Behavioural Economics: An Introduction II

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March 2018

Outline I

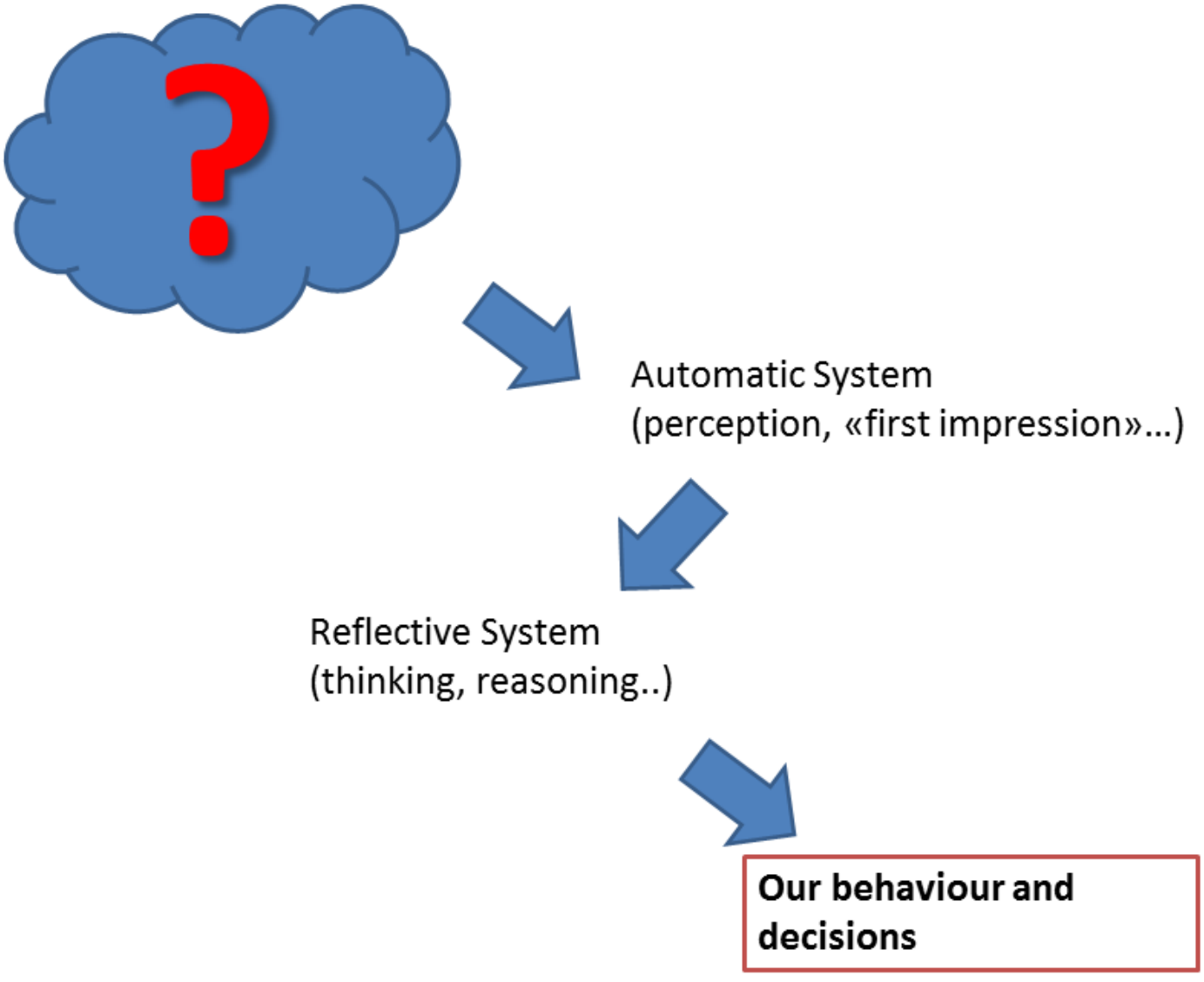
Outline II

- Methodology
- Very preliminary results
- conclusion

Last wednesday...

- standard economic therory and the everyday life
- human decision making process: heuristics, loss aversion, **framing**
- all the related implication:
  - Utility exists only relatively to some reference point
  - Human decisions are influenced by context-specific factors and filtered by the automatic system
  - Human attitude toward choices are influenced in ways that cannot be anticipated by standard economic theory...

Is this all?


Automatic System
(perception, «first impression»...)
Reflective System
(thinking, reasoning..)
Our behaviour and decisions

How framing translates in everyday life

- Values
- Attitudes
- Norms

They are vehicles developing **motivations**

Values

- Guiding principles in the life of a person; trascend specific situations
- Difficult to measure directly
- The same value can lead to different behaviours (e.g. impact on the environment)
- They are ordered in a system of priorities which implies that the most important value is chosen for each specific situation
- Values are a relevant stating point for changing a situation
- They influence how we interpret **information**, what we think we are responsible for and what we do about it.

Attitudes

- A mental disposition to evaluate an object with some degree of favour or disfavour
- Are based on the *idea* that one have about that specific object or situation or behaviour
- *Example*: **environmental concern** is often described as a general attitude towards the environment and reflects a personal evaluation of environmental issues
- However researchers do not find a significant correlation between behaviour and attitudes, even though these are positively associated (see Hines et al 1987).
- Other factors such as norms and demographic appears to have greater impact on environmental behaviour

Norms

- Psychologists: rules of expected behaviour
- Socioligsts: informal understandings that govern society's behaviour
- Guide individual actions by suggesting what is normal, expected or correct. We are constantly reading social setting to determine speech, gestures, manners, topic of discussion etc.
- As **economists**, we are interested in how norms influences market behaviour
- As **environmental economists**, we are interested in how a norm influences the final environmental impact though the modifications of market behaviour

Social Norms

- standards of behaviour that are understood by members of a group which guide and/or contrain the behaviour without the force of laws.
- two dimensions:
  - how much of the behaviour is shown by the majority of the group member
  - how much the group members approve or disapprove of the behaviour
  - *example*: disapproval of littering behaviours
- *injunctive* and *descriptive* (e.g.information campaign) social norms
- People believe to act because of a common sense or through logical decisions, underestimating the effect of social pressure

