DISCUSSION PAPER SERIES

DP14383

TALENT IN DISTRESSED FIRMS: INVESTIGATING THE LABOR COSTS OF FINANCIAL DISTRESS

Ramin Baghai, Rui Silva, Vikrant Vig and Viktor Thell

FINANCIAL ECONOMICS

ISSN 0265-8003

TALENT IN DISTRESSED FIRMS: INVESTIGATING THE LABOR COSTS OF FINANCIAL DISTRESS

Ramin Baghai, Rui Silva, Vikrant Vig and Viktor Thell

Discussion Paper DP14383
Published 05 February 2020
Submitted 03 February 2020

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

TALENT IN DISTRESSED FIRMS: INVESTIGATING THE LABOR COSTS OF FINANCIAL DISTRESS

Abstract

The importance of skilled labor and the inalienability of human capital expose firms to the risk of losing talent in critical times. Using Swedish micro-data, we document that firms lose workers with the highest cognitive and noncognitive skills as they approach bankruptcy. In a quasi-experiment, we confirm that financial distress is driving these results: following a negative export shock caused by exogenous currency movements, talent abandons the firm, but only if the exporter is highly leveraged. Consistent with talent dependence being associated with higher labor costs of financial distress, firms that rely more on talent have more conservative capital structures.

JEL Classification: N/A

Keywords: bankruptcy, financial distress, Employees, Talent, Capital Structure

Ramin Baghai - ramin.baghai@hhs.se
Stockholm School of Economics and CEPR

Rui Silva - rsilva@london.edu
London Business School and CEPR

Vikrant Vig - vvig@london.edu
London Business School and CEPR

Viktor Thell - viktor.thell@gmail.com
Finansinspektionen

Acknowledgements
We thank Ashwini Agrawal, Xavier Giroud, David Matsa, Gordon Philips, Fabiano Schivardi, Amit Seru, Henri Servaes, Elena Simintzi, Martin Strieborny, Geoffrey Tate, Luigi Zingales, and seminar and conference participants at the CSEF-EIEF-SITE conference on Labor and Finance (2015); Finance, Organizations and Markets Conference (2015); Spanish Economic Association meetings (2015); SHOF PhD conference (2015); SFS Finance Cavalcade (2016); 13th Annual Conference in Financial Economics Research, IDC, Israel (2016); EFA (2016); Adam Smith Workshops (2017); UNC/Duke Corporate Finance Conference (2017); NBER Corporate Finance Summer Institute (2017); Banco de Mexico; Bocconi University; Faculdade de Economia do Porto; London Business School; Lund University School of Economics and Management; Southampton Business School, Stockholm School of Economics (Swedish House of Finance), and University of Texas at Dallas. We thank Johan Wall at Statistics Sweden for his help with the administrative data. We are grateful for financial support from the Deloitte Institute for Innovation and Entrepreneurship, the Research and Materials Development Fund at the London Business School, and the Hans Dalborg foundation. Thell also gratefully acknowledges financial support from the Swedish Bank Research Foundation, as well as the Jan Wallander and Tom Hedelius Foundation.

Talent in Distressed Firms: Investigating the Labor Costs of Financial Distress

Ramin P. Baghai, Rui C. Silva, Viktor Thell, and Vikrant Vig*

January 2020

* First version: April 2015. Baghai is at the Stockholm School of Economics. Silva and Vig are at the London Business School. Thell is at Finansinspektionen. E-mail: ramin.baghai@hhs.se; viktor.thell@gmail.com; rsilva@london.edu; vvig@london.edu. We thank the Editor (Stefan Nagel), two anonymous referees, Ashwini Agrawal, Xavier Giroud, David Matsa, Gordon Philips, Fabiano Schivardi, Amit Seru, Henri Servaes, Elena Simintzi, Martin Strieborny, Geoffrey Tate, Luigi Zingales, and seminar and conference participants at the CSEF-EIEF-SITE conference on Labor and Finance (2015); Finance, Organizations and Markets Conference (2015); Spanish Economic Association meetings (2015); SHOF PhD conference (2015); SFS Finance Cavalcade (2016); 13th Annual Conference in Financial Economics Research, IDC, Israel (2016); EFA (2016); Adam Smith Workshops (2017); UNC/Duke Corporate Finance Conference (2017); NBER Corporate Finance Summer Institute (2017); Banco de Mexico; Bocconi University; Faculdade de Economia do Porto; London Business School; Lund University School of Economics and Management; Southampton Business School, Stockholm School of Economics (Swedish House of Finance), and University of Texas at Dallas. We thank Johan Wall at Statistics Sweden for his help with the administrative data. We are grateful for financial support from the Deloitte Institute for Innovation and Entrepreneurship, the Research and Materials Development Fund at the London Business School, and the Hans Dalborg foundation. Thell also gratefully acknowledges financial support from the Swedish Bank Research Foundation, as well as the Jan Wallander and Tom Hedelius Foundation.

Talent in Distressed Firms: Investigating the Labor Costs of Financial Distress

ABSTRACT

The importance of skilled labor and the inalienability of human capital expose firms to the risk of losing talent in critical times. Using Swedish micro-data, we document that firms lose workers with the highest cognitive and noncognitive skills as they approach bankruptcy. In a quasi-experiment, we confirm that financial distress is driving these results: following a negative export shock caused by exogenous currency movements, talent abandons the firm, but only if the exporter is highly leveraged. Consistent with talent dependence being associated with higher labor costs of financial distress, firms that rely more on talent have more conservative capital structures.

I. Introduction

> *"For embattled employees of RadioShack, Wet Seal and other companies facing bankruptcy, the time to find a new job is long before the company goes under. […] 'The best time to find a job, is when you have a job,' says Tim Sackett, president of HRU Technical Resources, an information technology and engineering staffing firm in Lansing, Mich. 'If you aren't going to wait around, it's best to leave early. Outside companies know the best talent leaves, or gets recruited the quickest, so if you're the last one to jump ship, most people will believe you're mediocre talent.'"*
> ("When should workers at troubled companies jump ship?" by Quentin Fottrell, MarketWatch, February 5, 2015.)

Ever since Modigliani and Miller's famous irrelevance theorem, financial economists have devoted considerable effort towards understanding the nature of the frictions that affect firms' financial choices. While there is a consensus that the financial structure of a firm matters and has real effects, its determinants are still under investigation. One prominent theory, the trade-off theory of capital structure, contrasts the advantages of debt, such as the interest tax shield, with the disadvantages of high leverage—the costs of financial distress. In theory, such costs are understood to include both direct (e.g., legal and advisory fees typically incurred during bankruptcy) and indirect costs (e.g., loss of customers, suppliers, employees). While the notion of these costs is precise theoretically, empirically identifying various channels has proven to be challenging.

In this paper, we examine how the onset of financial distress affects firms' ability to retain highly skilled labor ("talent") in the organization. A reduced ability of financially distressed firms to retain such workers may be viewed as a cost of financial distress. This notion is not new. The property rights view pioneered by Grossman and Hart (1986) and Hart and Moore (1990) provides a framework for analyzing how the inalienability of human capital affects the financing capacity of firms. Essentially, human capital introduces a contractual incompleteness that stems from the fact that, in the absence of slavery, firms do not own human capital, workers do. A recent survey of business professionals suggests that this is not

merely a theoretical possibility: "talent and skill shortages" were identified as the second most important risk facing modern organizations, only topped by the risk of "loss of customers" and ranking above other risks such as "changing legislation" (Lloyds Risk Index 2011).[1]

Whether talented employees are the first to desert the proverbial sinking ship is not a priori obvious. While a highly liquid market for talent may result in such workers exiting first, it may also make them more patient, because the cost of staying with the firm may be lower (e.g., lower wage discounts and shorter unemployment spells). To the extent that talented workers are employed in more strategic roles, this would also accord them some informational advantage that allows them to gauge the severity of the difficulties facing the firm. Other factors such as reputational damage (e.g., attribution of blame) may also play a role in their decision. This theoretical ambiguity that arises from the different economic forces makes for an interesting empirical investigation.

There are several challenges that must be overcome when trying to answer such a question. First and foremost are the data requirements for an in-depth analysis of the labor force in financially distressed firms. One requires very detailed, micro-level data on individual characteristics, job nature, and reasons for departures (voluntary or involuntary), among other things. Data of such granularity are typically not available. The empirical hurdles are further compounded by a measurement issue: how to define and measure talent. Since human capital is multidimensional, this is not an easy task. Finally, one needs a suitable approach to gauge whether the distress experienced by the firm is financial or economic—this distinction is critical because it is the cost of financial distress that matters for financial policy.

