Journal of Economic Psychology 32 (2011) 754–761

Contents lists available at ScienceDirect

Journal of Economic Psychology

journal homepage: www.elsevier.com/locate/joep

Impulsivity and household indebtedness: Evidence from real life

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ARTICLE INFO

Article history:
Received 17 August 2010
Received in revised form 8 April 2011
Accepted 10 May 2011
Available online 2 June 2011

JEL classification:
C21
D14
D91
G21

PsycINFO classification:
3900
3920
2560
2360

Keywords:
Behavioral economics
Decision-making
Household indebtedness
Impulsivity
Iowa Gambling Task
Probit model

ABSTRACT

Using a probit model, we estimated the role of emotional factors in determining household participation in the debt market, after controlling for such traditional economic predictors as age, level of education, income, wealth, and work status. A sample of 445 Caucasian subjects selected among fulltime employees at international asset management companies underwent the Barratt Impulsiveness Scale, the Iowa Gambling Task (IGT) while skin conductance was recorded, and a series of questions related to their demographic-socio-economic profile. Aside from confirming the role played by traditional explanatory variables commonly used as determinants of household indebtedness, results revealed the significant influence of individuals' impulsivity in making debt decisions. Impulsivity predicted unsecured debt (i.e. consumer credit), but it was not significantly associated with secured debt (i.e. mortgages). Neither presence of a somatic marker to guide decisions nor performance at the IGT predicted real-life indebtedness decisions in this non-clinical sample. The notion that "non-rational" factors influence debt demand has been largely ignored and raises concerns about the risk of over-indebtedness for impulsive individuals.

1. Introduction

The theoretical economic framework for consumption, saving, and indebtedness decisions has been developed within the Life-Cycle theory (Modigliani & Brumberg, 1954) and the Permanent Income Hypothesis (Friedman, 1957). According to these economic models, households generally decide to make a loan as a way of anticipating spending based on expectations of increased future income receipts. The rationale is that income is generally low in an individual's early working life and tends to rise over time. At the start of their working life, individuals expect higher future income receipts, thus financing the purchase of assets in order to raise consumption over the level offered by current income. Nearing the end of their working lives, individuals increase savings levels in preparation for retirement when spending will be greater than earning. In these economic models, individuals behave "rationally" so as to maximize their expected utility based on time-consistent

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doi:10.1016/j.joep.2011.05.002

preferences and indebtedness, as well as savings, which guarantees heightened economic welfare by smoothing out consumption over time (Bagliano & Bertola, 2004).

Several contributions to this theoretical framework use data from surveys focused on the determinants of household participation in the debt market (Cox & Jappelli, 1993; Del Rio & Young, 2006, 2008; Duca & Rosenthal, 1993; Gropp, Scholz, & White, 1997; Leece, 2000; Magri, 2007). The variables normally used to find the drivers of household debt demand are typically classified by socio-demographic variables (e.g., age, gender, level of education, size of family, and geographical area) and economic variables (e.g., net wealth, income, and work status). It has been concluded that the behavior of individuals deviates systematically from the "rational choice"[1] model of standard economic theories (Brown, Taylor, & Wheatley Price, 2005; Easterlin, 2005; Etzioni, 2010; Graham & Isaac, 2002; Karlsson, Dellgran, Klingander, and Garlin, 2004; Lea and Webley, 1995; Meier & Sprenger, 2007, 2010; Ranyard, Hinkley, Williamson, & McHugh, 2006; Rohde, 2009; Siemens, 2007), although it is not clear if this is determined by the existence of credit market imperfections or by the myopia of consumers (Hayashi, 1985; Magri, 2007). For example, individuals tend to systematically overvalue immediate costs and benefits and undervalue future ones (i.e., hyperbolic discount). In other words, their preferences are not time-consistent, as posited by traditional economic models (Franken, van Strien, Nijs, & Muris, 2008; Rachlin & Jones, 2008; Strack, Werth, & Deutsch, 2006). As regards the decision to demand for debt and, in particular, consumer credit, the hyperbolic discount factor pushes individuals, at the time they have to decide whether to purchase on credit terms or not, to opt for immediate purchase. This decision is made despite the fact that the individual is rationally able to judge that the level of debt taken on is unsustainable in comparison to future income. This effect explains why individuals choose "buy now, pay later" solutions that bring immediate gratification at a future cost; in fact, it means that individuals adopt impatient, short-sighted behavior patterns which make it difficult for them to be fully aware of the consequences of their spending decisions for the sustainability of personal debt (Meier & Sprenger, 2007, 2010; Siemens, 2007).