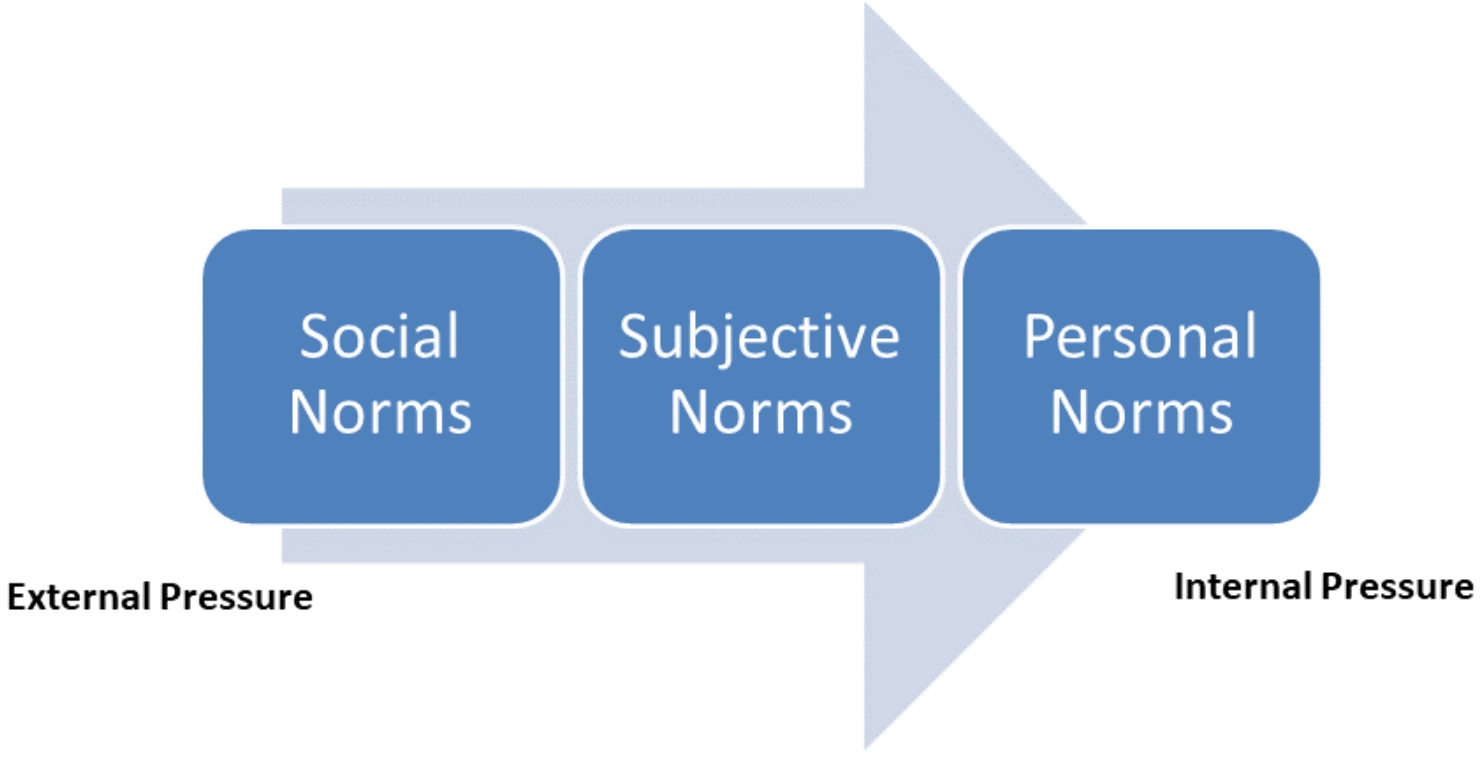
Subjective norms

- the awareness of other's behaviour along with its acceptance is a crucial factor affecting decision to take action
- for example, it has been found that social awareness of others recycling behaviour was a significant predictor of one's recycling behaviour
- Warning: the difference with social norm is subtle but it exists!

Personal norms

- are an individual's belief about their moral obligation to engage in certain behaviour
- the social norms become accepted by the individuals on a personal level
- the consequences of violating or upholding a personal norm are tied to one self's concept (e.g., violate the norm generates guilt and uphold the norm generates pride)
- social norm exists on a structural level while personal norms are **interalized moral attitudes**
- we act on personal norms to avoid guilt wheter or not others approve or disprove

In sum


Social Norms
Subjective Norms
Personal Norms
External Pressure
Internal Pressure

Motivation

The interplay of values, attitudes and norms are at the basis of motivation

Motivation

Represents the set of reasons that drives human behaviour in a certain direction with the purpose of satisfying individual need and achieving individual objectives. It is the *lever* behind human behaviour.

As environmental economists, we are concerned on understanding how public intervention can *influence* behaviour towards pro-environmental b.

Pro-environmental behaviour

The behaviour that people adopt explicitly with the aim of doing something beneficial for the environment

Self-interest theory

- **Standard economic theory** suggest motivation exixts as a response to an economic incentive
- in Extended self-interest theory, people might contribute to a public good if doing so is a precondition for receiving a private good
- People instrumentally behave pro-environmentally (or pro-socially) to get an external reward
- But this do not explain the full story....

Beyond self-interest

- self-interest theories do not explain the full story, because people often acts even without a possible reward
- **Pro-social preferences**:
  - Pure altruism: individual enjoys seeing the well being of others
  - Impure altruism: individual receive an internal ≪warm glow≫ from the prosocial behaviour
  - Inequality adversion: people behave altruistically with those worse off than they are but not with those that are better off
- *Reciprocity*: Response to a friendly/hostile behaviour of others; positive reactions to positive behaviour; conditional cooperation
- *Self-identity*:people not only care about their reputation with others but also want to have a good self image; interest in how the behaviour affects their personal self-image

Which motivation?

- Intrinsic motivation: comes from an inner need to perform an action or to adopt a certain behaviour.