In this paper, we employ unique micro-level data from Sweden to overcome these challenges. Our employee-employer matched dataset contains detailed information on firm characteristics, as well as individual worker traits, such as cognitive and noncognitive skills, age, gender, education, employment histories, and compensation. This allows us to paint an

[1] Anecdotal evidence, such as the Saatchi and Saatchi case (e.g., Rajan and Zingales 2000), also supports this view. When US fund managers who owned 30% of Saatchi and Saatchi vetoed the award of a generous compensation package to the firm's chairman Maurice Saatchi, he and his brother Charles left the firm, taking with them several key senior executives and key accounts.

exhaustive picture of the evolution of the labor force in firms approaching financial distress.[2] The dataset allows us to create meaningful proxies for talent. We define and measure talent as a set of cognitive and noncognitive abilities that are generally applicable in different tasks and jobs. While human capital is multifaceted, cognitive and noncognitive skills are closest to the innate concept of talent that we are trying to capture.[3]

Prior studies have shown that cognitive and noncognitive skills are important determinants of education and labor market outcomes (e.g., Heckman, Stixrud, and Urzua 2006, Lindqvist and Vestman 2011); such skills are also closely associated with firm productivity and value creation (e.g., Abowd et al. 2005). Workers with high cognitive and noncognitive skills may be particularly indispensable in critical times, such as financial distress, when the firm faces unique challenges. The firm may have to implement new and, compared to its usual "modus operandi," unconventional approaches that talented workers may find easiest to adapt to and master. The reliance of firms on, and the risk of losing, workers with these skills, which are portable across firms and generally valuable in the economy, can therefore expose firms to a type of "fragility" that originates in the characteristics of its workforce.

We start by investigating whether talented employees are prone to leaving firms that are approaching financial distress. Our main finding is that firms that become financially distressed indeed experience a significant loss of talent. Workers with the highest cognitive and noncognitive skills are 50% more likely to abandon the firm as it approaches distress, relative to the average worker. Further, we find that the intake of talented employees in distressed firms does not increase commensurably. Given the importance of talent for firm

[2] We discuss the external validity of our results in Section V and Online Appendix B.

[3] Other forms and proxies of human capital may also be important. However, we believe that cognitive and noncognitive skills are the most accurate proxy available to study the type of labor cost of financial distress that is of interest in this paper, which relates to the risk of loss of workers whose abilities are widely applicable and sought-after in the economy. Moreover, measurement issues hinder the interpretation of proxies for other dimensions of human capital. For example, long tenure in the firm may indicate the existence of valuable firm-specific human capital. However, workers with long tenure may also be "legacy" workers who are apathetic, unmotivated, and resistant to change. Another example is education. As pointed out by Philippon and Reshef (2012), there is significant variation in human capital within similar educational groups, and the skills associated with any particular level of education may change over time.

productivity and value, the fact that the most talented workers abandon a firm as it approaches bankruptcy can be seen as a labor cost of financial distress.

In our study, it is critical to separate demand- and supply-side factors that lead to a change in the labor composition of distressed firms: a lower reliance on talent may be the optimal strategy of a profit-maximizing firm that is experiencing financial distress. Direct information on which departures are voluntary and which are forced (firing) is rarely coded in any dataset. While we do not have such information, we use two independent approaches to identify voluntary departures. In the first approach, we examine whether an employee who leaves a firm is subsequently unemployed. Our conjecture is that forced departures would tend to be associated with unemployment, while voluntary departures would be less likely to result in unemployment spells. We find no evidence of firms firing talent at an increased rate during financial distress.

Our second strategy exploits a unique institutional feature of labor laws in Sweden to separate voluntary from involuntary turnover. Firms with 11 or more employees are required by law to follow a last-in-first-out (LIFO) rule when it comes to laying off workers.[4] Because we know the joining date of employees, we can determine whether job separations adhere to the LIFO rule or not. Deviations from this rule provide us with a proxy for voluntary departures. We find that talented employees are more likely to leave voluntarily as they "jump the queue" and leave earlier than the LIFO order would imply. Taken as a whole, our results point to talented workers voluntarily "abandoning the sinking ship" in times of financial distress.

After establishing that we are indeed documenting voluntary rather than involuntary departures by highly skilled employees, we present a test aimed at empirically separating financial distress from economic distress. That is, we address the following question: do talented employees leave because the firm ceases to be economically viable, or is it specifically because the firm is financially distressed? To answer this question, we consider a sample of

[4] Part A.II, Figure A-1, and Table C-16 in the Online Appendix provide evidence that LIFO regulations impact the human resources policies of firms and that there are significant costs associated with deviations from the rule.

Swedish firms exporting to different countries. The idea underlying the test is that a large, exogenous decrease in the value of exports due to unfavorable exchange rate movements is likely to be detrimental to all exporting firms, but the likelihood of financial distress will increase more for highly levered exporters, allowing us to distinguish between financial and economic distress. To implement the test we follow Caggese, Cunat, and Metzger (2019). We determine an exporter's exposure to a set of currencies, depending on the exporting firm's trade partners at the start of the sample period. We then define a shock as a large depreciation of the currencies of the trading partners relative to the domestic currency (Swedish Kronor). We first document that the likelihood of a firm going bankrupt in the years following an unfavorable exchange rate shock significantly increases, but only if the firm is highly leveraged ex-ante. After confirming that the setting is indeed helpful in disentangling the effects of financial and economic distress, we study the impact of this shock on the likelihood of talent leaving. We find that following a large negative export shock, talented workers in highly leveraged firms (compared to such workers in low-leverage firms experiencing the shock) are significantly more likely to leave the firm. This is our sharpest evidence that our main results are indeed driven by financial distress. In addition, by observing the shock that led to financial distress, this test helps rule out the concern that labor market forces (such as key employees leaving the firm) were driving the bankruptcy filing in the first place.[5]

Finally, we provide some evidence supporting the view that the risk of losing employee talent may affect firm leverage ex ante, a prediction consistent with a trade-off theory of capital structure. The risk of losing talent may affect firms with a high average level of talent of the labor force, but it may also pose a threat to firms whose talent is concentrated within a small group of employees. The reason is that firms in which the whole workforce is effectively high talent may be better equipped to survive the departure of key employees than a firm in which talent is concentrated and where such departures will severely deplete the overall talent pool. We find that the dependence of firms on a highly skilled and highly mobile labor force is

[5] One major difference of our setting vis-à-vis Caggese, Cunat, and Metzger (2019) is that while we focus on voluntary turnover, they study involuntary turnover of workers.

associated with lower leverage in the cross-section of Swedish firms. We show that it is not only the average talent level in the organization that matters. The degree to which cognitive and noncognitive skills are concentrated in a few key individuals within the firm is also negatively associated with financial leverage. This suggests that a firm's dependence on a small number of talented individuals constitutes a source of fragility. Taken as a whole, the results support the view that the most talented employees are more likely to desert a firm that is in financial distress, thus providing evidence of an indirect cost of financial distress associated with the loss of talent.

Our paper connects several strands of literature in finance. The paper contributes to the growing literature that studies the interactions between finance and labor.[6] Within that literature, our work is most closely related to research that studies the interaction between labor and capital structure (see Matsa 2018 for a recent review of this literature). Specifically, our work adds to Graham, et al. (2016), who find a significant loss in the wages of workers employed by firms at the time of bankruptcy, and Caggese, Cunat, and Metzger (2019), who argue that financial constraints distort firms' firing decisions.

Our paper complements the recent work by Brown and Matsa (2016), who use data from an online job search portal to examine how the onset of financial distress affects a firm's ability to hire workers. They find that not only do distressed firms receive fewer applications, but the average quality of the applicants is also lower, thus providing evidence on the labor costs of financial distress. We build on this key insight in several ways. First, we explicitly document the characteristics of workers who leave and join financially distressed firms. The granularity of our data allows us to measure talent, our main characteristic of interest, very precisely. Because we can also measure other individual traits (such as job tenure, age, gender, etc.), we can provide ancillary evidence documenting the characteristics of workers who leave

[6] Several ways in which labor factors shape corporate and, more specifically, financial policies of firms have been documented. For example, Silva (2016) studies the role of internal labor markets as a determinant of internal allocation of capital in conglomerates. Tate and Yang (2015a) document that diversified firms have more active internal labor markets than focused firms and that firms may diversify to create active internal labor markets (Tate and Yang 2015b).

and join financially distressed firms.[7] Second, we focus on the ability of firms to both attract workers and retain them. Failing to attract talent to the organization (as documented by Brown and Matsa 2016) would not be such a severe problem if firms were not losing their most talented employees in times of financial distress. However, we find that firms fail to retain their top talent. Furthermore, by focusing on realized departures, hiring outcomes, and leverage decisions, we are able to paint a comprehensive picture of how the labor composition changes around bankruptcy and how this relates to financial policies.

Finally, our paper also contributes to the literature that analyzes the capital structure of firms and its determinants (for a recent review of this literature see Graham and Leary 2011). In particular, we add to the literature that documents and measures costs of financial distress (e.g., Weiss 1990, Andrade and Kaplan 1998, Maksimovic and Phillips 1998, and Hortaçsu et al. 2013). We provide evidence that a firm's reliance on talent may make it fragile, especially when that talent is embodied by a small elite within the firm, and we propose such fragility as a potential determinant of capital structure.

II. Data and variables

II.A Main data sources

The main dataset used in our analysis is obtained by matching longitudinal data on socio-economic outcomes for Swedish individuals during 1990 – 2011, the *Longitudinal Database on Education, Income and Occupation* (LISA) from *Statistics Sweden* (SCB), with data from military enlistment records, and firm-level data from the *Serrano* database (1998 – 2011). LISA contains detailed employee-employer matched information for the whole Swedish population aged 16 years or older. A large set of socio-economic variables, such as age, gender, employment, uncensored wages, and social security benefits, are available. Thus, this dataset allows us to track individuals over time and to study career paths.

