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HOUSEHOLD DEBT DURING THE FINANCIAL CRISIS: MICRO-EVIDENCE FROM CHILE*

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Abstract

We examine evidence from a data panel from 2006 to 2009 to explore how Chilean households were affected by the negative income shock observed during the recent financial crisis. Our results show that there is a negative and significant relationship between income shocks and changes in consumption debt. This suggests that increasing debt allowed households to smooth consumption during the financial crisis and provides new empirical evidence about the importance of financial constraints in a developing country. We find evidence of heterogeneous effects by type of consumption debt and across households. Our results show that reduction in income increased indebtedness with banking institutions, but not with non-banking creditors. Across households, these results are driven mainly by those with financial assets and low levels of indebtedness before the crisis.

Resumen

Este trabajo examina evidencia empírica de un panel de datos de 2006 a 2009 que explora cómo los hogares chilenos se vieron afectados por un shock negativo al ingreso, observado durante la reciente crisis financiera. Los resultados indican que existe una relación negativa y significativa entre los shocks al ingreso y los cambios de la deuda de consumo. Esto sugiere que el aumento de la deuda permite a los hogares suavizar el consumo durante la crisis financiera, proporcionando nueva evidencia empírica acerca de la importancia de las restricciones financieras en un país en desarrollo. Encontramos evidencia de efectos heterogéneos dependiendo del tipo de deuda de consumo y a través de los hogares. Nuestros resultados muestran que la reducción en el ingreso aumenta el endeudamiento con entidades bancarias, pero no así con acreedores no bancarios. A través de los hogares, estos resultados se refieren principalmente a aquellos con activos financieros y bajos niveles de endeudamiento antes de la crisis.

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1. Introduction

During the downturn of 2008-09 associated with the international financial crisis, the Chilean households faced a higher unemployment rate, a wealth contraction and, based on surveys information, higher financial constraints. The magnitude of these shocks was not minor. The unemployment rate reached 10% in 2009, increasing from 6% in previous years. The households' wealth reduced by 7.5% between 2008 and 2009 and it has only recently recovered its pre-crisis level (Central Bank of Chile, 2012a). During the last quarter of 2008, the Survey of Credit Conditions showed that more than 60% of the banks strengthened their credit policies for consumption loans (Central Bank of Chile, 2012b).

In the standard consumption model, a transitory and unexpected reduction in income should generate and increases in debt to smooth consumption. However, in presence of credit constraints, some households may not be able to access to higher debt. This is one of the reasons why consumption seems to be excessively affected by changes in current income (Zeldes, 1989; Japelli, et al. 1998). Even there is abundant literature looking at how consumption, saving and borrowing responds to predictable or known changes in income (Attanasio, 1999; Browning and Lusardi, 1996), little is known regarding how households use credit markets in response to income shocks (Sullivan, 2008).

This paper contributes to the literature by analyzing whether the negative income shock experienced by Chilean households during the financial crisis had an effect on consumption debt. However, the casual identification of this effect is not an easy task. First, it is hard to distinguish between transitory and permanent income shocks. Second, income shocks are not exogenous. They depend on labor supply decisions that are endogenous to households borrowing decisions. We tackle this question and deal with endogeneity issues using panel data from the Social Protection Survey (EPS) conducted by the Universidad de Chile. The data

has information on borrowing and households characteristics for years 2006 and 2009, and it includes information for about 15.000 households. With this information and using an identification strategy aimed to identify exogenous and transitory changes in labor earnings, we estimate the quantitative effect of income shocks on consumption debt.

This paper is part of a growing literature covering different aspects of household impact of the recent international financial crisis such as consumption, debt, portfolio allocation, retirement decision, default risk, among others (Chakrabarti et al., 2011; Philippon and Midrigan, 2011; Hurd and Rohwedder, 2010; Mian and Sufi, 2010)¹. In particular, Chakrabarti et al. (2011) show for the US that the financial crisis reduced households' average spending and increased savings. Mian and Sufi (2010), in contrast, look at how household leverage previous to the crisis can explain differences in the impact of the crisis across the US counties. We follow more closely the empirical analysis by Sullivan (2008), who analyzes whether unsecured borrowing plays a role in the ability of disadvantaged households to compensate unemployment-induced earnings losses in the US. Most of previous works, due to limitations on microeconomic data for debt holdings, have focused on developed economies. Therefore, this paper allows getting a broader picture on this issue, especially given that we provide evidence in the case of one emerging economy using information at the household level².

Our results show that there is a negative and significant relationship between income shocks and changes in consumption debt. This suggests that unsecure debt has, in general, allowed households to smooth consumption during the financial crisis. Our findings show heterogeneous effects across individuals and types of debt. We find that a reduction in labor income increased consumption banking debt, but it had not a significant effect on non-banking debt. Across households, we find some evidence that credit constraints were

¹ For Japan there is evidence of the effects of the financial crisis of 1997 on households' consumption and welfare (Sawada, et al., 2011).

² For a review on the effects of financial crises using mostly aggregate data, see Fallon and Lucas (2002)

important during the crisis. In fact, our results suggest increasing debt was only possible for individuals with financial assets and for those with low levels of indebtedness previous to the crisis.

The rest of the paper is structured as follow. The second section describes the main trends in Chilean household debt during the last years. The third section provides a description of the household level data used in the paper. The fourth section shows the estimation methodology. The fifth section presents the results. The sixth section concludes.

2. Household Debt in Chile

Household indebtedness in Chile has grown significantly in the last decade. In aggregate terms, the average annual growth rate of total household debt was 12.2% in during the period 2000–2011³. There are not major differences in the growth rate of the two main components of the household debt: consumer and mortgage debt recorded average annual real growth rates of 13.9 and 11.1%, respectively, during this period. This growth is considerably higher than the growth of the economy (around 4.0% on average), causing the stock of debt to increase from 22.5% to 36.5% of GDP between 2000 and 2011. In terms of disposable income, the household debt increased from 35.4% to 61.6% during the same period. However, at it is clear shown Figure 1, this indicator of indebtedness has been stable after this crisis. A similar picture emerges from observe the household payment capacity, measured as the ratio of debt service to income (Figure 1). As we concentrate later our empirical analysis on consumption borrowing, we also show the evolution of households' consumption debt over disposable income during this period. As it can be appreciated, the evidence is quite similar to total debt (Figure 2).

