Debt trajectories and mental health

Daniel A. Hojman [a,*], Álvaro Miranda [b], Jaime Ruiz-Tagle [c]

[a] Department of Economics, University of Chile, Diagonal Paraguay 257, Santiago, 8330015, Chile
[b] School of Economics and Business, Diego Portales University, Santiago, Chile
[c] Department of Economics, University of Chile, Santiago, Chile

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ABSTRACT

In the last few decades, there was a marked increase in consumer debt in the United States, Latin America and other emerging countries, spurring a debate about the real costs and benefits of household credit. Using a unique longitudinal dataset with detailed health and balance sheet information from a large sample of 10,900 Chilean households we study the relationship between debt trajectories in a three-year time window and mental health. We find that depressive symptoms are higher for those who have been persistently over-indebted, followed by those who transit from moderate to high debt levels. We also find that those who transition from over-indebtedness to moderate debt levels have no additional depressive symptoms compared to those with trajectories of moderate debt throughout (never over-indebted). This suggests that the debt-related contribution to depressive symptoms vanishes as debt levels fall. The association between debt and depressive symptoms seems to be driven by non-mortgage debt -primarily consumer credit- or late mortgage payments; secured debt (secured by collateral) per se is not associated with depressive symptoms. Policy interventions to reduce the negative association of over-indebtedness on mental health are discussed.

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1. Introduction

In the last few decades, large segments of the world population have increased their access to credit. In the United States, between 1983 and 2007, the household median debt to income ratio nearly quadrupled, and lower to middle-income households gained access to mortgages and consumption credit. The median debt service to income ratio among all households rose from 5% in 1983 to 13% in 2007; the share of households with debt service obligations that exceeded 40% of income rose from 4% in 1983 to 11% in 2007 Dynan (2009). In Latin America and other emerging countries, the rise of the new middle classes and poverty exit by millions of people over the last decade is a remarkable social change that has also been accompanied by a massive rise of credit uptake. The growth of household debt in the last fifteen years is common to Latin America and emerging countries (IMF (2006), chapter 2). In Brazil, for example, debt service to income increased from 16% in 2005 to 36% in 2011 IMF (2013). Colombia and Chile show similar growth rates in the last decade.

The potential benefits of the availability of credit are substantial. They include consumption smoothing, the financing of productive investments such as education or working capital and durable goods. At the same time, a recent burgeoning literature has called attention to household debt as an important socioeconomic determinant of physical and mental health. Several studies have shown that over-indebtedness can lead to financial distress, and predict stress and depression (Drentea, 2000; Drentea and Lavrakas, 2000; Reading and Reynolds, 2001; Brown et al., 2005; Zimmerman and Katon, 2005; Bridges and Disney, 2010; Gathergood, 2012; Drentea and Reynolds, 2012; Sweet et al., 2013; Keese and Schmitz, 2014). Debt repayment can have direct effects on health by raising stress, generating anxiety and physiological changes (see Sweet et al. (2013) for a review). It can also affect health-related behaviors such as drug abuse, alcohol consumption, physical activity and nutrition, and even lead to under investments in health (Melzer, 2011; Gathergood, 2012).

In spite of the mounting evidence of the psychological costs that could be associated with debt-related financial distress, multiple questions remain. Specifically, we know of no prior study investigating how the dynamic trajectory of debt burden affects mental health. At the same time, with few exceptions, most of the empirical research documenting the relationship between debt burden

* Corresponding author.
E-mail address: dhojman@fen.uchile.cl (D.A. Hojman).

and health considers data from the United States and Europe. Little is known about the debt-health relationship in countries with lower levels of economic development (see Clayton et al. (2015) for an interesting literature review). The multiple methodological challenges in the estimation and interpretation of this relationship is another area requiring further research. For example, since social, health history, family and personal background are important determinants of depression and other health outcomes, longitudinal data in which households report debt and health data may be crucial to control for these factors. Sweet et al. (2013) is one of the few papers that estimate the relationship between debt and health outcomes with individual panel data.

This paper uses a unique panel dataset of Chilean households to study the association of debt trajectories over a short window of time on depressive symptoms. Our dataset is extremely-detailed and especially well-suited for the question at hand. We use a large, nationally-representative, longitudinal household survey, that includes complete household financial balance sheets, detailed health information and an in-depth set of controls (demographics, socioeconomic variables, labor history, household characteristics, medical history, time and risk preferences, among others).

Our paper contributes to the literature in three margins. First, there are few studies trying to understand whether individual time variations of individual socioeconomic variables affect health outcomes. Specifically, we ask whether the persistency of high individual debt levels explains depressive symptoms. We also investigate if depressive symptoms fade if debt levels fall.