A distinguishing strength of the Swedish data is the possibility of linking the information from LISA to measures of cognitive and noncognitive skills using military records. The

[7] Brown and Matsa (2016) use indirect proxies of applicant quality (often generated at the ZIP code level) due to data limitations.

military data cover the years 1968 – 2011 and are obtained from *The National Archives* ("Riksarkivet") and *The Swedish Defence Recruitment Agency* ("Rekryteringsmyndigheten"). Between 1968 and 2009, all Swedish males aged 18 or over were required to participate in enlistment tests for one to two days.[8] The enlistment test consisted of four parts, assessing cognitive ability, noncognitive ability, physical ability, and health status. Whether someone had to do military service was determined by their health status, and the capacity in which they served was determined by the joint outcome of all the tests. The cognitive ability test consisted of four parts: synonyms, inductions, spatial reasoning, and technical comprehension; the combined score from the four parts was converted to a cognitive ability score from one to nine on the Stanine scale.[9] Noncognitive ability was assessed through a structured interview with a psychologist, who graded test-takers on psychological abilities (the score was also mapped into the Stanine scale). Individuals who have the following character traits obtain high noncognitive test scores: willingness to assume responsibility, independence, outgoing character, persistence, emotional stability, initiative, ability to work in groups (for further details, see Lindqvist and Vestman 2011). In addition, leadership ability was assessed by the psychologist, for all test-takers who received at least an average score on the cognitive ability test. Lindqvist and Vestman (2011) and Adams, Keloharju, and Knüpfer (2018) show that these measures relate to labor market outcomes in a meaningful way.

The Swedish firm-level data are from the *Serrano* database. Serrano includes financial statement data, as well as detailed information on bankruptcy filings. The data are adjusted for split financial years as well as accounting periods of different lengths. The data cover both privately and publicly held firms. Finally, we obtain data on Swedish firms' exporting activity (by country of destination and product) from Statistics Sweden; these data are available for the period 2000 – 2011.

II.B Sample construction

[8] Since 2010, both participation in the tests and military service itself have no longer been compulsory.

[9] The Stanine scale is a method of scaling test scores resulting in approximately normally distributed data with a mean of 5 and a range from 1 to 9.

II.B.1 Main sample

We employ several data samples in our analysis. With our first sample, we explore changes in the composition of the labor force as firms approach bankruptcy. We start with all Swedish limited liability firms and categorize them into two groups. The first group, which we call the *bankruptcy* group, contains firms that experience a bankruptcy during our sample period, have non-missing accounting data and have at least five military test-takers five years prior to bankruptcy. We also require firms to have at least one military test-taker during each of the five years leading up to the bankruptcy event.[10] We define a bankruptcy event as either filing for bankruptcy under the Swedish Bankruptcy Code or filing for reorganization under the Swedish Company Reconstruction Code (see Online Appendix A.I for a detailed discussion of the Swedish bankruptcy law).

We then use a matching algorithm to construct a second group of firms, the *non-bankruptcy* group, which serves as a counterfactual for the firms approaching bankruptcy in the absence of such financial distress. Five years prior to bankruptcy, each of the firms in the *bankruptcy* group is matched to a firm that is observably similar but that does not file for bankruptcy during our sample period. Specifically, we match *non-bankruptcy* firms to *bankruptcy* firms using a nearest neighbor algorithm for a set of firm characteristics within strata for calendar year and industry (Imbens et al. 2004).[11] We use the following firm characteristics for the matching: *Ln(Assets)*, the natural logarithm of total assets; *Leverage*, defined as total debt divided by total assets; *Return on assets* (EBITDA divided by total assets); number of employees; average worker wage; and *Average talent,* the firm-year average of all workers'

[10] One caveat is that our methodology could lead to selection bias, as we condition on survival in the period of *t-5* to *t-1* relative to the bankruptcy. Because we impose the same restriction on the group of non-bankrupt firms that we match with, this methodology is unlikely to affect the interpretation of our tests.

[11] We define the following industries using SNI codes (the Swedish Standard Industrial classification): agriculture, manufacturing, transportation and utilities, construction and mining, commerce, professional services, other services, and finance. In the Online Appendix, we present results using a narrower industry definition for the matching (Tables C-6 and C-7). While matching at a finer industry level allows for greater comparability between bankruptcy and non-bankruptcy firms in terms of industrial classification, it leads to worse matching on other observable dimensions. Given this trade-off, we chose to report the results using this alternative matching strategy in the Online Appendix that accompanies the paper.

(additively combined) noncognitive and cognitive skill scores. Because the firm-level accounting data start in 1998 and our matching procedure is performed five years prior to the start of bankruptcy, our final sample includes bankruptcy events from 2003 to 2011.

The average firm in the Swedish economy is small. In our sample, the average number of employees five years prior to bankruptcy is 25 and the median is 34.[12] Panel A of Table 1 compares characteristics of firms in the *bankruptcy* and *non-bankruptcy* groups in the matching year (t-5). Unsurprisingly, *bankruptcy* and *non-bankruptcy* firms do not differ significantly with regard to the characteristics on which we match. The matching, however, also leads to similarity of *bankruptcy* and *non-bankruptcy* firms along some dimensions that we can observe but on which we do not match, such as the average number of years of education of a firm's workers, the number of workers who took military enlistment tests, the average combined cognitive and noncognitive skills of the top 5% of workers, and export volume.[13]

Panel B of Table 1 shows the distribution of corporate bankruptcies across industries in our sample. The total number of bankruptcies is 2,436; the number and frequency of bankruptcies is highest in the manufacturing industry, while it is lowest in the agriculture and financial sectors.[14] Panel C of Table 1 shows the distribution of bankruptcies over time in our sample. All sample years are well-represented in terms of bankruptcy events, with 2006 and 2007 being the years with the lowest numbers of bankruptcies, and 2003 and 2009 the years with the highest numbers of bankruptcies.

We match firms with their employees using the employee-employer links from LISA. For regressions studying labor transitions into and out of financially distressed firms, the sample consists of male workers with military test scores that are employed by the firm in at least one

[12] In Appendix C, we show that our results are robust to imposing larger firm size cutoffs—we report results for firms with a minimum size from 10 to 50 employees—for the regression sample; see Table C-5.

[13] Our findings are robust to different ways of constructing the *non-bankruptcy* group, including matching on different sets of characteristics. We discuss some of these alternative specifications in Section V.

[14] The 'Finance' category excludes commercial banks, which are a separate category of limited liability companies ("Bankaktiebolag") and for which regulations differ. Banks are thus not contained in our sample. Examples of activities pursued by the financial firms included in the sample are: financial leasing, investments, private equity, venture capital, brokerage services, and financial advisors.

of the five years leading up to bankruptcy. Workers are only part of the sample in the years they are employed by firms in the *bankruptcy* and *non-bankruptcy* groups. The sample spans the years 1998 to 2011 (using bankruptcies from 2003 to 2011).

II.B.2 Sample used in the analysis of exporting firms

Our second sample consists of exporting, non-financial limited liability firms. For each firm from 2000 until 2011, we have information on the export revenue, broken down by destination currency and year. We focus on exporting firms (firms with non-zero exports) with non-missing information on assets, at least five employees, and with at least five consecutive years of data (information from the Serrano database). Firms enter this exporter sample the first year in which they have at least five military test-takers among their workers. Moreover, we exclude the first two observations of each firm from the final regression sample. The reason is that in our regression models, we want to hold fixed a firm's leverage and export exposure using information preceding the regression estimation ("pre-treatment"); we thus construct these variables using the first two years of data for each firm, and then discard these two observations from the regression sample.

II.B.3 Sample used in the cross-sectional leverage analysis

Finally, the third sample, which we employ in the cross-sectional leverage tests, covers the years 1998 to 2011 and consists of non-financial Swedish limited liability firms. We focus on observations with non-missing information on assets, at least five employees, and with at least five consecutive years of data (information from the Serrano database). Furthermore, a firm is only included in the sample starting from the first year that it has at least five military test-takers among its employees.

II.C Variables

In this sub-section, we discuss the definitions of the variables employed in this article. A table with detailed variable definitions is included in the Online Appendix (Table A-1).

