# Homemade Unleverage, or: Do Households Care About the Employer's Capital Structure?*

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*Preliminary and Incomplete*
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**ABSTRACT**

Exploiting a rich dataset of matched households and employers, I provide novel evidence on the impact of the employer's capital structure on employees' consumption and saving decisions. Notwithstanding receiving lower wages, households working for highly leveraged employers exhibit lower marginal propensities to consume, with this effect being driven by cutting in "luxury" goods and services. To establish causality, I look at employees' responses to negative industry-wide shocks and find that only those employed by high-leverage firms cut consumption, though I find no differential effect on wages. I reconcile these facts with a Diamond-Mortensen-Pissarides matching model, in which heterogeneous risk-averse employees bargain with heterogeneous employers to determine wages. Consistent with the model, I find that the consumption response is mainly driven by poorer households, for whom unemployment is more painful. Overall, evidence is suggestive that financial distress costs are being partially shifted to employees.

**JEL classification**: E21, E62, G28, H31, G50
**Keywords**: Household finance, Financial distress, Firm leverage, Consumption, Savings, Income

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# 1 Introduction

In deriving an optimal debt policy, firms must trade off benefits and costs imposed by financial frictions. Although the channels through which firm value is affected by debt are well documented in the corporate finance literature, empirically it is less clear how such costs spill over to other stakeholders. In particular, as a firm increases leverage and credit default risk, employees face an increased likelihood of losing their jobs, a partially uninsurable event with grave consequences to the household. The use of leverage may then impose–through the increased likelihood of corporate bankruptcy–significant costs over employees, including not only the immediate decline in income but also the persistent losses in firm-specific human capital.[1] These, in turn, lead to economically significant reductions in consumption (Gruber, 1994).

What is less clear at this stage is whether households also recognize and endure the spillover effects of leverage *ex ante*. In this paper, I use an extensive household microdata panel, constructed from high-frequency transaction data from Portugal and merged with employers' accounting data, to provide evidence on the costs of leverage and corporate bankruptcy over employees. Opposing channels through which leverage could affect employee compensation have been theorized, and prior empirical studies have found mixed evidence on this relationship.[2] As such, I start by providing further evidence to this ongoing discussion. I find that, both in my sample and in aggregate income statement data, there exists a negative relationship between wages and the employer's indebtedness.

However, my main contribution lies in understanding how employees manage this additional labor income risk. Understanding whether employees are compensated for this

[1] Graham, Kim, Li, and Qiu (2023) estimate the present value of lost earnings to be around 87% of pre-bankruptcy annual pay. Davis and Von Wachter (2011) relate these costs to the business cycle and show that while men lose an average of 1.4 years of pre-layoff earnings in normal times, this figure increases to 2.8 years during recessions.

[2] For example, looking at public firms from the United States—more specifically by merging Compustat balance-sheet data with data from the Bureau of Labor Statistics' Longitudinal Database of Establishments—Michaels, Beau Page, and Whited (2019) find a negative correlation between wages and the employer's leverage. On the other hand, matching workers and public firms data from the U.S. Longitudinal Employer-Household Dynamics program, Graham, Kim, Li, and Qiu (2023) find a wage premium.

source of risk is challenging, as observing earnings is insufficient. It might be that case, for example, that on average highly leveraged firms employ more low-skill employees (Qian, 2003), or there exists equilibrium matching between employees with high-risk aversion and low-leverage firms (Berk, Stanton, and Zechner, 2010; He, Ren, Shu, and Yang, 2022). Moreover, conducting a welfare analysis would require detailed data on both the employee's actions and the employer's capital structure decisions. To overcome this observability problem, I look into the consumption habits of around 87 thousand Portuguese households, working for around 14 thousand private companies and about a thousand state-owned companies or institutions. I start by documenting how households working for companies in the public sector, facing low employment risk, exhibit higher marginal propensities to consume, measured from debit and credit card payments at the transaction level, which consistently leads to employees leveraging up by decreasing liquid savings. Consistent with this channel and within the private sector, higher employer leverage ratios are associated with lower marginal propensities to consume. While this result is true across households, I also show that the result holds *within* household. To further alleviate concerns about omitted variables, I show that these results are robust to the inclusion of industry-by-year, employer, and household-by-employment spell fixed effects. At the inter-quartile range of the leverage ratio, these results imply that marginal propensities to consume fall by about 3% (7% between the top and bottom 10%).

The overall effect in consumption also masks an important degree of heterogeneity. By splitting the sample on household and employer's characteristics, I find that the consumption response is substantially higher in poorer households (households in the bottom quartile in the asset distribution). Moreover, as one would anticipate, I provide evidence that households are especially sensitive to leverage when working in highly volatile industries. Taken together, these findings suggest that households are particularly concerned with their employer's indebtedness whenever the negative effects of unemployment are severe, or the expected separation rate is higher. In addition to providing overall estimates of the propensity to consume, I also report a different dimension of heterogeneity, discussing the compositional effects of leverage on the household consumption basket. In this respect, I show that the effect is driven by non-necessity, or "luxury" goods and services, as the effect is non-existent in groceries, health care or housing maintenance, and utility expenditures. However, I find a significant and negative effect for clothing, restaurant, and transportation, all of which have been associated with an income elasticity above one in previous empirical literature (for example, Clements, Wu, and Zhang (2006) and Clements, Si, Selvanathan, and Selvanathan (2020)).

Furthermore, the endogeneity of leverage is still a potential concern to be addressed in this baseline result, which could bias these findings in both directions: suppose, for example, that firms deciding to issue debt have better prospects, or face lower costs of financial distress in the first place; or, in contrast, firms with more severe moral hazard problems issue relatively more debt. To alleviate these concerns, I make full use of the high frequency of the data, allowing me to identify sharp changes in household behavior around arguably exogenous shocks to a firm's expected costs of financial distress. In particular, I propose a "quasi-experiment" where I identify industry-wide negative shocks to sales and measure the contemporaneous wage and consumption changes. I find that following such industry-wide shocks there is no differential effect in wage payments. However, consistent with the hypothesis that while on average firms experience economic distress only highly leveraged ones suffer financial distress, I find that only households working for high-leverage firms cut consumption. This effect is both statistically and economically significant, at about 3%. Moreover, the household concern about the employer's financial strength also appears to be warranted: highly leveraged firms are twice as likely to default in my sample and increasingly do so following these shocks.

Moreover, I find that the impact of imperfect risk-sharing between firms and employees is not limited to consumption or saving, but also to employment choices. Thus, I find that households also react with their feet: those working for highly leveraged firms are more likely to leave their employer, even after accounting for the fact that these firms are more likely to go bankrupt. However, when considering administrative data, I fail to find a differential effect in employment growth for the firms in the sample, which might suggest that the effect is supply-driven.

Finally, to help understand the economic mechanisms that determine these empirical findings, I propose a matching model with two-side heterogeneity, in which wages are determined in a Nash bargaining procedure, in the spirit of Bils, Chang, and Kim (2011). The literature has identified two main channels through which leverage is connected with labor market outcomes. On the one hand, previous papers have suggested that within the scope of the implicit contract model (Baily, 1974; Azariadis, 1975), the risk-neutral employer also plays the role of providing insurance to risk-averse employees, insulating them from adverse wage and employment shocks. As such, unemployment risk should drive wage premia, as workers demand compensation for limited risk-sharing with their employer (Abowd and Ashenfelter, 1981; Topel, 1984; Hamermesh and Wolfe, 1990). Thus, insofar as leverage increases the probability of firm failure, employees would then pay for insurance, i.e., lower employer leverage, by accepting a wage discount (Berk, Stanton, and Zechner, 2010); and ultimately a positive relation between leverage and wages should be observed.

On the other hand, financial constraints might be used strategically by employers to limit the bargaining power of workers.[3] Using the state-level adoption of right-to-work laws and unemployment insurance system changes in the United States as exogenous variation in union bargaining power, Matsa (2010) finds a positive relation between union power and financial leverage; and in a comprehensive panel of listed firms from 29 countries, Ellul and Pagano (2019) provide further evidence that firms respond to higher workers' bargaining power by increasing leverage. While focusing on public firms operating in the United States, Michaels, Beau Page, and Whited (2019) finds a negative correlation between leverage and employee pay and proposes a dynamic model of labor and capital, in which leverage restricts wages through bargaining.

In the proposed model, risk-averse workers exhibit heterogeneous job-match quality, as well as different levels of savings and relative risk aversion. Job-match quality is then subject

[3] Several papers have explored the idea of firms using capital structure as a bargaining tool. For early contributions, see, for example, Baldwin (1983), Dasgupta and Sengupta (1993), and Perotti and Spier (1993); or, more recently, Matsa (2010) and Michaels, Beau Page, and Whited (2019).

to exogenous shocks, which might lead to either the firm or the employee terminating the match. Part of this risk is treated as idiosyncratic and as such, workers cannot insure against it, apart from boosting their savings to ensure consumption smoothing. Consequently, the model partially replicates the dynamics proposed by Berk, Stanton, and Zechner (2010), in which risk-neutral firms pay a premium for losses incurred by the risk-averse workers in case of separation. On the other hand, potential employers differ in their leverage ratio, with leverage acting as a counterweight to the risk-sharing mechanism. As a result of the assumed functional form for the generated employee-employer surplus, I assume that leverage has a depressing effect on wages through the bargaining procedure, decreasing pledgeable cash flows to workers. For a calibration of the model's parameters that attempts to replicate stylized facts of the Portuguese economy, these bargaining frictions introduce a wage discount from the use of leverage.

This paper relates to several strands of the literature. Firstly, it complements the emerging literature on capital structure's impact on employees and the labor market. While opposing evidence has been found for the effect of leverage on wage determination (Chemmanur, Cheng, and Zhang, 2013; Akyol and Verwijmeren, 2013; Agrawal and Matsa, 2013; Michaels, Beau Page, and Whited, 2019; Graham, Kim, Li, and Qiu, 2023; Dore and Zarutskie, 2023; Gill, Choi, and John, 2024), recent empirical findings suggest that employees perceive financial distress and recognize this source of risk. Brown and Matsa (2016) find that more leveraged firms receive fewer and lower quality applications, providing evidence that outsiders (job seekers) perceive the firm's financial strength and consider such concerns when applying for a job. Consistently, Gortmaker, Jeffers, and Lee (2022) show that insiders also take into account the financial strength of their employers, and react to their employer's credit deterioration by increasing their networking activity. Using a panel of Swedish employee-employer matched data, Baghai, Silva, Thell, and Vig (2021) find that this effect may be more pronounced for top talent, who following an exogenous export shock are more likely to abandon the firm, but only if the employer is highly leveraged. This paper contributes to this literature by showing that employees react to these employment concerns by cutting spending and partially insuring themselves through precautionary savings.

Though the main focus of the paper is on the employee response to capital structure, more broadly this paper is connected with the literature on the indirect costs of financial distress borne by firms (Titman, 1984). Due to their nature, indirect costs are difficult to measure. However, evidence suggests they are much more significant than direct ones, working through the loss of customers (Opler and Titman, 1994; Hortaçsu, Matvos, Syverson, and Venkataraman, 2013; Custodio, Ferreira, and Garcia-Appendini, 2023), suppliers (Sautner and Vladimirov, 2017), as well as through fire sales of firm's assets (Pulvino, 1998). Additionally, there is evidence that the loss of human capital might be important in quantifying the indirect costs of financial distress. I contribute to this literature by providing evidence that financial distress costs are at least partially shifted to employees, who are paid less and have to restrain their consumption. Given that pay has been found to be a major determinant of employee motivation (Rynes, Gerhart, and Minette, 2004) (which together with job security constitutes one of the most important job characteristics from the employees' perspective (Clark, 2001)), I provide suggestive evidence that the use of debt may lead to lower employee motivation, imposing additional costs on the financial and non-financial investors.

The paper is laid out as follows. Section 2 describes the matched worker-firm sample. Section 3 presents and analyzes a consumption-saving model in which heterogeneous risk-averse employees match with firms with varying levels of leverage. Section 4 describes the empirical strategy, with the results being presented in Section 5. Finally, Section 6 concludes. The appendix contains all proofs, as well as additional empirical findings supporting the paper's main results.

## 2 Data

The sample consists of household-employer pairs, covering clients with an outstanding mortgage loan at a large Portuguese bank, from January 2018 to June 2022. First, clients who have a joint mortgage are matched to define a household. The sample is then restricted to include households who i) regularly use this bank's accounts, through either credit or debit card, for making purchases and payments (requiring a minimum average of 10 payments per month); and ii) chose direct deposit of wages, which is crucial in identifying the household's employers. While in a previous paper (Adelino, Ferreira, and Oliveira, 2024) the final sample includes retired individuals and unemployed, in this work a subset of the former is used, considering only households in which at least one element is employed, either on the private or the public sector.

From the perspective of the household, I can partially describe the asset side of their balance sheet, by observing the end-of-the-month balances for all checking and savings accounts held at the bank. Moreover, I observe transaction-level data for all payments and purchases made using either a credit or a debit card at this bank. By using the bank's internal information about the households' liabilities, which includes outstanding debt, interest rate, date of origination, maturity, and monthly installments, and merging this data with the Portuguese Credit Register, managed by Bank of Portugal, it is possible to fully characterize the liability side of the households' balance sheet.

The data also track all inbound Single Euro Payments Area (SEPA) transfers. Since all households in the original sample hold an outstanding mortgage at this bank and are offered a reduction in the interest rate spread by requesting direct deposit of the wage at the bank, I observe a large number of wage payments. Furthermore, by making use of the transfer description, namely, the name of the entity ordering the SEPA transfer, I am able to match each transfer to the universe of companies operating in Portugal. To achieve this, I apply the Levenshtein Distance string metric over the name of the entity, relative to the names of all companies operating in Portugal, with its accuracy being validated by multiple random manual checks.

Having identified the name and thus the unique tax identifier of each employer, I then exploit the firm-level database SABI INFORMA (Sistema de Análisis de Balances Ibéricos), made available by Bureau van Dijk. The database uses detailed accounting data from IES (Informação Empresarial Simplificada), allowing me to construct a set of measures to capture the likelihood of financial distress. In particular, I use this dataset to construct the main explanatory variable of interest, the leverage ratio, computed as total debt financing, net of cash, divided by book assets.

In Section 5.4, I consider industry-wide revenue shocks as an exogenous instrument for financial distress. To construct a monthly measure of industry-wide shocks I match the employer's data with year-on-year monthly changes in the industry's calendar unadjusted turnover, from the Eurostat's Short-term business statistics, at the 2-digit NACE Rev.2 code.[4] However, these data is only available for a subset of my sample, focusing on manufacturing and service activities.

## 2.1 Household Statistics

Panel A of Table 1 presents a summary of the main variables at the household level for the final sample, which includes around 87 thousand households. This sample considers all households having at least one employed member throughout the sample period, either in the public or the private sector and for which a valid employer match is found.

The average household is composed of 1.7 members and has a monthly consumption expenditure of about 1,615 euros. This measure includes all purchases and payments, including cash withdrawals, from either a credit or a debit card from this bank. Table 2 shows that households whose main wage payment comes from the public sector consume around 150 euros more than those working for the private sector. Additionally, within the latter group, those working for firms in the top quintile of leverage appear to consume less, at about 90 euros, when compared to those households working for firms at the bottom quintile of the leverage distribution.

The average total income is about 2,170 euros per month and the average monthly wage is approximately 1,860 euros. These figures are slightly above the after-tax average household

[4]NACE (Nomenclature statistique des Activités économiques dans la Communauté Européenne) corresponds to the Statistical Classification of Economic Activities in the European Community. CAE (*Classificação de Actividades Económicas*) Rev.3, which I consider for industry classification of all employers at the 5-digit level, is integrated under the former.

monthly income, at the national level, which in 2019 amounted to 1,800 euros. This sample of borrowers differs from the average Portuguese household, as I am focusing on homeowners with mortgage, a group that represented in aggregate around 30% of all Portuguese households in 2021,[5] and earn on average higher wages than the remaining Portuguese population (Xerez, Pereira, and Cardoso, 2019). Households in the public sector earn significantly higher wages, at about 270 euros per month, and about 490 euros more in total income, as shown in Table 2. Within the private sector, once again those working for the most leveraged firms earn lower wages on average, at around 100 euros per month, compared to households working for the least leveraged firms (a similar figure is found when considering the total income of the household).