The concept of hyperbolic discount has been borrowed by psychologists and considered instrumental to understand drug dependence (Bickel & Marsch, 2001). In fact, several studies showed how delayed reinforcers are discounted by drug dependent individuals (e.g., Yechiam, Stout, Busemeyer, Rock, & Finn, 2005).

More recently, the notion of hyperbolic discount has been linked to impulsivity and extended to non-clinical subjects (Franken et al., 2008; Zermatten, Van der Linden, d'Acremont, Jermann, & Bechara, 2005). Impulsive subjects overestimate the duration of time intervals and, as a consequence, discount the value of delayed rewards more than do self-controlled individuals (Wittmann & Paulus, 2008). In general, high impulsive individuals are biased towards immediate rewards when evaluating options and are less sensitive to the negative consequences of their choices (Martin & Potts, 2009; Potts, George, Martin, & Barratt, 2006).

An influential attempt to explain why "hunches" and "gut feelings" are often better predictors than rational economic factors comes from Damasio's Somatic Marker Hypothesis (Damasio, 1994), originally developed to explain decision-making deficits in people with ventromedial prefrontal cortex lesions. These patients seem unable to learn from previous mistakes, as reflected by repeated engagement in decisions that led to negative consequences. In contrast, these patients' intellectual and problem-solving abilities are largely normal. Moreover, they tend to show flat affect and an inability to react to emotional situations. This led Damasio to hypothesize that the primary dysfunction of these patients is an inability to use emotions to aid in decision making, and he further postulated that somato-visceral signals from the body (affective reactions) ordinarily guide individuals' decisions-making and risk engagement processes. To test this hypothesis, Bechara and colleagues had participants complete a decision making task (the Iowa Gambling Task [IGT]; Bechara, Damasio, Damasio, & Anderson, 1994) while measuring skin conductance responses (SCR), an autonomic index of emotional arousal.

In a series of experiments, it was shown that the majority of normal subjects responded with SCRs that were larger before choosing from disadvantageous decks than before choosing from advantageous decks, whereas patients with vmPFC damage did not show such anticipatory emotional responses, which seem necessary to anticipate the emotional impact of future losses.

Further studies, however, demonstrated that a small group of healthy individuals show the same performance as the patients at the IGT. It is plausible to hypothesize that the impaired subgroup of normal controls would also engage in indebtedness behaviors. Moreover, Franken et al. (2008) and Sweitzer, Allen, and Kaut (2008) demonstrated that higher impulsivity scores were associated with poorer performance at the IGT in non-pathological subjects.

This paper focuses on the determinants of households' participation in the debt market. We hypothesized that psychological factors, i.e. a somatic marker and impulsivity, would play a significant role in the prediction of household probability of holding debt, together with explanatory variables commonly used in the applied economic literature, such as gender, age, the level of education, income, wealth, and work status.

We also focused on the effects of the psychological variables on the two main categories of debt: secured (i.e. mortgages) and unsecured (i.e. consumer credit).[2] The rationale was that the effect of behavioral factors on household debt demand is likely to be different for these two types of debt; in particular, secured debt decisions last for a long time and follow the life-cycle, while unsecured debt decisions are largely determined by short run benefits. In fact, consumer credit is increasingly used to finance daily shopping (e.g. credit cards); thus, decision-making is more influenced by behavioral patterns like impa-

[1] Rationality as a concept adopted in economic theory consists of a series of hypothetical, regularized preferences on the part of an individual described by their utility function (Bagliano & Bertola, 2004).

[2] Secured debts are debts backed by collateral; since the most common type of secured debt is the mortgage, in the paper we use the two terms as synonymous. Similarly, we use the terms unsecured debt and consumer credit to refer to any type of debt that is not collateralised, such as personal loans, credit card debts, and pay day loans.