Intrinsic motivation

the reward comes from the action itself

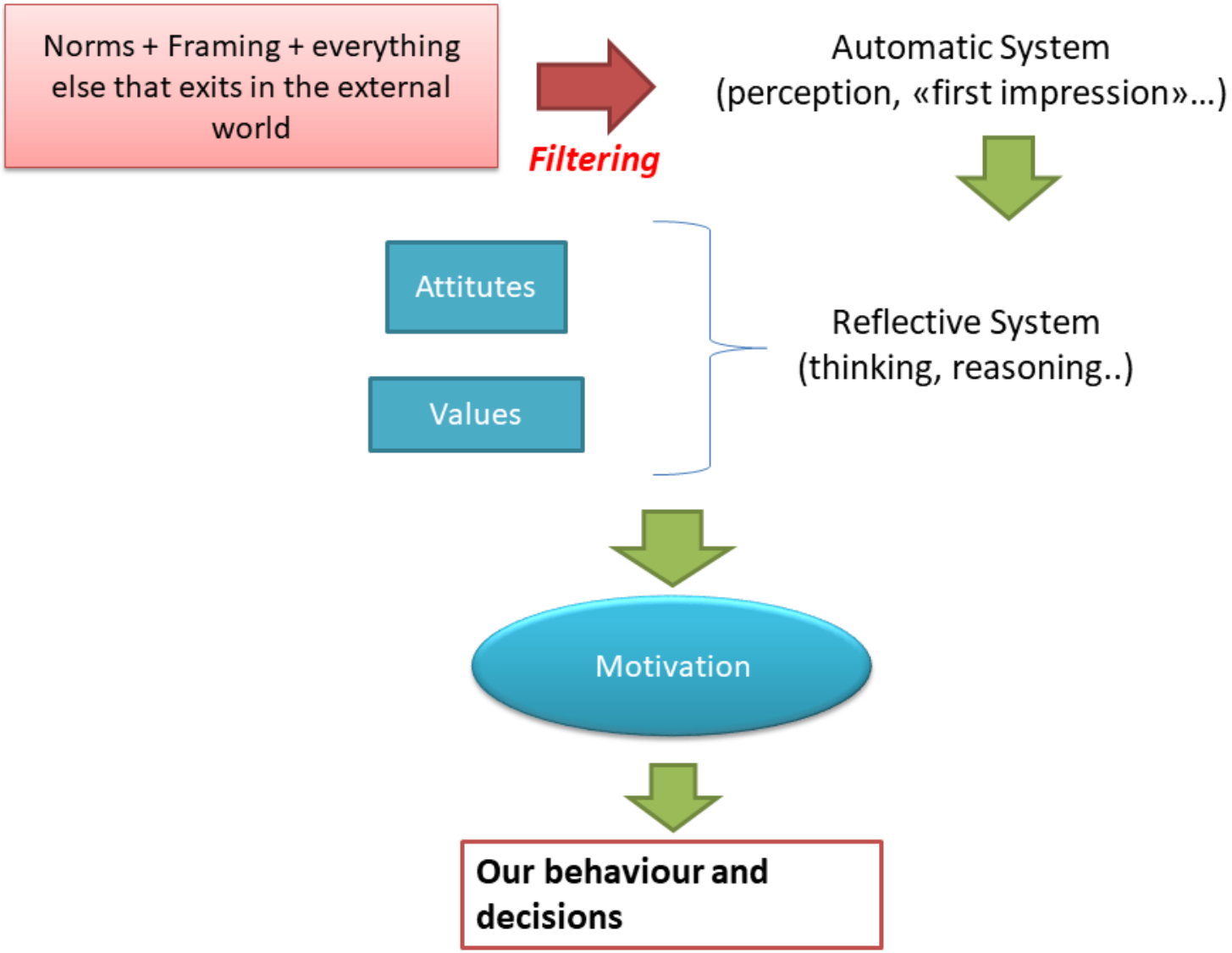
- Extrinsic motivation:individuals engage in an activity because of an external imposition

Extrinsic motivation

there exists the perspective of an external reward in exchange of their behaviour

Remember?

A more exhaustive representation



Behavioural attitude towards waste prevention recycling

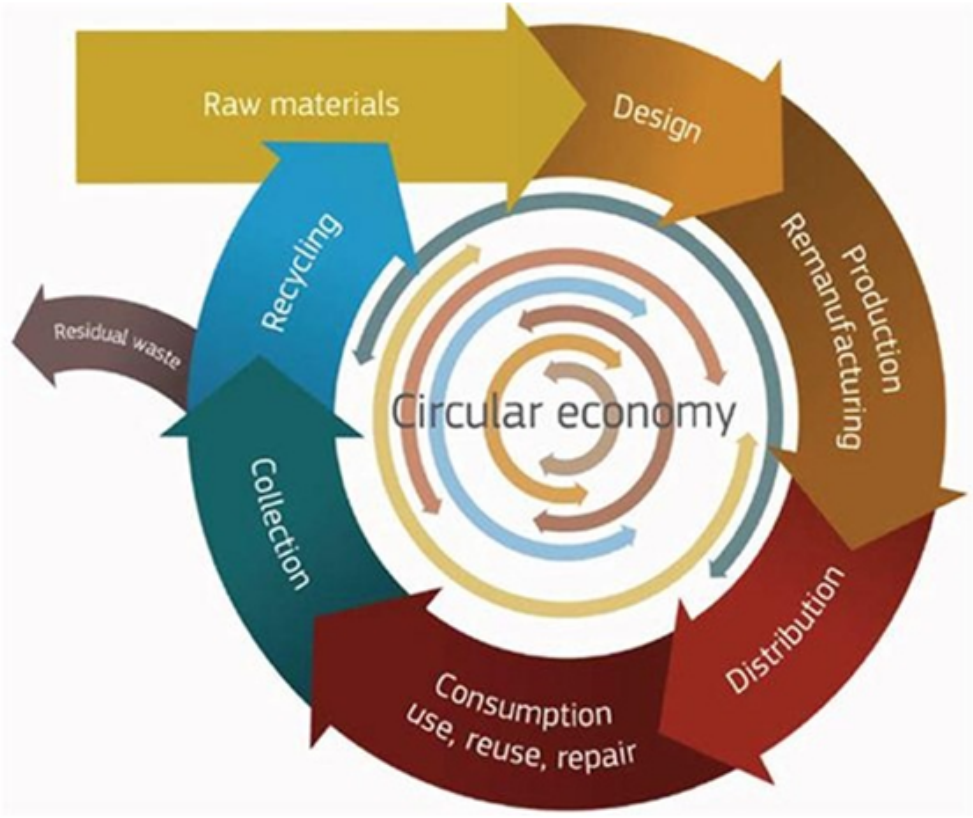
- Standard economic theory suggests that indivials are motivated in behaving pro-socially/pro-environmentally only by economic incentives
- But the literature often highlights that socio-economics characteristics of both households and municipalities matters, as well as the role played by population density, urban concentration, size and wealth of households in determining the development path of waste management systems.
- However, less attention has been paid, up to now, to the role of behavioural aspects in households decisions towards waste prevention and recycling. This paper will attempt to fill this gap

Aim

- Investigate and describe the motives which induce people to engage in pro-social/pro-environmental behaviour which may go beyond purely economic reward
- Based on motivation, describe the individuals' behaviour in separate collection and waste minimization