These households hold on average 6,700 euros in net liquid assets, which considers their checking account balance and their outstanding credit card and overdraft balances. A fraction of these households, approximately 59 thousand households, have a savings savings account at this bank, holding about 17.9 thousand euros in such deposit accounts. Looking at liabilities, households had on average a mortgage balance of 73.6 thousand euros. Only a small fraction of households hold auto or student loans (about 1%), or other types of loans, such as personal loans (about 7%). Conditional on having the former, these households have an outstanding balance of about 7 thousand euros; and conditional on having personal and other types of loans, their outstanding balance is about 6.4 thousand euros. Nonetheless, around 71% of households have loans with other banks, showing an outstanding balance of about 10.7 thousand euros (though the median is much lower, at around 3.2 thousand euros). As before, households working for the public sector carry higher levels of savings and liquid assets and hold higher credit card balances. Notably, they have a lower outstanding mortgage balance, partially explained by their age (such households are on average 4 years older than households working for the private sector). Furthermore, those working for more leveraged firms carry lower net liquid assets (around 650 euros less, when compared to the households working for firms in the bottom quintile), and have a lower outstanding mortgage balance, at around 5

[5] INE (Instituto Nacional de Estatística), Population and housing census 2021.

thousand euros. I also introduce a measure of debt payment-to-income, corresponding to the ratio between the monthly debt payments made by the household and their total income, which stands at around 14%. Finally, around 45% of households in this sample work for a state-owned company or institution.[6]

## 2.2 Firm Statistics

In Table 3 I report a few characteristics of in-sample firms. I also report sample statistics for the characteristics used as controls or in defining subsamples for empirical tests, following previous literature on the effect of leverage on wage determination (see, for example, Akyol and Verwijmeren (2013), or Graham, Kim, Li, and Qiu (2023)). I compute a measure of industry volatility at the 3-digit national industry code given by the standard deviation of sales at the 3-digit industry level in the 3 previous years, normalized by the industry's total book assets. The leverage ratio corresponds to total (current and non-current) debt financing, net of cash holdings, normalized by book assets. Profitability is the return on assets, given by net income divided by total assets, and tangibility is the ratio between fixed assets and book assets. Finally, I define employee productivity as sales divided by the number of employees, while average employee expenses correspond to total wage bills divided by the number of employees.

Since I include lagged variables as a control in my empirical design, the sample of firms runs from 2015 to 2022, though summary statistics are computed for 2018 only. I start by excluding financial firms from the sample (CAE codes 64 to 66), as well as any firm observations with negative book value of assets or negative value of sales. The average employer has book assets of about 11.3 million euros, though the median employer is much smaller, at about 1.8 million euros. Annual turnover for the average firm is about 9.8 million euros, resulting in a net income of about 380 thousand euros. The average employer is thus a medium firm,

[6] A significantly higher fraction compared to the national average, which stands at about 15%. This fact is explained by the selection of the sample, which only includes households with an outstanding mortgage—and were consequently selected by a lender according to their ability to meet debt payments, namely, by considering the volatility of their wages—and the market positioning of this particular bank.

employing about 75 workers in 2019, while the median firm would be a small firm, employing about 24 workers. Total debt is about 2.4 million euros on average (6.7 million euros in total liabilities), costing about 77 thousand euros in interest payments per year. Employee productivity is measured at about 145 thousand euros of generated sales per worker and firms face an average annual wage bill of about 22 thousand euros per worker.

As most of the comparable studies focus on US publicly-held firms, it is also instructive to compare in-sample firms with the standard dataset for such US-focused studies. Figure IA.1 presents the distribution of in-sample firms, *vis-à-vis* the distribution of Compustat firms.[7] As expected, by book assets these households' employers are much smaller than most Compustat firms (the average US public firm has book assets of about 4.2 billion euros, as opposed to about 11.3 million euros for firms in-sample). Companies in-sample also use less leverage, as defined above (average of 11% for firms in-sample versus 33%).[8] Additionally, they are more profitable (0% versus -31%) and exhibit higher tangibility of assets (about 26% versus 22%). However, these in-sample employers are larger when compared to the remaining universe of Portuguese firms, as the average firm in the latter has about 510 thousand euros in book assets. As shown in Figure IA.3, not only are in-sample firms larger, but they are also more levered, more profitable, and have higher tangibility of assets.

# 3 Theory

In this section I introduce a matching model of endogenous job creation and destruction, based on previous work from Bils, Chang, and Kim (2011). In contrast to their work, I calibrate the model to match some stylized facts of the Portuguese economy, as well as adding two important sources of heterogeneity: in the model presented here, I consider varying levels in the level of relative risk aversion, as well as introducing exogenous leverage to the employer's

[7]To construct this sample, I include all firms in the Compustat Fundamentals dataset in 2018. I exclude firms with negative book assets or negative turnover and exclude firms operating in the financial sector (SIC codes 6000-6999) and utilities (SIC codes 4900-4999).

[8]Figure IA.2 shows the median leverage ratio at the industry level for both Compustat firms and in-sample firms, demonstrating that differences in levels also reflect substantial industry and institutional differences.

problem, with varying degrees of indebtedness.

The goal of the model is to understand whether bargaining frictions could help match empirical findings while trying to further understand how endogenous matching between workers and firms might bias estimates on the impact of leverage on wages. Unemployed individuals search for a job and, by assumption, they have perfect knowledge about the exogenously determined amount of debt that the potential employer holds.[9] On the other hand, entrepreneurs have perfect knowledge about workers' characteristics, namely how risk-averse they are and how much wealth they hold.[10] Workers are risk averse and can save to partially insure themselves against job-match idiosyncratic shocks; and can also borrow, subject to a borrowing constraint. Moreover, I assume they are also additionally insured by unemployment insurance, which facilitates the calibration of the model to the Portuguese economy. Thus, the model includes two counteracting forces in determining wages: on the one hand, risk-averse workers dislike unemployment risk, and bargain for a higher wage as compensation, in the spirit of Berk, Stanton, and Zechner (2010); however, while increasing unemployment risk, leverage reduces the available surplus to be shared with the employee, which even though modeled very differently, resembles the intuition behind Michaels, Beau Page, and Whited (2019). While I try to combine both views in a single framework, to the best of my knowledge I am the first to endogenously determine the matching process between risk-averse workers and levered firms.

## 3.1 Model Setting

Consider a given labor market in discrete time, populated by a continuum of measure one of infinitely lived risk-averse households, and a continuum of infinitely lived risk-neutral entrepreneurs.

[9] While being a simplifying assumption, work by Brown and Matsa (2016) suggests that applicants have at least *some* knowledge about the financial condition of potential employers.

[10] One could think about previous job experience and age as proxies for these two variables.

*Households*

Households are ex ante heterogeneous in their risk-aversion and initial wealth and maximize their lifetime utility according to constant relative risk aversion (CRRA) utility function with two separable goods, consumption and leisure, defined by

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta_h^t \left[ \frac{c_t^{1-\gamma} - 1}{1-\gamma} + (1 - \mathbb{1}_e) l \right]$$

with $0 < \beta < 1$. The indicator function for being employed is denoted by $\mathbb{1}_e$, and as such unemployed households derive utility from $l$, the exogenous value of leisure.[11] In each period consumption must be nonnegative and households are subject to a traditional budget constraint, as follows

$$c_t \leq (1+r)a_t + (1 - \mathbb{1}_e)uib + \mathbb{1}_{e=1} w_t - a_{t+1}, \quad \forall t \in [0, T], \tag{1}$$

$$c_t \geq 0, \quad \forall t \in [0, T]. \tag{2}$$

Employed households earn a wage $w_t$ and unemployed workers receive an unemployment insurance benefit equal to $uib$. Households can also smooth consumption and partially insure against unemployment risk by saving and investing in a short-term riskless bond. On the other hand, households are also allowed to borrow, subject to an exogenous borrowing constraint, such that

$$a_t \geq \underline{a}_t, \quad \forall t \in [0, T]. \tag{3}$$

*Entrepreneurs and Firms*

Entrepreneurs maximize the discounted present value of match surplus, represented by

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta_f^t \left( z_t x_t - b \right) \tag{4}$$

[11] Allowing the value of leisure to depend on employment status is helpful in calibrating the model to match real moments.

Match surplus changes over time and according to two Markov processes, which govern aggregate productivity, denoted by $z_t$, and idiosyncratic job-match quality, denoted by $x_t$. Moreover, I assume a standard autoregressive process of order one for both variables: the persistence of the aggregate process is represented by $\rho_z$, and the corresponding innovations are normally distributed, with $\varepsilon_z \in \mathcal{N}(0, \sigma_z^2)$; while $\rho_x$ denotes the persistence of the idiosyncratic process and $\sigma_x$ for the standard deviation of idionsyncratic shocks.

For new matches, $x_t$ is assumed to be equal to the unconditional mean of job-match quality productivity, $\overline{x_t}$. I assume that entrepreneurs issue a perpetual bond which costs $b$ per each unit of time and thus lowers the surplus to be shared with the worker. This amount is not micro-founded and is instead exogenously set at firm inception, since my primary concern is not capital structure choice but its effects on worker behavior.

### *Labor Market*

Job matches are then obtained through a Cobb-Douglas matching function as follows

$$m(v_t, u_t) = m_0 u_t^{1-\eta} v_t^{\eta},$$

with $m_0$ representing the efficiency of the matching technology, while $u_t$ represents the number of unemployed workers, $v_t$ is the number of posted vacancies, and $\eta$ is the elasticity of job matchings with respect to vacancies (with $0 \leq \eta \leq 1$). As such, the job-filling rate, i.e., the rate at which vacancies become filled, is $q(\theta_t) = m(v_t, u_t)/v_t = m_0 \theta_t^{\eta-1}$, where $\theta_t$ represents the vacancy-unemployment ratio; while the job-finding rate, the rate at which unemployed workers finds a match is $\theta_t q(\theta_t) = m(u_t, v_t)/u_t = m_0 \theta_t^{\eta}$.

At the beginning of each period, matches, and both idiosyncratic and systematic shocks are realized. Following a match, households and entrepreneurs decide whether to continue or separate. If they decide to continue, production is realized and the agreed wage, which depends on the household type and wealth, job-match quality, and employer's leverage, is paid. Otherwise, by deciding to not continue the current match, households join the measure of unemployed workers who search for a new match. Furthermore, assume that the distribution of employed and unemployed households is characterized by $\lambda_e(\gamma, a_t, x_t, b)$ and $\lambda_u(\gamma, a_t)$, respectively.

In characterizing the worker and entrepreneur's problem, let the value functions for employed and unemployed households be represented as $W$ and $U$, while the value functions for a new vacancy and a matched job be denoted by $V$ and $J$. Also, denote by $\phi_t = (\gamma, a_t)$ the vector of household-specific states for employed households, while $\Phi = (z_t, \lambda_e, \lambda_u)$ corresponds to the vector of aggregate states for unemployed households.

### *Wage Setting*

Wages are set endogenously through a bargaining procedure, in which the matched household and entrepreneur split the generated surplus. Given the value functions introduced above, for a job match to form, the household gives up $U$ (the household's threat point) in exchange for $W$; while the entrepreneur gives up $V$ (the entrepreneur's threat point) in exchange for $J$. Consequently, the Nash bargaining solution for $w_t(x_t, b_t\phi_t, \Phi_t)$ is determined by the following problem

$$\arg\max_{w_t} \left\{ \left[W_t(x_t, b_t, \phi_t, \Phi_t) - U_t(\phi_t, \Phi_t)\right]^{\delta} \left[J_t(x_t, b, \phi_t, \Phi_t) - V_t(b, \Phi_t)\right]^{1-\delta} \right\}, \tag{5}$$

where $0 \leq \delta \leq 1$, which may be interpreted as a relative measure of the worker's bargaining power.

### *Optimization Problem*

Households solve their optimization problem by choosing the optimal level of consumption and consistently how much to borrow or lend. Then, the optimization problem for an employed household, subject to conditions (1) to (2), can be summarized as follows

$$W_t(x_t, b_t, \phi_t, \Phi_t) = \max_{\{c_t, a_{t+1}\}} \left\{ \frac{c_t^{1-\gamma} - 1}{1-\gamma} + \beta_h \mathbb{E}_t \max\left[W_{t+1}, U_{t+1}\right] \right\}, \tag{6}$$

where for notational convenience I drop the value functions dependence on $t = t + 1$. Notice that the last term relates to the household choice about whether to continue within the same match or join the pool of unemployed workers. In the latter case, the value of being unemployed, subject to conditions (1) to (2), is given by

$$U_t(\phi_t, \Phi_t) = \max_{\{c_t, a_{t+1}\}} \left\{ \frac{c_t^{1-\gamma} - 1}{1-\gamma} + l + \beta_h \left\{ (1 - \theta_t q(\theta_t)) \mathbb{E}_t \left[ U_{t+1} \right] + \theta_t q(\theta_t) \mathbb{E}_t \left[ W_{t+1} \right] \right\} \right\}. \quad (7)$$

Finally, from the perspective of the entrepreneur who is matched with a household, the value of a match is given by

$$J_t(x_t, b, \phi_t, \Phi_t) = z_t x_t - b - w(x_t, b, \phi_t, \Phi_t) + \beta_f \mathbb{E}_t \left[ \max \left\{ J_{t+1}, V_{t+1} \right\} \right], \quad (8)$$

where the last term relates to the entrepreneur's choice of continuing the current match, or breaking it and posting a new vacancy. In turn, the value of posting a new vacancy is as follows

$$V_t(b, \Phi_t) = -\kappa + \beta_f q(\theta_t) \int \mathbb{E}_t \left[ J_{t+1} \right] \mathrm{d}\lambda'_u(\phi_{t+1}) + \beta_f (1 - q(\theta_t)) \mathbb{E}_t \left[ V_{t+1} \right], \quad (9)$$

where $\kappa$ represents the fixed cost of posting the vacancy and $\lambda'_u$ corresponds to the measure of unemployed households at the end of each period (after borrowing and lending decisions have been made).

### *Equilibrium*

In equilibrium, all profit opportunities must be exhausted, and as such I impose a free-entry condition, such that $V_t(b, \Phi_t) = 0$. With this condition in mind, the stationary equilibrium of the model implies the following job creation condition, corresponding to the first-order maximization condition of the bargaining problem (5):

$$J_t(x_t, b, \phi_t, \Phi_t) = \frac{1-\delta}{\delta} \left[ W_t(x_t, b_t, \phi_t, \Phi_t) - U_t(\phi_t, \Phi_t) \right] c_t^{\gamma}. \quad (10)$$

Therefore, a stationary equilibrium corresponds to a set of value functions as described in equations (6) to (9); decision rules for consumption and, consequently, savings; a full characterization of the wage schedule; the population distributions and their laws of motion; and, finally, a labor-market tightness ratio, such that:

1. Given $\theta_t$, conditions (6) to (7) are met;
2. Given the wage schedule and optimal saving decision rules, condition (8) is met, with the value of a new posting for each firm type being zero;
3. The wage schedule satisfies the first-order maximization condition (10).

## 3.2 Quantitative Analysis

This section presents some numerical examples, based on the baseline calibration reported in Table 4. Additionally, by simulating a panel of search and match dynamics on the steady-state, I provide estimates for the impact of leverage on wage determination and household consumption and saving behavior.

### *Calibration*

The model is calibrated in steady state and model parameters are chosen with a model period of one month in mind. I begin by normalizing the unconditional mean of the aggregate productivity, assuming that in the steady state $z = 1$. Additionally, I normalize the job market tightness $\theta = 1$. The annual risk-free rate is set to 4% and the household's monthly discount factor, $\beta_h$, to 0.996. The latter is set for the model to generate a realistic level of average financial holdings to average household income, at about 13 for Portugal in 2017.[12] I assume two values for the coefficient of relative risk aversion, $\gamma \in \{1, 2\}$, both within the usual calibration of this literature. As also traditional in this literature, I choose a symmetric

[12] Annual mean net income per household, INE-Instituto Nacional de Estatística, Statistics on Income and Living Conditions; and average value of financial assets of private households; Bank of Portugal, Household Finance and Consumption Survey 2017

bargaining power for sharing the job-match surplus, also equal to the elasticity of the matching technology, i.e., $\delta = \eta = 0.5$. For the idiosyncratic process, I choose $\rho_x = 0.98$, to match the high persistence of observed earnings, and a standard deviation of innovations of about 0.035, both comparable with the calibration of Fujita and Moscarini (2017). I then choose a debt cost, $b$ of 0.1, for the wage leverage gap in the model to be comparable in size to the empirical counterpart, presented in section 5

Compared to the US economy, Portugal is characterized by significantly longer unemployment, even if unemployment rates are comparable at times. Therefore, following Blanchard and Portugal (2001), I set the matching technology parameter $m_0$ to be equal to 0.11, generating an average unemployment spell duration of about 9 months. The utility from leisure, $l$ is 0.15, as per Bils, Chang, and Kim (2011), so that leisure is comparable to a 15% higher consumption level. In this calibration, the unemployment insurance benefit is higher than the benchmark in Bils, Chang, and Kim (2011), to reflect the lower observed wedge between wages and unemployment benefit in Portugal, relative to the US.[13] In particular, the unemployment benefit is then chosen to target an unemployment rate of 6.5% (Blanchard and Portugal, 2001). Finally, the parameter $\kappa$, the cost of posting a vacancy, is allowed to vary according to the free-entry condition.