³ This figure includes bank and nonbank debt (retailers, family compensation funds, and other debt) and is expressed in real terms.

The evolution of household debt, previous to the crisis, has been similar to what happened in other advanced and emerging economies. According to the IMF (2006), the average annual real growth rate of household credit was 21% between 2000 and 2005 in a sample of 30 countries, while the average GDP growth of these economies was 4.1%. At regional level, growth was strongest in emerging Europe, with annual rates of 48%, while average growth in Latin America and the more developed nations fluctuated around 9% annually. According to the same study, this phenomenon is consistent with the presence of common global elements in the development of the financial markets, such as the reduction of inflation and interest rates, financial liberalization, and lower competition for financial resources among households and firms, which is explained by improved access to credit in the business sector (IMF, 2006).

The increase in household debt can have both positive and negative aspects. On the one hand, higher indebtedness suggests that the financial system is accomplishing one of its fundamental roles, namely, that of acting as an intermediary of financial resources and facilitating households' access to credit. Facilitating financial access has positive affects on welfare because it allows to smooth consumption both over the life cycle and during business cycles. On the other hand, the growth of debt and the resulting increase in debt service can be a source of concern with regard to household payment capacity, especially in the face of income shocks. Some literature on these issues suggests that higher level of indebtedness would be associated with an increase in the sensitivity of household arrears and insolvencies to macroeconomic shocks (Japelli, et al. 2010). Nevertheless, even there was a period before the crisis of sustained increase in households' indebtedness, the international comparison suggests that Chile's debt level and financial burden are not exceptionally high given its income level (Figures 3 and 4).

In terms of market structure, an important aspect related to the Chilean credit markets is

the diversity of financial institutions. Although the main lenders to Chilean households are banking institutions, which finance about 60% of total consumption debt in 2011, large retailers are highly active in the consumer loans segment, accounting by approximately 16% of the household consumption debt (Table 1). Additionally, institutions providing social credit have increased their incidence during the last years, but it is still low across households. The diversity of agents in this market has implied a wider use of credit by households across different income segments. In effect, large retailers are the main credit institutions for low income households, while banks tend to focus on higher income households. Then, the analysis of Chilean households during the crisis may allow disentangling the effect on debt across different types of households and banking and non-banking credit.

3. Data Description

We use two versions of the Social Protection Survey (EPS, for *Encuesta de Protección Social*), which includes a financial module since the 2004 version of the survey. This survey was designed to assess the well being of workers and non-workers and their households and it is carried out by Microdata Center of the University of Chile since 2002. The first survey in 2002 was only representative at the level of affiliated to the system of pensions, both at national and regional level. Since 2004, a sample of non--affiliated was incorporated for completing the representativeness of the survey for all workers and non-workers in Chile. In the years 2006 and 2009 the sample was maintained, providing information for about 20,000 people distributed in all the regions of the country.

The EPS contains information of employment history and funds pension affiliation, education, health, social security, labor training, patrimony and assets, and household information. Although the EPS is not a financial survey, the financial module makes the dataset similar to those found in other countries. A common feature with other available

surveys around the world is the availability of demographic and labor information, household composition, incomes, and stock of debts and assets (Cox, et al. 2006).

There are some shortcomings with this dataset. First, all information about debt, income and assets is self-reported and subject to measurement error. Second, there is not information on mortgage debt. Nevertheless, the survey provides detailed information on other debts, including bank credit cards, bank credit lines, credit from department stores, bank consumer loans, finance institution consumer loans, vehicle loans, social institution loans, loans for education, and loans from other loaners (non-formal).

We exploit the panel dimension of the data for looking at the situation before (2006) and during the financial crisis (2009). In the Chilean case, the economy contracted 1.7% in 2008, and the unemployment rate increased only slightly during that year, but greatly in 2009 reaching at 10%. As we mentioned in the introduction, during the crisis, financial wealth was reduced significantly and financial institutions reported higher financial restrictions for households' credit.

The EPS allows characterizing indebtedness at the household for complementing aggregate evidence discussed in the previous section. Data show an increase in the median of consumption debt to income ratio (CDIR), going up from 5.8% in 2006 to 7.9% in 2009. This is also found across all income groups, but the larger increase corresponds to the lower income households (Table 2). In the poorer segment – first quintile- the median household increased its CDIR from 10.9% to 17.7% between 2006 and 2009. In contrast, the median in fifth quintile grew from 5.1% to 6.0% between both years. In this sense, apparently, the role of debt during shock income periods varies across households, suggesting a minor role for consumption smoothing in low-income households as suggested by standard models.

In terms of debt incidence, there are not significant changes in the percentage of households declaring to have any type of debt. At the aggregate, approximately 47% of households declare in both years to have some consumption debt. The information by type of debt shows as similar evolution. In the case of retailers credit cards the percentage of debt holders kept about 40%. In contrast, there is some evidence that social credit has increased from 1.9% to 3.5%, but its incidence is low across households (Table 3).

The analysis by income quintiles shows some differences. First, the incidence of debt increases between 3 and 4 percentage points in the first two quintiles, and it declines in the richer households by more than 2 percentage points (Table 4). Second, this is mostly explained by an increase in the percentage of households accessing to retailers credit. In the case of the first quintile, it grew from 24.8% to 27.2%, and in the second quintile from 33.1% to 34.5%.

4. Methodology

We are interested in looking at how changes in income affect borrowing levels at household level. The standard literature suggests that the response of borrowing to income changes depends on whether these are permanent or transitory. Nonetheless, the literature also shows that the relationship between debt and income will also depend on the degree of financial frictions, moreover the relationship between debt and income shocks could end up being positive under some settings (Kocherlakota, 1996; Cochrane, 1991, Atkinson, 1991). These frictions could take different forms –asymmetric information, transaction costs, etc.–, and they could be present at different degrees depending on the household characteristics – for instance, low income households could have less assets than high income households, which could be either used as collateral or as a good signal of credit quality. Therefore, the empirical relationship between debt and income is an open question.

