CONTRIBUTIONS OF PSYCHOLOGY TO THE ECONOMIC ANALYSIS OF ADDICTIVE BEHAVIORS

APPORTS DE LA PSYCHOLOGIE À L’ANALYSE ÉCONOMIQUE DES COMPORTEMENTS ADDICTIFS

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THE RATIONALITY ISSUE

Homoeconomicus has long been the preeminent paradigm used in economic theory. His perfect rationality and self-interested attributes lead him to optimal decision making. Deprived from any emotion that could divert him from his objectives, the individual is endowed with stable preferences and unlimited calculation capacities. Those attributes, permit him to take into account all the available information from his environment in order to maximize his discounted utility function without any processing cost. As individual’s decisions can be planned with certainty, psychological science has no reason to exist. Thereby, the hypothesis of perfect rationality appears to be an obstacle for any cross disciplinary study between economics and psychology. This theoretical framework, useful for economists to model individual behavior in a broad range of situations, has been challenged by contradictory experimental results (DellaVigna, 2007).

Largely questioned by scientists, the rational choice issue led economists to take a step toward related disciplines, such as social psychology, in order to fill its weaknesses. Indeed, psychological and economic sciences appear to be complementary since the social psychologist identifies environments that favor biases apparition, whereas the work of the economist aims to suggest instruments permitting to limit them (Petit, 2012). This connection between economics and psychology is at the origin of behavioral economics development.

Despite the strong interest expressed by some researchers for behavioral economics, economic literature related to addictive behaviors are characterized by the prevalence of models related to the theory of rational addiction (TRA) of Becker and Murphy (1988). Without reconsidering the hypothesis of perfect rationality, this theory can explain how the consumption of an addictive product increases according to past consumptions, through the growth of an addictive stock that lowers the utility function. This stock induces two effects: tolerance (the need to consume more in order to get a constant welfare), and reinforcement (an increased desire to consume). Since addictive consumption choice relies on stable preferences, only an exogenous shock – a change in the environment such as price change or new available information – can lead the individuals to modify their long term behavior. Consequently, recommended public policies are limited to those that limit consumption externalities and let consumers take care of themselves (Kopp, 2006).

In such a framework, there is no place for “excessive optimism, strong loss aversion, the useful role or counterproductive role of emotions in decision making, selective memory, or own-beliefs manipulation” (Tirole, 2013), or for the study of the social environment impact on decision making. Moreover, TRA does not explain how an individual can quit his addictive consumption in the absence of any external intervention, nor abstention failures despite the numerous public intervention policies (Guignard, Beck, Richard, and Peretti-Watel, 2013).
Relaxing the hypothesis of a perfect rationality in favor of a bounded rationality (Simon, 1972), largely supported by behavioral and experimental economics fields, allows to study the role of emotions and social environment, which can disrupt the program of welfare maximization. It also allows the introduction of a wide range of public policies, since admitting that individuals face cognitive biases or use heuristics to make their decision, is a strong argument in favor of libertarian paternalism (i.e. Nudges) advocated by Thaler and Sunstein (2009).

THE ROLE OF SHORT TERM EMOTIONS
Loss of self-control is one important characteristic of addictions (American Psychiatric Association, 2014) that is ignored by TRA because it causes a variation in the short term preferences. Adopting the perspective of bounded rationality allows to study losses of self-control through visceral emotions (Loewenstein, 1996, 2000). The latter refers to a phenomenon that motivates individuals to consume certain goods such as water or food, when they experience craving. Any resistance is futile due to the unbearable pain imposed. Visceral emotions arousal induce the coexistence of two modes of thinking, confirmed by neurosciences (Brocas and Carrillo, 2014): the cold mode in which the individual make his decisions as rationally as his cognitive capacities enable him, and a hot mode in which the only priority is to minimize the visceral emotion, even if the resulting welfare is not optimal (for instance, when we eat a whole bowl of peanuts before the dinner). Those two modes are completely independent, this cold-to-hot empathy gap (Loewenstein, 2005; Sayette, Loewenstein, Griffin, and Black, 2008) is the result of a misevaluation of the state switch (Badger et al., 2007).