The computational methodology employed in solving and simulating the model is described in the Internet Appendix.

### *Wage Schedule*

Figure 1 plots the wage schedule for a constant job-match quality, equal to the unconditional mean of $x$, as a function of the household's savings. However, Panel A compares the average wage across all household and firm types with the wage earned by households with different levels of risk aversion; while Panel B provides the same split for households working in unlevered and levered firms.

[13]For the 2000-2022 period, the average unemployment benefit after 2 months of unemployment, as a share of previous income, was about 76% in Portugal and 61% for the US (data retrieved from the OECD).

First, notice that wages are increasing in household savings, as holding assets partially insures the household against unemployment, turning this outside option relatively less painful, as in Krusell, Mukoyama, and Şahin (2010) and Bils, Chang, and Kim (2011). Interestingly, the model generates important differences in how risk aversion affects wages. For sufficiently low levels of wealth, one would expect a *negative* association between risk aversion and wages, a point previously made, for example, in Acemoglu and Shimer (1999), where increases in risk aversion make households prefer low-wage jobs with lower unemployment risk. However, for sufficiently high wealth, so that households have high enough bargaining power in the wage negotiation procedure, there is a *positive* relationship between wages and risk aversion. In this region, more risk-averse households negotiate higher wages, as they require higher compensation for unemployment risk—and have enough relative bargaining power to do so.

An equivalent exercise is made in Panel B, but splitting the wage schedule according to the employer's leverage. However, for this numerical example, there is an unambiguous effect of leverage, which depresses wages. This result is consistent with a priori intuitions, going back to equation (8). Everything else constant, increasing the entrepreneur's debt payments has a direct effect on the value of match, which feeds back into the bargaining game and lowers wages. What is perhaps less obvious is that an offsetting force to this direct channel exists. By increasing debt payments and reducing the surplus generated by a match, leverage also makes employment riskier and decreases the value of employment to the household, as the probability of reaching a separating threshold is now greater. Thus, through this channel, wages would actually increase.

### *Distribution of Wealth*

Figure 2 demonstrates, for the same calibrated parameters, how the wealth distribution is, splitting households by risk aversion coefficient (Panel A), and employer's leverage (Panel B). As expected, there are significant differences in Panel A, since more risk-averse individuals increase savings to insure themselves against income risk. However, the interplay between wages and income risk, both varying according to the use of leverage by the employer, makes differences in the wealth distribution by employer's leverage less striking, as seen in Panel B. As such, this motivates an empirical approach based not on levels but on propensities to consume and save.

*Simulated Panel*

In this section, I generate a panel of households in a stationary equilibrium. In particular, I simulate 250 thousand household paths, and by randomly keeping 50 thousand households, I create an artificial panel of consumption, saving, and employment decisions. To ensure stationarity, I simulate 5,000 periods, while keeping only the last 60 periods (thus comparable to my sample period). I then conduct a series of empirical tests that are comparable in design to tests performed on the empirical data.

Table 5 shows that in the simulated panel households working for levered employers negotiate lower wages, consistent with the wage schedule and the channels discussed above. However, even if they receive lower wages on average, the need for insurance dominates and households working for levered employers significantly decrease their propensities to consume, as shown in columns (1)-(2) of Table 6. Consistently, this consumption response is accompanied by an increase in households' propensity to save earned wages, as reported in columns (3)-(4).

# 4 Empirical Methodology

The first test conducted in this paper addresses whether households working for relatively more levered firms receive higher wages. To do so, I start by identifying the primary employer for each household for each year. I then compute the annual wage paid by this primary employer and use this measure as the outcome variable in the following baseline specification:

$$Log(AnnualEarnings)_{h,e,y} = \lambda Leverage_{e,y-1} + Z_{e,y-1} + \nu_y + \varepsilon_{i,y}, \tag{11}$$

where the observation level is at the household $h$, working for employer $e$ at year $y$. The main explanatory variable is the lagged leverage ratio, computed as total financing, net of cash, to book assets, which measures the sensitivity of employee's wages to the employer's financial leverage. In some tests, I alternatively consider as the main explanatory variable a dummy variable taking the value of one for above-median leverage firms. $Z_{e,y-1}$ is a set of employer-level controls which includes other lagged explanatory variables used in previous empirical studies (Akyol and Verwijmeren, 2013), namely, the natural logarithm of the employer's book assets, to account for a potential large firm wage premium; the employer's profitability, which should capture surplus to be shared with employees, and tangibility, which by working as a proxy for capital-intensity, may be correlated with the probability of bankruptcy (Berk, Stanton, and Zechner, 2010); the average employees' productivity, to account for the possibility that more productive workers are paid more; and the industry's volatility measured in the three previous years, which by being correlated to the worker's willingness to bear risk may determine wages.

While I do not observe education levels in the data, in some specifications I include household fixed effects, to absorb time-invariant characteristics of the household. I also account for year ($\nu_y$) fixed effects, to control for common shocks affecting all households. Finally, in more stringent specifications, I also include industry-year and employer fixed effects, to further mitigate concerns about omitted industry or employer-level variables.

The paper then proceeds by testing whether households working for more levered firms adjust their consumption and saving decisions. I consider the monthly panel and define the primary employer by considering the main source of income over the previous quarter. I then focus on two outcome variables, the household consumption expenditure, measured as the sum between purchases and payments from either a debit or a credit card at this bank; and the change in net liquid assets, which considers changes in checking account balances, net of credit card and overdraft payments made. In particular, to describe household behavior, I estimate marginal propensities to consume and save, using the following baseline specification:

$$\begin{aligned} Outcome_{h,e,t} &= \beta_0 Income_{h,t} + \beta_1 Income_{h,t} \times Z_{e,t-12} \\ &+ \lambda Income_{h,t} \times Leverage_{e,t-12} + \mu_h + \nu_t + \varepsilon_{i,t}, \end{aligned} \tag{12}$$

where *Outcome* is consumption or change in net liquid assets for household $h$, working for employer $e$, at date $t$. To estimate their marginal propensities, I am primarily interested in how coefficient $\beta_0$ changes while working for a relatively more levered firm, an effect measured by coefficient $\lambda$. I also include in this specification the set of additional controls for the employer described above, denoted by $Z_{e,t}$: size, profitability, tangibility, average employees' productivity, and industry's volatility.

To establish causality, I also employ a difference-in-differences regression to compare consumption, net liquid savings, and wages, following an industry-wide shock. In particular, I consider the following baseline specification:

$$\begin{aligned} Log(Outcome_{h,e,t}) &= \lambda High\ Leverage_{e,t-12} \times Industry\ Shock_{h,t} + \beta_0 High\ Leverage_{e,t-12} \\ &+ \beta_1 Industry\ Shock_{h,t} + Z_{e,t-12} + \mu_h + \nu_{i,t} + \varepsilon_{i,t}. \end{aligned} \tag{13}$$

I classify an industry as being treated if the year-on-year change in industry sales (at the 2-digit code) is in the bottom 5% in a given year. The key assumption here is that while firms operating in such industries are facing economic distress, those firms with above-median leverage face greater costs of financial distress. Given the design, I consider, in all specifications, household and industry-by-month-year fixed effects.

# 5 Effects of Capital Structure on Employees

## 5.1 Effect on Wages

Before presenting the results for the effect of leverage on wages, it is perhaps worthwhile to consider first if there is any evidence that households *should* receive any compensating differential, i.e., whether they face higher unemployment risk by working for levered employers. Table 7 shows the estimates for a linear probability model, where the outcome variable is a dummy variable taking the value of one if the firm goes bankrupt.

First, I consider the probability of a sample firm going bankrupt, during the whole sample period, i.e., from 2018 to 2022, as a function of the explanatory variables described above (values at the end of the 2017 fiscal year). In this case, I use a dummy variable, *High Leverage*, which takes the value of one for firms with above-median leverage ratio, as my main explanatory variable.[14] Estimates for this model are presented in columns (1)-(3). Column (1) shows that firms with above-median leverage ratios are much more likely to go bankrupt during the sample period (an increase of 1.2% points, *vis-à-vis* an unconditional mean of 1.7%). Column (2) adds industry fixed effects at the 2-digit level, and column (3) adds all the additional firm-level controls. Across all columns the leverage ratio is statistically and economically significant, suggesting that employees working for above-median firms are exposed to higher unemployment risk.

In columns (4)-(6) I consider a panel counterpart, where the outcome variable is a dummy variable taking the value of one if the firm goes bankrupt in the following year. Once again, leverage is statistically and economically significant across all specifications.[15]

Table 10 suggests that more levered firms are not more likely to be reducing the number of employees, as leverage does not predict changes in the latter in the short-run (after one year), nor in the longer-run (after three years). This result holds across all specifications for

[14] Results are robust for the same specification using the original continuous variable

[15] Table IA.1 shows comparable results even if using the overall universe of Portuguese firms, and Table IA.2 shows consistent results by running a logistic regression model.

in-sample firms in the short-run, as shown in columns (1)-(3), and in the long-run, in columns (4)-(5). However, this null result is likely driven by a small sample size. Table IA.4 in the Internet Appendix reports estimates, following the same model, for the complete universe of Portuguese firms. While the magnitude in columns (1)-(3) is significantly higher, columns (4) and (5) show comparable magnitudes to Table 10 (and even lower point estimates in column (6)). However, across all specifications, results are statistically significant, suggesting that highly leveraged firms are more likely to shed employees, in the immediate and in the long-run periods.

With these results in mind, I then run the regression in equation (11). Table 8 shows the estimates for the effect of the firm-level variables on wage determination. In column (1) I show that households whose main employer operates in the public sector earn, on average, a 24% premium.[16] More importantly, columns (2) to (5), suggest there is no leverage wage premium. When adding industry-by-year and household fixed effects, the effect of leverage on household earnings is negative (a 4.1% wage *discount*) and statistically significant.

In Table 9 I support these findings by running a firm-year level regression in which the outcome variable is the natural logarithm of the average employee expenses, computed as the total wage bill of a firm in a given year divided by its number of employees. Overall results are consistent with the previous findings, with more levered employers paying lower wages on average. Columns (1) and (2) include only year fixed effects, and show that the average wage discount is about 7% and is invariant to other firm-level controls. In column (3) I include industry-by-year and show that this result is still economically and statistically significant. However, I fail to find evidence that leverage exerts a negative pressure on wages *within* the firm, as the coefficient of interest in column (4) is statistically insignificant. Table IA.3 in the Internet Appendix shows that estimates of this effect are generally smaller when considering the whole universe of Portuguese firms, but still negative and statistically significant.

Unfortunately, this data used only allows weak evidence on whether job terminations are

[16] While being a secondary finding not related to the study in hand, households working for the public sector then exhibit a *higher* marginal propensity to consume (and lower marginal propensity to save), providing further evidence on how households see income and unemployment risk when making consumption and saving decisions.

more likely to be employee or employer-driven. In contrast to most US states, where firms are not obliged to provide a reason for dismissal, unilateral termination of regular employees in Portugal implies stricter procedural requirements, as well as severance pay costs to the firm (OECD, 2020). Moreover, Portuguese employment protection requires such dismissal to be grounded on "fair" reasons, such as collective dismissal, redundancy of tasks, employee ineptitude or breach. And though structural reforms were made within the scope of the international bailout in 2011, Portuguese employment protection is still very high. For example, in 2019 the OECD still ranked Portugal as having the third-strictest employment regulation for regular workers (and in the top 10 countries in relation to temporary workers). Columns (1)-(3) of Table 11 show that households working primarily for highly leveraged firms (above-median firms in leverage ratio) are more likely to switch to a new employer in the following year. Compared to the unconditional mean of around 4.3%, households whose main employer has an above-median leverage ratio are more likely to switch jobs, at about 1.8 percentage points in the most stringent specification. I also examine the income behavior of movers and the differential effect for those previously working in a highly leveraged firm, in columns (4)-(6).[17] In fact, I fail to find evidence that households switching employers suffer a negative impact on their annual total income, which might suggest those departures are either anticipated or voluntary. Moreover, I find no differential effect for those previously working for highly leveraged firms.

Finally, Table 12 provides additional evidence on whether leveraging the firm is associated with lower firm growth, in the short run (the following year) and the long run (after three years). While leverage does not seem to matter for turnover growth in the short and in the long run in columns (1) and (4), respectively, a negative and statistically significant effect is found after adding industry-by-year fixed effects (columns (2) and (5), for the short- and long-run effect, respectively). Finally, adding employer fixed effect flips the direction of the effect in the short-run, and turns the magnitude over the long run statistically insignificant.

[17] To rule out alternative explanations, such as members of the household switching jobs following a positive shock to other household members, I only consider those households with a single employer. However, in unreported results, adding this restriction does not change the conclusions.

However, by considering all Portuguese firms, Table IA.5 suggests that indeed more levered firms have worse turnover growth prospects, both in the short and the long run, with this effect being either positive in the short run or insignificant in the long run for *within-firm* increases in leverage.

## 5.2 Effect on the Marginal Propensities to Consume and Save

I now estimate the effect of leverage on household consumption and saving by looking at marginal propensities to consume and save liquid assets, as per equation (12).

Table 13 reports the estimate for the marginal propensity to consume and overall shows that income risk is an important driver of this sensibility. Column (1) first shows that households primarily working for firms or institutions belonging to the public sector have a higher marginal propensity to consume, roughly an increase of 10% relative to private sector households. Notice, however, how this is true even if they earn *higher* wages on average.[18] While being only tangentially connected to the theoretical framework present before, this result is consistent with the main hypothesis developed in this paper: households recognize income and employment risk and act on these through the consumption decision (and consequently, through precautionary saving). Starting in column (2) I then report the marginal propensity to consume only for households whose main employer is a private sector firm, thus focusing on the effect of leverage. Column (2) shows a marginally significant and negative effect of leverage, which becomes larger in absolute value and highly significant by including industry-by-year fixed effects, as shown in column (3). Finally, I show that the results are robust to the inclusion of employer and employment-spell fixed effects, and imply that a household working for an employer in the top 10% of the leverage ratio distribution reduces their marginal propensity to consume by about 7% when compared to a household working for a bottom 10% firm. Interestingly, I also find a negative and statistically significant effect from increased industry volatility. Additionally, households working for

[18] To the best of my knowledge, I am the first to provide transaction-level evidence about the heterogeneity in consumption and saving response to income changes between public and private sector employees.

more labor-intensive companies, measured by their tangibility ratio and employee productivity, exhibit lower marginal propensities to consume.

A caveat is however in order regarding the potential causal effect of leverage. So far, we cannot attribute these results solely to the use of leverage, as firms endogenously issue and retire debt, and as such capital structure may be capturing time-varying, firm-specific omitted variables. However, the main contribution of the paper is *not* about capital structure determinants,[19] but whether capital structure is perceived as a potential source for income and unemployment risk, and whether these risks induce a response from households. Nonetheless, in section 5.4 I try to ameliorate these concerns by exploring an arguably exogenous shock.

Table 14 decomposes the overall result on consumption according to different spending categories. Due to data limitations, this panel runs only from January 2020 to June 2022. Moreover, I consider a specification with month-by-year, household, and industry-by-year fixed effects, while controlling for the same set of firm-level variables presented before. As we observe in columns (1), (3), and (6), households working for more levered employers do not appear to decrease their propensity to consume necessary goods and services, such as groceries, house maintenance and utilities, or health care, respectively. Instead, the negative effect described before appears to be driven by decreases in clothing, transportation, and restaurants, as seen in columns (2), (5), and (7), respectively.[20] These findings are then consistent with households cutting the consumption of expenditure categories categorized in the literature as “luxury” goods and services, i.e., those with an income elasticity greater than one.[21]

[19]Though of course in equilibrium firms respond to the imperfect insurance provided to workers and adjust their leverage ratio accordingly.

[20]And in goods and services, which considers undefined spending (for example, cash withdrawals), but also large online retailers which do not fit or are difficult to fit in the remaining categories.

[21]Though the consumption categories change between studies, see for example Clements, Wu, and Zhang (2006), where clothing and transportation exhibit an income elasticity well above one.

### 5.3 Heterogeneous Effects

To further characterize how households perceive this source of risk, I re-estimate the model in equation (12) and interact the effect of leverage on the propensity to consume with various sample splits. Figure 4 plots the $\lambda$ coefficient of equation (12) for different groups of households, splitting the sample according to household characteristics.

Panel A shows that the effect of leverage over the marginal propensity to consume is statistically indistinguishable when comparing households in the bottom quartile of total income to the rest of the sample. However, resonating with the model's predictions, Panel B shows that the response is mainly driven by households in the bottom quartile of assets, with this difference in coefficients being statistically significant at the 5% level. Panels A and B are broadly consistent with Figure 3. Note that in the context of the model, when the possibility of unemployment is particularly painful, namely because assets are sufficiently low, households cut consumption the most.

Panel C then shows that there is no difference in behavior according to the household average age, while Panel D reports a considerable difference in the magnitude of the estimated coefficient, depending on the household debt payment-to-income (though the difference is statistically insignificant).