Following Sullivan (2008), changes in labor income for the head of household i , ΔY_i , can be decomposed into a transitory (ΔY_i^T) and a permanent ($\Delta \mu_i$) component. As we are interested in transitory income shocks, the equation to be estimated is:

$$\Delta D_i = \beta_0 + \beta_1 \Delta Y_i^T + \beta_2 \Delta \mu_i + X_i \beta_3 + \varepsilon_i \quad (1)$$

In this paper, ΔD is defined as the change in consumption debt⁴ for household i between 2006 and 2009. X_i is a vector of households variables associated with permanent income and preferences.

The estimation of this equation, however, generates several econometric problems. First, it is hard to distinguish permanent and transitory income changes from the data. Second, transitory income changes are not completely exogenous. In fact, income changes associated with labor supply decisions are endogenous to borrowing (Sullivan, 2008). Third, given that all variables are self-reported, these are measured with error. These concerns on endogeneity and measurement error in income changes indicate that OLS estimation of equation (1) would generate biased results. For this reason, we estimate the following two-stage model:

$$\Delta Y_i = \alpha_0 + \alpha_1 \Delta Z_i + X_i \alpha_2 + \mu_{it} \quad (2)$$

$$\Delta D_i = \delta_0 + \delta_1 \Delta Y_i + X_i \delta_2 + v_{it} \quad (3)$$

Where ΔY is the change in labor earnings of household head and ΔZ is an instrumental variable for transitory income shocks. Our main parameter of interest is δ_1 , which measures how changes in income affect changes in borrowing. In the case that households want to smooth consumption when facing a negative income shock, we should expect an increase in debt. In such a case, δ_1 would be negative.

⁴ We focus on consumption debt due to two main reasons. First, there are data limitations. The EPS does not have information on mortgage debt. Second, we want to focus on whether unsecured debt is used for smoothing consumption when households face negative income shocks.

The identification assumption is that there are exogenous changes in unemployment that are correlated with income, but they are not correlated with borrowing. For constructing this instrument, we follow the strategy developed by Bartik (1991) and applied, among others, by Autor and Duggan (2003) and recently by Aizer (2010) for capturing the impact of labor demand shocks across individuals.

In this paper, this measure is constructed to reflect exogenous demand shocks according to the sector, region and gender of the household head. This strategy takes advantage that the financial crisis affected more negatively to some industries than others and the exposure to these shocks is different across individuals depending on their gender and where there are located. For example, a negative labor demand shock for construction industries is expected to reduce wages (or increase unemployment) to men workers mainly and to those located in regions where construction is a relatively more important demand source. Then, for each individual of genre s , located in region r and previous job in industry j , we compute the following labor demand shock as follows:

$$Z_{grj} = \sum_k s_{kgr} \Delta l_{kg-j} \quad (4)$$

Where Δl_{kg-j} is the employment change in industry k for genre g in all regions - except j - and s_{kgr} is the employment share of industry k for genre g in region r . We use industry at 2-digit of ISIC classification.

The vector X includes household's characteristics that influence borrowing decisions and other variables that are associated with permanent income, preferences, or consumption needs. Specifically, we use educational attainment, marital status, and family size. For looking at the impact of another potential shocks, we include variables associated with changes in family size, marital status, and health status between both years.

As we are also interested in the potential heterogeneous effect of labor earning shocks, we also analyze how the household response changes across types of debt, distinguishing between banking debt and not-banking debt. In the case of Chile there is evidence that banking institutions are less likely to give credit low-income or more risky individuals, and that households obtain loans from non-banking intuitions mainly, especially from retailers (Montero and Tarziján, 2010). Then, the effect of income shocks may be different on these two types of debt. We expect that banking institutions being more selective in targeting creditors are more likely to give loans to their customers when facing transitory negative shocks. In contrast, non-banking debt may be less responsive to changes in income.

We also explore differences across types of households depending on two main characteristics: (i) existence of financial assets and (ii) indebtedness. In the first case, we could expect a lower impact on debt for households with sizable asset holdings because if they can deplete these assets rather than increasing debt during periods of negative income shocks (Sullivan, 2008), or alternatively we could expect a higher impact because of these households could use assets to collateralize its borrowing. To explore this issue, we split the sample between households with and without financial assets. For the second case, we look at differences between those households with previous – the year 2006- high and low level of indebtedness. We expect that households with lower level of indebtedness were more likely to obtain new loans to smooth consumption during the crisis. To do that, we divide the sample between those households with unsecured debt to income ratio above and below the median in 2006.

Both indicators would also give some idea on potential borrowing constraints across households⁵. More indebted individuals may be excluded of credit markets because they can

⁵ For evidence on borrowing constraints for Chilean households, see Ruiz-Tagle and Vella (2010),

be considered riskier by financial institutions. Given the high level of indebtedness, their ability for paying debt back would be reduced during the crisis. There is some evidence on this regard using a similar indicator, the debt-payment-to-income ratio (DSR). Johnson and Li (2010), using data from the Survey of Consumer Finances in the US, find that households with high DSR are more likely to be turned down for credit. Regarding financial assets, they can be used as collateral and households with financial assets would be more likely to obtain a credit during the financial crisis.

5. Econometric Results

The basic results are shown in Table 5. In the first column we show the OLS result for illustrating the bias associated with this estimation and the differences with several specifications using our instrument (columns 2 through 4). In the last row of Table 5 we present the first stage regression – showing that there is a positive and significant relationship between labor earning changes and our variable measuring labor demand shocks – and we show statistical tests for documenting the strength of the instrument. In general, the F-test of the first stage is relatively high and the Kleibergen-Papp statistics suggest that we do not have a problem of weak instrument.