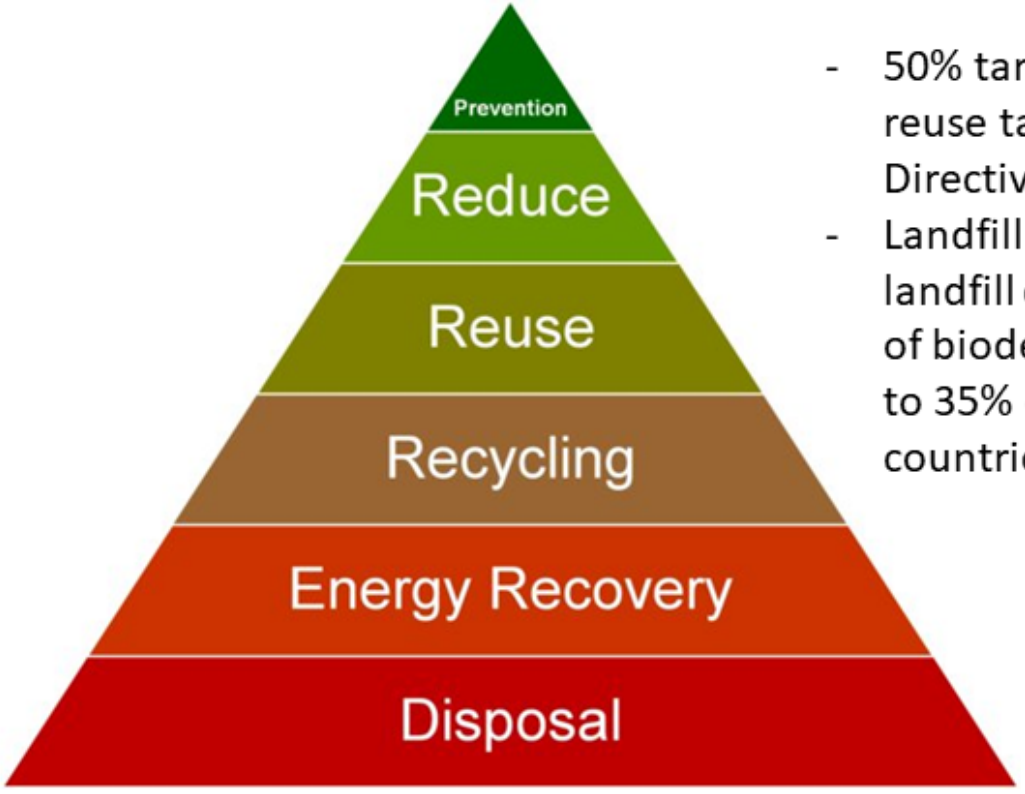
- Intrinsic Motivation are motivation that comes from within the person's attitude. (e.g. pure altruism, good self-image, or the 'warm glow')
- Extrinsic Motivation come from outside the person (e.g. material rewards, such as tax breaks)
- Mixed motivation such as reciprocity and social norm

Circular economy



Circular Economy

Waste Hierarchy and EU target (FD 2008/98/CE)



- 50% target of Recycling / Preparation for reuse target in the Waste framework Directive
- Landfill diversion Targets for Bio-Waste in landfill directive (reduction of the amount of biodegradable municipal waste landfilled to 35% of 1995 levels by 2016 (for some countries by 2020).

The Survey

- The main focus of the survey was to analyse the management of domestic waste in the national territory. From a methodological perspective the survey was conducted with an integration of two different approaches:
  - CAWI, computer assisted web interview;
  - CATI, computer assisted telephone interview.
- The individuals analysed were 618 Italian households representative of the whole population, stratified according to the following parameters:
  - Geographic macro-area
  - Age
  - Gender
- The interview were carried out between the 13th and 19th of June 2014 by SWG. The respondent always is the head of family or the adult responsible the domestic waste management

Empirical strategy

- we selected questions which inform about intrinsic motivation (both social and environmental), reciprocity, extrinsic motivation
- cluster analysis to create homogeneous group based on motivation
- built a regression model to verify the relation between motivation and prevention and recycling behaviours.

Model

$$y = \alpha + \beta_1 cluster_i + \beta_2 area_a + \beta_3 family + \beta_4 education_e + \beta_5 income_s + \epsilon$$

Variables of interest - Motivation variables

- we built a factor variable collecting common variance from questions related to **intrinsic motivation**:
  - how much are uou bothered by wasting unconsumed food?
  - do you usually prefer items with lower packaging at the grocery store?
  - are you informed about environmental problems caused by waste and other environmental issues?
  - do you usually buy products made with recycled raw materials?
  - are you a memeber of non-profit or environmental associations?
- **Reciprocity**: takes value 1 if the household declares to prefer a waste management tariff based on the average waste production of the municipality
- **Extrinsic motivation**: takes value 1 if the household declares that it is fair to provide economic incentive for waste minimization and separate collection

Dependent variables - Minimization

- **Food minimization**: takes value 1 if household declare to waste 15
- **Glass minimization**:Takes a value of 1 if the household increased her glass waste minimisation with respect to the two previous years leading up to the interview
- **Plastic minimization**:Takes a value of 1 if the household increased her plastic waste minimisation with respect to the two previous years leading up to the interview
- **Paper minimization**: Takes a value of 1 if the household increased her paper waste minimisation with respect to the two previous years leading up to the interview

Dependent variables - Separate collection

- **Glass rec.**:Takes a value of 1 if the household usually collects glass
- **Plastic rec.**:Takes a value of 1 if the household usually collects plastic
- **Paper rec.**:Takes a value of 1 if the household usually collects paper and cardboard
- **Medicines rec.**:Takes a value of 1 if the household usually collects medicines
- **Batteries rec.**:Takes a value of 1 if the household usually collects batteries
- **Aluminium rec.**:Takes a value of 1 if the household usually collects aluminium
- **Organic rec.**:Takes a value of 1 if the household usually collects organic waste

Contextual factors

- Area: North, South or centre of the country
- Education: takes different values according to the respondents' level of education
- Income: takes different values according to the main income sources' of the respondent

Description of the clusters

	Sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Description		Mainly motivated by reciprocity, do not present intrinsic or extrinsic motivation	Mainly motivated by incentives, less sensitive to reciprocity and show very low levels of intrinsic motivation	Mainly intrinsically motivated, some sensitivity to incentives but any motivation related to reciprocity	A group of outlier households
Observations	588	49	385	127	2