I then focus on the heterogeneity on the employer side, splitting the sample according to the employers' growth in the number of employees, book assets, return on assets, and industry volatility. Panel A shows that the consumption estimate is higher if working for an employer at the bottom 5% of the employee growth distribution, though the difference is statistically insignificant. The effect of leverage on consumption is also stronger for larger employers (Panel B), as well as for less profitable firms (Panel C). Finally, the effect is also larger for employers working in a more volatile industry, providing further evidence that the consumption response is motivated by separation and unemployment concerns.

## 5.4 Responses to Exogenous Shock

In this section, I provide further evidence that leverage and financial distress are an important concern of households, when making consumption and saving decisions, by looking at an arguable exogenous industry shock. In defining this event, I consider year-on-year monthly changes in turnover at the 2-digit industry level. This monthly panel is constructed by Eurostat and uses the complete universe of Portuguese firms. I proceed by ranking all the industry-by-month combinations and then selecting the worst performing 5%.[22] The rationale for selecting this shock is that while on average firms experience economic distress, the highly leveraged companies additionally experience financial distress.

Before characterizing the consumption response, in Table 16 I check whether there is any differential effect on wages. If these firms are experiencing economic distress, it might be the case that wage payments are delayed, and so the pass-through of the shock is felt by households at the extensive margin. Since this is the case, in the following tests I consider the inverse hyperbolic sine of wages and consumption as the explanatory variable.[23] However, columns (1) and (2) show that the wage drop following such shock is statistically insignificant. Moreover, all specifications show that there is no differential effect for households working in above-median leverage firms.

Interestingly, Table 17 then shows that while low-leverage employers do not induce any consumption response by their employees, households working for highly leveraged firms cut consumption when experiencing this industry-wide shock. This consumption drop is economically and statistically significant, at about 2% in the most stringent specification. To alleviate concerns that the COVID-19 pandemic response might be partially driving these results, in the Internet Appendix, I report identical wage and consumption responses even when considering just 2018-2019 (Tables IA.6 and IA.7, respectively). Finally, table 18 reports estimated coefficients for the effect of this industry shock on the probability of going

[22] Due to the concern that the COVID-19 pandemic would be driving this selection, I perform this exercise for each year in sample, i.e., I identify the worst performing industry-month pairs *by year*. Nonetheless, in a robustness check, I exclude all observations starting in March 2020 and find similar results.

[23] Alternative specifications, such as the natural logarithm of $y + 1$ yield similar results.

bankrupt within the sample period. In all specifications, high leverage firms are more likely to go bankrupt, but to so increasingly so if subject to this industry shock, increasing the probability of bankruptcy by about 1.5 percentage points.

# 6 Conclusion

Using a unique dataset I bring novel evidence on the spillover effects of capital structure on the firm's employees. In particular, these data allow us to study an unexplored connection between leverage and employees: how the latter, further exposed to income risk by the employer's use of leverage, readjust their consumption and saving decisions.

To explore the proposed channels through which leverage could affect household decisions, I proposed a Diamond-Mortensen-Pissarides model with a precautionary saving motive, which incorporates wage bargaining frictions. In the model, leverage has opposing effects on wage bargaining: on the one hand, risk-averse households demand compensation for the increased separation rate, but on the other hand, leverage depresses job-match surplus and reduces wages. By calibrating the model for the Portuguese economy leverage has a negative effect on wages, and by increasing unemployment risk, leads to households decreasing (increasing) their propensity to consume (save).

As in the model, while analyzing the matched employer-employee dataset I find that leverage is associated with lower pay; even so, households working for highly leveraged firms exhibit a lower marginal propensity to consume. The effect is particularly strong when unemployment is painful due to low wealth, or when working for employers in highly volatile industries. I complement these findings by showing that when facing a contemporaneous industry-wide shock, households working for highly leveraged employers immediately cut consumption, though facing no differential effect on wages. Taken together, these results are consistent with the proposed model, to the extent that leverage increases separation rates and imposes a cost on households, who are forced to cut back consumption and boost savings.

Moreover, empirically this response is also highly heterogeneous with respect to the consumption basket: while being statistically insignificant for goods and services traditionally identified as "necessities", the effect is mostly driven by reductions in the consumption of "luxury goods", i.e., those with an income elasticity greater than unity. As such, through changes in the consumption basket of employees, this paper further contributes to the literature on the spillover effects of capital structure by implying an indirect effect over other firms. Interestingly, these affected firms might not be competitors, nor belong to the same supply chain as the levered firm.

More generally, these results also imply broader questions. In recent times, concerns about the high levels of indebtedness in the private sector led to restrictions on the tax deductibility of interest, and additional efforts are being made to further limit the equity-debt tax treatment. By providing evidence that capital structure can shift costs of financial distress and distort employee behavior, while mostly imposing such costs on poorer households, these findings can raise additional questions on the optimality of the interest tax deductibility from a social perspective. Overall, I believe that the evidence presented here can lead to further questions on the important but understudied interaction between labor and finance.

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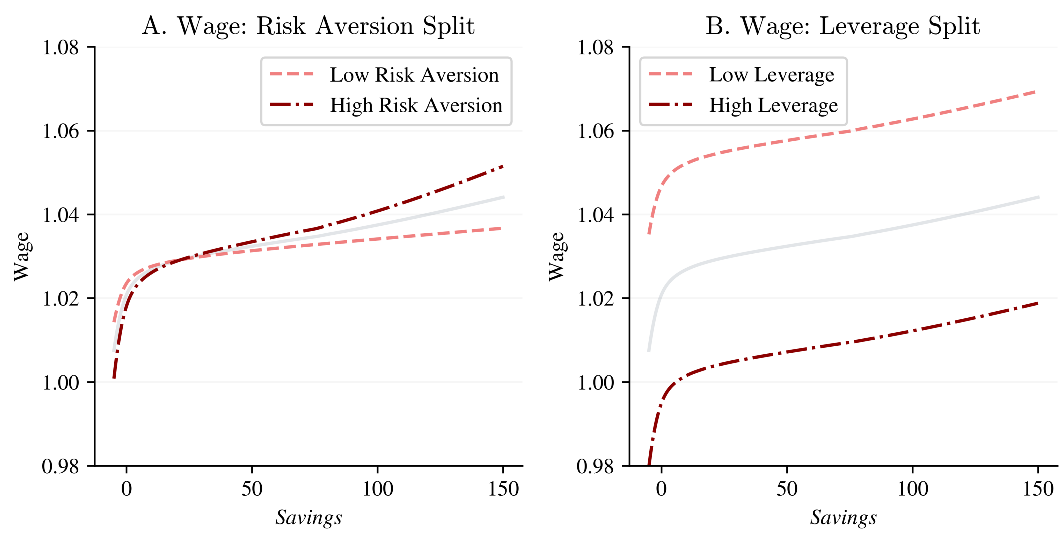
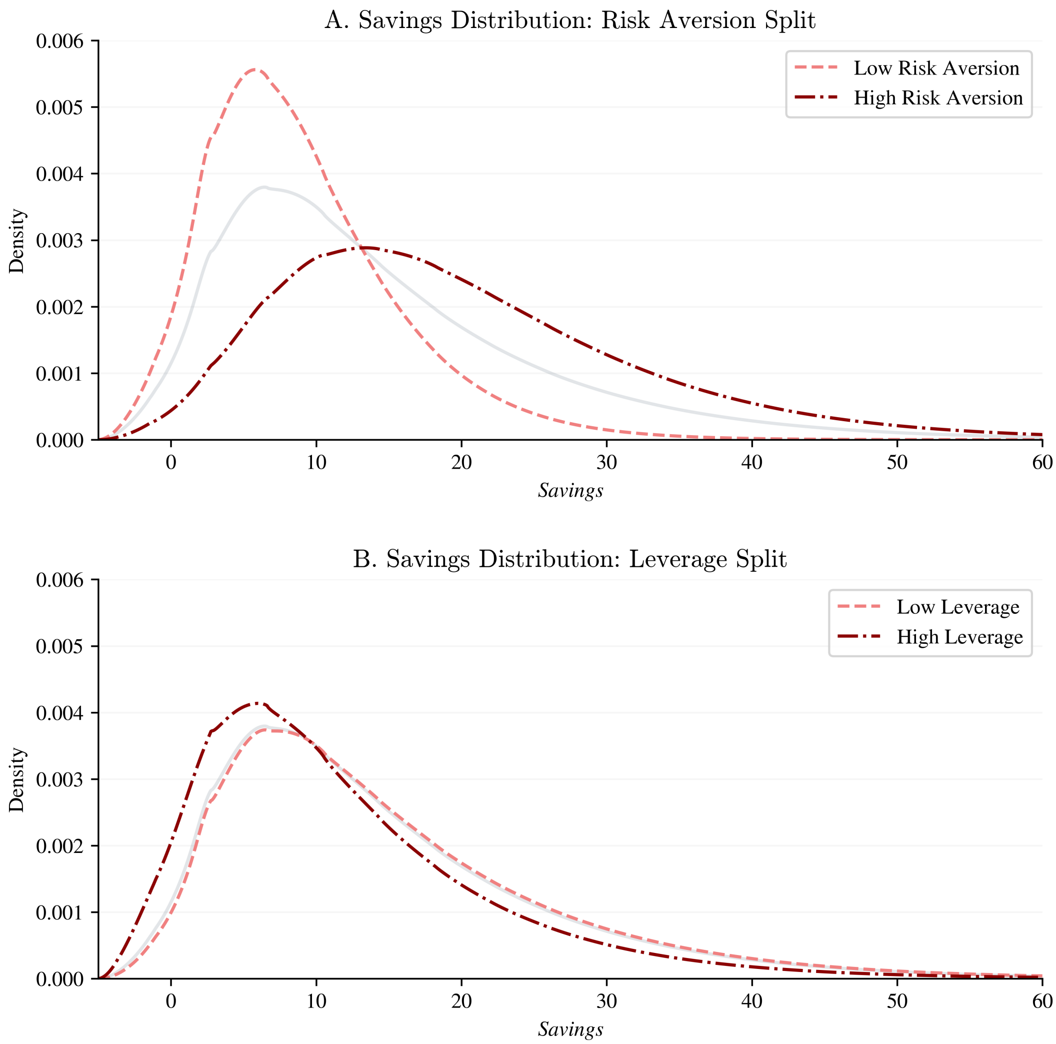
**Figure 1:** Wages as a Function of Savings: Risk Aversion and Employer's Leverage Splits



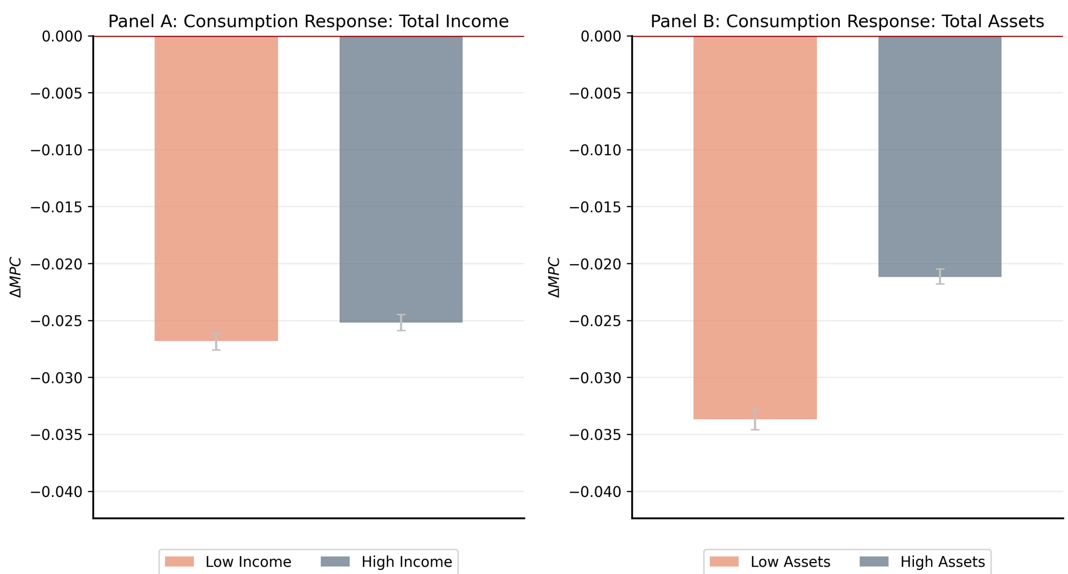

This figure plots the wage schedule as a function of household savings, based on the calibration reported in Table 4. In both panels the average wage for different types of households and firms, assuming a job-match quality equal to the unconditional mean of $x$, is represented in grey (solid line). Keeping the level of idiosyncratic productivity ($x$) constant, Panel A then shows in orange (dashed line) the wage function for a lower coefficient of risk aversion ($\gamma = 1$) and in red (dash-dotted line) for a higher coefficient of risk aversion ($\gamma = 2$). Panel B also keeps the level of idiosyncratic productivity ($x$) constant, but plots in orange (dashed line) the wage function for an unlevered firm ($b = 0$), and in red (dash-dotted line) the same function for a levered firm ($b = 0.1$).

**Figure 2:** Wealth Distribution: Risk Aversion and Employer's Leverage Splits



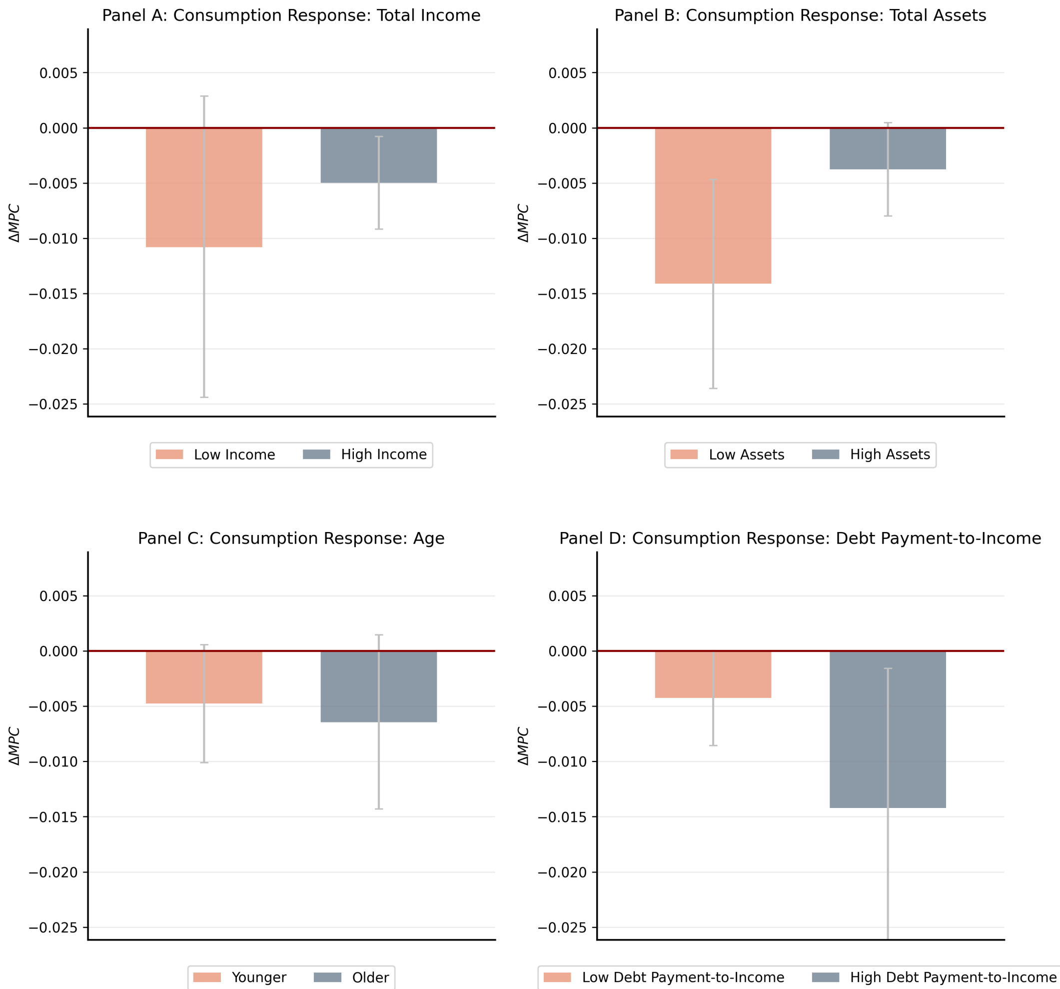

This figure plots the wealth distribution, based on the calibration reported in Table 4. In both panels, the density for each wealth level, across all levels of productivity, risk aversion, and leverage, is represented in grey (solid line). Panel A then shows in orange (dashed line) the wealth distribution for a lower coefficient of risk aversion ($\gamma = 1$) and in red (dash-dotted line) for a higher coefficient of risk aversion ($\gamma = 2$). Panel B plots in orange (dashed line) the wealth distribution for an unlevered firm ($b = 0$), and in red (dash-dotted line) for a levered firm ($b = 0.1$).

