

# Economic Analysis of Law Review

## Overindebtedness in the Prelude to the Crisis of 2016 in Brazil: An Empirical Contribution.

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### RESUMO

No Brasil, a expansão do acesso ao crédito pelo consumidor tem sido um importante fator que fez surgir novas oportunidades e novas adversidades, tanto para os indivíduos quanto para o cenário macroeconômico. As novas relações de consumo, impulsionadas pelo acesso ao crédito, apresentam como consequências mudanças no comportamento econômico do consumidor brasileiro gerando reflexos nos indivíduos e na própria economia do país. O aumento da oferta de crédito para elevar o consumo gerou um aumento na proporção de renda das famílias direcionada ao pagamento de dívidas, sendo que estas tornaram-se gradativamente mais altas, fazendo com que o superendividamento se tornasse um fenômeno de maior visibilidade. O presente trabalho pretende analisar quais eventos implicaram em maior ou menor endividamento do consumidor brasileiro poucos meses antes da deflagração da crise brasileira de 2016. E, a partir dos resultados obtidos, fornecer subsídios para possíveis políticas públicas de apoio ao superendividados (ou com risco de superendividamento). Os resultados de nossa pesquisa mostram que mesmo diante da crise, o comportamento do consumidor com relação à probabilidade de se endividar não muda.

**Palavras-chave:** Superendividamento; Insolvência; Estudo Empírico

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### ABSTRACT

In Brazil, the expansion of access to credit by consumers has been an important factor, giving rise to new opportunities and new problems, both for individuals and the macroeconomic scenario. With a policy to increase the supply of credit by the Brazilian government to boost consumption, the proportion of household income directed to pay debts gradually increased, causing indebtedness to become a more visible phenomenon. This paper analyzes which events implied higher or lower indebtedness of Brazilian consumers in the prelude to the 2016 crisis. The results show that when there is a birth or death of a family member, there is an increase in the probability of being indebted in six of nine proposed concepts of debt. Our results indicate that even in the face of a crisis, the behavior of consumers regarding the probability of assuming debt does not change.

**Keywords:** Overindebtedness; Insolvency; Empirical study

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## 1. Introduction

In Brazil, the expansion of access to credit by consumers has been an important factor bringing new opportunities and new problems, both for individuals and the macroeconomic scenario. The new relations of consumption, driven by greater access to credit, allowed a larger part of the population to consume goods and services that were not previously included in their budgets, as well as causing consequences in economic behavior and the macroeconomic climate.

With the Brazilian government's policies to expand the supply of credit to increase consumption, the proportion of household income directed to pay debts became gradually higher, which caused indebtedness to become a more visible phenomenon. Economic slowing along with rising inflation and unemployment and high interest rates is a perverse combination that negatively affects indebtedness, which in turn hinders the possibilities of economic recovery. In other words, the relation between overindebtedness and economic recovery is a vicious cycle. As the debt level rises, the risk of a severe crisis also rises. The commitment of a substantial share of household income to pay debt increases the possibility that interest rate increases will result in widespread default, with systemic consequences.

Unlike the current literature, this paper aims to analyze which events imply higher or lower indebtedness of Brazilian consumers in the 2016 recession. To our knowledge, no papers have specifically analyzed how the prelude to an economic crisis affects the likelihood of indebtedness. We used data from a national survey conducted March 2016 with 2,002 households. Our definition of events encompasses common situations that affect everyone, but at the same time can, temporarily or not, result in higher expenditure.

The importance of studying how individuals' behavior can change during an economic crisis is that the reasons that lead certain individuals to assume too much debt during economic boom times are not the same reasons in time of crisis. Besides that, during crisis periods, society needs to solve the overindebtedness problem. The existing literature has focused on studying the indebtedness theme in a broader way, but little attention has been devoted to quantifying the impact of various events on the real probability of household overindebtedness.

First, it is necessary to establish the concept of overindebtedness. There is no settled definition, but a good one is that of Cláudia Lima Marques, for whom the phenomenon consists of the impossibility of paying all current and future consumption debts in a reasonable time according to the present income and net worth, excluding tax obligations, debts from fines and payments of alimony/child support<sup>3</sup>. Therefore, it is defined as the supervening inability to honor debts due to an unforeseen change in personal situation and/or the overall economic scenario.