The IV results in columns (2) - not including additional controls –indicate that effect of income shocks on debt changes is negative and statistically significant at 5%. This is an expected result under a standard setting whenever households can access to unsecured debt to smooth consumption once they face a negative income shock. As we can see, given that the parameter is lower than 1, the increase in current income is lower than the increases in consumption debt. Including additional control variables, columns (3) and (4), does not change this finding and it seems to be robust to alternative specifications. The magnitude of

the coefficient increases from 0.25 to 0.35, but lower its significance. However, in both specifications the parameter is still statistically significant at 10%.

In Table 6 and 7 we show the same results for banking and non-banking consumption debt. The results for banking debt are very similar to the previous ones. In fact, a reduction in income causes an increase in banking unsecured debt, and the effect is lower than 1. As we can see in columns (3) and (4), the inclusion of additional covariates increases the parameter and reduces its statistical significance at 10%. In contrast, results for non-banking consumption debt show a non-significant relationship between income variations and debt changes. It seems that non-banking debt, in contrast to banking debt, has not helped to households to smooth consumption during the financial crisis. As was mentioned before, non-banking lenders are more focused on low income households and some characteristics of them, such as lack of collateral, credit history, and income vulnerability, can explain why financial constraints are more prevalent in non-banking debt.

An interesting aspect to be analyzed is whether ability to smooth consumption during a negative income differs across individuals. As we mentioned before, we look at heterogeneous effects according to financial assets holdings and indebtedness level⁶. In Table 8, 9, and 10 we present the results for total consumption, banking debt and non-banking debt, respectively, dividing the sample between individual reporting financial assets holdings ($FA > 0$) and those without financial assets ($FA = 0$) previous to the crisis. In general, the results consistently show that households with financial assets increase debt when current income falls (Table 8). In general, additional control variables are not statically significant and reduce the significance of income shocks, but the income effect still is significant at 10% of confidence. As in the previous results, these findings are mostly driven by banking debt (Table 9). In this

⁶ We also tried to analyze differences across income quintiles, but splitting the sample according to quartiles revealed that in most of the regressions we had problem of weak instruments.

case, income negative shocks do not affect debt for households without financial assets, but increases debt for those with financial assets holdings. In contrast, in the case of non-banking debt the parameter of income change is always not statically significant for both samples.

In Table 11, 12 and 13 we show similar estimations dividing the sample between households with high and low levels of indebtedness previous to the crisis. To do that, we use the median of the debt-to-income ratio (DIR) for dividing the sample. The results reveal a negative and significant effect of changes in income on consumption debt holdings, but only for households with $DIR < 0.2$ (Table 11). These finding would be consistent with the idea that households with relatively low indebtedness (debt-to-income ratio lower than the median) are more able to access to unsecured debt during the financial crisis. Similarly to what we find previously for the whole sample, this result is only valid for banking debt (Table 12), but not for non-banking debt (Table 13).

In sum, our results suggest that negative income shocks are associated with an increase in unsecured debt, consistent with the idea that access to financial markets helped to smooth consumption during the recent financial crisis. We find also evidence of relevant heterogeneities across types of debt and households. Our results suggest that banking institutions are less reluctant to reduce credit during hard times than non-financial institutions. Also, we find that households with financial assets holdings and low indebtedness were more able to access banking debt during the crisis.

6. Conclusions

We focus in this paper on how household borrowing responds to shocks in labor earnings. To do so, we exploit panel information for Chilean households before and during the recent financial crisis. This is especially interesting in Chilean case because household debt has

shown a steady growth pattern until 2008 and since then, the level of indebtedness has been stable at an aggregated level. However, the relative stable path of debt after the subprime crisis misses an important degree of heterogeneity across households about how they faced income shock. Comparing low and high income households, the data show that the negative income shock during the crisis was especially severe for lower income households and, as a consequence, the level of debt of these households increased as a proportion of their income. In contrast, high income households do not show significant changes of their indebtedness.

We examine how households respond to the income shock observed during the subprime crisis using an identification strategy based on exogenous changes in labor income by exploiting differences in labor demand shocks across industries, regions and gender. We also analyze how this response varies across types of debt, distinguishing between banking debt and not-banking debt, and across types of households, those with and without financial assets and by indebtedness levels previous to the crisis.

Our results show that, in general, there is negative effect of income shocks on consumption debt. This is consistent with the idea that a reduction in current income is accompanied by an increase of debt, allowing households to smooth consumption during a business cycle. This implies that not severe financial constraints affected the ability of households for increasing debt during the financial crisis.

The evidence in this paper also suggests that this effect is heterogenous not only across households but also by type of debt. We find that reduction in labor income increase only consumption banking debt, but we do not find any significant impact on non-banking debt. This can be consistent with differences in the type of consumers across financial institutions. In the case of non-banking institutions, mostly trade retailers, they seem to be more reluctant to extend credit during the financial crisis given that they have a pool of potentially riskier

households. We find also that households with financial assets and low level of indebtedness previous to the crisis are more able to get banking debt during the financial crisis. These results confirm that financial constraints are heterogeneously distributed across the population. In this case, households with financial assets, that can be used as collateral, and with low level of debt, are subject of lower problems of credit access by banking institutions.

These findings are relevant for understanding how able are households in developing countries to smooth consumption over the business cycle and the relevance of financial constraints across households. However, that some individuals were not subject of credit during the crisis may be consistent with the existence of severe financial constraints, but also with alternative explanations. One of them is that precautionary reasons reduce the demand for borrowing in some households, indeed for those that would have access to debt. However, with the data at hand, we cannot rule out this possibility and opens the research agenda for looking at other explanations for these results. Moreover, an extension to more recent data may be needed to look at how financial restrictions are relaxed during the economic recovery.