**Figure 3:** Heterogeneity in the Consumption Response: Simulated Data



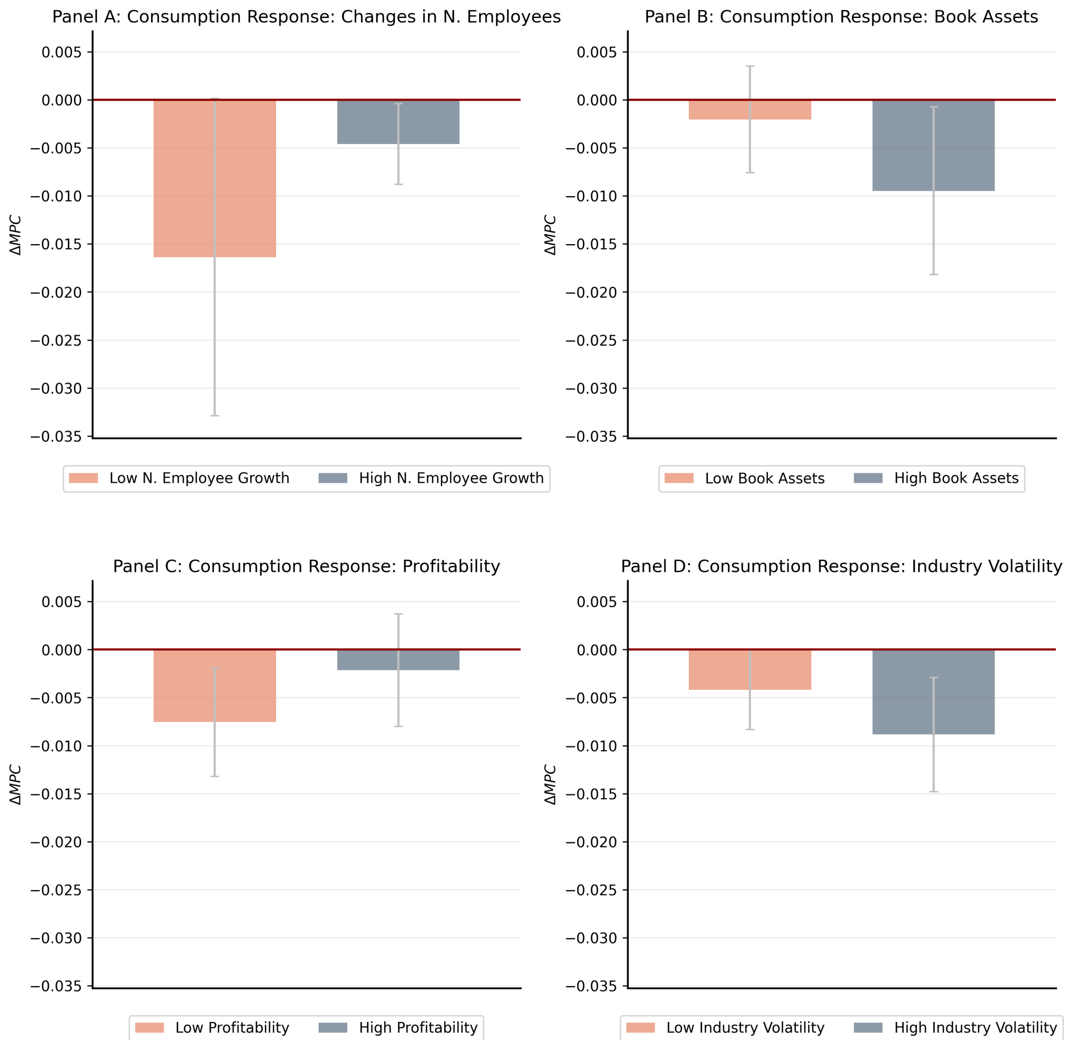

This figure plots the regression coefficients and 95% confidence intervals for consumption, by employer's leverage and different splits by household characteristics, based on a simulated panel as described in Section 3.2. The empirical methodology is comparable to the real data analysis and is based on the model defined in equation (12). The explanatory variable, *Levered* is a dummy variable which takes the value of one for levered employers and zero otherwise. This variable is then interacted with a dummy variable which takes the value of one for households in the bottom quartile of income, and zero otherwise (Panel A); and a dummy which takes the value of one for households in the bottom quartile of savings, and zero otherwise (Panel B). Standard errors are clustered at the household level.

**Figure 4:** Heterogeneity in the Consumption Response: Household Characteristics Split




This figure plots the regression coefficients and 95% confidence intervals for consumption, by employer's leverage and according to different splits by household characteristics. The regression is based on equation (12), where the *Leverage* variable is interacted with dummy variables, indicating the group a household belongs to. The dependent variable on all panels, consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. Panel A shows the estimated coefficient for leverage, interacted with a dummy variable which takes the value of one if the household belongs to the bottom quartile in the income distribution and zero other. For Panel B, the interacted dummy variable takes the value of one for households belonging to the bottom quartile in the asset distribution, and zero otherwise. Panel C uses a dummy variable that takes the value of one for households above the median age, and zero otherwise. Finally, Panel D uses a dummy variable taking the value of one for households in the top quartile in the debt payment-to-income distribution, and zero otherwise. This specification includes household, month-year, and industry-year fixed effects. Firm-level characteristics, the natural logarithm of the household's contemporaneous income, and the remaining interaction terms are added as controls. Standard errors are computed using two-way clustering (household and employer level).

**Figure 5:** Heterogeneity in the Consumption Response: Employer's Characteristics Split




This figure plots the regression coefficients and 95% confidence intervals for consumption, by employer's leverage and according to different splits by the employer's characteristics. The regression is based on equation (12), where the *Leverage* variable is interacted with dummy variables, indicating the group the household's employer belongs to. The dependent variable on all panels, consumption, is measured as the sum between purchases and payments from either a debit or credit card at this bank. Panel A shows the estimated coefficient for leverage, interacted with a dummy variable which takes the value of one if the household's employer is in the bottom 5% for the employee growth distribution, and zero otherwise. Panel B splits employers by book assets, with the interacted dummy variable taking the value of one for the top quartile, and zero otherwise. Panel C uses a dummy variable taking the value of one for firms in the bottom quartile in the ROA distribution, and zero otherwise. Finally, Panel D splits the sample by considering households whose employer operates in a highly volatile industry (defined as being in the top quartile, and according to the industry volatility measure described in Table 3). This specification includes household, month-year, and industry-year fixed effects. Firm-level characteristics, the natural logarithm of the household's contemporaneous income, and the remaining interaction terms are added as controls. Standard errors are computed using two-way clustering (household and employer level).

**Table 1:** Household Summary Statistics

| Variable | N | Mean | SD | p10 | p25 | p50 | p75 | p90 |
|---|---|---|---|---|---|---|---|---|
| HH Average Age | 87,258 | 46.8 | 8.0 | 37.0 | 41.0 | 46.0 | 52.5 | 58.0 |
| N. of Mortgagors | 87,258 | 1.7 | 0.5 | 1.0 | 1.0 | 2.0 | 2.0 | 2.0 |
| Married | 87,258 | 0.6 | 0.5 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 |
| Consumption | 87,258 | 1,617.0 | 946.4 | 647.0 | 956.3 | 1,406.5 | 2,045.4 | 2,834.4 |
| Wages | 87,258 | 1,855.9 | 1,110.8 | 727.2 | 1,115.2 | 1,613.7 | 2,328.8 | 3,301.1 |
| Retirement Benefits | 20,126 | 1,079.4 | 728.8 | 327.8 | 530.6 | 862.1 | 1,497.0 | 2,246.6 |
| Social Security Benefits | 26,070 | 171.4 | 219.5 | 10.2 | 28.7 | 76.8 | 214.3 | 501.3 |
| Total Income | 87,258 | 2,171.1 | 1,278.8 | 873.1 | 1,322.8 | 1,833.8 | 2,741.4 | 3,852.9 |
| Net Liquid Assets | 87,258 | 6,686.7 | 12,987.6 | -344.4 | 527.9 | 1,927.6 | 6,689.7 | 18,566.1 |
| Saving Accounts | 58,733 | 17,878.9 | 29,210.8 | 0.0 | 518.7 | 6,133.5 | 21,443.3 | 50,679.6 |
| Vehicle, Student and Educ. Loans | 1,275 | 6,999.0 | 5,353.2 | 1,056.1 | 2,792.9 | 5,853.9 | 9,941.1 | 14,901.1 |
| Home Mortgage Loans | 87,258 | 73,582.9 | 52,453.2 | 17,679.1 | 34,581.3 | 62,434.6 | 100,135.7 | 141,768.2 |
| Other Loans | 5,767 | 6,356.3 | 6,426.5 | 525.6 | 1,919.4 | 4,334.1 | 8,794.8 | 14,898.1 |
| Other Banks' Loans | 61,613 | 10,853.1 | 20,495.7 | 42.5 | 344.0 | 3,321.7 | 12,420.5 | 25,857.4 |
| Debt Service-to-Income | 87,257 | 0.14 | 0.09 | 0.05 | 0.08 | 0.13 | 0.18 | 0.26 |
| Civil Servant | 87,258 | 0.45 | 0.50 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |

This table lists for each variable its mean, standard deviation, the 10%, 25%, 50%, 75%, and 90% percentiles, and the number of households for which non-missing records exist. Statistics are computed on household averages over 2019 and firms' statistics correspond to 2018 values. Income, assets, liabilities, and consumption measures are winsorized at the top and bottom 1% by date. The indicator variable "civil servant" assumes a value of 1 if most of the annual joint salary of the household is paid by a state-owned company or institution. In Panel B, all variables correspond to book values and are winsorized at the top and bottom 1%. Industry volatility is defined as the standard deviation of sales at the 3-digit industry level, normalized by the average industry's total assets. Leverage is defined as total debt financing, net of cash, normalized by total assets; profitability is defined as net income divided by total assets; and tangibility corresponds to the ratio of fixed assets to total assets. Finally, employee productivity is defined as total sales divided by the firm's number of employees.

**Table 2:** Household Summary Statistics by Subsample

| Variable | Public Sector | Private Sector | | |
|---|---|---|---|---|
| | | Low Leverage | Intermediate Leverage | Very High Leverage |
| HH Average Age | 49.2 | 44.9 | 44.7 | 45.3 |
| N. of Mortgagors | 1.6 | 1.7 | 1.7 | 1.7 |
| Married | 0.6 | 0.6 | 0.6 | 0.7 |
| Consumption | 1,699.6 | 1,605.1 | 1,548.4 | 1,512.4 |
| Wages | 2,007.9 | 1,781.2 | 1,736.2 | 1,679.5 |
| Retirement Benefits | 303.7 | 215.7 | 199.8 | 208.9 |
| Social Security Benefits | 33.8 | 64.7 | 65.8 | 65.5 |
| Total Income | 2,359.6 | 2,077.5 | 2,018.3 | 1,966.7 |
| Net Liquid Assets | 7,275.4 | 6,628.0 | 6,182.8 | 5,971.7 |
| Saving Accounts | 13,450.0 | 12,029.7 | 10,810.2 | 10,258.1 |
| Vehicle, Student and Educ. Loans | 114.2 | 78.7 | 93.0 | 100.2 |
| Home Mortgage Loans | 72,543.6 | 76,759.5 | 74,791.8 | 71,714.3 |
| Other Loans | 448.1 | 416.6 | 407.9 | 349.4 |
| Other Banks' Loans | 7,667.1 | 7,543.6 | 7,755.4 | 7,439.6 |
| Debt Service-to-Income | 0.14 | 0.15 | 0.15 | 0.15 |
| Observations | 39,379 | 6,800 | 31,223 | 9,856 |

This table lists for each variable its mean within subgroups of households, defined by their employer. Households are identified as working for the public sector if this is the primary source of income during that particular year. Households whose primary source of income comes from the private sector are further divided depending on their primary employer's leverage. *Low Leverage* corresponds to the bottom quintile of employers' leverage; *High Leverage* corresponds to those in the top quintile of leverage; while the remaining households earn their primary wage from an employer in the second, third or fourth quintile of leverage. The remaining employer statistics are computed on household averages over 2019. Income, assets, liabilities, and consumption measures are winsorized at the top and bottom 1% by date.

**Table 3:** Firm Summary Statistics

| Variable | N | Mean | SD | p10 | p25 | p50 | p75 | p90 |
|---|---|---|---|---|---|---|---|---|
| Total Assets | 14,128 | 11,330.5 | 32,352.4 | 140.4 | 471.7 | 1,837.8 | 7,044.3 | 23,912.3 |
| Cash | 14,128 | 706.2 | 2,004.7 | 5.1 | 22.9 | 100.0 | 416.0 | 1,511.9 |
| Fixed Assets | 14,128 | 2,524.8 | 7,570.2 | 3.8 | 39.0 | 258.6 | 1,376.2 | 5,472.8 |
| Total Liabilities | 14,128 | 6,710.6 | 20,041.6 | 83.9 | 260.5 | 1,017.8 | 3,935.9 | 13,447.6 |
| Total Debt | 14,128 | 2,444.5 | 8,147.7 | 0.0 | 2.9 | 154.0 | 1,096.6 | 4,758.4 |
| Turnover | 14,128 | 9,789.8 | 24,725.8 | 162.5 | 534.9 | 1,888.4 | 6,925.1 | 22,493.4 |
| Interest Paid | 14,128 | 76.6 | 291.7 | 0.0 | 0.1 | 3.9 | 27.0 | 129.3 |
| Net Income | 14,128 | 384.8 | 1,574.6 | -73.2 | 2.4 | 36.4 | 231.6 | 1,012.5 |
| Industry Volatility | 14,128 | 0.04 | 0.12 | 0.01 | 0.01 | 0.02 | 0.04 | 0.08 |
| Number of Employees | 14,128 | 75.3 | 168.8 | 4.0 | 9.0 | 24.0 | 65.0 | 164.0 |
| Leverage | 14,126 | 0.08 | 0.34 | -0.34 | -0.11 | 0.05 | 0.29 | 0.48 |
| Profitability | 14,126 | 0.03 | 0.16 | -0.07 | 0.00 | 0.03 | 0.08 | 0.16 |
| Tangibility | 14,126 | 0.26 | 0.24 | 0.01 | 0.05 | 0.19 | 0.40 | 0.63 |
| Employee Productivity | 13,852 | 144.9 | 223.2 | 20.5 | 39.4 | 73.6 | 149.0 | 319.7 |
| Average Employee Expenses | 13,852 | 21.8 | 13.2 | 10.8 | 13.7 | 18.4 | 25.5 | 35.9 |

This table lists for each variable its mean, standard deviation, the 10%, 25%, 50%, 75%, and 90% percentiles, and the number of firms for which non-missing records exist. The statistics presented here correspond to 2018 values. All variables correspond to book values and are winsorized at the top and bottom 1%. Book assets, cash holdings, fixed assets, total liabilities, turnover, interest paid, and net income are shown in thousand euros. Industry volatility is defined as the standard deviation of sales at the 3-digit industry level, normalized by the average industry's total assets. Leverage is defined as total debt financing, net of cash, normalized by total assets; profitability is defined as net income divided by total assets; and tangibility corresponds to the ratio of fixed assets to total assets. Finally, employee productivity is defined as total sales divided by the firm's number of employees.

**Table 4:** Parameter Values for the Endogenous Search and Match Model

| Parameter | Symbol | Low | High |
|---|---|---|---|
| Relative Risk Aversion | $\gamma$ | 1 | 2 |
| Debt Payment | $b$ | 0.0 | 0.1 |
| Annual Risk-free rate | $r$ | 0.04 | |
| Household's Discount Factor | $\beta_h$ | 1.0 | |
| Worker's Bargaining Power | $\delta$ | 0.5 | |
| Elasticity of Matching Technology | $\eta$ | 0.5 | |
| Scaling Factor of Matching Technology | $m_0$ | 0.11 | |
| Labor Market Tightness | $\theta$ | 1.0 | |
| Unemployment Insurance Benefit | $uib$ | 0.62 | |
| Utility from Leisure | $l$ | 0.15 | |
| Persistence of Idiosyncratic Productivity | $\rho_x$ | 0.98 | |
| Standard Deviation of Idiosyncratic Productivity | $\sigma_x$ | 0.04 | |

This table reports the household-specific and aggregate parameter values used in the quantitative exercises and simulations. Unless otherwise stated, values are reported for a monthly time interval.