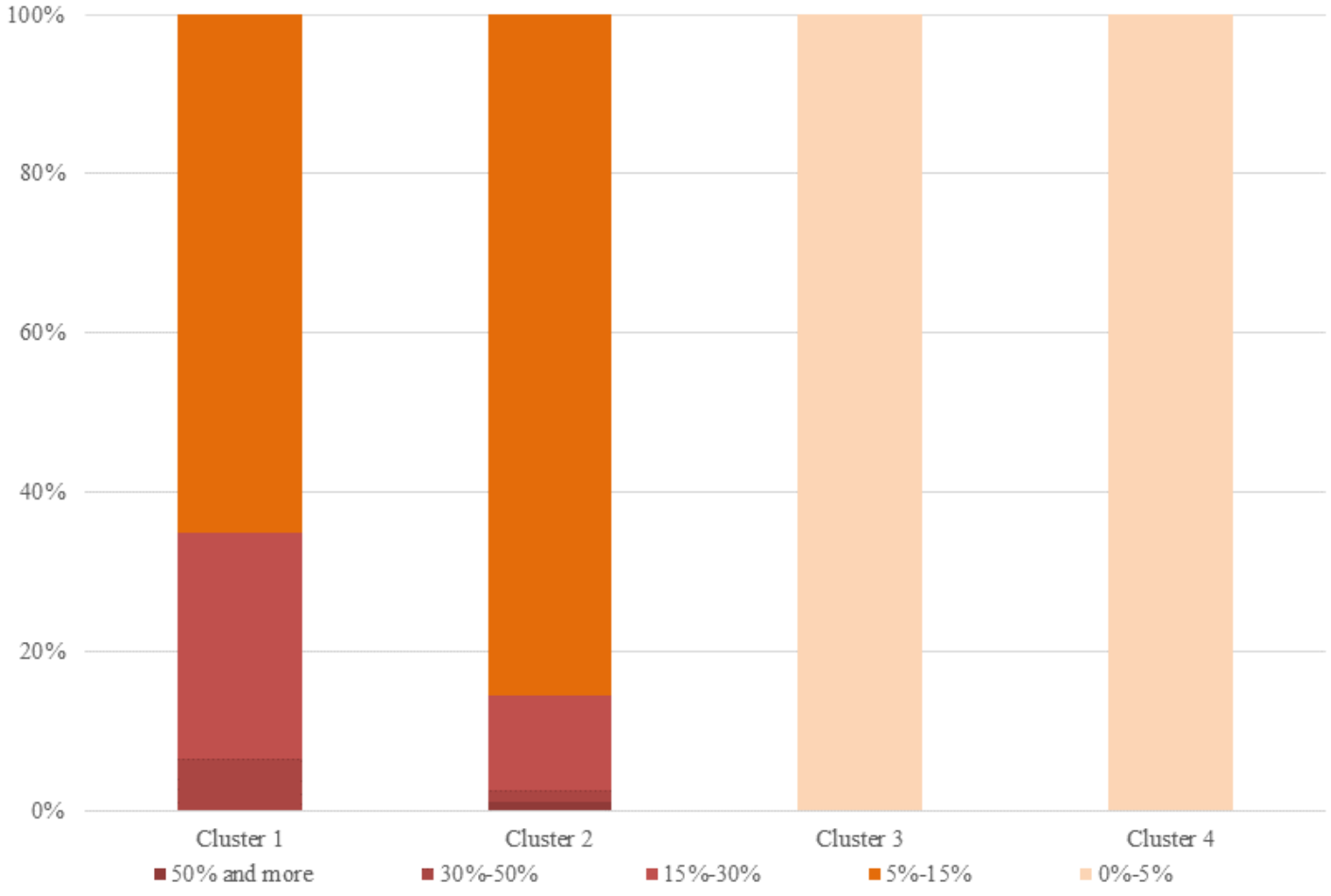
Description of the clusters

		Sample	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster6
Description			100% extrinsically motivated	100% extrinsically motivated but they are more sensible to direct economic incentives then cluster 1	Slightly more extrinsically motivated than intrinsically motivated. They are selfish but not sensible to direct economic incentives	Altruistic individuals, they also show strong extrinsic motivation.	Purely altruistic individuals, they do not appear to be sensible to economic incentives.	Environmentalists but they also have intrinsic motivations. They do not seem to have any altruistic behaviour.
Observations		618	321	43	38	120	21	44
Region	Nord Centre South	34.95% 28.32% 36.73%	37.38% 29.28% 33.33%	34.88% 18.60% 46.51%	31,58% 39.47% 28.95%	29.17% 26.67% 44.17%	38.10% 33.33% 28.57%	34.09% 29.55% 36.36%
Area*(n of resp)	TownCentre Suburbs Countryside	18.12% 44.17% 15.86%	19.94% 40.50% 15.58%	30.23% 46.51% 16.28%	15.79% 31.58% 21.05%	11.67% 54.17% 16.67%	14.29% 57.14% 9.52%	6.82% 45.45% 20.45%
Family member	Avg (sd)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
Age	Avg (sd)	43 (15)	42 (14)	50 (15)	38 (15)	44 (16)	45 (22)	44 (12)