We proposed nine others indebtedness definitions that helped us to measure the overindebtedness scenario in Brazil and analyze, in the light of economic theory, possible causal relationships that can create guidelines on personal bankruptcy prevention and recovery. Our research results show, for example, that whenever a death or birth in the household happens, there is an increase in the prob-

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<sup>3</sup> Definition made with Cláudia Lima Marques's own words: "The impossibility of a lay consumer in debt, acting in good faith, to pay his current and future debts from consumption (excluding tax debts, fines and alimony/child support) within a reasonable time frame in line with his current income and net worth". MARQUES, Cláudia Lima. Sugestões para Uma Lei Sobre o Tratamento do Superendividamento de Pessoas Físicas em Contratos de Crédito ao Consumo: proposições com base em pesquisa empírica de 100 casos no Rio Grande do Sul. Rio Grande do Sul: *Revista dos Tribunais*, 2006, p. 256.

ability of being indebted in six of the nine proposed indebtedness definitions. When the head of household loses his/her job, it raises the probability of assuming additional debt in five of the nine definitions. The same happens in five of the nine definitions when there is a disease into the household, another member loses a job (not the head) or a divorce occurs - for each definition of indebtedness.

There are variables that result in higher or lower indebtedness of Brazilian consumers and, in our view, it is important to investigate them. Through prevention and remediation of public policies, it is possible to deal more efficiently with the overindebtedness problem.

The paper is organized as follows. Section II contains a brief literature review. Section III presents the link between economic theory and overindebtedness and section IV presents the database and descriptive statistics. In section V, we discuss the econometric specifications and the results. We present a brief discussion in section VI, and section VII concludes.

## 2. Literature Review

Part of the literature on indebtedness focuses on finding out the endogenous and exogenous factors that make individuals susceptible to being overly indebted. Some empirical studies aim to identify which factors affect the debt accessibility, in other words, which are the main elements that influence the debt arrears and financial fragility of households.

Burrows (1997), for example, using data from the Survey of English Housing from 1994-1995, which covers 8,000 households, concluded that it is more probable that households with unemployed or underemployed heads will be behind in mortgage payments. This delay is also more usual among people employed by the private sector, among those that bought property during periods of unfavorable economic conditions and among households with members that had previous problems paying their mortgages.

It is easy to perceive the importance of holding a steady job to household financial stability. For example, employment is a huge factor regarding creditworthiness of consumers. Therefore, full-time employees with stable jobs are eligible for more credit with better terms, while those who are unemployed or tenuously employed typically are not considered good credit risks by reputable lenders.

Although obviously credit is not something granted to every applicant, in recent years there has been a greater flexibility of the rules, which has increased the number of people receiving loans. Leigh-Pemberton (1989) suggests that higher trust in the consumer when granting credit is a consequence of the real income and confidence in the country's economic prospects. A similar phenomenon happened in Brazil when the government decided to increase the credit supply in order to increase consumption. According to Leigh-Pemberton, personal debt rose considerably in the United Kingdom thanks to factors such as the expansion of the credit source variety, the extinction of restrictions on consumer indebtedness and the higher borrowed limits in proportion to disposable.

Miragem (2010) acknowledges the risks due to this policy of encouraging credit<sup>4</sup> by the Brazilian government and therefore he proposes measures to reduce these risks: "The prevention of credit risks demands the adoption of responsible lending policies, by respecting banking institutions' good faith obligations in relation to consumers, recommended by consumer protection standards." Besides

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<sup>4</sup> This occurred through two mechanisms: easier credit terms from government-controlled banks and relaxation of rules applicable to financial institutions in general.

that, the Brazilian jurist Herman Benjamin, who calls this phenomenon “bankalization” of private life, points to the need for:

[...] creation of programs intended to deter irresponsible credit and payment plans, such as the those in the United States and in Europe, where the law gives consumers the opportunity to reeducate themselves and restart living in society, transformed from irresponsible to responsible debtors.<sup>5</sup>

Another well-studied variable regarding overindebtedness is household income. Lunt and Livingstone (1992), for example, note that although disposable household income is not a determinant factor to conclude who is or is not a debtor, it is an index of what is the level of assumed debt and repayment. According to them, “the available income is not a good index of who is in debt, however, regarding the amount assumed, its importance is moderate and very important in determining the amount repaid” (Ferreira, 2013).