**Table 5:** Wages and Employer's Leverage: Simulated Data

| | Log(Annual Earnings) | |
|---|---|---|
| | (1) | (2) |
| Levered | -0.020*** | -0.009*** |
| | (0.001) | (0.001) |
| Household FE | No | Yes |
| $R^2$ | 0.009 | 0.630 |
| Observations | 2,780,800 | 2,780,798 |

This table presents estimates of regressions of the natural logarithm of annual wages, using simulated data. The model is calibrated according to Table 4, and to ensure a stationary equilibrium, 5,000 periods were simulated but only the last 60 (5 years) are considered. Observations are at the household-month level. *Levered* is a dummy variable that takes the value of one for households working for levered employers. Standard errors in parentheses are clustered at the household level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 6:** Consumption, Saving, and Employer's Leverage: Simulated Data

| | Consumption | | Saving | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Wage | 0.462*** | 0.259*** | 0.648*** | 0.741*** |
| | (0.002) | (0.001) | (0.001) | (0.001) |
| × Levered | -0.037*** | -0.026*** | 0.030*** | 0.025*** |
| | (0.001) | (0.000) | (0.000) | (0.000) |
| Household FE | No | Yes | No | Yes |
| $R^2$ | 0.323 | 0.983 | 0.778 | 0.988 |
| Observations | 2,780,800 | 2,780,798 | 2,733,691 | 2,733,689 |

This table presents the effect of leverage on consumption and saving, using simulated data. The model is calibrated according to Table 4, and to ensure a stationary equilibrium, 5,000 periods were simulated but only the last 60 (5 years) are considered. Observations are at the household-month level. *Levered* is a dummy variable that takes the value of one for households working for levered employers. Standard errors in parentheses are clustered at the household level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 7:** Probability of Bankruptcy

| | Bankrupted | | | Bankrupted at t+1 | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| High Leverage | 1.274*** | 1.254*** | 1.319*** | 0.017** | 0.016** | 0.018** |
| | (0.281) | (0.275) | (0.274) | (0.007) | (0.007) | (0.009) |
| Log(Firm's Total Assets) | | | -0.036 | | | 0.005** |
| | | | (0.062) | | | (0.002) |
| Profitability | | | -0.700 | | | -0.053 |
| | | | (0.437) | | | (0.042) |
| Tangibility | | | -0.823 | | | -0.005 |
| | | | (0.524) | | | (0.023) |
| Log(Employees' Productivity) | | | -0.205 | | | -0.008 |
| | | | (0.159) | | | (0.006) |
| Industry's Volatility | | | -1.715 | | | 0.000 |
| | | | (1.678) | | | (0.015) |
| Industry FE | No | Yes | Yes | No | No | No |
| Year FE | No | No | No | Yes | No | No |
| Industry × Year FE | No | No | No | No | Yes | Yes |
| $R^2$ | 0.002 | 0.018 | 0.018 | 0.000 | 0.009 | 0.009 |
| Observations | 13,536 | 13,535 | 13,114 | 93,142 | 93,132 | 65,578 |

This table presents estimates for the probability of going bankrupt as a function of the firm's leverage, according to a linear probability model and considering in-sample firms. The outcome variable in columns (1)-(3) is a dummy variable that takes the value of one if the firm goes bankrupt during the whole sample period (from 2018 to 2022). In these columns, the explanatory variables are measured at the end of the 2017 fiscal year. In columns (4)-(6) the outcome variable is a dummy variable that takes the value of one if the firm goes bankrupt during the following year, and the regression runs at the firm-year level, from 2017 to 2021. Financial firms (CAE codes 64-66) are excluded from the sample. *High Leverage* is a dummy variable that takes the value of one for firms with an above-median leverage ratio, defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 8:** Wages and Employer's Leverage

| | Log(Annual Earnings) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Public Sector | 0.244*** | | | | |
| | (0.075) | | | | |
| Leverage | | -0.148 | -0.104* | -0.041** | -0.023 |
| | | (0.092) | (0.060) | (0.016) | (0.018) |
| Log(Firm's Total Assets) | | 0.054*** | 0.055*** | 0.026*** | 0.048*** |
| | | (0.017) | (0.011) | (0.004) | (0.013) |
| Profitability | | -0.637*** | -0.107 | 0.007 | 0.026 |
| | | (0.127) | (0.069) | (0.029) | (0.032) |
| Tangibility | | 0.052 | -0.068 | 0.038 | 0.024 |
| | | (0.075) | (0.069) | (0.027) | (0.035) |
| Log(Employees' Productivity) | | 0.127*** | 0.083*** | 0.029*** | 0.025*** |
| | | (0.027) | (0.020) | (0.007) | (0.009) |
| Industry's Volatility | | -0.970** | 1.090*** | 0.131 | 0.125 |
| | | (0.467) | (0.418) | (0.098) | (0.098) |
| Year FE | Yes | Yes | No | No | No |
| Industry × Year FE | No | No | Yes | Yes | Yes |
| Household FE | No | No | No | Yes | Yes |
| Employer FE | No | No | No | No | Yes |
| $R^2$ | 0.025 | 0.102 | 0.231 | 0.813 | 0.843 |
| Observations | 344,488 | 184,693 | 184,692 | 178,398 | 176,711 |

This table presents estimates of regressions of the natural logarithm of wages, defined as the mean monthly wage paid by the household's primary employer. Observations are at the household-year level and the panel runs from January 2018 to December 2021. Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and employer level). *p$<$ 0.1;**$p<0.05$;***p$<$ 0.01.

**Table 9:** Wages and Employer's Leverage - Accounting Data

| | Log(Average Employee Expenses) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Leverage | -0.071*** | -0.073*** | -0.061*** | -0.001 |
| | (0.009) | (0.009) | (0.008) | (0.007) |
| Log(Firm's Total Assets) | | 0.083*** | 0.081*** | 0.049*** |
| | | (0.002) | (0.002) | (0.005) |
| Profitability | | -0.101*** | -0.100*** | -0.011 |
| | | (0.011) | (0.011) | (0.008) |
| Tangibility | | -0.294*** | -0.172*** | 0.003 |
| | | (0.013) | (0.013) | (0.015) |
| Log(Employees' Productivity) | | 0.123*** | 0.123*** | 0.007 |
| | | (0.004) | (0.005) | (0.005) |
| Industry's Volatility | | -0.063* | -0.132*** | 0.013 |
| | | (0.036) | (0.044) | (0.024) |
| Year FE | Yes | Yes | No | No |
| Industry × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.021 | 0.284 | 0.419 | 0.871 |
| Observations | 91,619 | 65,260 | 65,252 | 64,668 |

This table presents estimates of regressions of the natural logarithm of wages, defined as the mean monthly wage paid by the household's primary employer. Observations are at the household-year level and the panel runs from January 2018 to December 2021. Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and employer level). *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 10:** Number of Employed Workers

| | $\text{Log(Employees)}_{t+1}$-$\text{Log(Employees)}_t$ | | | $\text{Log(Employees)}_{t+3}$-$\text{Log(Employees)}_t$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Leverage | -0.003 | -0.001 | -0.006 | -0.009 | -0.008 | -0.025 |
| | (0.003) | (0.003) | (0.009) | (0.009) | (0.009) | (0.016) |
| Log(Firm's Total Assets) | -0.017*** | -0.020*** | -0.156*** | -0.046*** | -0.051*** | -0.310*** |
| | (0.001) | (0.001) | (0.006) | (0.002) | (0.003) | (0.014) |
| Profitability | 0.035*** | 0.030*** | 0.045*** | 0.043** | 0.036** | 0.048** |
| | (0.007) | (0.007) | (0.010) | (0.018) | (0.018) | (0.020) |
| Tangibility | 0.024*** | 0.042*** | 0.073*** | 0.030* | 0.078*** | 0.139*** |
| | (0.005) | (0.006) | (0.018) | (0.015) | (0.016) | (0.038) |
| Log(Employees' Productivity) | 0.022*** | 0.035*** | 0.145*** | 0.059*** | 0.082*** | 0.194*** |
| | (0.001) | (0.002) | (0.008) | (0.004) | (0.005) | (0.017) |
| Industry's Volatility | -0.011 | -0.018* | 0.009 | -0.031 | -0.030 | 0.020 |
| | (0.008) | (0.010) | (0.025) | (0.024) | (0.029) | (0.030) |
| Year FE | Yes | No | No | Yes | No | No |
| Industry × Year FE | No | Yes | Yes | No | Yes | Yes |
| Employer FE | No | No | Yes | No | No | Yes |
| $R^2$ | 0.025 | 0.053 | 0.368 | 0.034 | 0.070 | 0.769 |
| Observations | 65,330 | 65,322 | 64,741 | 36,679 | 36,675 | 35,609 |

This table presents estimates for the change in number of employees as a function of the firm's leverage, considering in-sample firms. The outcome variable in columns (1)-(3) is the first difference in the number of employees, while columns (4)-(6) consider the same difference over a 3-year period ($t = t$ to $t = t + 3$). Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 11:** Job Transition

| | $\text{Mover}_{y+1}$ | | | $\text{Log(Annual Income}_{y+1})$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| High Leverage | 1.006*** | 1.116*** | 1.786*** | -0.049*** | -0.004 | 0.002 |
| | (0.356) | (0.358) | (0.681) | (0.012) | (0.004) | (0.006) |
| Mover | | | | -0.076*** | 0.008 | -0.009 |
| | | | | (0.023) | (0.015) | (0.023) |
| High Leverage × Mover | | | | -0.012 | -0.006 | -0.018 |
| | | | | (0.030) | (0.021) | (0.027) |
| Age | -0.103*** | -0.105*** | | 0.009*** | 0.001*** | |
| | (0.012) | (0.012) | | (0.001) | (0.000) | |
| Log(Annual Income) | -0.750*** | -0.544*** | 0.692 | | 0.802*** | 0.030*** |
| | (0.216) | (0.199) | (0.845) | | (0.007) | (0.010) |
| Additional Controls | No | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Household FE | No | No | Yes | No | No | Yes |
| $R^2$ | 0.044 | 0.046 | 0.487 | 0.193 | 0.791 | 0.955 |
| Observations | 95,307 | 95,264 | 84,144 | 75,957 | 75,957 | 65,486 |

This table presents estimates of regressions of the probability of switching employers and changes in annual income in the year a transition occurs, as a function of the previous employer's leverage. Observations are at the household-year level, measured at the end of each year, and the panel runs from January 2018 to December 2021. All firm-level variables correspond to the primary employer over the previous 12 months. For the outcome variable in columns (1)-(3) and as a control variable in columns (4)-(6), a household is classified as a *Mover* if no longer working for the main employer in the last quarter of the following year. The outcome variable in columns (4)-(6) corresponds to the natural logarithm of annual income, which considers all wage payments but also social security and retirement benefits. *High Leverage* is a dummy variable that takes the value of one for above-median firms in the leverage ratio, defined as the ratio of total debt financing, net of cash, to total assets, measured in book values; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and employer). *p< 0.1;**$p$ < 0.05;***p< 0.01.

**Table 12:** Turnover

| | $Log(Turnover_{t+1})$-$Log(Turnover_t)$ | | | $Log(Turnover_{t+3})$-$Log(Turnover_t)$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Leverage | -0.002 | -0.013* | 0.034* | -0.014 | -0.036** | -0.006 |
| | (0.007) | (0.007) | (0.018) | (0.017) | (0.017) | (0.025) |
| Log(Firm's Total Assets) | -0.006*** | -0.006*** | -0.194*** | -0.037*** | -0.038*** | -0.403*** |
| | (0.002) | (0.002) | (0.011) | (0.004) | (0.008) | (0.020) |
| Profitability | -0.079*** | -0.074*** | 0.081*** | -0.177*** | -0.175*** | 0.062** |
| | (0.016) | (0.015) | (0.016) | (0.034) | (0.038) | (0.027) |
| Tangibility | -0.027*** | 0.020* | 0.028 | -0.086*** | 0.075** | 0.118** |
| | (0.010) | (0.010) | (0.031) | (0.025) | (0.037) | (0.053) |
| Log(Employees' Productivity) | -0.061*** | -0.083*** | -0.515*** | -0.061*** | -0.096*** | -0.611*** |
| | (0.004) | (0.004) | (0.012) | (0.008) | (0.025) | (0.019) |
| Industry's Volatility | 0.132*** | 0.083** | 0.020 | 0.025 | 0.079 | 0.032 |
| | (0.028) | (0.034) | (0.035) | (0.064) | (0.092) | (0.050) |
| Year FE | Yes | No | No | Yes | No | No |
| Industry × Year FE | No | Yes | Yes | No | Yes | Yes |
| Employer FE | No | No | Yes | No | No | Yes |
| $R^2$ | 0.075 | 0.151 | 0.533 | 0.041 | 0.123 | 0.819 |
| Observations | 65,346 | 65,338 | 64,761 | 36,722 | 36,718 | 35,652 |

This table presents estimates for the change in turnover as a function of the firm's leverage, considering in-sample firms. The outcome variable in columns (1)-(3) is the first difference in the number of employees, while columns (4)-(6) consider the same difference over a 3-year period ($t = t$ to $t = t + 3$). Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p< 0.1;**$p <$ 0.05;***p< 0.01.

**Table 13:** Marginal Propensity to Consume

| | Consumption | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Total Income | 0.071*** | 0.073*** | 0.115*** | 0.112*** | 0.108*** |
| | (0.002) | (0.002) | (0.013) | (0.014) | (0.014) |
| × Public Sector | 0.007** | | | | |
| | (0.003) | | | | |
| × Leverage | | -0.006* | -0.006*** | -0.008*** | -0.009*** |
| | | (0.003) | (0.002) | (0.002) | (0.003) |
| × Log(Firm's Total Assets) | | | 0.001 | 0.001 | 0.002 |
| | | | (0.001) | (0.001) | (0.001) |
| × Profitability | | | 0.006 | 0.006 | 0.004 |
| | | | (0.009) | (0.010) | (0.010) |
| × Tangibility | | | 0.009* | 0.011** | 0.013** |
| | | | (0.005) | (0.006) | (0.006) |
| × Log(Employees' Productivity) | | | -0.005*** | -0.006*** | -0.006*** |
| | | | (0.001) | (0.001) | (0.001) |
| × Industry's Volatility | | | -0.057** | -0.059** | -0.059** |
| | | | (0.024) | (0.024) | (0.025) |
| Month × Year FE | Yes | Yes | Yes | Yes | Yes |
| Household FE | Yes | Yes | Yes | Yes | No |
| Industry × Year FE | No | No | Yes | Yes | Yes |
| Employer FE | No | No | No | Yes | No |
| Household × Employer FE | No | No | No | No | Yes |
| $R^2$ | 0.538 | 0.550 | 0.551 | 0.556 | 0.560 |
| Observations | 4,428,016 | 2,356,500 | 2,336,140 | 2,335,933 | 2,334,414 |

This table presents estimates of the effect of leverage on consumption expenditure. Observations are at the household-month-year level and the panel runs from January 2018 to June 2022. All firm-level variables correspond to the primary employer over the past quarter. The dependent variable in columns (1) to (3) is measured as the sum between purchases and payments from either a debit or credit card at this bank; while from columns (4) to (6), the dependent variable is measured as the sum between end-of-the-month checking and saving accounts' balances, net of debt payments made by the household. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book values; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and employer). *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 14:** Marginal Propensity to Consume by Category

| | (1) Groc. | (2) Cloth. | (3) House Maint. | (4) Furnit. | (5) Transp. | (6) Health Care | (7) Restau. | (8) Entert. & Educ. | (9) Misc. |
|---|---|---|---|---|---|---|---|---|---|
| Total Income | 0.017*** | 0.009*** | 0.001 | 0.007*** | 0.011*** | 0.006*** | 0.012** | 0.005** | 0.043*** |
| | (0.003) | (0.002) | (0.001) | (0.002) | (0.003) | (0.002) | (0.005) | (0.002) | (0.007) |
| × Leverage | -0.001 | -0.002*** | -0.000 | -0.000 | -0.002*** | -0.000 | -0.001** | -0.000 | -0.006*** |
| | (0.001) | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) | (0.001) | (0.002) |
| Additional Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Month × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Household FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.609 | 0.404 | 0.250 | 0.201 | 0.384 | 0.327 | 0.437 | 0.339 | 0.425 |
| Observations | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 | 1,330,940 |

This table presents estimates of the effect of leverage on consumption expenditure. Observations are at the household-month-year level and the panel runs from January 2020 to June 2022. All firm-level variables correspond to the primary employer over the past quarter. Each column shows a different consumption category as the dependent variable: (1) Groceries; (2) Clothing; (3) Housing Maintenance and Utilities; (4) Furniture; (5) Transport; (6) Health Care; (7) Restaurants; (8) Entertainment and Education; and (9) Miscellaneous Goods and Services. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book values; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. In all specifications, social security and retirement benefits are added as controls. Standard errors in parentheses are computed using two-way clustering (household and employer). *p$<$ 0.1;**$p < 0.05$;***p$<$ 0.01.

