for all employees working for the municipality. The effects for the part-timers are analyzed based on a survey among these employees.

The city of Gothenburg in Sweden decided in 2015 to implement a part-time right, down to 50 percent of full time, for all its 50 000 employees. The policy stipulates that line managers are not allowed to decline a request for part-time without first trying to find a solution with the help of the central HR-department (Göteborg Stad, 2015).

This reform has not explicitly been motived on environmental grounds by the politicians, but the results are still relevant since the effect of such a reform likely is similar no matter what reasons that the politicians have in mind. The background of the decision in Gothenburg is that the municipal sector has a long tradition of employees with part-time contracts, for which it has been criticized since it gives their employees, who are mainly women, lower incomes and pension levels. The municipality of Gothenburg has therefore in recent years decided to offer all employees full-time contracts. However, many employees wanted to continue working part-time therefore the city decided to offer full-time contracts with good possibilities to continue to work part-time. In 2015 the right to request part-time was decided to be valid for all employees in the city of Gothenburg.

The data presented here is based on a survey which was conducted in 2016 among part-time working employees of the City of Gothenburg. The municipality has 50 000 employees and the sample frame was identified with the help of the central HR-department of the municipality and consisted of those who had full-time contracts but had opted to work part-time. Employees that had worked part time for more than 10 years were excluded from the sample frame, as well as those that had used the legal right for work part-time in order to study and those that simultaneously received parental leave benefits. This resulted in 3331 individuals and our analysis is based on employment records data from the HR-department for these employees together with survey responses. 994 respondents completed the web-based survey which gives a response rate of 30 percent. The results from this survey are here briefly described regarding environmental impact, individual motives, as well as effects on quality of life and time use patterns.

Environmental impact. Reducing work hours by using a part-time right means lower incomes. On average the 994 part-time workers in Gothenburg work 20 percent less than full-time workers which translates into about 20 percent less income. The effect that this has for their consumption patterns and their carbon footprint has not been scrutinized in detail but a previous study indicates that the net environmental effect is around 15 percent (Nässén & Larsson, 2015).

Individual motives. Based on previous research and statistics a set of motives for choosing part-time was developed. Table 1 shows the importance that the respondents on average give to each motive. The respondents state on average 2.5 motives as important (value four or five on a Likert scale of 1-5) for their part-time work.

Table 1. Motives for working part-time. The question was "How important was the following reasons for you when you made the decision to shorten your work time?" 1 equals "not important at all" and 5 equals "Very important". Mean values.

Individual motives	**Score**
Full-time work is too demanding, physically or mentally	3.5
More own time (e.g. for exercise, hobbies, friends, relaxing)	3.4
More time with children living at home	3.0
Managing all household work (e.g. cooking, cleaning, repairs, maintenance)	2.7
Caring for adult kin (e.g. parents, partner or adult children)	1.8
Other part-time work / starting or running own business	1.6
Studies	1.5
Involvement in society (e.g. sports leader, volunteer work, political engagements)	1.5

As shown in table 1 the two most important motives for starting to work part-time are that full-time is too demanding and that the respondents want more "own time". This illustrates that for the majority in this sample part-time is a coping strategy for handling an unsatisfactory life situation. To want more own time can for some be linked to needing time for recovery from a job which is too demanding, while it for others is a motive that stands for itself with a wish to have more time for e.g. exercise, hobbies or friends. Examples of what this can mean in practice can be found in the free text answers "to give room for my artistic side", "to avoid the feeling of being in the rat-race", "to have the freedom of controlling my own time and life", "after a cancer treatment I no longer take for granted that I will live until retirement, I want to have time for exercise, etc."

The figure here for the motive "more time with children" is the average for both those with and those without children living at home. Almost all parents with children under the age of 8 rate this motive as very important. One motive which is also often rated as important is to get time for managing all household work. Finally, there are four motives that are important to relatively few respondents and therefore received a low mean figure, these are caring for adult kin, other part-time work / starting or running own business, studies, and finally, involvement in society.

Choosing to work part-time as a strategy for living more sustainably was not included as one of the motives. However, in the free text answers related to the questions on motives for part-time a few respondents brought this up, e.g. "To live more sustainably, e.g. to repair clothing and other belongings, to consume less" and "To care for the environment and try to avoid increasing consumption".