In Brazil, few papers have analyzed overindebtedness, though Porto and Butteli (2015), in analyzing the debt profile of Brazilians, described the characteristics that make them more likely to get into debt. One of the results of the research was that “living in the countryside (as opposed to the capital) and in the Northeast and Midwest regions reduces the probability of overindebtedness.” Their study is the most recent (last year), but other researchers have tried to find factors that make people more or less likely to get into debt.

In addition to that, it is important to consider the interaction between the quality and the institutional efficiency of a country and its economic performance. Within this framework, the relations between the legal institutions of a country and its financial system are emphasized as essential factors for creating and strengthening global economic growth. Porto and Galvão (2014) studied how the performance of a country’s legal institutions affects the financial system, which in the overindebtedness context is highly relevant, since financial institutions use the country’s legal uncertainty, considering the default of borrowers, in setting interest rates.

The legal uncertainty issue in Brazil recalls the eternal debate related to property rights. If when the default happens, the financial institution has a low likelihood of collecting the debt or repossessing the good purchased using the credit, it is natural that the interest rate has to be higher as form of protection. According to Porto and Franco (2016), the law must offer a new point of view to the property rights, making a clear definition of externalities in order to reach greater efficiency.

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### 3. Overindebtedness and Economic Theory

The traditional economic theory supposes that the agents are rational and welfare maximizers. Thus, given a budget constraint, agents will choose how much to consume of each good in each time period. Another important hypothesis assumed by economic theory is that

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<sup>5</sup> Available at: <<http://www.esa-sc.org.br/noticias/endividamento-do-povo-brasileiro-e-desafio-novo-codigo-defesa-consumidor/10529>> Consulted on August 26, 2016.

the players are risk averse. In other words, risk aversion is one's reluctance in accept a deal with uncertain return, instead of another deal with an expected return with greater certainty, but possibly smaller profit.

In a scenario in which consumers are risk averse, constant consumption would be preferred to a volatile consumption flow. When there is availability of credit, consumers can borrow today against a higher expected future income, allowing them to raise consumption in times when income is low in exchange for a decrease in the future, when the expectation is of higher income. Theory shows demand will exist for such contracts as long as the consumers are risk averse, and in those cases it will result in an increase in welfare.

This framework is commonly known as the permanent income-life cycle hypothesis (PILCH) model, which presupposes that individuals wish to consume a constant proportion of what is called permanent income, that is, the expected average income in the long run. The most important prediction of this model is that present individual consumption does not respond to changes in fluctuations of transitory income: only changes that affect the permanent income of individuals are capable of changing their consumption level. Therefore, when an individual earns a transitory raise in income – as a result, for example, of a temporary tax reduction – the impact on present consumption tends to be small.

However, the real world has a factor known as uncertainty, i.e., there are no complete certainties regarding what will happen in the next period. In this context, personal credit is considered to be good that brings present value to future consumption. In other words, credit also has an important role in increasing welfare when adding the uncertainty of future results and incomplete markets in the analysis.

If an unexpected adverse shock were the only motivating case for overindebtedness, only events such as job loss, disease, unexpected family growth, or divorce could lead to this situation. The classic economic theory excludes any "irrational" behavior - such as having present habits of consumption incompatible with future flows of income - as a plausible explanation for these phenomena. In this way, rational agents seek protection against these adverse events in the form of financial products such as health, unemployment or even informal insurance. Precautionary savings can also be noted as a form of insurance against such events. Only when these instruments are unavailable can overindebtedness arise in equilibrium, that is, as a result of a common economic model.