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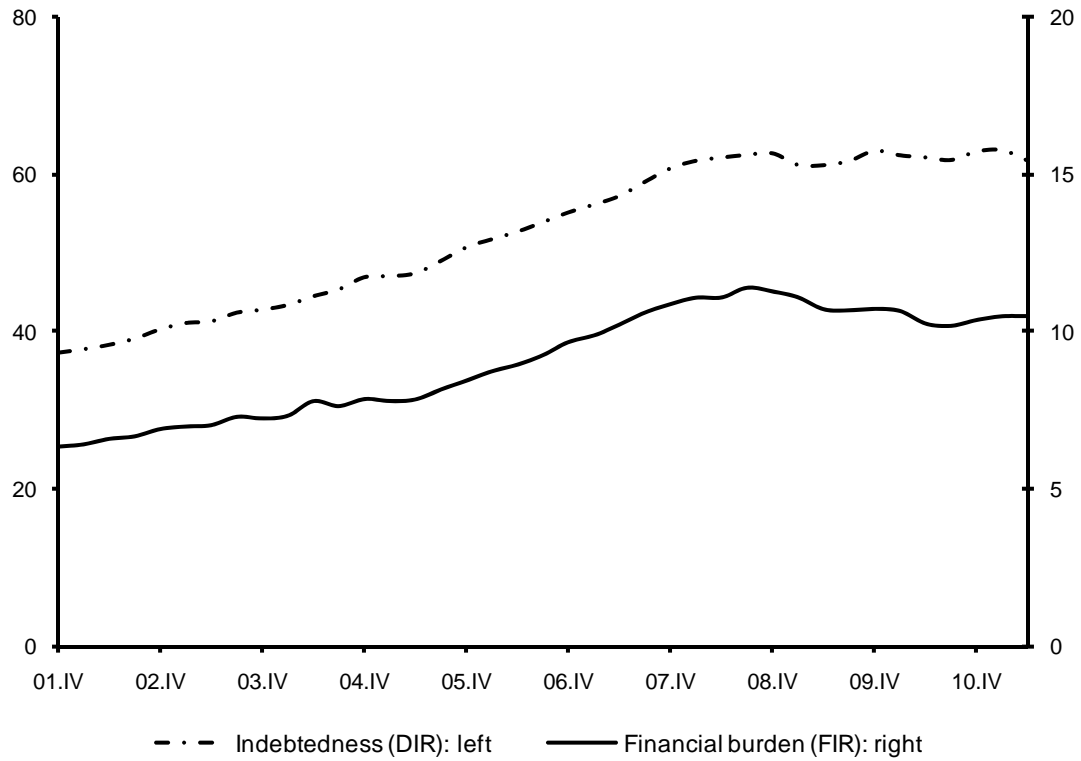
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Figure 1

Indebtedness and Financial Burden

(Percentage of disposable income)

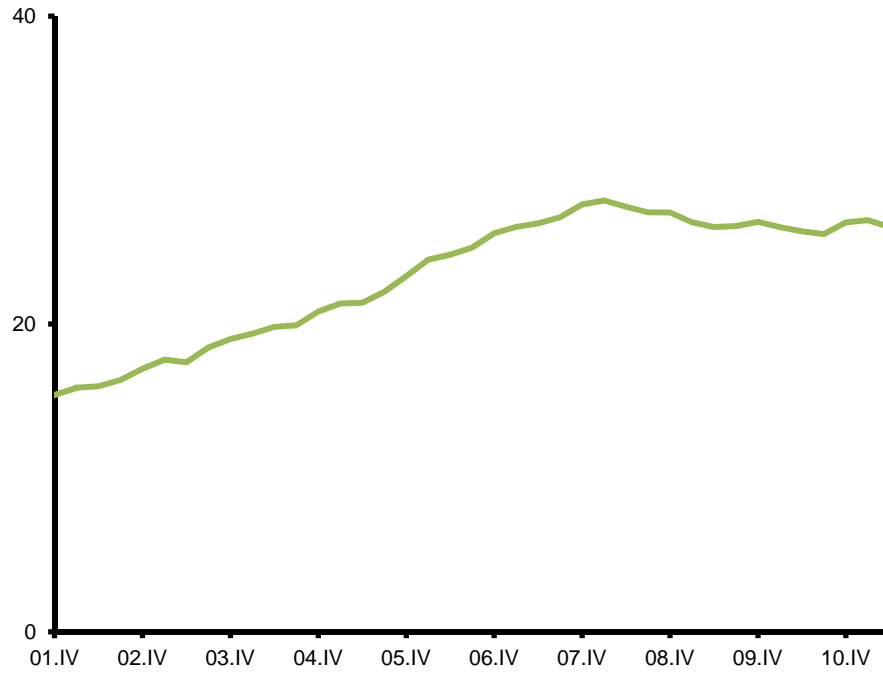


Sources: Central Bank of Chile, SBIF, SuSeSo and SVS.

Figure 2

Consumption Indebtedness

(Percentage of disposable income)