II.C.1 Main variables

The two main variables we use to study employee mobility are *Leave* and *Join*. *Leave* is a dummy variable that takes the value of one in the year a worker leaves the employer, and

zero otherwise. A worker's "employer" in a given year is the firm that provides an individual with the most labor income in a given calendar year. To better capture voluntary turnover, the variable is zero when a worker leaves an employer but collects unemployment benefits (even if only temporarily). *Join* is a dummy variable that takes the value of one in the year an employee joins a new firm. We identify "joiners" by verifying whether the main source of labor income changed vis-à-vis the previous year.[15]

The (time-invariant) dummy variable *Bankrupt* takes the value of one for firms that at some point during our sample period file for bankruptcy. The variable *Close* identifies the period of interest, from three to one years prior to the bankruptcy event. Figure 1 suggests that our choice is meaningful; the figure shows the share of workers leaving and joining firms as they approach bankruptcy. On average, the labor force appears stable until about four years prior to the onset of bankruptcy and begins to contract thereafter. For *bankruptcy* firms, *Close* takes the value of one in the years t-3, t-2, and t-1 relative to the bankruptcy filing, and it takes a value of zero in the years t-4 and t-5. It also takes the value of one for *non-bankruptcy* firms in the years t-3 to t-1 relative to the matching date (which occurs at t-5); in other instances, *Close* takes the value of zero. Our tests can thus be interpreted as difference-in-differences estimates, where we compare the probability of workers leaving (or joining) distressed firms close to bankruptcy (t-3 to t-1) relative to "normal" times (t-5 and t-4), and relative to the matched *non-bankruptcy* group of firms.

Our measure of talent is based on the sum of the cognitive and noncognitive test scores of males obtained from their military records. Cognitive skills refer to an individual's ability to perform various mental activities closely associated with learning and problem solving.

[15] One limitation of the annual frequency of the data is that the timing of job switches may sometimes be imprecisely measured. For example, suppose that an employee switches employer and has the same wages at both jobs. In LISA, end of December is the cutoff date for considering the annual income and for recording the employer which provided the largest source of income during the past 12 months. "Leavers" are defined by having a different largest source of income in the next year. Thus, an employee who switches in July of year *t* will be classified as departing in year *t*. But if s/he switches in June of year *t*, the departure is coded as happening in year *t-1*. The same applies to the variable "Joiners." The fact that this data limitation applies equally to the bankruptcy firms and to the non-bankruptcy firms should mitigate the concerns that this is driving our results.

Noncognitive skills refer to personality, social, and emotional traits, such as empathy, sociability, conscientiousness, and perseverance. *Talent* is a dummy variable that takes the value of one if an individual has a combined score in the top five percent of the distribution of such scores at the firm-year level, and it takes the value of zero otherwise.[16] We thus define talent with reference to the distribution of skills within the firm. We do so because the average level of talent varies across firms and industries (see Table 2, Panel A, for how cognitive and noncognitive skill scores vary across industries), and we are interested in understanding whether within each organization, the most talented workers are the ones most likely to "jump ship" as the firm becomes financially distressed.[17] In cases where the top fifth percentile cannot be unambiguously determined (because a firm has fewer than 20 workers that took the military tests, or because the top scores are shared by more than 5% of the workers), *Talent* takes the value of one for all workers that share the top score.[18] In all tests relying on military test scores, to adjust for the possibility of changes in test standards over time, we include fixed effects for the enrolment period as reported by the testing authority: 1969 – 1982, 1983 – 1997, 1998 – 2001, 2002 – 2008, and 2009 – 2010. For robustness, we construct additional measures of talent based on, respectively, cognitive skills, noncognitive skills, leadership skills, and wages (the latter proxy is available for both men and women). We discuss these alternative proxies in Section V.

Panel A of Table 2 shows the distribution of talent scores across industries in Sweden. Specifically, it shows industry averages of the sum of cognitive and noncognitive skill scores of workers. The industries for which this talent measure is highest are finance, professional

[16] The firm-year distribution of test scores is based on all workers who during that year received their main labor income from the firm.

[17] If, instead, we defined talent in an "economy-wide" way based on absolute scores some firms may consist of an exclusively low-talent workforce, while other firms may consist of an exclusively high-talent workforce. We discuss robustness tests related to the definition of talent in Section V.

[18] Approximately 0.7% of the military test-takers are volunteering females, who are excluded from the regressions employing talent as an explanatory variable. Males with incomplete tests or missing test scores are also excluded. We exclude female test-takers because self-selected test-takers may be especially interested in pursuing a military career and their civilian career decisions may thus be less informative. However, our results remain unchanged if we include female test-takers in our sample.

services (which includes, among others, workers in IT, R&D, law, and consulting), and services (which includes workers in the education and health care). Panel B of Table 2 reports the talent distribution across different levels of hierarchies. The table shows that the higher levels of hierarchies tend to have more talented workers. Perhaps somewhat surprisingly, the third layer of hierarchy ("senior staff" members) tends to have marginally more talented workers on average than the top layer ("CEOs and directors"). This is due to the relatively large number of small firms in the Swedish economy which tend to have flat hierarchical structures and less talented CEOs (see also Adams, Keloharju, and Knüpfer 2018).[19]

Ln(Years of education) is the natural logarithm of an individual's years of schooling.[20] *Ln(Wage)* is the natural logarithm of gross wage, deflated to 1998 SEK, paid by the main employer (i.e., the employer which provided the largest source of income during the year). We define two variables measuring work experience: *Short tenure* is a dummy variable that takes the value of one if the number of years worked at the current firm is less than the sample median (which corresponds to four years of tenure in the main sample studying the characteristics of workers leaving and joining financially distressed firms). *Experience in industry* is the number of years worked in the current industry. Both variables are censored due to the start of available employment histories in 1990. *Other municipality* is an indicator that is equal to one if a worker moves to a new municipality (that is, changes her place of residence to a different municipality, whether or not she changes employment).

Individual-level information on occupational tasks is available from 2001 onwards. This information is reported using the Swedish Standard Classification of Occupations 1996 (SSYK), which is the Swedish version of the International Standard Classification of Occupations. We follow Tåg (2013) and construct a measure of hierarchy by mapping the

[19] In Appendix Figures C-3 and C-4, we present figures that report the distribution of talent across, respectively, industries and hierarchy levels, and that employ various alternative talent proxies based on cognitive test scores, noncognitive test scores, leadership scores, and wages.

[20] More specifically, for each individual, we consider the number of scheduled schooling years required by an individual to obtain his/her highest earned degree, regardless of how many years it actually took the person to complete the degree (the latter information is unavailable): 12 years for a high school graduate, 15 years for an individual with a bachelor's degree, etc.

occupational codes into four different levels of hierarchy: CEOs and directors; senior staff; supervisors; and clerks and "blue-collar" workers.

Finally, in our worker-level analysis we also employ two alternative dependent variables in some specifications. *Unemployed* is an indicator variable that takes the value of one if a worker leaves a firm and transitions into unemployment. A transition into unemployment is recorded if a worker receives any unemployment insurance payments in the year of the separation or the next. One potential issue with defining unemployment status with information from unemployment insurance payments is that if unemployment insurance take-up is low, we may falsely categorize workers as not having experienced an unemployment spell, even when they do. While this may be problematic in some countries (e.g., Anderson and Meyer 1997 report that in the U.S., unemployment insurance take-up is below 50%), it is unlikely to bias our results in the Swedish setting. In Sweden, voluntary contributions to top up governmental unemployment insurance are made by more than 85% of workers (Kolsrud et al. 2018). Such contributions would not make financial sense if unemployment insurance take-up was low.[21]

Jumped the queue is a dummy variable that takes the value of one in a given year if (i) a worker is no longer at the same employer in the following year; and (ii) this separation event deviates from the order implied by the last-in-first-out ("LIFO") rule, which is based on the tenure of workers at the firm in that year. The variable is set to zero if (i) the worker is no longer at the same employer in the following year but the separation is consistent with the LIFO rule, or (ii) the worker starts collecting some unemployment insurance benefits in the year of the separation or the next. This variable is only defined for workers who leave a bankrupt firm in the years t-3 to t-1 relative to the bankruptcy filing year.

In Panel A of Table 3, we report summary statistics for the variables used in the analysis of the characteristics of workers that leave and join firms that experience a bankruptcy event during the years 2003 to 2011 (that is, the underlying sample period is 1998 – 2010). The

[21] Despite this, we cannot fully rule out the concern that unemployment insurance take-up may be lower for more talented people. We refer the reader to Kolsrud et al. (2018) and Landais et al. (2018) for a more complete analysis of unemployment insurance in Sweden.

sample and summary statistics cover workers from both *bankruptcy* group and *non-bankruptcy* group firms.[22]

II.C.2 Variables used in the analysis of exporting firms

In Section III.E, we exploit movements in exchange rates as a source of exogenous variation for financial distress. We first construct a vector of the exposure of a firm to different currencies, *Export exposure*$_f$. To ensure that a currency shock is exogenous to the firm's and workers' actions, we calculate the export exposure using information from the first two years that the firm is in the sample, but we subsequently exclude these two ("pre-treatment") years from the regression sample.[23] Specifically, first, we calculate, for each firm and for the first two years that a firm is in the sample, a firm's exports in EUR, USD, GBP, NOK, and DKK (expressed in SEK) divided by the total sales (in SEK) of that firm in that year; we take the average of the year one and year two shares for each firm.[24] *Export exposure*$_f$ is then the following vector for each firm:

$$Export\ exposure_f = \left(AVG\left[\frac{Exports\ in\ EUR}{Total\ Sales}\right] \quad \ldots \quad AVG\left[\frac{Exports\ in\ DKK}{Total\ Sales}\right]\right)$$

Next, we construct an annual exchange rate movement index by calculating the scalar product between the *Export exposure* vector and a vector of relative exchange rate changes between the current and the previous year for the five currencies considered (the exchange rates in the currency vector are quoted as SEK per foreign currency). Finally, our main variable of interest is the *Exchange rate shock* dummy variable, which takes the value of one when a firm suffers a negative shock to the value of its exports, that is, when the firm (given its export exposure)

[22] Table C-8 in Appendix C reports summary statistics for the subsample for which we have occupational data (SSYK codes) for the workers during all five years leading up to bankruptcy. Specifically, the sample reported in Table C-8 is used for regressions in which we control for hierarchy fixed effects (specifications in Tables 5 and 8 in the paper), and it covers the years 2001 – 2010.