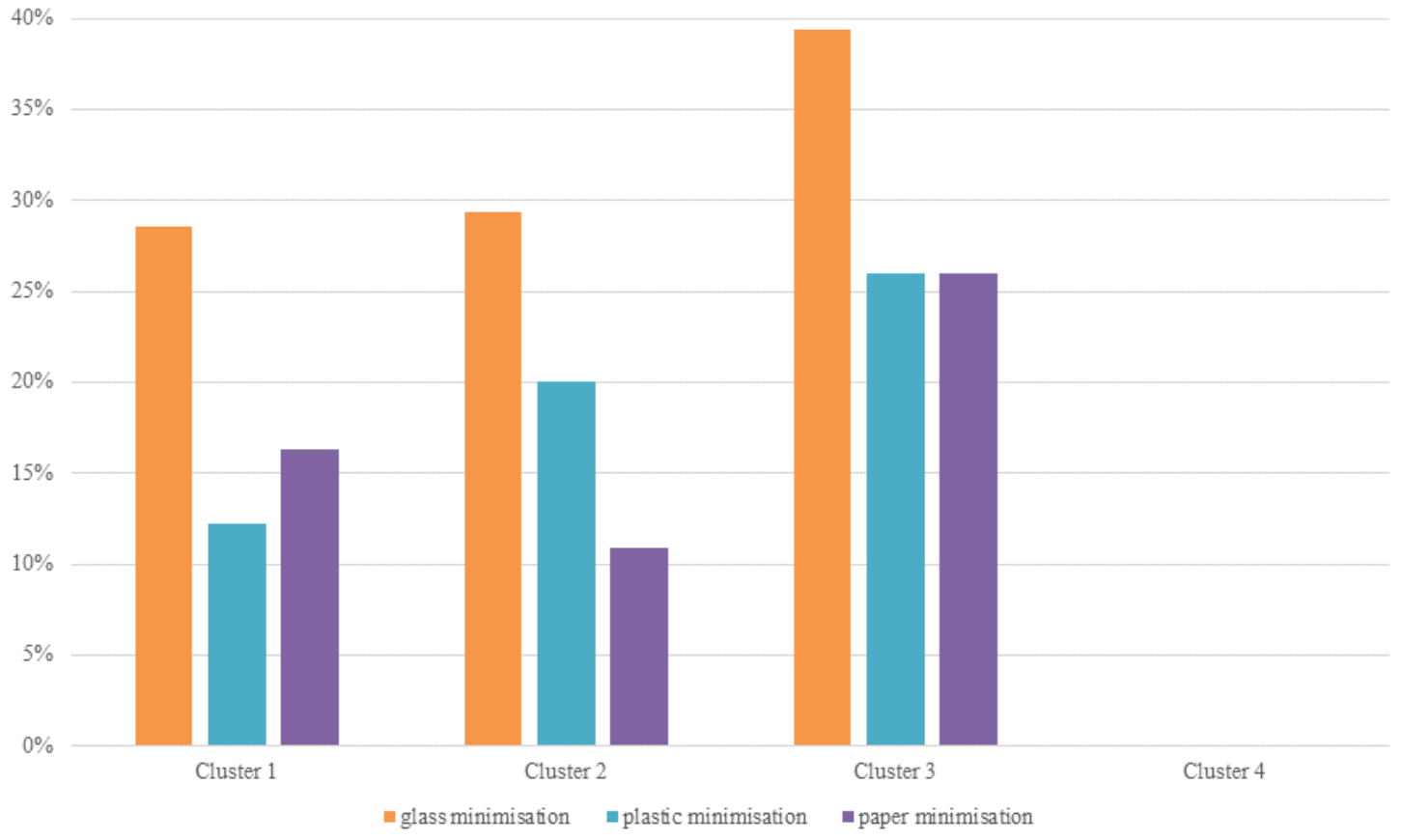
Description of the clusters

		Sample	Cluster1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster6
Education	Ph.D	5.50%	5.61%	4.65%	13.16%	3.33%	4.76%	4.55%
	MSc	18.12%	19.63%	16.28%	10.53%	14.17%	19.05%	31.82%
	Bachelor	15.37%	14.95%	11.63%	31.58%	10%	14.29%	18.18%
	High school	49.35%	50.78%	46.51%	39.47%	55.83%	47.62%	
	Middle-high school	9.71%	8.10%	18.60%	2.63%	13.33%	9.52%	36.36%
	Primary school	1.46%	0.62%	2.33%	2.63%	2.50%	4.76%	9.09%
	No education	0.49%	0.31%	0%	0%	0.83%	0%	0%
								0%
Job	Worker	54.05%	56.39%	55.81%	50%	50%	57.17%	56.82%
	Looking for new job	8.25%	7.48%	9.30%	10.53%	10%	0%	6.82%
	Looking for first job	3.07%	3.43%	0%	5.26%	2.50%	9.52%	0%
	Hosewife	9.71%	7.48%	9.30%	10.53%	15%	4.76%	11.36%
	Student	13.11%	13.08%	6.98%	18.42%	13.33%	14.29%	11.36%
	Disability	0.49%	0.31%	0%	2.63%	0.83%	0%	0%
	Retirement	7.77%	7.79%	18.60%	2.63%	5.83%	9.52%	6.82%
	Other	2.43%	2.49%	0%	0%	1.67%	4.76%	6.82%
	NA	1.13%	1.56%	0%	0%	0.83%	0%	0%
Income source	Employed	56.63%	56.70%	55.81%	52.63%	57.50%	52.38%	65.91%
	Self-employed	13.43%	15.26%	13.95%	15.79%	14.17%	4.76%	9.09%
	Retirement	17.15%	18.07%	25.58%	18.42%	13.33%	14.29%	9.09%
	Annuity	0.81%	0.62%	0%	2.63%	0.83%	4.76%	0%
	Investments	1.13%	1.25%	0%	2.63%	0.83%	0%	2.27%
	Support by family	3.72%	2.49%	2.33%	2.63%	6.67%	9.52%	2.27%
	Other	1.78%	0.31%	2.33%	0%	1.67%	9.52%	4.55%
	NA	5.34%	5.30%	0%	5.26%	5%	4.76%	6.82%
House dimension (m^2)	Average	105.50	104.17	107.09	95.55	108.69	117.56	105.85
	(sd)	(47.32)	(45.63)	(28.66)	(26.53)	(57.04)	(66.78)	(50.09)

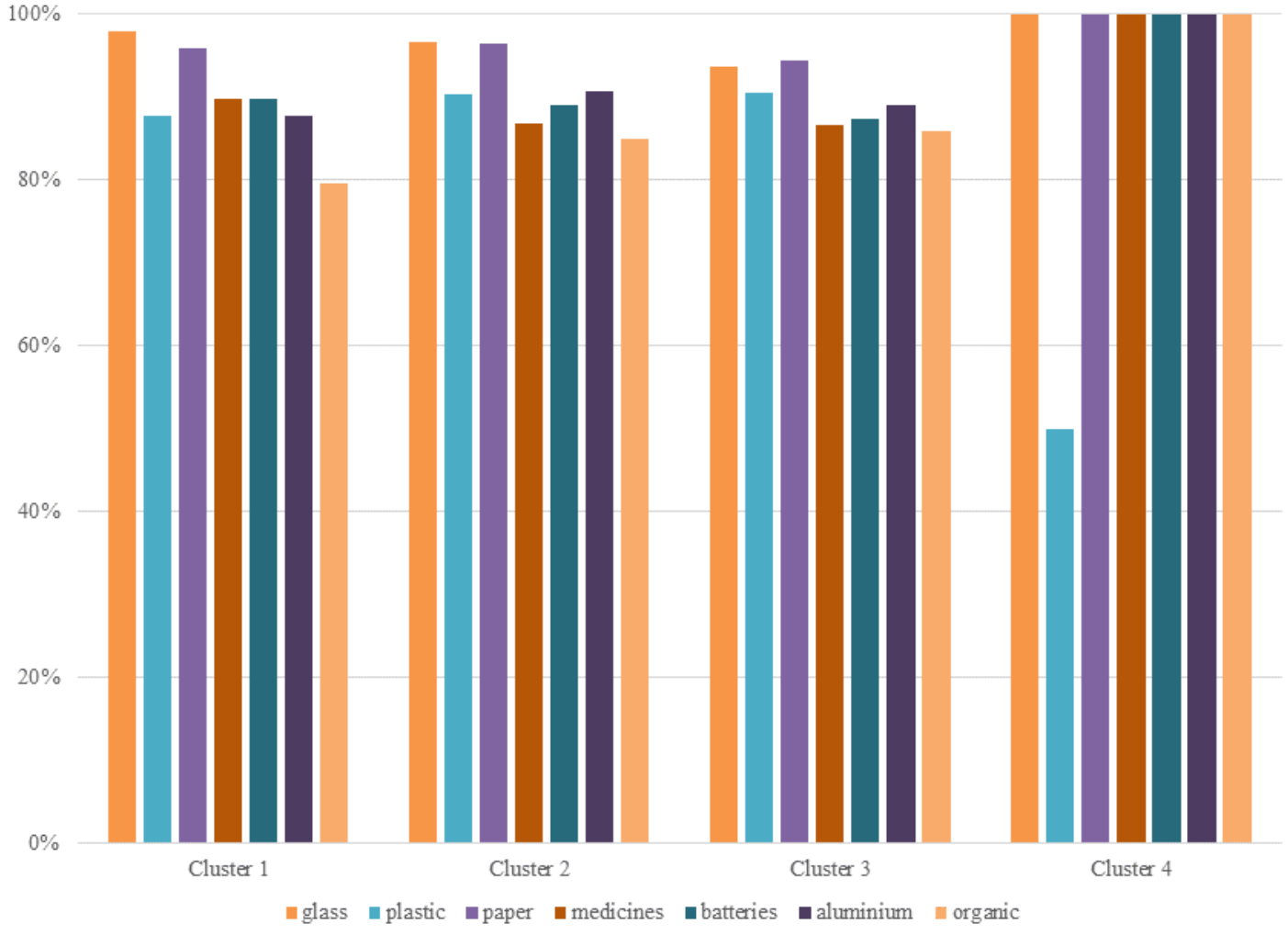
Proportion of food waste



Proportion of minimization



Proportion of separate collection



Differences in the effect of being in one cluster

Table 5 - Marginal effects of moving from cluster 1 to another cluster on selected dependent variables.