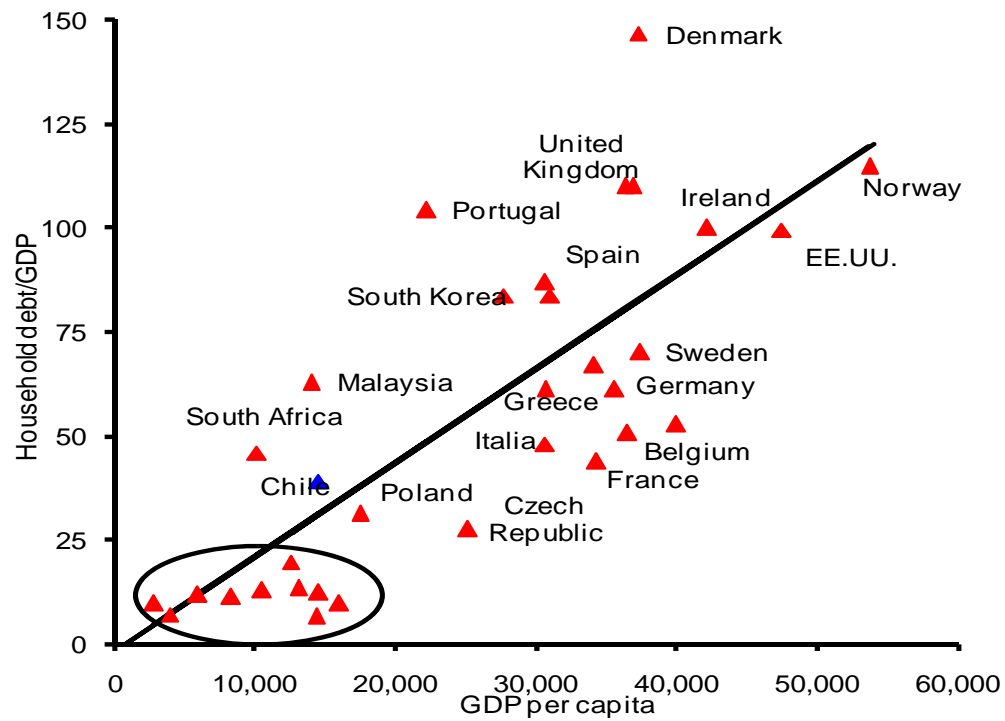


Sources: Central Bank of Chile, SBIF, SuSeSo and SVS.

Figure 3

Household debt: International Comparison, 2008

(Percent, U.S. dollars)

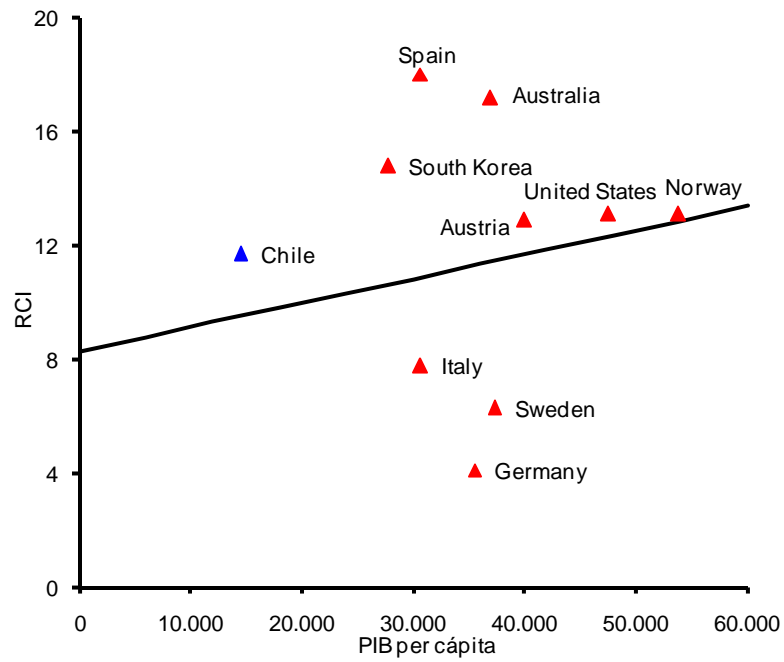


Countries inside the circle: India, Indonesia, Colombia, China, Brazil, Romania, Turkey, México, Argentina y Russia. Sources: McKinsey & Company, IMF and Central Banks of Colombia, South Africa, Turkey, Argentina, Malaysia and Czech Republic.

Figure 4

Household Financial Burden: International Comparison, 2008

(Percent of disposable income, U.S. dollars)



Sources: McKinsey & Company and IMF

Table 1

Household Debt

(Percentage)

	2004	2005	2006	2007	2008	2009	2010	2011
Total debt								
Bank	71.8	72.6	72.3	71.6	71.5	74.0	75.2	76.6
Nonbank	28.2	27.4	27.7	28.4	28.5	26.0	24.8	23.4
Consumption								
Bank	57.4	57.7	58.0	55.9	55.2	56.9	57.7	59.3
Nonbank	42.6	42.4	42.0	44.1	44.8	43.1	42.3	40.7
Retailers (1)	15.0	15.6	14.7	16.1	15.9	16.8	17.0	16.3
FCF (2)	8.5	7.6	8.9	9.0	9.3	9.8	9.5	9.3
Cooperatives	4.7	5.2	5.3	5.7	5.7	6.2	5.9	5.6
Other (3)	14.4	14.0	13.2	13.3	13.8	10.3	9.9	9.5
Mortgage								
Bank	83.7	85.7	85.7	85.6	85.5	86.5	88.0	89.5
Nonbank (1)	16.3	14.3	14.3	14.4	14.5	13.5	12.0	10.5

(1) Includes securitized debt. (2) FCF: Family compensation funds. (3) Includes car financing, student loans, and insurance companies. Sources: Central Bank of Chile, SBIF, SuSeSo and SVS.

Table 2

CDIR by Income Quintiles

Quintiles	2006	2009	Difference
1	10.9%	17.7%	6.8%
2	5.7%	9.7%	4.0%
3	5.4%	6.7%	1.3%
4	4.6%	6.4%	1.8%
5	5.1%	6.0%	0.9%
Total	5.8%	7.9%	2.1%

Source: EPS, 2006 and 2009.

Table 3

Incidence of Debt

(Percentage of households)

	2006	2009	Difference
Bank line of credit	5.3	5.2	-0.1
Bank credit cards	8.6	8.0	-0.6
Retailer credit card	39.3	38.5	-0.9
Bank consumption loans	6.1	7.1	1.0
Consumption loans in non-bank financial institutions	3.2	2.5	-0.8
Loan cars	0.5	0.5	0.0
Social credit	1.9	3.5	1.6
Educational debt	3.1	4.2	1.1
Loans from relatives or friends	1.1	1.0	-0.1
Loans from other lenders	0.2	0.1	-0.1
Other debt	2.2	1.1	-1.1
TOTAL	46.7	47.3	0.6
Observations	14512	13463	

Source: EPS, 2006 and 2009.