[23] For a new firm, the first year may not be representative of its steady-state export intensity; hence we also consider the second year.

[24] Exports denominated in these five currencies account for more than two thirds of total Swedish exports during our sample period. We focus on these top five export currencies to simplify the analysis. The distribution of exports during our sample period is as follows: 38% of exports (by value) are to Eurozone countries, 9% are to Norway, 9% to the US, 8% to the UK, and 6% to Denmark. Other countries make up 30% of the exports, the biggest three being China (2.5%), Poland (2%), and Russia (1.5%).

experiences negative exchange rate movements. Specifically, the dummy takes the value of one when (i) the annual exchange rate movement index (the scalar product between the *Export exposure* vector and the currency vector) is negative, indicating an appreciation of the Swedish Krona vis-à-vis the exporter's relevant trading partner currencies; and (ii) the exchange rate movement index is in the bottom 5% of the distribution of the index across all years of the sample.[25]

To differentiate between high leverage and low leverage firms, we construct the (time-invariant) dummy variable *High leverage.* As in the case of export shares, we average the first two observations of *Leverage* of each firm in the sample; *High leverage* takes the value of one if a firm's average leverage ratio is above the sample median. We note that both *Export exposure* and *High leverage* are defined using historical information (relative to the information used in the regressions) and are hence less subject—albeit not immune—to endogeneity concerns, such as firms adjusting leverage or the choice of their trade partners as a consequence of a negative currency shock. Finally, the variable *Bankrupt within 2 years* takes the value of one if a given firm files for bankruptcy in that year or in one of the two subsequent years; it takes the value of zero otherwise.

Panels B and C of Table 3 report summary statistics for the variables used in the tests studying the effects of exchange rate shocks on exporting firms; Panel B reports statistics for the firm-level sample, while Panel C shows summary statistics for the employee-employer matched sample.

II.C.3 Variables used in the cross-sectional leverage analysis

We define *Leverage* as the sum of short- and long-term debt, divided by total assets. *Tangibility* is property, plant and equipment divided by total assets; *Ln(Assets)* is the natural logarithm of total assets; *Profitability* is operating income minus depreciation, divided by sales. *Leverage*, *Tangibility*, *Profitability*, and *Ln(Assets)* are winsorized at the first and 99th percentile. *Short*

[25] Our results are robust to defining the *Exchange rate shock* dummy variable using an annual ranking of the exchange rate movement index, and considering the bottom 5% of firms in a given year as "shocked" (see Table C-17 in the Online Appendix).

tenure share and *Average experience in industry* are, respectively, the means of the variables *Short tenure* and *Experience in industry* at the firm-year level. *Firm age* is the number of years since incorporation. We also study differences in leverage between financially constrained and unconstrained firms. The typical financial constraints measures considered in the empirical corporate finance literature are constructed using US data and cannot be directly applied in the Swedish setting. However, we conceptually follow Hadlock and Pierce (2010) to group firms into constrained and unconstrained sets.[26] *Constrained* is a dummy variable that takes the value of one for firms that are "small and young," and it is zero for firms that are "large and old." Specifically, we sort observations into two quantiles of firm age, and two quantiles of assets (deflated to 1998 SEK). A firm is financially constrained in a given year (that is, *Constrained* takes the value of one) if both its age and assets are below or equal to the sample median; it is unconstrained if both its age and assets are above the sample median.

In these firm-level regressions, we build two different measures of talent within the firm. *Average talent* is the mean of the combined cognitive and noncognitive skill scores of the employees working in a firm in a given year. *Talent concentration* is defined as the fraction of the total combined cognitive and noncognitive skills existing at a firm in a given year that are held by the top 5% of workers within that firm-year.[27] This measure, which is the firm-level analog of the dummy variable *Talent* used in our worker mobility analysis, captures the firm's dependence on the human capital of its most talented employees.

Panel D of Table 3 reports summary statistics for the sample of firms used in the cross-sectional analysis of leverage; each observation corresponds to a firm-year.

III. Evolution of labor force composition around bankruptcy

[26] Hadlock and Pierce (2010, p.1912) "recommend that researchers rely solely on firm size and age, two relatively exogenous firm characteristics, to identify constrained firms."

[27] Formally, this variable is defined as follows. For each firm and year, we rank (male) workers based on their combined cognitive and noncognitive ability scores; we identify the workers in the top fifth percentile (the "top 5% workers," see procedure described for the variable *Talent*). We then sum the cognitive and noncognitive ability scores for the top 5% workers and divide this number by the total sum of the cognitive and noncognitive ability scores of all (male) workers in that firm and year. This ratio is then adjusted by the factor (0.05 / share of workers in the top 5% of talent distribution), which ensures that this variable does not mechanically capture a firm size effect. The resulting number is the variable *Talent concentration*.

III.A Characteristics of workers leaving financially distressed firms

We begin by studying the evolution of the labor force composition in firms approaching bankruptcy. Specifically, we examine the selection and characteristics of workers who leave and of those who join firms prior to bankruptcy. Workers with different characteristics may have different preferences and incentives to leave (or join) firms approaching bankruptcy. Moreover, mobility of workers may be determined by the extent to which their human capital can be generally applied in the economy.

Among all workers who may desert a firm as it becomes financially distressed, the loss of key talent (defined as a set of innate cognitive and noncognitive abilities that are generally applicable in different tasks and jobs) is likely to be especially critical for the firm's ability to survive and create value.[28] Consistent with this notion, we observe a positive and increasing talent wage premium in Sweden (Figure 3). This increase is particularly pronounced at the top of the talent distribution: workers above the 95th percentile of the distribution of cognitive and noncognitive skills in the economy experienced a considerably larger growth in their wage premium than those above the median.

There are several reasons why the most talented workers may decide to leave the firm early, in anticipation of bankruptcy. One possibility is that these workers are better able to predict the likelihood of bankruptcy of their firm and may thus time their exit decision better. Furthermore, because more talented workers are likely to have more influence on the performance of the firm, the cost they would face by being associated with a failed enterprise may be larger than for the average worker. On the other hand, talented workers may be better able to hedge bankruptcy risk. The availability of outside options may also differ for high- and low-skilled workers. If more talented workers face a more liquid labor market, staying in the firm longer could be less risky for them.[29] The theoretical ambiguity that arises from the

[28] Abowd et al. (2005) find that the most skilled workers in a firm have a disproportionately positive impact on firm productivity and market value.

[29] Consistent with this argument, in Appendix C (Table C-15), we show that "talented" workers, controlling for various other observable characteristics, are less likely to be unemployed and that they have shorter unemployment spells, conditional on being unemployed.

different economic forces makes it an interesting empirical question whether talented workers are indeed more likely to abandon distressed firms early.

Figures 1 and 2 examine these effects graphically. Figure 1 shows that, relative to *non-bankruptcy* firms, the fraction of workers leaving increases as a firm approaches bankruptcy. In contrast, the fraction of workers joining the firm evolves similarly for firms in the bankruptcy and non-bankruptcy groups. Figure 2 shows the share of talent (as a fraction of total workers employed in the firm in a given year) leaving and joining firms. The pattern documented in Figure 2 indicates an overall deterioration of the talent pool in *bankruptcy* firms over time. The most talented workers are significantly more likely to leave a firm as it approaches bankruptcy, while there is no evidence of an increase in the fraction of talent joining soon-to-be bankrupt firms.

We formally test whether proximity to bankruptcy is correlated with an increase in the probability that talented workers leave the firm by estimating a linear probability model. We compare the probability that a worker at the top of the within-firm talent distribution abandons the firm as it approaches distress, relative to talented workers in non-bankruptcy firms. The regression specification that we estimate also includes a set of individual worker characteristics that could affect the probability of leaving prior to bankruptcy events. In particular, we control for worker age, tenure in the firm, experience in the industry, years of education, and wages (lagged by one year). Moreover, we estimate the extent to which workers who depart close to bankruptcy differ from those who leave at other times. In order to account for time-invariant differences in turnover across firms that may occur for reasons other than bankruptcy, the regressions also include firm fixed effects. Year-by-industry fixed effects account for the evolution of the optimal composition of workers at the industry level. Our results are thus not driven by the possibility that, for example, industries with more bankruptcies are also those where more talented employees are leaving. Finally, we note that we cluster standard errors at the firm level.