Second, most previous studies on the relationship between debt and mental health use data from developed countries. In the last two decades, hundreds of millions of individuals in developing countries have gained access to debt, improving their ability to smooth and increase consumption. Understanding the potential health costs of the massive increase in debt opportunities in these countries is important, especially taking into account the differences social and institutional context. Our study provides evidence from a Latin American country which, in spite of sustained growth and poverty reduction, still exhibits high levels of social inequality and limited public health coverage. Since the 1990s, there has been an explosive growth of consumer credit, especially in lower-middle and middle-income households. This boom has been largely driven by non-banking credit provided by retail stores, supermarkets, pharmacy chains and large department stores. From 2003 to 2009, the ratio of debt to income increased 35% and consumer credit increased at a rate of 12% per year. In 2008, the number of existing credit cards was more than 19 million, more than one per capita, where 50% was offered by retailers and other non-bank credit suppliers.

At the same time, Chile has one of the highest rates for the prevalence of depression in the world. A striking 17% of the adult population is estimated to have suffered this illness in 2010. A comparative study with subjects from fifteen countries around the world showed that, in 1999, Santiago was the capital with the highest depression symptoms by a fair margin (Simon et al., 1999). This work should contribute to our understanding of the connection between debt burden and mental health in countries that are experiencing vast socioeconomic transformations.

Finally, the richness of our panel data allows to overcome two methodological challenges. In line with Sweet et al. (2013), we control for a large set of variables that capture life events and health history, such as the loss of a family member, previous health conditions including previous mental health conditions, family diagnosis of depression, among others, all factors likely to directly affect this relationship. At the same time, the literature that uses objective debt data, such as this paper, uses a ratio between individual debt and income (or assets) to measure the burden of debt. These

measures may confound the effect of different economic determinants of depressiveness, as the variation of this ratio may reflect income changes -e.g. falling into poverty-rather than debt. Taking advantage of the panel, we are able to isolate this by focusing on individuals whose incomes are roughly constant in the time window considered, so that changes in the debt-to-income ratio can be attributed to time-variations in debt. Although causality cannot be fully confirmed, our linear regression results are consistent with those using propensity score matching.

The rest of the paper is organized as follows: Section 2 describes the data and introduces our measures of depression and over-indebtedness. Section 3.1 and 3.2 presents the empirical strategy and the main results. Section 4 concludes.

2. Data and empirical strategy

The main source of our data is the Chilean Social Protection Survey (SPS; Encuesta de Protección Social). The SPS is a longitudinal household survey that aims to characterize the social protection and the labor market conditions in Chile for adult individuals in 2002, 2004, 2006 and 2009. We use information from all four waves of the SPS panel to construct over-indebtedness measures and characterize individuals. However, only the 2009 wave contains a section with a set of questions used to diagnose depression symptoms. The sample consists of 14,463 individuals and is representative of the population over 18 years old. The survey contains information on income, employment history, assets, debts, pensions, health, individual history, family events (e.g. births, divorce, deaths, and changes in household composition), family history and personality traits. The sub sample with complete information for the panel and the variables we use consists of 10,902 individuals.

2.1. Depressive symptoms

Symptoms of depression were measured in the 2009 wave of SPS using the Short Form of the Center for Epidemiological Studies Depression Scale (*CES-D short form*, 8 questions) (Radloff, 1977; Karim et al., 2014). The responses were reverse coded as appropriate and added up to create a total depressive symptoms score (d_i). For a detailed account, see the on-line appendix. This variable takes values between 0 and 8. Its average in our sample is 3.6 and its standard deviation is 2.4. In our sample, Cronbach's alpha for the depressive symptoms score is 0.79, significantly above the threshold of 0.70 commonly used to assess the reliability of a psychometric measure.

As shown by the descriptive statistics that are presented in Table 1, the depressive symptoms score exhibits patterns at the population level that are common for depression measures. Being a female, having a lower household income or education level, and being older are associated with a higher average depressive symptoms score. The average value of the depressive symptoms score is greater for individuals who are unemployed or inactive relative to employed individuals. The same applies to widowers or separated individuals relative to those single or married. Having young children does not seem to be associated with a higher score. However, those with older children have a greater depressive symptoms score compared to individuals without children. The table also shows that the average score is higher for obese individuals (Body Mass Index - BMI - of 30 or more), those who have a chronic disease or cancer, individuals with inpatient treatment in the past two years, and those who have a family members diagnosed with depression or who have been diagnosed with depression at some point in life. On average, the death of a husband/wife and/or a child is associated with a higher score. Finally, the score is