Table 4

Incidence of Debt by Income Quintiles

(Percentage of households)

Income quantile	2006					2009				
	I	II	III	IV	V	I	II	III	IV	V
Bank line of credit	1.2	1.3	2.8	5.4	15.6	2.2	2.2	2.2	4.9	14.5
Bank credit cards	2.8	3.5	5.9	9.8	20.9	4.5	4.1	5.3	7.4	18.7
Retailer credit card	24.8	33.1	39.9	44.2	54.7	27.2	34.5	37.6	41.7	51.2
Bank consumption loans	2.5	2.7	5.2	6.8	13.4	3.8	4.2	5.5	8.6	13.4
Non-bank financial institutions	1.8	2.2	3.1	4.5	4.5	0.9	1.9	2.6	3.5	3.4
Loans for the purchase of cars	0.1	0.2	0.3	0.6	1.3	0.1	0.1	0.3	0.5	1.2
Social credit	1.1	1.5	1.9	2.2	3.0	1.7	2.7	4.0	4.2	4.8
Educational debt	1.6	1.8	2.4	3.4	6.3	2.3	2.8	3.2	4.7	7.9
Loans from relatives or friends	0.9	0.9	1.0	1.2	1.6	0.9	1.1	1.1	1.1	1.0
Loans from other lenders	0.1	0.2	0.2	0.2	0.3	0.1	0.1	0.3	0.0	0.1
Other debt	2.0	1.9	2.5	2.6	2.3	1.3	1.1	1.2	1.0	1.2
TOTAL	30.3	38.6	47.1	52.0	65.4	33.3	42.3	46.9	51.0	63.2
Observations	2902	2903	2902	2903	2902	2692	2693	2693	2693	2692

Source: EPS, 2006 and 2009.

Table 5

Consumption Debt and Income Changes

VARIABLES	(1) OLS	(2) IV	(3) IV	(4) IV
Income change	0.00834 (0.0151)	-0.251** (0.125)	-0.343*** (0.200)	-0.347*** (0.205)
Secondary education			-102,766 (81,787)	-102,484 (82,940)
Tertiary education			-231,064 (211,349)	-232,503 (215,085)
Marital status			-99,331 (75,176)	-101,645 (79,543)
Familiy size			12,824*** (6,868)	13,664** (6,861)
Marriage Break				-10,717 (97,794)
Change in family size				34,798 (22,133)
Change in health status				-29,242 (25,457)
Constant	82,641* (17,482)	-108,186 (90,582)	-96,959*** (54,530)	-106,136*** (57,035)
Observations	6,386	6,386	6,383	6,380
First-stage regression				
Labor demand shock		5038948 (628668)***	3546266 (676126)***	3478823 (681346)***
F-test		64.24	63.52	43.23
Kleibergen-Paap		64.24	27.51	26.07

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 6

Banking Consumption Debt and Income Changes

VARIABLES	(1) OLS	(2) IV	(3) IV	(4) IV
Income change	0.0125 (0.0140)	-0.174** (0.0831)	-0.244*** (0.135)	-0.243*** (0.138)
Secondary education			-117,429** (56,945)	-116,164** (57,720)
Tertiary education			-117,556 (140,489)	-116,952 (142,471)
Marital status			-64,816 (52,071)	-64,652 (55,170)
Familiy size			5,298 (4,796)	5,572 (4,765)
Marriage Break				-11,407 (70,401)
Change in family size				7,726 (16,268)
Change in health status				-13,268 (16,363)
Constant	35,998* (12,323)	-99,634*** (59,299)	-62,835*** (35,781)	-64,955*** (37,140)
Observations	6,368	6,368	6,365	6,362
First-stage regression				
Labor demand shock		4975061 (625083)***	3452895 (673453)***	3388181 (688700)***
F-test		63.35	62.77	42.74
Kleibergen-Paap		63.35	26.29	24.92

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 7

Non-Banking Consumption Debt and Income Changes

VARIABLES	(1) OLS	(2) IV	(3) IV	(4) IV
Income change	0.00350 (0.00895)	-0.0177 (0.0776)	-0.0247 (0.115)	-0.0342 (0.118)
Secondary education			21,491 (47,548)	18,276 (48,164)
Tertiary education			-83,254 (123,668)	-90,132 (125,788)
Marital status			-22,018 (42,611)	-30,267 (45,119)
Familiy size			8,001*** (4,732)	8,554*** (4,756)
Marriage Break				48,386 (51,933)
Change in family size				28,564** (11,853)
Change in health status				-11,374 (15,980)
Constant	34,512* (11,385)	18,950 (56,461)	-12,439 (35,488)	-21,103 (37,141)
Observations	6,386	6,386	6,383	6,380
First-stage regression				
Labor demand shock		5038948 (628668)***	3546266 (676126)***	3478823 (681346)***
F-test		64.24	63.52	43.23
Kleibergen-Paap		64.24	27.51	26.07

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 8

Total Consumption Debt and Income Changes: Financial Assets

VARIABLES	(1) FA>0	(2) FA>0	(3) FA=0	(4) FA=0
Income change	-0.840 (0.707)	-0.372 (0.284)	-0.247 (0.218)	-0.222 (0.142)
Secondary education	-427,747 (286,963)		-27,768 (83,077)	
Tertiary education	-976,228 (828,708)		-20,352 (211,061)	
Marital status	-476,128 (369,595)		-40,488 (77,038)	
Family size	4,105 (32,762)		11,223 (7,042)	
Marriage Break	-148,172 (505,310)		69,301 (89,767)	
Change in family size	114,869 (106,595)		23,824 (20,868)	
Change in health status	-139,524 (94,706)		-8,683 (26,650)	
Constant	-226,362 (248,262)	-412,765 (322,577)	-85,236 (57,605)	-48,691 (88,669)
Observations	1,251	1,252	5,129	5,134
First-stage regression				
Labor demand shock	3191045 (1914160)*	5257832 (1793430)***	3514284 (702292)***	4951460 (639037)***
F-test	12.00	8.59	30.14	60.04
Kleibergen-Paap	2.78	8.59	25.04	60.04