Results are reported in Table 4. In column one, we find that being in close proximity to bankruptcy is associated with a statistically and economically significant increase in the

probability of a worker leaving the firm. The estimate implies that for firms in the *bankruptcy* group, the probability of workers leaving is 7.1 percentage points higher when firms are close to distress relative to normal times. In columns two and three we analyze the composition of workers who leave *bankruptcy* firms close to distress. An important pattern that emerges is the increase in the propensity of talented workers to leave as the firm approaches bankruptcy. In column two we find that workers with high talent have a 3.6 percentage point higher probability of leaving the firm as it approaches bankruptcy than "less talented" workers. Relative to the average effect of 7.1%, this estimate implies that the most talented employees are 50% more likely to leave the firm approaching distress than the average employee. The specification reported in column 3 is augmented with a wide range of worker characteristics. We find that workers with shorter tenure in the firm—perhaps those who have invested less in firm-specific skills—are relatively more likely to leave as the firm approaches bankruptcy. In Table 5, we perform additional variations of the regression model, to ensure the robustness of our findings. In column 1, we add firm-by-year fixed effects to our regression; our results remain qualitatively similar. In columns 2 and 3 we repeat the previous analysis, but include a set of fixed effects for the level of hierarchy at which a worker is employed (in column 2), and also the interaction between *Close*, *Bankruptcy*, and hierarchy fixed effects (in column 3). The sample size here is reduced, as the hierarchy measure is only available from 2001 onwards (see Section II). Our results show that within any given hierarchical level, highly talented employees are significantly more likely to abandon the firm as it approaches distress. The results in columns 2 and 3 alleviate concerns that what we are capturing is simply a reorganization of the activities of the firm through which some hierarchical levels shrink more than others. Instead, our results imply that even after taking this potential confounding effect into account, firms approaching bankruptcy have a lower ability to retain their key talent in the organization.

III.B Voluntary vs. involuntary turnover

In periods of distress, firms facing financial constraints may have to dismiss their most talented employees, as they may also be the most expensive. Therefore, there may be the

concern that what we are interpreting as workers voluntarily leaving soon-to-be bankrupt firms may instead reflect reorganization efforts initiated by the firm.

At the outset, it should be noted that our findings, reported in Tables 4 and 5, are unlikely to be driven by firms firing their most expensive workers in times of distress because we control for wages in our tests. We also interact *Ln(Wage)* with *Close* × *Bankruptcy* to allow for the possibility that firms may be particularly cost-sensitive prior to bankruptcies. In other words, to be consistent with our results, if firms were choosing between two similarly paid workers to lay off, they would choose to let go of the more talented worker. Instead, the most natural explanation for our findings is that we are capturing the decision of talented workers to leave firms voluntarily. Second, in the tests reported above, the variable *Leave* excludes transitions to unemployment; we do this to capture voluntary turnover as accurately as possible.

To distinguish further between voluntary and involuntary turnover, we examine which workers transition into unemployment after exiting the distressed firm. The idea is that workers who become unemployed are more likely to have been laid off than those who abandon the firm and do not experience a spell of unemployment. Specifically, in columns 1 and 2 of Table 6, we repeat the analysis from Table 4, but use a new dependent variable: *Unemployed*, which takes a value of one only if a worker leaves and transitions into unemployment. In column 1, we find that workers from *bankruptcy* firms are more likely to transition to unemployment compared to workers from *non-bankruptcy* firms. However, as can be seen in column 2, this effect is not more pronounced for highly talented workers, as the coefficient on the interaction term *Close* × *Bankruptcy* × *Talent* is economically and statistically insignificant.[30] This suggests that firms are not simply laying off their most talented employees when approaching distress. One caveat with this analysis is that laid-off workers with high ability may be more likely to find other employment before collecting unemployment insurance benefits than low ability workers (Table C-15 in the online

[30] Consistent with Caggese, Cunat, and Metzger (2019), who study financially constrained firms, we find that workers with short tenure in the bankrupt firm are more likely to be fired, using transitions to unemployment as a proxy for firings.

appendix provides evidence supportive of this conjecture). Next, we conduct two tests that exploit specific firing restrictions of the Swedish labor law to provide additional evidence that our main results are primarily a manifestation of voluntary departures.

When dismissing workers, firms with 11 or more employees have to follow a last-in-first-out (LIFO) rule that constrains their ability to lay off workers arbitrarily.[31] In columns 3 and 4 of Table 6, we repeat our analysis for the subsample of firms that are bound by LIFO rules. Because these firms are limited in their ability to select which workers to fire and which workers to retain, it is difficult to argue that they simply fire the most talented workers as part of a reorganization around bankruptcy. The results are similar to those reported in Table 4. This evidence further strengthens our interpretation that the most skilled workers "jump ship," as opposed to the view that organizations approaching bankruptcy have a reduced need for talent and, as such, fire highly skilled employees.

In firms that are restricted by LIFO regulation, workers who are fired follow the inverse order in which they joined the firm. In contrast, voluntary exits may "jump the queue" and leave even if they were not in the order dictated by LIFO. Because we know the year that workers join a firm, we can test whether talented workers are more likely to be the ones who "jump the queue" and leave "out of order." Finding that talented workers are less likely to follow the LIFO order would be another piece of evidence consistent with these workers leaving voluntarily, instead of them being fired by the firm. In the specifications reported in columns 5 and 6 of Table 6, we employ the dependent variable *Jumped the queue.* This indicator variable takes the value of one if the worker leaves and, in doing so, deviates from the job separation order implied by the LIFO rule.[32]

The algorithm we use can be best understood using a simple example. Suppose that a firm has 100 employees and we observe that 20 employees leave the firm. Because we know when these employees joined, we can determine whether these job separations adhere to the LIFO

[31] See Appendix A.II for a general discussion of the labor laws in Sweden, and of LIFO rules in particular. Figure A-1 and Table C-16 in the Online Appendix provide evidence that LIFO rules are indeed binding.

[32] Note that we do not include the variable *Short tenure* in these regressions, because the dependent variable (*Jumped the queue*) is a function of worker tenure.

rule or not. Any deviations from this rule would provide us with a proxy for voluntary departures. In these regressions we focus only on *bankruptcy* firms—that is, firms that become bankrupt—and we only retain in the sample workers who leave firms in the period t-3 to t-1 relative to bankruptcy. We find that the most talented employees of the firm do not wait their turn to be fired. Instead, they tend to leave earlier than what their tenure would predict if the firm was laying off workers according to a LIFO rule.

A potential concern is that LIFO is not enforced and, as such, *de facto* it is not a restriction on firing. However, von Below and Thoursie (2010) provide evidence to the contrary: they find that both hiring and separation probabilities significantly increased for small firms after the LIFO restriction was relaxed in 2001 for such firms. We provide similar evidence in Appendix C. We report several tests that show that the LIFO rule does indeed affect the firing decisions of firms (see Table C-16, and Figure A-1).

In sum, the evidence we provide in this subsection lends support to our interpretation that the effects documented in Tables 4 and 5 are most consistent with high-talent workers voluntarily abandoning firms that become financially distressed.

III.C Selection of workers joining distressed firms

Next, we turn to the analysis of which workers join firms approaching bankruptcy and specifically to the ability of financially distressed firms to attract talent. If firms are not able to retain talented workers but are still able to attract them, then the overall talent pool in the organization may be unaffected by the imminent threat of bankruptcy.

The specification that we use differs in three ways from the tests on employee departures reported in Table 4. First, the dependent variable, *Join*, is an indicator that takes the value of one in the year the worker joins the firm, and zero otherwise. Second, we exclude from the list of control variables *Short tenure*, as by definition new joiners would not have experience in the firm they join. Third, we add the variable *Other municipality* to some specifications to test whether the firm is less likely to attract workers for whom the adjustment costs are larger. Results are reported in Table 7. We first note that the estimate of *Close* × *Bankruptcy* in column one is negative, which implies that firms attract fewer employees as they approach

bankruptcy. According to column 1, *bankruptcy* firms have a 1.2% lower fraction of new employees in the three years preceding bankruptcy relative to normal times (this coefficient is not statistically significantly different from zero). Importantly, in regressions reported in columns 2 and 3, we find that being close to bankruptcy does not enhance the ability of firms to attract highly skilled individuals in an economically or statistically significant way. Despite the loss of talent documented in Tables 4 and 5, *bankruptcy* firms are unable to replace the lost human capital by attracting highly skilled employees in sufficiently larger numbers. We also find that the characteristics of workers who join financially distressed firms differ from the types of employees joining firms at other times. According to column 3 of Table 7, workers commanding lower wages and with more experience in the industry are more likely to join the firm, although these effects are not precisely estimated.

Table 8 presents additional specifications. In particular, we find similar results when estimating a regression with firm-year fixed effects (column 1); a specification with hierarchy fixed effects (column 2); and a regression that includes interactions of hierarchy fixed effects with *Close* × *Bankruptcy* (column 3).

The fact that we do not find a decrease in the hiring rate of talented employees relative to less skilled workers for firms approaching bankruptcy suggests that financially distressed firms do not *choose* to operate with lower levels of talent. If that were the case, firms would not only dismiss their most talented employees, they would likely also stop hiring talented employees. In fact, if firms were aiming to voluntarily reduce the number of talented workers they employ, the natural first step would be to stop hiring talent even before starting to lay off their most skilled workers. However, Brown and Matsa (2016) show that financially distressed firms continue posting job vacancies. In addition, we find that firms keep hiring talented employees at the same rate as less talented employees. In sum, our results suggest that even prior to bankruptcy, the pool of human capital available in the firm may considerably deteriorate.