**Table 15:** Marginal Propensity to Save

| | Δ Net Liquid Assets | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Total Income | 0.616*** | 0.630*** | 0.435*** | 0.440*** | 0.454*** |
| | (0.005) | (0.005) | (0.026) | (0.030) | (0.031) |
| × Public Sector | -0.021*** | | | | |
| | (0.006) | | | | |
| × Leverage | | 0.014*** | 0.010* | 0.009 | 0.010 |
| | | (0.005) | (0.005) | (0.006) | (0.006) |
| × Log(Firm's Total Assets) | | | 0.003*** | 0.001 | 0.001 |
| | | | (0.001) | (0.002) | (0.002) |
| × Profitability | | | -0.010 | -0.013 | -0.013 |
| | | | (0.013) | (0.014) | (0.014) |
| × Tangibility | | | -0.009 | -0.005 | -0.007 |
| | | | (0.012) | (0.014) | (0.014) |
| × Log(Employees' Productivity) | | | 0.013*** | 0.016*** | 0.015*** |
| | | | (0.002) | (0.002) | (0.003) |
| × Industry's Volatility | | | 0.068 | 0.080 | 0.093* |
| | | | (0.051) | (0.053) | (0.053) |
| Month × Year FE | Yes | Yes | Yes | Yes | Yes |
| Household FE | Yes | Yes | Yes | Yes | No |
| Industry × Year FE | No | No | Yes | Yes | Yes |
| Employer FE | No | No | No | Yes | No |
| Household × Employer FE | No | No | No | No | Yes |
| $R^2$ | 0.094 | 0.098 | 0.098 | 0.102 | 0.104 |
| Observations | 4,353,865 | 2,319,660 | 2,299,554 | 2,299,353 | 2,297,950 |

This table presents estimates of the effect of leverage on saving. Observations are at the household-month-year level and the panel runs from January 2018 to June 2022. All firm-level variables correspond to the primary employer over the past quarter. The dependent variable is measured as the sum between end-of-the-month checking and saving accounts' balances, net of debt payments made by the household. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book values; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and employer). *p$<$ 0.1;**$p < 0.05$;***p$<$ 0.01.

**Table 16:** Household's Reaction to Industry Shock - Wages

| | Asinh(Wages) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Industry Shock | -0.040 | -0.037 | | |
| | (0.025) | (0.025) | | |
| Industry Shock × High Leverage | -0.014 | -0.016 | -0.011 | -0.017 |
| | (0.032) | (0.032) | (0.032) | (0.033) |
| High Leverage | -0.043*** | -0.045*** | -0.038*** | -0.023 |
| | (0.012) | (0.013) | (0.012) | (0.015) |
| Additional Firm Controls | No | Yes | Yes | Yes |
| Month × Year FE | Yes | Yes | No | No |
| Household FE | Yes | Yes | Yes | Yes |
| Industry × Month × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.401 | 0.402 | 0.424 | 0.433 |
| Observations | 1,178,296 | 1,169,605 | 1,169,605 | 1,169,542 |

This table presents estimates of regressions of the natural logarithm of wages on industry-level shocks and the main employer's leverage. Observations are at the household-calendar date level and the panel runs from January 2018 to June 2022. Wages are defined as total wages received by the household, irrespective of the source and considering all employers in a given household. All firm-level variables correspond to the primary employer over the past quarter, lagged by one year. *Industry Shock* is a dummy that takes the value of 1 if the primary employer of the household operates in one of the most affected industry-month pairs in a given year (defined as the bottom 5% of year-on-year monthly change of sales at the 2-digit industry level), and 0 otherwise. *High Leverage* is a dummy that takes the value of 1 if the household main employer's leverage is above the sample's median, and 0 otherwise. *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; and *Tangibility* is given by fixed assets divided by total assets. Standard errors in parentheses are clustered at the industry-date level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table 17:** Household's Reaction to Industry Shock - Consumption

| | Asinh(Consumption) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Industry Shock | -0.006 | -0.006 | | |
| | (0.007) | (0.007) | | |
| Industry Shock × High Leverage | -0.032*** | -0.032*** | -0.020*** | -0.020*** |
| | (0.008) | (0.008) | (0.007) | (0.007) |
| High Leverage | -0.006** | 0.002 | -0.004 | -0.000 |
| | (0.003) | (0.003) | (0.003) | (0.003) |
| Additional Firm Controls | No | Yes | Yes | Yes |
| Additional Household Controls | Yes | Yes | Yes | Yes |
| Month × Year FE | Yes | Yes | No | No |
| Household FE | Yes | Yes | Yes | Yes |
| Industry × Month × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.515 | 0.515 | 0.520 | 0.533 |
| Observations | 1,178,296 | 1,169,605 | 1,169,605 | 1,169,542 |

This table presents estimates of regressions of the natural logarithm of monthly consumption expenditure on industry-level shocks and main employer's leverage. Observations are at the household-calendar date level and the panel runs from January 2018 to June 2022. The dependent variable, consumption, is defined as the sum between purchases and payments from either a debit or credit card at this bank. All firm-level variables correspond to the primary employer over the past quarter and are lagged by one year. *Industry Shock* is a dummy that takes the value of 1 if the primary employer of the household operates in one of the most affected industry-month pairs in a given year (defined as the bottom 5% of year-on-year monthly change of sales at the 2-digit industry level), and 0 otherwise. *High Leverage* is a dummy that takes the value of 1 if the household main employer's leverage is above the sample's median, and 0 otherwise. *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; and *Tangibility* is given by fixed assets divided by total assets. In all specifications, the natural logarithm of wages, social security, and retirement benefits are added as controls. Standard errors in parentheses are clustered at the industry-date level. *p< 0.1;**$p<0.05$;***p< 0.01.

**Table 18:** Firm's Probability of Default following Industry Shock

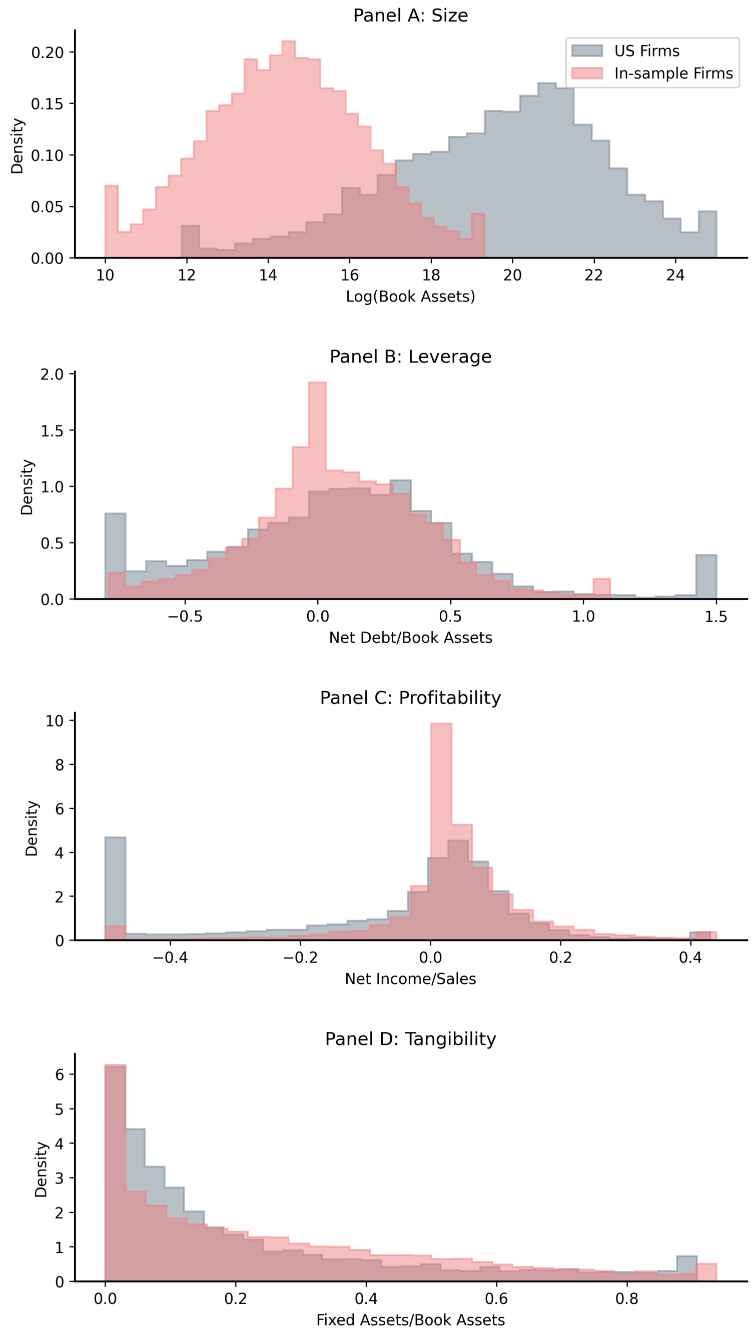
| | Bankrupted Dummy | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| High Leverage | 1.819*** | 0.760** | 1.587*** | 0.773** |
| | (0.321) | (0.307) | (0.317) | (0.300) |
| Industry Shock | 0.631 | 0.530 | | |
| | (0.387) | (0.328) | | |
| Industry Shock × High Leverage | 1.513** | 1.592** | 1.400** | 1.413** |
| | (0.695) | (0.729) | (0.671) | (0.679) |
| Additional Firm Controls | No | Yes | No | Yes |
| Industry FE | No | No | Yes | Yes |
| $R^2$ | 0.003 | 0.007 | 0.013 | 0.016 |
| Observations | 114,338 | 109,059 | 114,338 | 109,059 |

This table presents a cross-sectional analysis on the probability of going bankrupt as a function of the firm's leverage, according to a linear probability model and considering in-sample firms. The outcome variable in columns (1)-(4) is a dummy variable that takes the value of one if the firm goes bankrupt from 2019 to 2022). In all columns, the explanatory variables are measured at the end of the 2018 fiscal year. Financial firms (CAE codes 64-66) are excluded from the sample. *High Leverage* is a dummy variable that takes the value of one for firms with an above-median leverage ratio, defined as the ratio of total debt financing, net of cash, to total assets, measured in book value. Moreover, *Industry Shock* is a dummy variable that takes the value of one for firms working in one of the bottom 5% performing industries during 2018, measured in terms of year-on-year turnover change, and zero otherwise. Though unreported, additional firm controls are included in columns (2) and (4), namely, *Firm's Total Assets* corresponding to book assets; *Profitability*, defined as net income divided by total sales; *Tangibility*, given by fixed assets divided by total assets; *Employees' Productivity*, corresponding to total sales divided by the number of employees; and finally *Industry's Volatility*, computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Standard errors in parentheses are clustered at the industry-date level. *p< 0.1;**$p < 0.05$;***p< 0.01.

# Internet Appendix for

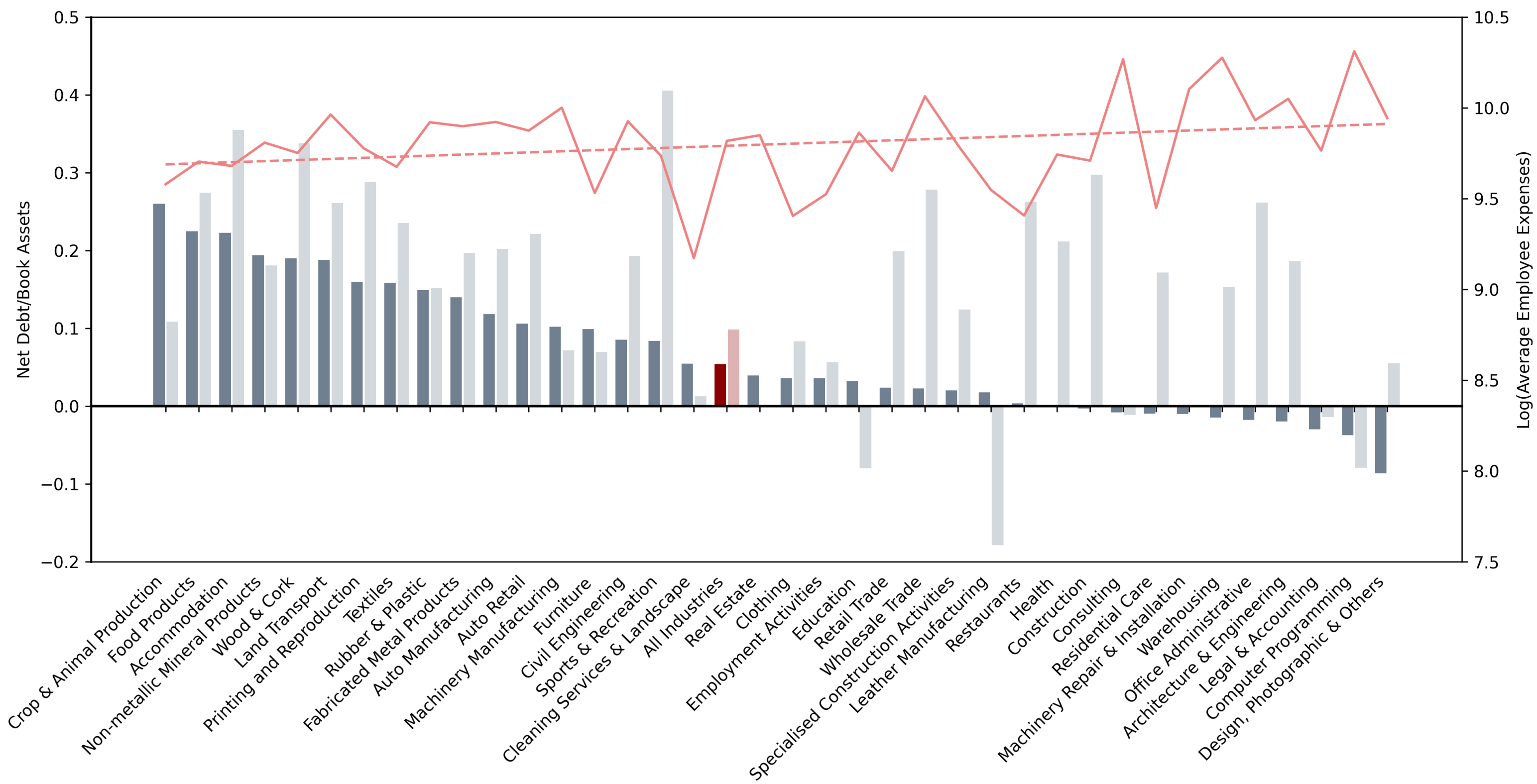
# “Homemade Unleverage
# Do Households Care About the Employer’s Capital Structure?”

**Figure IA.1:** Comparison between in-sample firms and US firms



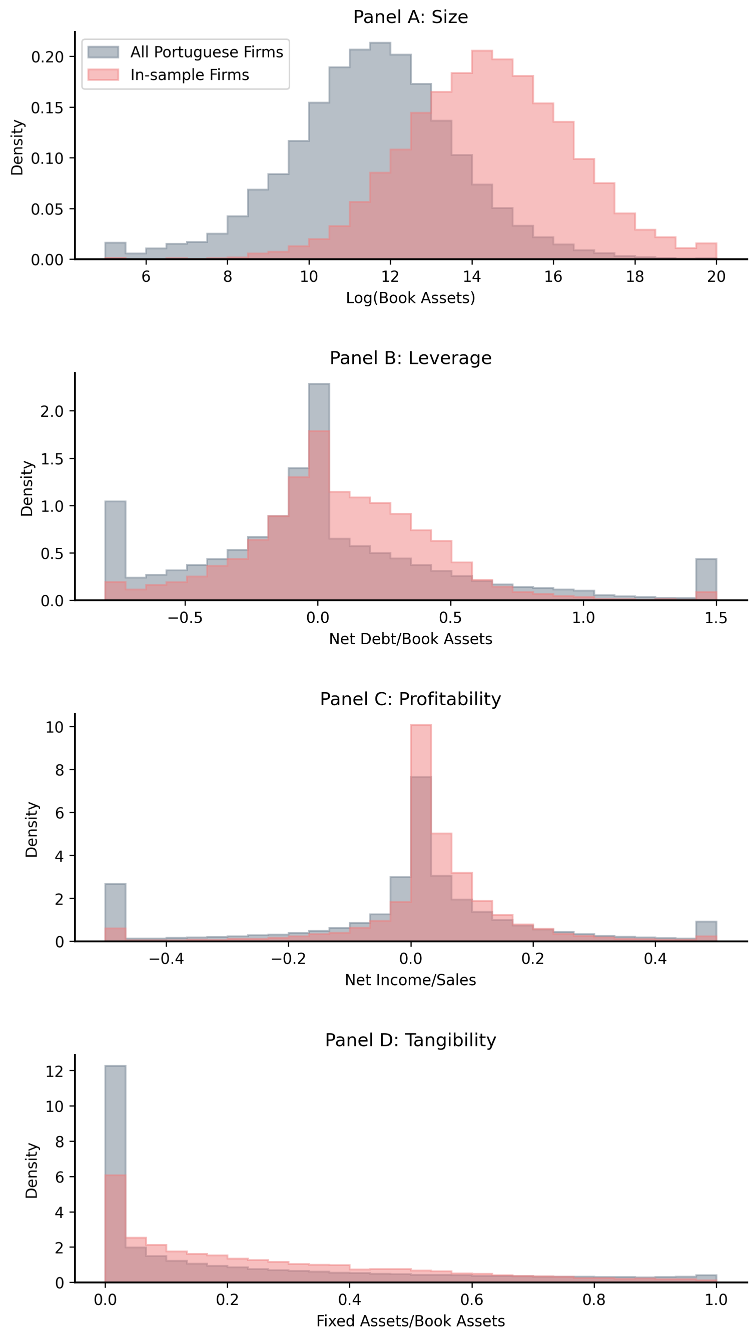

This figure plots the distribution of employers found in the sample of households (in red) and the distribution of US publicly-held firms from Compustat (in blue). Both financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the Compustat sample, as well as any firm observations with a negative book value of total assets or negative value of sales. In Panel A, size is defined as the natural logarithm of book assets, using an exchange rate USD-EUR of 0.87294 (as of December 31, 2018). Panel B, the leverage ratio is defined as total debt financing minus cash, normalized by book assets. Panel C shows the profitability measure as return-on-assets, computed as net income normalized by book assets. Finally, Panel D plots the tangibility measure, computed as fixed assets divided by book assets.