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 9

Banking Consumption Debt and Income Changes: Financial Assets

VARIABLES	(1) FA>0	(2) FA>0	(3) FA=0	(4) FA=0
Income change	-1.020 (0.738)	-0.476*** (0.258)	-0.0730 (0.139)	-0.0963 (0.0907)
Secondary education	-402,434 (294,677)		-52,591 (55,169)	
Tertiary education	-1.148e+06 (868,419)		96,763 (135,114)	
Marital status	-531,146 (379,296)		12,274 (51,208)	
Familiy size	-18,196 (33,796)		5,604 (4,607)	
Marriage Break	220,756 (509,475)		-5,860 (66,520)	
Change in family size	89,195 (107,735)		1,936 (14,203)	
Change in health status	-103,705 (89,292)		4,196 (16,673)	
Constant	-300,483 (267,201)	-536,123*** (291,307)	-29,867 (34,209)	-28,031 (55,397)
Observations	1,248	1,249	5,114	5,119
First-stage regression				
Labor demand shock	3062369 (1911636)	5110262 (1789004)** *	3439270 (698540)***	4908207 (634389)***
F-test	11.86	8.16	29.91	59.86
Kleibergen-Paap	2.57	8.16	24.24	59.86

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 10

Non-Banking Consumption Debt and Income Changes: Financial Assets

VARIABLES	(1) FA>0	(2) FA>0	(3) FA=0	(4) FA=0
Income change	0.168 (0.274)	0.130 (0.163)	-0.0841 (0.135)	-0.0574 (0.0895)
Secondary education	9,814 (112,698)		21,116 (51,947)	
Tertiary education	158,594 (333,647)		-128,762 (123,471)	
Marital status	17,971 (139,846)		-35,167 (46,989)	
Familij size	25,456*** (13,716)		5,886 (5,326)	
Marriage Break	-127,282 (139,361)		79,122 (58,940)	
Change in family size	12,818 (40,326)		28,463** (12,183)	
Change in health status	-6,991 (37,838)		-12,237 (18,046)	
Constant	52,430 (100,502)	168,303 (182,392)	-31,910 (40,564)	-1,635 (56,486)
Observations	1,251	1,252	5,129	5,134
First-stage regression				
Labor demand shock	3191045 (1914160)	5257832 (1793430)***	3514284 (702292)***	4951460 (639037)***
F-test	12.00	8.59	30.14	60.04
Kleibergen-Paap	2.78	8.59	25.04	60.04

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 11

Total Consumption Debt and Income Changes: Indebtedness

VARIABLES	(1) DIR \geq 0.2	(2) DIR \geq 0.2	(3) DIR $<$ 0.2	(4) DIR $<$ 0.2
Income change	0.413 (1.367)	0.661 (0.745)	-0.322** (0.162)	-0.291* (0.100)
Secondary education	-388,100 (465,187)		31,657 (67,168)	
Tertiary education	11,165 (1.085e+06)		49,359 (187,858)	
Marital status	-209,731 (387,031)		-42,358 (66,267)	
Familiy size	-10,637 (39,867)		11,072*** (6,038)	
Marriage Break	630,600 (693,777)		-45,152 (76,815)	
Change in family size	-142,269 (228,319)		44,594** (17,326)	
Change in health status	97,758 (250,909)		-34,082*** (19,828)	
Constant	-327,635*** (167,699)	-605,751 (432,594)	-63,739 (51,506)	13,062 (73,817)
Observations	822	824	5,558	5,562
First-stage regression				
Labor demand shock	2340887 (3064507)	4070413 (2757404)	3540108 (666158.8)***	5125378 (616989)***
F-test	6.86	2.18	40.86	69.01
Kleibergen-Paap	0.58	2.18	28.24	69.01

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 12

Banking Consumption Debt and Income Changes: Indebtedness

VARIABLES	(1) DIR \geq 0.2	(2) DIR \geq 0.2	(3) DIR $<$ 0.2	(4) DIR $<$ 0.2
Income change	-0.0879 (1.047)	0.0868 (0.545)	-0.216** (0.106)	-0.180* (0.0638)
Secondary education	-488,916 (387,080)		-31,791 (43,421)	
Tertiary education	-128,534 (804,147)		21,705 (115,310)	
Marital status	-166,608 (315,802)		-31,391 (43,105)	
Familiy size	18,937 (36,605)		1,837 (3,364)	
Marriage Break	93,098 (539,200)		-15,116 (48,787)	
Change in family size	-57,288 (183,183)		11,426 (12,522)	
Change in health status	13,790 (191,772)		-14,607 (11,377)	
Constant	-81,815 (147,433)	-358,767 (313,063)	-48,842 (31,817)	-43,543 (45,994)
Observations	819	821	5,543	5,547
First-stage regression				
Labor demand shock	2526396 (3054631)	4352037 (2747677)	3418109 (662194.2)***	5018507 (611727)***
F-test	6.95	2.51	40.02	67.30
Kleibergen-Paap	0.68	2.51	26.64	67.30

Robust standard errors in parentheses

* p<0.01, ** p<0.05, *** p<0.1

Table 13

Non-Banking Consumption Debt and Income Changes: Indebtedness

VARIABLES	(1) DIR \geq 0.2	(2) DIR \geq 0.2	(3) DIR $<$ 0.2	(4) DIR $<$ 0.2
Income change	0.652 (0.998)	0.678 (0.580)	-0.0533 (0.0947)	-0.0644 (0.0623)
Secondary education	185,677 (339,872)		48,829 (38,994)	
Tertiary education	364,398 (802,000)		-21,964 (108,993)	
Marital status	-23,081 (294,465)		-7,779 (36,412)	
Familiy size	-24,980 (36,574)		10,100** (4,026)	
Marriage Break	709,898 (484,477)		492.1 (41,965)	
Change in family size	-32,088 (166,964)		28,175* (8,771)	
Change in health status	66,877 (198,246)		-10,247 (11,555)	
Constant	-201,986 (150,764)	-69,970 (334,451)	-5,406 (33,678)	55,802 (46,247)
Observations	822	824	5,558	5,562
First-stage regression				
Labor demand shock	2340887 (3064507)	4070413 (2757404)	3540108 (666158)***	5125378 (616989)***
F-test	6.86	2.18	40.86	69.01
Kleibergen-Paap	0.58	2.18	28.24	69.01

* p<0.01, ** p<0.05, *** p<0.1

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