III.D Placebo test

Even though our *bankruptcy* and *non-bankruptcy* firms look similar on observable characteristics (see Table 1), we cannot rule out the possibility that they are fundamentally different in terms of unobservables. To alleviate this concern, we conduct the following placebo test: we retain the composition of the *bankruptcy* and *non-bankruptcy* groups and estimate the same specifications as the ones reported in Tables 4 and 7, but now define the placebo "treatment" period to be the period t-6 to t-4 (instead of t-3 to t-1 as in our main analysis).[33] That is, our new variable of interest, *Placebo close,* takes the value of one in years t-6, t-5, and t-4 relative to bankruptcy, and zero otherwise. The sample period is t-8 to t-4 relative to bankruptcy (which occurs at *t0*); this period is also well-defined for *non-bankruptcy* firms due to the matching of both groups of firms at t-5 relative to the bankruptcy event.

The idea underlying the test is the following. If *bankruptcy* and *non-bankruptcy* firms are different even in the absence of bankruptcy, we would expect to find differences also in the ability of *bankruptcy* firms to attract and retain talent a number of years before bankruptcy, relative to *non-bankruptcy* firms. On the other hand, if *bankruptcy* and *non-bankruptcy* firms are comparable absent bankruptcy, we would expect to find no difference in the ability of *bankruptcy* firms to attract and retain talent relative to the *non-bankruptcy* group, when focusing on a period that is further away from bankruptcy.

In Table 9, we report the results of this placebo test. Note that while we retain all the variables in our regressions, we only report the coefficients associated with the interactions between *Placebo close* × *Bankruptcy* and the individual worker characteristics, to simplify the reading of the table (coefficients on the non-interacted worker characteristics are comparable to those reported in Tables 4 and 7). We find that the coefficients on the interactions of the placebo treatment dummy *Placebo close* × *Bankruptcy* and the different worker characteristics are economically small and statistically insignificant. The only exception is with respect to employee age, where the triple interaction *Placebo close* × *Bankruptcy* × *Age* is statistically significant at the 5% level in column 3. Importantly, we find no evidence that, in years more

[33] This analysis is effectively testing the parallel trends assumption of our difference-in-difference tests design.

distant from the bankruptcy event, *bankruptcy* and *non-bankruptcy* firms behave differently with regard to retention (columns 1 – 3) or attraction (columns 4 – 6) of talent. This lends support to our identifying assumption that the *non-bankruptcy* group provides a good counterfactual for the evolution of talent in *bankruptcy* firms in the absence of bankruptcy. Of course, this test does not rule out differences in unobservables, which are inherently untestable.

III.E Financial vs. economic distress: evidence from exogenous currency shocks in exporting firms

Our evidence so far suggests that firms that become bankrupt (compared to a matched sample of firms that do not go bankrupt) lose talent. To ensure that our results are not driven by economic distress, we examine a quasi-experimental setting that focusses on a sample of exporting firms with (ex-ante) different capital structures. The setting is conceptually similar to Caggese, Cunat, and Metzger (2019). The idea underlying the test is that a large, exogenous decrease in the value of exports due to changes in exchange rates is likely to be detrimental to all affected firms, but will increase the likelihood of financial distress more for highly levered exporters, allowing us to distinguish between financial and economic distress. The richness of our data allows us to construct *firm-level* exposures to different currencies, as we observe the value of exports by country of destination for each firm. We can thus exploit, for identification purposes, the fact that a depreciation of the dollar, for example, would negatively impact the demand of firms that export to the US, while not directly affecting firms that only export to Norway.

First, as a validation of our identification strategy, we estimate the impact of an exchange rate shock on the probability of filing for bankruptcy. Because different firms export to different markets, the exogenous variation that we exploit varies both over time and across firms, even within the same industry. This allows us to control for firm and industry-by-year fixed effects, as well as for a set of time-varying firm controls.

We present the results of this test in Table 10. We find that exporting firms with high leverage (but not those with low leverage) are significantly more likely to file for bankruptcy in the

years following an unfavorable exchange rate shock. Specifically, in column 1 we find that an exchange rate shock is associated with a 0.7 percentage point increase in the probability that a highly levered firm will file for bankruptcy in the year of the shock or the subsequent two years. Relative to the unconditional mean of the variable *Bankrupt in 2 years* of 0.014 (see Table 3), this constitutes an increase of more than 50% in the likelihood of going bankrupt. In column 2, we include a set of firm controls and find a quantitatively similar result. The results reported in Table 10 help us to distinguish economic from financial distress: they show that a negative exchange rate shock, while plausibly harmful to the bottom line of all affected exporters, only leads to financial distress in those firms that were highly leveraged *ex ante*.

After confirming that the setting is helpful in disentangling the effects of financial and economic distress, we study the impact of this shock on the likelihood of talented workers leaving. In these worker-level tests, the dependent variable is *Leave*, which, like before, takes the value of one in the year that a worker leaves the firm and zero otherwise. The coefficient of interest in these tests is on the interaction between *High leverage*, the *Exchange rate shock*, and *Talent* (defined as in our previous tests). Since we are interested in estimating the increase in likelihood of a talented worker leaving relative to that of other workers in the firm, these regressions include firm-by-year fixed effects, which account for any time-varying firm-level unobservable. We report results in Table 11. In column 1, we find that the probability of a talented worker leaving a firm following an unfavorable exchange rate shock increases in the case of highly levered firms, as the interaction of *Exchange rate shock*, *High leverage*, and *Talent* is positive and statistically significant. Relative to the unconditional probability of leaving a firm in a given year, a talented worker is about 11% more likely to leave a highly leveraged exporter following a negative exchange rate shock. In column 2, we include additional controls for worker tenure, experience in the industry, worker age, the logarithm of the years of education, and wage, and we observe a similar result. In column 3, we add to the specification of column 2 hierarchy fixed effects; the point estimate of interest does not change.

In Table 12, we report coefficients from additional specifications in which we include

interactions between *Exchange rate shock*, *High leverage*, and, respectively, the variables *Age*, *Short tenure*, *Experience in industry*, *Ln(Years of education*), and lagged *Ln(Wage)*. These specifications confirm our previous evidence: when highly levered exporting firms suffer a currency shock, their most talented workers are more likely to subsequently abandon the firm. On the other hand, the estimates on the interactions between *High leverage*, *Exchange rate shock*, and the remaining worker level characteristics yield economically and, for the most part, statistically insignificant coefficients.

In this quasi-experimental setting, the effects we are documenting are not originating from the labor market: we can trace the origin of the employment effects back to exogenous exchange rate movements. This reduces reverse causality concerns that may occur in our main tests (Tables 4 – 8), namely that firms go bankrupt *because* talented workers leave. Furthermore, this analysis also increases our confidence that the results discussed in Sections III.A to III.C are driven by financial rather than economic distress. Finally, this "shock-based" research design also addresses concerns that unobserved differences between *bankruptcy* and *non-bankruptcy* firms may be driving our findings.

One potential concern with the tests that exploit exchange rate movements in different currencies in addition to differences in ex-ante capital structures is that firms with different levels of leverage and different export activity may differ along other dimensions. In Table C-18 in the Online Appendix, we report separate summary statistics for firms with high and low leverage (Panel A), firms with high (above median) and low export exposure (Panel B), and export-intensive firms (those with above-median exports) with high and low leverage (Panel C). Unsurprisingly, and consistent with large literatures in corporate finance and international trade, we observe that capital structure and export exposure are not randomly assigned: there are statistically significant differences—although most of them are economically small—between high and low leverage firms, and between firms that export more compared to those that export less. The inclusion of firm-by-year fixed effects in our regression specifications (reported in Tables 11 and 12) allows us to control for any time-varying unobservable factor that homogeneously affects all workers in any given firm and

thus alleviates concerns that our results are driven by such firm-level omitted variables. However, if there are firm characteristics that differentially affect talented workers, our estimates could be biased. Given the exogenous nature of the exchange rate shock that we employ, our analysis would recover the causal effect of financial distress on talent retention if worker turnover (as captured by the variable *Leave*) evolved similarly for shocked and non-shocked firms in the absence of the shock.

While it is not easy to envisage the kind of economic mechanism that would give rise to the empirical patterns we document, we test whether firms that are not affected by the shock *yet* experience any premature response, which would raise concerns about the nature of the shock or the differences between firms that are experiencing a shock and those that are not. Specifically, in Table 13, we test whether, prior to the exchange rate shock, firms that will be affected by an exchange rate shock in the following year experience more talent departures relative to firms that do not experience an exchange rate shock. We find that in the absence of the shock, these two groups of firms do not behave differently. While we cannot completely rule out the possibility that unobservable differences across firms may differentially affect talented workers, the evidence in Table 13 suggests that differences in unobservables are unlikely drivers of the results. Because we explicitly control for various observable characteristics of workers and firms, those are unlikely to explain the results either. Therefore, with all necessary caveats, we conclude that talent departures are likely driven by financial, rather than economic, distress.