**Figure IA.2:** Leverage and Average Employee Expenses by Industry




This figure plots the median leverage ratio and median employee expenses per employee for selected industries. Only in-sample firms are considered and only industries for which more than 100 observations exist were considered. Bars represent the average leverage ratio within each industry, computed as total debt financing minus cash, normalized by book assets (left y-axis). The median leverage ratio for all in-sample firms is shown in red. The figure also plots the median employee expense, computed as the natural logarithm of total employee expenses divided by the number of employees (right y-axis). The dashed line represents a best-fit line through the right y-axis data points, illustrating the negative correlation (-0.17) between the average employee expenses and leverage ratio at the industry level.

**Figure IA.3:** Comparison between in-sample firms and the full universe of Portuguese firms




This figure plots the distribution of employers found in the sample of households (in red) and the distribution of all firms in Portugal for which non-missing accounting data exists (in blue). Financial firms (CAE codes 64-66) are excluded from the sample. In Panel A, size is defined as the natural logarithm of book assets. Panel B, the leverage ratio is defined as total debt financing minus cash, normalized by book assets. Panel C shows the profitability measure as return-on-assets, computed as net income normalized by book assets. Finally, Panel D plots the tangibility measure, computed as fixed assets divided by book assets.

**Table IA.1:** Probability of Bankruptcy (All Portuguese Firms)

| | Bankrupted | | | Bankrupted at t+1 | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| High Leverage | 0.502*** | 0.493*** | 0.498*** | 0.005*** | 0.005*** | 0.005*** |
| | (0.078) | (0.071) | (0.066) | (0.001) | (0.001) | (0.001) |
| Log(Firm's Total Assets) | | | 0.219*** | | | 0.004*** |
| | | | (0.030) | | | (0.001) |
| Profitability | | | -0.138*** | | | -0.006*** |
| | | | (0.028) | | | (0.002) |
| Tangibility | | | -0.380*** | | | -0.006** |
| | | | (0.075) | | | (0.003) |
| Log(Employees' Productivity) | | | -0.070** | | | -0.004*** |
| | | | (0.030) | | | (0.001) |
| Industry's Volatility | | | 0.899 | | | 0.000 |
| | | | (0.871) | | | (0.012) |
| Industry FE | No | Yes | Yes | No | No | No |
| Year FE | No | No | No | Yes | No | No |
| Industry × Year FE | No | No | No | No | Yes | Yes |
| $R^2$ | 0.001 | 0.008 | 0.010 | 0.000 | 0.001 | 0.001 |
| Observations | 345,492 | 345,491 | 264,252 | 2,459,595 | 2,459,587 | 1,374,002 |

This table presents estimates for the probability of going bankrupt as a function of the firm's leverage, according to a linear probability model and considering all Portuguese firms. The outcome variable in columns (1)-(3) is a dummy variable that takes the value of one if the firm goes bankrupt during the whole sample period (from 2018 to 2022). In these columns, the explanatory variables are measured at the end of the 2017 fiscal year. In columns (4)-(6) the outcome variable is a dummy variable that takes the value of one if the firm goes bankrupt during the following year, and the regression runs at the firm-year level, from 2017 to 2021. *High Leverage* is a dummy variable that takes the value of one for firms with an above-median leverage ratio, defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p$<$ 0.1;**$p < 0.05$;***p$<$ 0.01.

**Table IA.2:** Probability of Bankruptcy - Logistic Regression

| | In-sample Firms | | | All Firms | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| High Leverage | 0.822*** | 0.814*** | 0.864*** | 1.017*** | 0.996*** | 0.867*** |
| | (0.146) | (0.149) | (0.158) | (0.052) | (0.053) | (0.059) |
| Log(Firm's Total Assets) | | | -0.017 | | | 0.313*** |
| | | | (0.050) | | | (0.017) |
| Profitability | | | -0.268 | | | -0.217*** |
| | | | (0.192) | | | (0.045) |
| Tangibility | | | -0.541 | | | -0.517*** |
| | | | (0.363) | | | (0.111) |
| Log(Employees' Productivity) | | | -0.145* | | | -0.109*** |
| | | | (0.087) | | | (0.026) |
| Industry FE | No | Yes | Yes | No | Yes | Yes |
| Likelihood Ratio $\chi^2$ | 34 | 32 | 40 | 423 | 1,628 | 1,815 |
| Observations | 13,536 | 11,893 | 11,538 | 345,492 | 343,141 | 262,098 |

This table presents estimates for the probability of going bankrupt as a function of the firm's leverage, according to a logistic regression model and considering all Portuguese firms. The outcome variable in columns (1)-(3) is a dummy variable that takes the value of one if the firm goes bankrupt during the whole sample period (from 2018 to 2022). In these columns, the explanatory variables are measured at the end of the 2017 fiscal year. In columns (4)-(6) the outcome variable is a dummy variable that takes the value of one if the firm goes bankrupt during the following year, and the regression runs at the firm-year level, from 2017 to 2021. *High Leverage* is a dummy variable that takes the value of one for firms with an above-median leverage ratio, defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Standard errors are shown in parentheses. *p$<$ 0.1;**$p < 0.05$;***p$<$ 0.01.

**Table IA.3:** Wages and Employer's Leverage: Accounting Data (All Portuguese Firms)

| | Log(Average Employee Expenses) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Leverage | -0.060*** | -0.046*** | -0.030*** | -0.016*** |
| | (0.001) | (0.001) | (0.001) | (0.002) |
| Log(Firm's Total Assets) | | 0.100*** | 0.104*** | 0.071*** |
| | | (0.001) | (0.001) | (0.002) |
| Profitability | | -0.042*** | -0.053*** | -0.006*** |
| | | (0.001) | (0.001) | (0.001) |
| Tangibility | | -0.124*** | -0.080*** | -0.012** |
| | | (0.004) | (0.004) | (0.005) |
| Log(Employees' Productivity) | | 0.126*** | 0.135*** | 0.018*** |
| | | (0.001) | (0.001) | (0.001) |
| Industry's Volatility | | -0.416*** | -0.553*** | -0.141*** |
| | | (0.032) | (0.051) | (0.026) |
| Year FE | Yes | Yes | No | No |
| Industry × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.017 | 0.167 | 0.200 | 0.773 |
| Observations | 1,878,765 | 1,297,091 | 1,297,091 | 1,242,972 |

This table presents estimates of regressions of the natural logarithm of wages, defined as the mean monthly wage paid by the household's primary employer. Observations are at the household-year level and the panel runs from January 2018 to December 2021. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level, normalized by the industry's total assets. All variables at the firm level are lagged by one year. Standard errors in parentheses are computed using two-way clustering (household and year level). *p$<$ 0.1;**$p < 0.05$;***p$<$ 0.01.

**Table IA.4:** Number of Employed Workers (All Portuguese Firms)

| | $\text{Log(Employees)}_{t+1}$-$\text{Log(Employees)}_t$ | | | $\text{Log(Employees)}_{t+3}$-$\text{Log(Employees)}_t$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Leverage | -0.008*** | -0.007*** | -0.012*** | -0.013*** | -0.008*** | -0.008*** |
| | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.002) |
| Log(Firm's Total Assets) | -0.015*** | -0.017*** | -0.084*** | -0.032*** | -0.037*** | -0.170*** |
| | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) | (0.002) |
| Profitability | 0.009*** | 0.008*** | 0.016*** | 0.020*** | 0.015*** | 0.029*** |
| | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.002) |
| Tangibility | 0.037*** | 0.035*** | 0.017*** | 0.057*** | 0.070*** | 0.010 |
| | (0.001) | (0.001) | (0.003) | (0.003) | (0.003) | (0.006) |
| Log(Employees' Productivity) | 0.039*** | 0.045*** | 0.130*** | 0.080*** | 0.093*** | 0.185*** |
| | (0.000) | (0.000) | (0.001) | (0.001) | (0.001) | (0.002) |
| Industry's Volatility | -0.023*** | -0.013* | 0.107*** | -0.204*** | -0.010 | 0.025 |
| | (0.006) | (0.007) | (0.018) | (0.026) | (0.022) | (0.027) |
| Year FE | Yes | No | No | Yes | No | No |
| Industry × Year FE | No | Yes | Yes | No | Yes | Yes |
| Employer FE | No | No | Yes | No | No | Yes |
| $R^2$ | 0.022 | 0.030 | 0.283 | 0.030 | 0.044 | 0.706 |
| Observations | 1,337,627 | 1,337,627 | 1,281,041 | 681,878 | 681,878 | 625,788 |

This table presents estimates for the change in number of employees as a function of the firm's leverage, considering all Portuguese firms. The outcome variable in columns (1)-(3) is the first difference in the number of employees, while columns (4)-(6) consider the same difference over a 3-year period ($t = t$ to $t = t + 3$). Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table IA.5:** Turnover (All Portuguese Firms)

| | $\text{Log}(\text{Turnover}_{t+1})$-$\text{Log}(\text{Turnover}_t)$ | | | $\text{Log}(\text{Turnover}_{t+3})$-$\text{Log}(\text{Turnover}_t)$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Leverage | -0.028*** | -0.030*** | 0.006*** | -0.044*** | -0.041*** | -0.004 |
| | (0.001) | (0.001) | (0.002) | (0.002) | (0.002) | (0.003) |
| Log(Firm's Total Assets) | 0.031*** | 0.027*** | -0.059*** | 0.035*** | 0.022*** | -0.182*** |
| | (0.000) | (0.000) | (0.002) | (0.001) | (0.001) | (0.004) |
| Profitability | -0.024*** | -0.025*** | 0.015*** | -0.059*** | -0.064*** | 0.018*** |
| | (0.001) | (0.001) | (0.002) | (0.003) | (0.003) | (0.003) |
| Tangibility | -0.043*** | 0.008*** | -0.002 | -0.074*** | 0.057*** | 0.046*** |
| | (0.002) | (0.002) | (0.006) | (0.005) | (0.005) | (0.009) |
| Log(Employees' Productivity) | -0.170*** | -0.183*** | -0.655*** | -0.195*** | -0.215*** | -0.710*** |
| | (0.001) | (0.001) | (0.002) | (0.002) | (0.002) | (0.004) |
| Industry's Volatility | 0.614*** | 0.571*** | -0.126*** | 0.262*** | 0.937*** | 0.377*** |
| | (0.031) | (0.045) | (0.029) | (0.042) | (0.109) | (0.064) |
| Year FE | Yes | No | No | Yes | No | No |
| Industry × Year FE | No | Yes | Yes | No | Yes | Yes |
| Employer FE | No | No | Yes | No | No | Yes |
| $R^2$ | 0.109 | 0.144 | 0.555 | 0.065 | 0.108 | 0.790 |
| Observations | 1,343,712 | 1,343,712 | 1,287,163 | 690,628 | 690,628 | 633,621 |

This table presents estimates for the change in turnover as a function of the firm's leverage, considering all Portuguese firms. The outcome variable in columns (1)-(3) is the first difference in the number of employees, while columns (4)-(6) consider the same difference over a 3-year period ($t = t$ to $t = t + 3$). Financial firms (CAE codes 64-66) are excluded from the sample. *Leverage* is defined as the ratio of total debt financing, net of cash, to total assets, measured in book value; *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; *Tangibility* is given by fixed assets divided by total assets; *Employees' Productivity* corresponds to total sales divided by the number of employees; and finally *Industry's Volatility* is computed as the standard deviation of sales at the 3-digit industry level and for the previous 3 years, normalized by the industry's total assets. Robust standard errors are shown in parentheses for columns (1) to (3), while standard errors for the remaining columns are clustered at the firm level. *p$<$ 0.1;**$p <$ 0.05;***p$<$ 0.01.

**Table IA.6:** Household's Reaction to Industry Shock - Wages (Excluding Pandemic)

| | Normalized Net Liquid Assets | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Industry Shock | -0.026 | -0.022 | | |
| | (0.040) | (0.040) | | |
| Industry Shock × High Leverage | -0.095* | -0.088* | -0.032 | -0.039 |
| | (0.052) | (0.054) | (0.051) | (0.052) |
| High Leverage | -0.036 | -0.041* | -0.044* | -0.012 |
| | (0.022) | (0.024) | (0.024) | (0.030) |
| Additional Firm Controls | No | Yes | Yes | Yes |
| Month × Year FE | Yes | Yes | No | No |
| Household FE | Yes | Yes | Yes | Yes |
| Industry × Month × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.476 | 0.477 | 0.507 | 0.513 |
| Observations | 568,977 | 564,072 | 564,072 | 564,007 |

This table presents estimates of regressions of the natural logarithm of wages on industry-level shocks and the main employer's leverage. Observations are at the household-calendar date level and the panel runs from January 2018 to December 2019. Wages are defined as total wages received by the household, irrespective of the source and considering all employers in a given household. All firm-level variables correspond to the primary employer over the past quarter, lagged by one year. *Industry Shock* is a dummy that takes the value of 1 if the primary employer of the household operates in one of the most affected industry-month pairs in a given year (defined as the bottom 5% of year-on-year monthly change of sales at the 2-digit industry level), and 0 otherwise. *High Leverage* is a dummy that takes the value of 1 if the household main employer's leverage is above the sample's median, and 0 otherwise. *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; and *Tangibility* is given by fixed assets divided by total assets. Standard errors in parentheses are clustered at the industry-date level. *p< 0.1;**$p < 0.05$;***p< 0.01.

**Table IA.7:** Household's Reaction to Industry Shock - Consumption (Excluding Pandemic)

| | Asinh(Consumption) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Industry Shock | 0.006 | 0.005 | | |
| | (0.009) | (0.009) | | |
| Industry Shock × High Leverage | -0.027*** | -0.024*** | -0.018** | -0.018** |
| | (0.009) | (0.009) | (0.009) | (0.009) |
| High Leverage | -0.006 | -0.004 | -0.003 | -0.001 |
| | (0.006) | (0.006) | (0.006) | (0.007) |
| Additional Firm Controls | No | Yes | Yes | Yes |
| Additional Household Controls | Yes | Yes | Yes | Yes |
| Month × Year FE | Yes | Yes | No | No |
| Household FE | Yes | Yes | Yes | Yes |
| Industry × Month × Year FE | No | No | Yes | Yes |
| Employer FE | No | No | No | Yes |
| $R^2$ | 0.645 | 0.645 | 0.647 | 0.655 |
| Observations | 568,977 | 564,072 | 564,072 | 564,007 |

This table presents estimates of regressions of the natural logarithm of monthly consumption expenditure on industry-level shocks and main employer's leverage. Observations are at the household-calendar date level and the panel runs from January 2018 to December 2019. The dependent variable, consumption, is defined as the sum between purchases and payments from either a debit or credit card at this bank. All firm-level variables correspond to the primary employer over the past quarter and are lagged by one year. *Industry Shock* is a dummy that takes the value of 1 if the primary employer of the household operates in one of the most affected industry-month pairs in a given year (defined as the bottom 5% of year-on-year monthly change of sales at the 2-digit industry level), and 0 otherwise. *High Leverage* is a dummy that takes the value of 1 if the household main employer's leverage is above the sample's median, and 0 otherwise. *Firm's Total Assets* corresponds to book assets; *Profitability* is defined as net income divided by total sales; and *Tangibility* is given by fixed assets divided by total assets. In all specifications, the natural logarithm of wages, social security, and retirement benefits are added as controls. Standard errors in parentheses are clustered at the industry-date level. *p< 0.1;**$p < 0.05$;***p< 0.01.