Effects on quality of life and time use patterns. The survey includes questions on both positive and negative changes compared to when they worked full-time. Table 2 provides the share of respondents that agree with specific statements.

Table 2. Positive and negative changes after starting to work part time. The percentage describes the share that agrees with the statements, including those that state answer no. 4 and 5 on a 5-grade Likert scale ranging from "do not agree at all" (1) an "agree completely" (5). (N=966-982).

	percent that agree
Positive changes	
My health is better now compared to when I worked full-time	68
It is now easier to find time to do everything I want, or need, to do in my private life.	68
I am now more well-rested when I come to work.	57
My reduced work time makes me organize my work, and prioritize, tasks, in a better way.	40
I now have more energy left for working effectively even during the end of the working day.	53
Negative changes	
I now have a harder time making my income cover my needs.	33
I am now more worried that my future pension will be very low.	45
I now feel obliged to work harder, take fewer breaks or to work involuntary overtime to get my tasks done	19
I now feel more stress during work hours	18

Table 2 shows that most of the respondents find both that their health has improved and that they have more time and energy to do what they want to do in their private life. They also report on several positive changes related to that they are now more productive in their working life. The negative side is mainly that some experience financial worries or that work has become more stressful.

The survey also included questions on how the time use patterns had changed after reducing work hours (Table 3).

Table 3. Changes in time use after reducing work hours, percent (N=825-931)

Time use categories	Much more time	Slightly more time	Unchanged	Less time
Family	42	41	17	0
Friends	10	34	53	3
Exercise	14	40	42	4
Household work	8	40	49	3
TV/computer	1	11	80	8
Shopping	2	8	79	11
Sleep/recovery	15	45	36	4
Societal engagement (e.g. youth leader, volunteering, politics)	3	8	82	7
Other hobbies	11	32	53	4
Shorter vacations	6	26	64	4
Culture (e.g. reading, theatre, movie, museum)	7	32	56	5

Previous research has shown that some of these time-use categories correlate clearly with well-being, e.g. time spent with family, friends and for exercise (Killingsworth & Gilbert, 2010). The increased time used in these categories indicate that the altered time-use patterns due to part time work may have improved overall well-being.

4 DISCUSSION

In this paper we have explored the idea of achieving more sustainable lifestyles by combining sharing practices and part time work. The direct environmental impacts of sharing practices are usually positive, but they also typically imply a relative reduction of expenditures and an opportunity to increase other expenditures. If the total increase in emissions in the other categories is equal to the reduction in consumption category where the sharing took place, then we have a rebound effect of 100 percent and no net environmental benefit. Our examples of sharing categories show a large range of rebound effects. The lowest, 13 percent, is for ride shares where fuel purchases with very high GHG intensities are reduced and instead assumed to be replaced with marginal consumption. However, most products have large rebound effects; 65 percent for clothes sharing, 94 percent for tool sharing and 119 percent for car sharing. These high rebound effects illustrate the need for an approach to sustainable lifestyles that addresses the total consumption volume.

Pairing sharing practices with shorter work time has the potential to avoid these rebound effects and give large net environmental benefits. The analyzed sample of part time workers in Gothenburg work 20 percent less than full-time workers which translates into about 20 percent less incomes. Based on previous research this indicates that the net environmental effect is around 15 percent. The respondents also report many positive changes after starting to work part time. Most of the respondents find that they have more time and energy to do what they want to do in their private life. They also report that they now spend more time with family, friends and for exercise, activities that have been shown to be linked to high well-being. The negative changes were mainly that some experience financial worries due to the lower income. Sharing practices constitute a potential to reduce expenditure without having lower access to various material belongings, and also without increased financial worries.

This paper indicates that the combination of sharing practices and part time work can be the basis for lifestyles that are both more sustainable and more attractive compared to mainstream ways of life. However, our analysis has several limitations. We do not have access to any data sets of people who have combined both of these lifestyle choices and instead have to base the analysis on different data sources. A comprehensive study on the sustainability and well-being effects from one sample could give more robust results. Another limitation is that the analysis does not cover societal effects. How would a large diffusion of sharing practices and part time work affect total environmental impact, employment and public finances, gender patterns, etc.

We conclude that pairing sharing practices with part time work compose a promising concept for sustainable and attractive lifestyles. The implementation of a part time right at the organisational, sectoral or national level would be prerequisite for facilitating such lifestyles.

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