There is, however, behavioral economics<sup>6</sup>, which produces models that best fit individual observable actions, assuming that individuals are not completely rational. One of the possibilities mentioned by behavioral economics is the existence of risk perception problems: if individuals fail to notice or understand the actual probabilities of overindebtedness, their choices may be inconsistent with those they would have made if they had full knowledge of the objective probabilities. However, putting subjective probabilities in place of objective probabilities does not in fact change the paradigm of rational utility-maximizing individuals,

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<sup>6</sup> For more on the topic: PORTO, Antônio José Maristrello; THEVENARD, Lucas. Economia Comportamental e Contratos de Adesão. *Revista Direito Empresarial* (Curitiba), v. 1, pp. 51-76, 2012.

since the traditional theory of choice under uncertainty is compatible with both types of probabilities. The risk underestimation would be represented by designating the highest probability for possible future scenarios where consumption is higher. Conversely, one can think of risk overestimation by assigning lower probability to the same scenarios. Otherwise, one can think of risk overestimation, by assigning lower probability to the same scenarios. That would produce overindebtedness and produce less risk-sharing and under-indebtedness. Both can be produced by a standard utility maximization problem if the probabilities associated with each scenario are adjusted to properly represent how uninformed individuals are.

Within behavioral economics, there is also the aspect of "limited rationality". The models of limited rationality depart from traditional microeconomic models by recognizing that individual rationality is constrained by cognitive limitations, by available information, and by the time the individual has to make a decision. Such constraints may produce decisions that are not in accordance with those indicated by rational choice theory.

#### **4. Database and Descriptive Statistics**

The database used in the present study was built by the Brazilian Institute of Public Opinion and Statistics (IBOPE) in March of 2016. The sample was composed of 2,002 households, in order to obtain a representative sample of the Brazilian population. Only those responsible for financial decisions of the household answered the questionnaire.

The questionnaire comprises eight sections. The first section aims to characterize the individual. The purpose of this section is to identify the individual by obtaining age, gender, marital status and level of schooling, for example. The second section attempts to characterize the households through questions such as monthly household income and how many people contribute to the monthly income, as well as other relevant questions. The third section elicits information on the interviewees' perception of their economic situation. This section's questions have more objective content, for example, whether individuals believe they have difficulty in managing their finances, among others. The fourth investigates available household income. The questions in this section are more objective, such as how much has been spent in the last month or how much has been saved in the last month. The fifth section analyzes the benefits and indebtedness in general. This section contains questions on whether the individual is behind in debt payments or the amount in arrears, for instance. The sixth section seeks to understand the decisions on indebtedness of agents. This section questions if the household intends to obtain some kind of financing in the next three months, and if so, what kind of financing. Finally, the seventh section is a potpourri of questions, such as whether individuals have heard about the concept of overindebtedness, whether they know someone who is over-indebted, and whether they have heard of civil insolvency.

The sample mean age was 42 years, of which 27% were single and 55% were married. With regard to color, 33% declared themselves as white, 14% black, 4% yellow/indigenous, and 47% brown or mulatto. In addition, 83% declared having a particular religion. In total, 47% of the sample was composed of men. With regard to the level of education, 17% had higher education, 34% had high school education, 21% had primary education and 7% did not have formal education.

Additionally, 6% of respondents stated that they were married, 9% experienced a divorce, 19% suffered from the loss of householder employment, and 17% had suffered the loss of another family member. Concerning disease, widowhood and birth, 26%, 1% and 16% of respondents said they had experienced these events respectively. Moreover, 5% and 2% of the sample declared they had started and ended a business.

## 5. Ecometric Specification and Results

An econometric framework is justified because by combining economics and law, one reaches the conclusion that economic psychology aims to guide consumers, and more specifically, overindebted ones, to make more balanced and efficient choices, which also concerns the law. From the orientation of the economic behavior of consumers and overindebtedness, it becomes possible to analyze consumption relations.

Nevertheless, given the importance of the correlation between economics and law, the *Núcleo de Estudos Comportamentais* – NEC – (Center for Behavioral Studies) was created, composed of experts in behavioral economics so that the combined study between psychology, economics, society, cognition, neuroscience and pedagogy stimulates suggestions, criticisms, recommendations and technical aspects, aiming at the conformation of the agenda of public policies to help overindebted consumers (Ferreira, 2008). In this respect, the *Programa de Apoio ao Superendividado* – PAS – (Program to Support the Overindebted) deserves attention, which was developed together with the PROCON<sup>7</sup> of São Paulo, and intends to encourage bargaining to reach consensus between consumers and suppliers and debtors and creditors.