	Food waste	Glass Minimisation	Plastic Minimisation	Paper Minimisation
Cluster 2	*0.167*	0.088	0.010	0.027
	(0.067)	(0.059)	(0.072)	(0.068)
Cluster 3	*0.363*	*0.154*	0.107	*0.143*
	(0.065)	*(0.062)*	(0.078)	*(0.074)*
Observations	556	544	556	554

Note: italicized values correspond to statistically significant coefficients in the logistic regression model (at least 5%). The marginal effects standard error is in parentheses. Covariates included in the model are area of residence, education, income source, and number of rooms in the house.

Differences in the effect of being in one cluster

Table 6 - Marginal effects of moving from cluster 1 to another cluster on selected dependent variables.

	Glass Recycling	Plastic Recycling	Paper Recycling	Medicines Recycling	Batteries Recycling	Organic Recycling	Aluminium Recycling
Cluster 2	-0.007	0.043	0.011	-0.039	-0.011	0.086	0.051
	(0.036)	(0.054)	(0.031)	(0.047)	(0.047)	(0.069)	(0.058)
Cluster 3	-0.044	0.037	-0.006	-0.053	-0.043	0.094	0.028
	(0.042)	(0.061)	(0.035)	(0.055)	(0.054)	(0.074)	(0.064)
Observations	508	554	519	543	556	540	528

Note: italicized values correspond to statistically significant coefficients in the logistic regression model (at least 5%). The marginal effects standard error is in parentheses. Covariates included in the model are area of residence, education, income source, and number of rooms in the house.

Final remarks

- intrinsic motivations are significantly correlated with minimisation behaviour, while there is not an empirical link between extrinsic motivation and waste reduction
- the evidence for recycling is less clear, and more research in this field is needed
- If we want to move from a policy framework based mainly on recycling towards achieving the actual reduction of waste at the source, attention should be paid to the interaction between waste policies and waste behaviour.
- a well-designed policy framework that places more emphasis on information, specific environmental knowledge, environmental awareness and an efficient product design can enhance intrinsic motivation in several ways

Doggy bag? Yes, please. On the use of social norms and default to reduce food waste

- almost one-third of food produced for human consumption, corresponding to approximately 1.3 billion tonnes per year, is wasted
- Food waste reduction is relevant in the perspective of improving food security and guaranteeing sustainable development paths by affecting the economic, social and environmental dimension of the food sector
- food waste is responsible for both the unnecessary use of the natural resources used for food production, and the local and global consequences of food waste disposal, including GHG emissions
- carbon footprint of food produced and uneaten was estimated to be 3.3 Gtonnes of CO2 equivalent in 2007

Why doggy bags?

- In this study, we focus on customers' attitude to reduce food waste at restaurants by using food boxes (the so-called "doggy-bag") to take their leftovers away.
- Despite its widespread use in the US, the practice of boxing customers' leftovers is quite unusual, even unknown, in several EU countries
- In a recent study conducted in France and in the Czech Republic, customers' behavior related to doggy bags have been investigated, finding that for the majority of the respondents "customers who ask for doggy bag are seen as consumers with financial problems" and that "leaving leftovers is clearly a symbol of social and/or financial status"

- we examine the impact of two different behavioral instruments aimed to incentivize the use of doggy bag and the consequential reduction of consumers' leftovers and of food waste
- In a first group of restaurants, we introduced signs on tables displaying a message intended to activate a social descriptive norm.
- In a second set of restaurants, the message was intended to change the default option in restaurants, which generally consists in the customer that has to ask for the doggy bag in order to have their leftovers boxed
- In both cases, the aim of the messages was to reduce the sense of stigma and shame people feel when they ask for the doggy bag

Social Norm tag

Opt out tag

- the activation of a social descriptive norm is expected to affect the individual perception of the social approval towards the use of doggy bags and to reduce feelings of shame and stigma
- changing the choice setting by providing doggy bags as default in case of leftovers is also expected to reduce the sense of blame, stimulating individuals to accept to take their food home
- restaurants were split randomly into three different groups, labelled: SOCIAL NORM, DEFAULT, and CONTROL group. The experiment lasted 61 days