To be applied to addictions, Loewenstein model should be adapted. Indeed, addictive good do not generate visceral emotions per se, they are positively related to the addictive consumption history. Therefore, it is necessary to incorporate an addictive stock into the model. To make this framework closer to reality, consumers’ attempts to resists to their impulses (Elster, 2000), by adopting avoidance or commitment strategies (Bernheim and Rangel, 2004), have to be included. The model shows that empathy gap increases the losses of self-control over addictive good consumptions (Ogrodnik, 2015). This is a point in favor of policies aiming to reduce visceral effects partly relying on physical dependence and on psychological dependence. Substitution treatment diffusion (promotion campaigns or subsidizing), or free hotline introduction, aim to reduce the physical dependence. In order to manage the psychological dependence, public bans and restrictions on advertising show effective results. Moreover authorities (private or public) can act to strengthen individuals’ willpower by the proposition of commitment contracts (Giné, Karlan, and Zinman, 2010; Gneezy, Meier, and Rey-Biel, 2011).

THE ROLE OF LONG TERM EMOTIONS
In the TRA context, new information brought by prevention campaigns directly lead to a modification in the addictive behavior. Actually, such campaigns did not eradicate smoking or excessive alcohol drinking. The extended parallel process model (Witte, 1992; Witte and Allen, 2000) shows that the response to a prevention message is tempered by several cognitive mechanisms. Relying on the concept of the minimization of cognitive dissonance (Festinger, 1957), it describes situations in which individuals that face a fear-appealing message (for instance “smoking kill. To avoid the death danger, call the special hotline, a counselor will help you to quit”) resorts to
cognitive or behaviors rationalization. In a first step, the subject evaluates the level of threat (e.g. the message “smoking kills” is very threatening), as well as his level of vulnerability (“I smoke, so I am concerned”). If the level of threat or vulnerability is weak, there is no reaction. Otherwise, he makes a second set of evaluations; he assesses the response efficacy of the message to protect him from the danger (“I think that calling a hotline is an effective way to quit smoking”) and the self-efficacy, that refers to his perceived ability to adopt the recommendation (Peters, Ruiter, and Kok, 2013). The control of fear implies defensive mechanisms such as a minimization of the threat, a depreciation of the source credibility, or the selection of favorable arguments (Janis and Terwilliger, 1962).

The model of Witte can be adapted for economists through the introduction of a loss function, increasing with the addictive good consumption, with a slope equal to min \{t, v, e, s\}, that lowers the utility function of the addictive good. If at least threat \(t\), vulnerability \(v\), efficacy \(e\), or self-efficacy \(s\) is weak, the loss function slope is low, and the utility received from the consumption of the addictive good is not affected. However, if the four parameters are high, the fear function considerably impacts the utility function. If the slope of the latter becomes negative (i.e. decreasing with the amount consumed), the individual tries to diminish or quit his addictive consumption. In terms of public policies, fear campaigns lead to an inverted U shaped utility function (Gallopel-Morvan, 2006). An adequate message should be moderately fear-appealing and should propose credible solutions, to overcome the reported danger, that are not perceived as difficult to adopt (Durkin, Brennan, and Wakefield, 2012).

THE ROLE OF SOCIAL IDENTITY
In TRA, the individual acts according to his own interests. The existence of groups and sub-groups that share norms is eluded, as well as peer pressure, stigmatization and conformism.

The role of peers and normative beliefs should be taken into account in economic models of consumption decision. Akerlof and Kranton (2010) have open this path by constructing general models, that can be applied to addictions since normative beliefs are good predictors of behaviors (Steele, Spencer, and Aronson, 2002), especially in the case of smoking (Mourre and Gurviez, 2015) and alcohol drinking (Garnett et al., 2015).

Taking into account social identity in individuals’ decision making process, has numerous implications in terms of public policies: denormalization campaigns that rely on the undesired in-group behaviors are effective to encourage individuals to adopt a desired behavior (White, Simpson, and Argo, 2014). Nonetheless, those campaigns are not always adequate and can lead the individual to identify more strongly to the deviant sub-group instead of changing (Badea, Boza, Ramos, and others, 2011; Peretti-Watel, Legleye, Guignard, and Beck, 2014). Thereby, carefulness is necessary in order to avoid boomerang effects (Mourre and Gurviez, 2015).
REFERENCES


Contribution of Psychology to the economic analysis of addictive behaviors (long abstract)
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