The empirical strategy used takes advantage of the fact that we have a cross-section in 2016 to measure the effects of certain events on the probability of household indebtedness. It is important to emphasize that households with similar profiles are interviewed, not the same households.

The econometric model used is:

$$Y_{is} = \beta_0 + \beta_1 X_{is} + \beta_2 Z_{is} + \sigma_s + \varepsilon_{is} \quad (1)$$

In which  $Y_{is}$  is an overindebtedness dummy variable (according to nine different definitions) of agent  $i$  and in state  $s$ . The nine definitions are:

*Definition 1:* The individual has at least one debt contract and spent more than he/she earned in the last month.

*Definition 2:* The person has debt in arrears/late payments.

*Definition 3:* People are in debt and have been forced to cut health and food expenses in the last 24 months.

<sup>7</sup> Brazilian states have consumer protection agencies, called PROCONs.

*Definition 4:* The person is on the credit blacklist of at least one credit bureau.

*Definition 5:* The person declared being overindebted.

*Definition 6:* The person spends more than 30% of income paying off debts.

*Definition 7:* The person spends more than 50% of income paying off debts.

*Definition 8:* The person stated that he/she is in debt and that the debt payments have become a burden.

*Definition 9:* The person has taken a loan to pay off debt.

As mentioned before, there is no universal definition of overindebtedness; therefore, we present nine possible definitions of overindebtedness. These definitions help us shape the scenario of overindebtedness in Brazil and analyze possible causal relationships that can create guidelines for prevention of and recovery from personal bankruptcy.

Definition 1 is an attempt to capture individuals who are in debt and spending more than earned as a proxy for overindebtedness. The rationale behind this definition lies in the combination of two questions: being in debt "and" spending more than earned. Individuals who are in debt do not necessarily have difficulty of paying off debts. However, when we add the fact "spending more than you earn," this means that these individuals may be having problems paying debts, since their budget is being exceeded.

Definition 2 is more comprehensive, that is, it covers people who are indebted but not necessarily overindebted.

Definition 3 seems to be a good proxy for overindebtedness, since it is the combination of two important questions: being in debt "and" cutting health and food expenses (which are essential goods). In other words, there is a strong indication of overindebtedness, since individuals are cutting spending on essential goods and additionally are in debt.

Definition 4 assumes the person is on the blacklist of a credit bureau, meaning he or she probably is unable to pay at least one outstanding debt (principle of good faith), so is in financial distress. Once again, this is a broad variable, since it does not necessarily capture overindebtedness, but rather indicates a bad credit rating.

Definition 5 uses individuals' own perception of overindebtedness. Like any self-reported variable, this is subject to bias.

Definition 6 originates from Bill of Law 283/12, which has the aim of protecting debtors in distress and classifies overindebtedness as having more than 30% of income committed to paying off debt. From here came definition 7, as an attempt to create a new threshold for overindebtedness, 50% of income impairment instead of 30%.

Definition 8 is based on experience around the world. International research often raises questions about overindebtedness in a slightly different way. Rather than asking directly whether individuals know someone who is "overindebted" - which would imply a more

technical notion of the phenomenon on the part of respondents - the questionnaires often ask people to assess whether their debts have become a personal burden.

Definition 9 tries to capture individuals who are so in debt that they need to get another loan to pay their debts. The assumption here is that these individuals are heading toward, in not already in, a state of overindebtedness.

The variable  $X_{is}$  comprises a set of possible events (marriage, widowhood, birth, divorce, loss of job of the head of household, loss of employment of another member, opening a company and closure of a company) experienced by agent  $i$  in state  $s$ . The variable  $Z_{is}$  also includes a set of control variables, such as age, color, ethnicity, gender and education of the respondents. The variable  $\sigma_s$  is a set of dummies of states, which absorb time-invariant differences in observable and non-observable characteristics in the states. The variable  $\varepsilon_{is}$  is the error term.