Figure 1 – Average daily number of doggy bags per treatment group

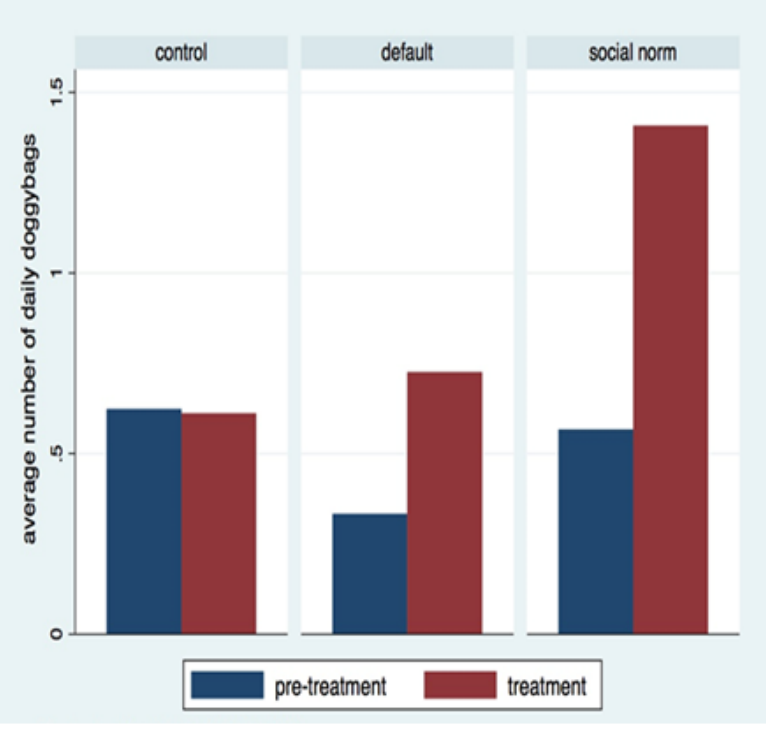


Figure 2 – Average Ratio per treatment group

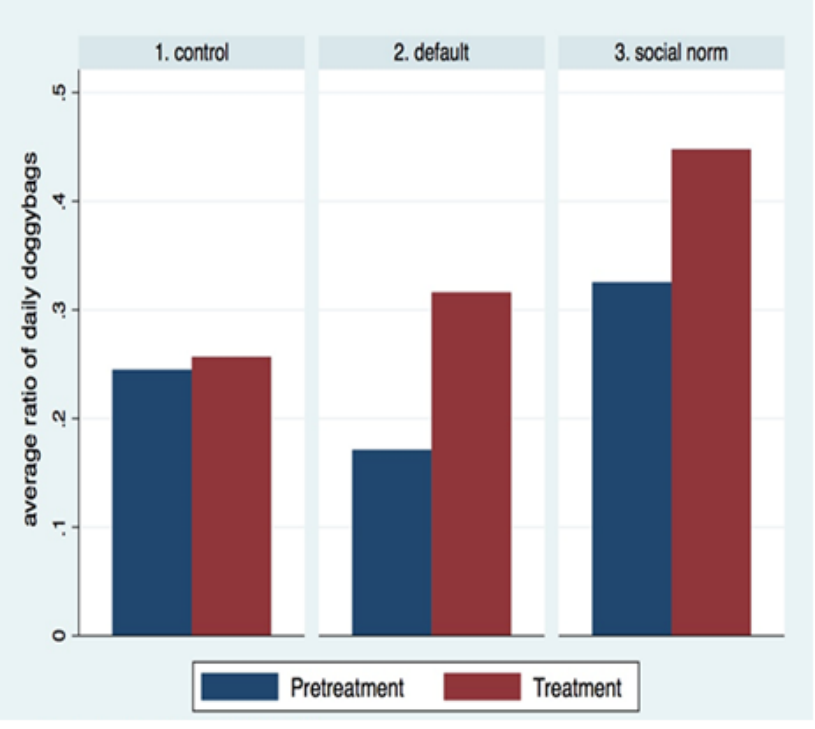


Figure 3 – Comparison average daily number of doggy bags and leftovers per treatment group in the pre-treatment and treatment phases

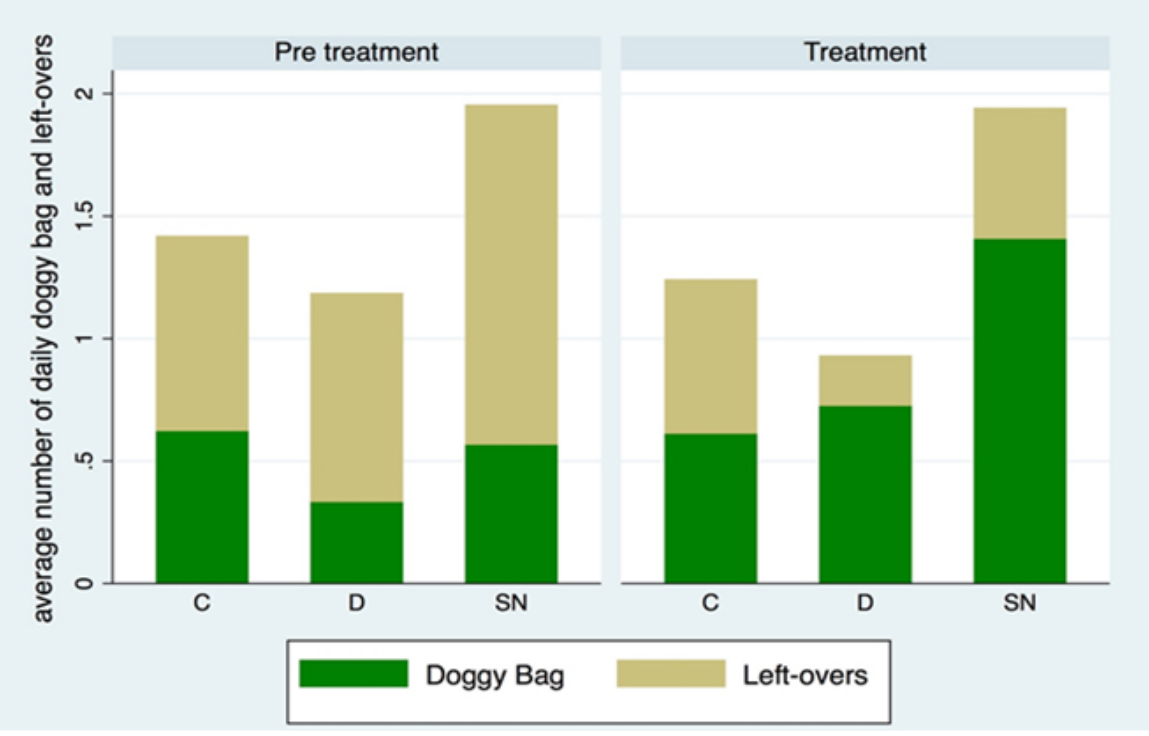


Table 3 – Regression results

	Doggy Bag	*Doggy Bag*	*DB Ratio*	*DB Ratio*
Default	0.2685**	0.2930	0.1242***	0.0702
	(0.1294)	(0.2426)	(0.0386)	(0.0695)
Social Norm	0.8696***	1.2668**	0.2293***	0.2258**
	(0.1340)	(0.4811)	(0.0399)	(0.0987)
Leftovers		0.3218*		
		(0.1641)		
Price		0.0507**		0.0030
		(0.0225)		(0.0053)
Covers		0.0129***		0.0028***
		(0.0042)		(0.0009)
Patrons		-0.7211		-0.2111*
		(0.5501)		(0.1113)
Zero-kilometer		-0.7411		-0.0755
		(0.4366)		(0.0988)
Center		0.1409		0.0660
		(0.2638)		(0.0771)
Traditional		0.7361**		0.0263
		(0.3398)		(0.0786)
Pizzeria		1.0787***		0.1936
		(0.3674)		(0.1342)
Const	0.6554***	-1.6367	-0.2293	0.1067
	(0.1997)	(1.2529)	(0.3088)	(0.1968)
Time Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Obs	766	766	766	766

- both treatment appears to be significant compared to the control group, but DEFAULT is no longer significant when covariates are included
- important covariates are: price, number of covers
- it appears that with respect to the opt-out option the descriptive social norm is more effective.

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- Sirieix, L., Lála, J., & Kocmanová, K. (2017). Understanding the antecedents of consumers' attitudes towards doggy bags in restaurants: Concern about food waste, culture, norms and emotions. Journal of Retailing and Consumer Services, 34, 153-158.