Table 1

Impact of Events on the Probability of being Over Indebted

	Definition 1	Definition 2	Definition 3	Definition 4	Definition 5	Definition 6	Definition 7	Definition 8	Definition 9
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Marriage	0,03 (0.03)	0,04 (0.04)	0,00 (0.03)	0,05 (0.04)	0,00 (0.02)	0,00 (0.04)	0,00 (0.03)	-0,12 (0.08)	0,09*** (0.03)
Divorce	0,00 (0.03)	0,03 (0.03)	0,02 (0.03)	0,04 (0.03)	0,03 (0.01)	0,07** (0.03)	-0,01 (0.03)	0,06 (0.08)	0,01 (0.02)
Unemployment Householder	0,03* (0.02)	0,09*** (0.02)	0,11*** (0.02)	0,07*** (0.02)	-0,01 (0.01)	0,03 (0.02)	0,03 (0.02)	0,11* (0.05)	-0,03 (0.01)
Unemployment Other	0,07*** (0.02)	0,07*** (0.02)	0,09*** (0.02)	0,05** (0.02)	0,02 (0.01)	0,01 (0.02)	0,00 (0.02)	0,13** (0.05)	0,06*** (0.01)
Disease	0,09*** (0.01)	0,04** (0.02)	0,02 (0.02)	0,03 (0.02)	-0,01 (0.01)	0,01 (0.02)	0,04** (0.02)	0,12** (0.05)	0,06*** (0.01)
Widowhood	-0,07 (0.06)	-0,08 (0.08)	-0,03 (0.07)	-0,01 (0.07)	0,00 (0.04)	0,08 (0.08)	0,09 (0.07)	0,18 (0.17)	0,05 (0.05)
Birth	0,06*** (0.02)	0,06** (0.02)	0,07*** (0.02)	0,10*** (0.02)	0,02 (0.01)	0,05* (0.03)	0,00 (0.02)	0,10* (0.06)	-0,01 (0.02)
Started Company	-0,02 (0.03)	0,04 (0.04)	0,01 (0.04)	0,01 (0.04)	0,02 (0.02)	0,00 (0.05)	0,01 (0.04)	-0,05 (0.10)	0,08** (0.03)
Ended Company	0,08 (0.05)	0,13** (0.06)	0,11* (0.06)	0,14** (0.06)	-0,01 (0.03)	-0,09 (0.07)	-0,03 (0.06)	0,22 (0.14)	0,07 (0.04)
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls:									
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standart deviation in parenthesis. (\*\*\*)  $p < 0.01$ , (\*\*)  $p < 0.05$ , (\*)  $p < 0.1$ .

Table 1 reports the results of equation (1) for the nine definitions of overindebtedness. Column (1) reports the results of definition 1. Regarding job loss of another household member, the chance of being overindebted increases 7%. When there is a disease in the family, the chance of overindebtedness increases by 9%. Another variable that contributes to increase the probability of overindebtedness by 6% is the birth of a new member in the household. Unemployment of another household member increases the chance of overindebtedness by 3%, but with a significance of only 10%.

Column (2) presents the results of definition 2. Unemployment of the head of household increases the chance of overindebtedness by 9%, while the unemployment of another member increases the chance by 7%. Disease and birth increase the chance of overindebtedness by 4% and 6%, respectively. Ending a company also increases the chance of being overindebted by 13%.

Column (3) reports the results of definition 3. Unemployment of the household head increases the chance of overindebtedness by 11%, while unemployment of another household member increases the chance by 9%. Birth increases the chance of overindebtedness by 7%. Ending a company also increases the chance of being overindebted by 11% however it is only significant at 10%.

Column (4) reports the results of definition 4. Unemployment of the household head increases the chance of overindebtedness by 7%, while unemployment of another member increases the chance by 5%. Birth increases the chance of overindebtedness by 10%. Ending a company also increases the chance of being overindebted by 14%.

Column (5) reports the results of definition 5. It is interesting to note that for this definition, no event was significant. This result may be related to the fact that it is a variable of self-perception, not a quantitative variable.

Column (6) reports the results of definition 6. Only the variables divorce/separation and birth were significant. Separation increases the probability of being overindebted by 7% and birth by 5%, however with only 10% significance.

Column (7) reports the results of definition 7. For this definition of overindebtedness, only disease was significant, increasing the chance of being overindebted by 4%.

Column (8) presents the results of definition 8. Disease and unemployment of another household member were significant in increasing the chance of overindebtedness by 12% and 13%. In addition, unemployment of the household head and birth positively affect the probability of being overindebted by 11% and 10%, however only with 10% significance.

Finally, column (9) presents the results of definition 9. The variable marriage increases the chance of being overindebted by 9%. Another household member's unemployment and disease increase the chance of being overindebted by 6% each. Finally, starting a company increases the chance of being overindebted by 8%.

As mentioned before, a part of the literature that studies indebtedness focuses on finding which individuals are most likely to be overindebted. Some empirical studies, as this one, aim to identify which factors affect the accessibility of debt, that is, what are the main elements that influence the financial backwardness and the financial fragility of households. Most of the papers on this topic find that job loss is a major factor for excessive indebtedness. This result is unsurprising, since the employment situation is a factor of great relevance when discussing the possibility of providing credit to a consumer. The report *Drivers of Over-Indebtedness* (2008), in turn, identifies three main factors which can cause individuals to be overindebted: unemployment, divorce and disease. In the same sense, the report *Consumer EALR*, V. 8, nº 1, p. 215-227, Jan-Jun, 2017

Overdose and Consumer Law in the European Union (2003) also identifies factors such as unemployment, disease and changes in the household nucleus, in addition to excessive consumption, as being associated with situations of overindebtedness.

In general, the events that had the strongest effect according to the definitions presented in this study were unemployment of the household head, unemployment of another household member and birth. These results corroborate what has been found in the international literature.

Our results, however, gain importance because of the fact that, unlike previous studies, we quantify the exact contribution of certain events on the probability of household indebtedness for different definitions.

Concerning the results, policymakers have all the necessary information to create some type of public policy aimed at 1) preventing overindebtedness and 2) acting more quickly in the face of certain events that may worsen the situation of households. The prevention of overindebtedness can occur by focusing on the profile of Brazilian overindebtedness traced by the present paper: individuals with income of up to two times the minimum monthly wage and who suffer some kind of unexpected event. Depending on the definition of indebtedness chosen by the policymaker, some events, such as unemployment, gain greater importance than other events, such as separation/divorce. That is, this article, allows an assessment of which events policymakers should worry about when trying to implement programs to decrease the number of overindebted people.

## 6. Discussion

In the face of our results, it is important to provide a brief discussion regarding our definitions of overindebtedness. As mentioned earlier, there is no formal (or universal) definition of overindebtedness. Therefore, we used nine definitions in order to understand the behavior of consumers when facing the prelude to a crisis. However, we have two preferred definitions.

As mentioned before, definition 3 seems to be a good proxy for overindebtedness, since it is the combination of two important questions: being in debt "and" having to cut health and food expenses (which are essential goods). We start from the assumption that when a person is decreasing health and food spending, this can only mean that the financial situation is very bad. We also prefer definition 9, since it captures the need obtain more debt to pay existing debts, which could mean a beginning of a dangerous vicious cycle.

In this section we analyze with more care our three preferred definitions. The results from Table 1 show there is no unanimity regarding the events that increase the probability of being overindebted with the exception of unemployment of another household member. Definition 3 indicates that unemployment of the household head, unemployment of other household member and birth are the three most important events that increase the probability of being overindebted. Definition 9 indicates that unemployment of another household member, marriage and disease are the three important events that increase the probability of being

overindebted. Surprisingly, the unemployment of the household head only was significant for definition 3. One hypothesis is that definition 3 captures the effect of more permanent events and definition 9 captures the effects of more transitory events. By definition 9 the consumer is assuming more debt in the possible belief that the bad financial moment is only temporary. Instead, in definition 3 the consumer may believe that the bad timing is more permanent, prompting cutting back on health and food spending. We assume that when a person believes that the bad financial situation is transitory, he/she will decrease spending on non-essential goods.

## 7. Conclusion

It is important to note that if the current economic crisis gets worse, with further deterioration of macroeconomic variables, the result for Brazilian overindebtedness can be more calamitous. Indeed, economic theory predicts that the levels of individual consumption tend to react with greater visibility to situations of change in the situation of permanent income, and do not change significantly due to mere fluctuations in transitory income.

It is necessary, therefore, to structure public policies that inhibit *ex ante* unbridled consumption and foster the search for legal alternatives to help people deal with the issue of overindebtedness. This issue matters not only to the creditors and debtors of a given obligation, but also to society at large.

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