IV. Talent and capital structure

The analysis in the previous section provides evidence that as firms approach financial distress, talent abandons the firm. This may endanger the future of the company even further. Labor may thus bring an added degree of fragility to the organization, especially in cases in which most of the firm's human capital is concentrated in these key employees. In this section, we investigate whether the risk of loss of talent may help explain firms' leverage choices.[34]

[34] The risk of loss of talent during "normal times" may also have an effect on capital structure (Hart and Moore 1994). This channel is also consistent with our hypothesis.

We test whether the extent to which a firm relies on talent shapes its financial decisions by analyzing the ex-ante capital structure choices of firms in the cross-section. Firms whose most talented employees are more likely to leave in times of financial distress face large (indirect) costs of bankruptcy and are thus expected to have lower leverage. In that sense, the employee composition of a firm and, in particular, a firm's reliance on its highly skilled labor would be an additional factor shaping the financial policy of firms. We formally test whether the average level of talent and the concentration of talent within the firm correlate with capital structure by estimating the following OLS regression:

$$Leverage_{ft} = \alpha + \beta_1 \cdot Average\ talent_{ft-1} + \beta_2 \cdot Talent\ concentration_{ft-1} + X'_{ft-1}\gamma + \Psi_{ft} + \varepsilon_{ft}$$

The matrix X includes standard controls used in capital structure regressions: *Tangibility*, *Profitability*, *Ln(Assets)*, and *Firm age*. Our firm-level talent measures are *Average talent* and *Talent concentration*. *Average talent* is the average of the combined cognitive and noncognitive skill scores of the employees working in a firm in a given year. *Talent concentration* is the share of the firm's total endowment of cognitive and noncognitive skills that is held by the workers in the top 5% of the talent distribution within the firm. The matrix Ψ includes year fixed effects or, in some specifications, industry-year fixed effects to control for macroeconomic determinants of leverage. Thus, the coefficients in these regressions can be interpreted as cross-sectional comparisons.

Table 14, Panel A, reports the results. In column 1 we regress *Leverage* on our firm talent measures and year fixed effects, while in column 2, we include additional controls. The results confirm the notion that the average level of talent in a firm's labor force is an important determinant of capital structure decisions. In both columns, leverage is negatively correlated with the *Average talent* of a firm. A one standard deviation increase in a firm's *Average talent* is associated with a 1.1 percentage point lower leverage ratio (column 2). Relative to the average level of leverage in the sample (13.3%), this is 8% lower leverage than in the average firm. For comparison, a one standard deviation increase in *Tangibility, Profitability, Ln(Assets)*, and *Firm age*, is associated with a 9.7, -1.8, -0.3, and -0.9 percentage point change in leverage,

respectively. The estimate associated with *Average talent* is thus larger than the effect of a standard deviation change in firm size and firm age, and somewhat smaller than the effect of a standard deviation change in profitability.

In addition, we find that talent concentration at the top of the organization is also negatively correlated with leverage. A one standard deviation increase in *Talent concentration* is associated with a 0.4 percentage point decrease in leverage (column 2). Relative to the sample mean of 13.3%, this corresponds to a 3 percent lower leverage ratio. The magnitude of this effect is economically similar to that of a one standard deviation increase in *Ln(Assets)*. While Mueller, Ouimet, and Simintzi (2017) highlight the benefits associated with the existence of within-firm inequality, our results underscore the risks that may be associated with firms' dependence on a few (highly mobile) individuals. To the best of our knowledge, our paper is the first to document that the degree of concentration of human capital within the firm may have implications for financial policy.

In column 3, we add to the specification industry-year fixed effects to identify cross-sectional differences in leverage within firms in the same industry and year. In columns 4 and 5, we add to the specification two additional measures of worker human capital: *Short tenure share* and *Average experience in industry*. These variables serve as proxies for the endowment of the firm's labor force with firm- and industry-specific human capital. The coefficient on *Short tenure share* is positive and significant in both columns. This could be because workers may not be willing to invest in firm-specific human capital in risky firms. Alternatively, it may also suggest that firms with long-tenured workers (who may not be easily fired) have high operating leverage, which decreases their debt capacity (along the lines of Simintzi, Volpin, and Vig 2015). The coefficient associated with *Average experience in industry* is positive in column 4 but insignificant in column 5. The coefficients associated with *Average talent* and *Talent concentration* remain statistically and economically significant in these specifications.

The results reported in Panel A are consistent with two interpretations. First, according to a trade-off model of capital structure, the increased present value of labor costs of financial distress due to increased talent departures at the onset of bankruptcy may lead firms to

optimally use less leverage ex ante. Second, financiers may not supply debt to firms that rely heavily on talent. Both channels are in line with our thesis that a firm's reliance on talent introduces a degree of fragility that affects the firm's observed equilibrium capital structure. In a first attempt to evaluate the relative strength of the two potential channels, in Panel B of Table 14, we study the correlation between talent intensity and financial leverage among two groups of firms: financially constrained firms and firms that are not constrained.[35] If the correlation between our talent measures and leverage is more negative in the group of financially unconstrained firms, then it is plausible that the first mechanism (firms use less leverage if the risk of talent loss increases) dominates. In contrast, if one observes that the correlation between a firm's reliance on talent and leverage is more negative among financially constrained firms, this would lend more support to the debt capacity channel. In the specifications reported in Panel B, we interact *Constrained* with the two talent measures. Overall, we find support for the trade-off theory channel: the negative correlation between our talent measures and leverage is quantitatively larger in the group of financially unconstrained firms.

To alleviate concerns that our results are driven by spurious correlation, we include in the tests reported in Table 14 year fixed effects and industry-year fixed effects, as well as several controls for other important determinants of leverage. We also present a variety of alternative specifications of these tests using different talent measures, additional controls, and variations of the regression sample (see Online Appendix C). Despite this, given the nature of these cross-sectional correlations, endogeneity concerns remain. For example, firms with lower leverage could attract workers who have lower talent instead of the firm's dependence on talent being the driver of the choice of capital structure.

V. Robustness and additional discussion

In our tests, we use the sum of cognitive and noncognitive skill scores to construct measures

[35] The number of observations in the regressions reported in Panel B is smaller than in the full sample in Panel A. The reason is that in Panel B, we focus on firms that are either constrained or unconstrained, eschewing observations for firms that cannot be unambiguously classified into one of these two groups. See Section II for the detailed definition of the variable *Constrained*.

of talent. Our results are robust to several different ways of measuring talent. In particular, our results are robust to measuring talent using more narrow measures reflecting only cognitive skills, noncognitive skills, or leadership ability. Furthermore, even though the measures of skill based on military test scores are accurate and economically meaningful (as documented in, e.g., Lindqvist and Vestman 2011), they are only available for males. To extend our analysis to include females, we also repeat our tests using a talent measure based on wages (which proxies for the market price of talent). We report a replication of our previously discussed main findings with these alternative measures of talent in Tables C-1, C-2, and C-10 of Appendix C.

When studying the evolution of the labor force composition, we defined talented employees as those whose combined cognitive and noncognitive skill scores belong to the top 5% of the distribution within the firm. In Table C-3 of Appendix C, we use 25% and 50% as the cutoff for the within-firm talent definition and obtain similar results. In Table C-4 of Appendix C, we define talented workers as those at the top of the skill distribution in the industry, or with reference to the economy-wide distribution of cognitive and noncognitive skill scores.[36]

In Appendix C, we also present robustness tests studying the composition of the workforce in financially distressed firms in which we focus on firms of different minimum size, as measured by the number of employees (Table C-5). We also report tests that employ alternative matching procedures to construct the *non-bankruptcy* group of firms (Tables C-6 and C-7). Overall, we find qualitatively and quantitatively similar results as in Tables 4 and 7; however, the difference in the probability of talented workers leaving vs. joining firms approaching bankruptcy stops being statistically significant, although quantitatively very similar, when we condition on firms that have a large number of employees. This seems to be driven by lack of statistical power, as these tests eliminate a significant share of firms from the sample.

[36] We note that the coefficient of interest in Table C-4 is smaller and less precisely estimated in these regressions than in the regressions reported in the article. However, conceptually, as we discuss in Section II, the relevant *Talent* measure should primarily reflect the within-firm distribution of skills, rather than an economy-wide or industry-wide one.

As our results are based on firms and workers in Sweden, external validity may be a concern. To address this matter, in Appendix B, we conduct a series of tests on the relationship between leverage and proxies for the mobility of talented workers in the US. In these tests, we exploit staggered changes in the enforceability of non-compete clauses in labor contracts across US states as a natural experiment. We find that as the risk of loss of talented workers is reduced due to increased enforceability of non-compete agreements by state courts, firms increase their financial leverage (see Klasa et al. 2018 for additional analysis of labor mobility and leverage). Like in the Swedish setting, we observe that these results are driven by financially unconstrained firms. This is conceptually consistent with our more granular evidence based on Swedish data and suggests that our findings may not be specific to the Swedish setting.

VI. Conclusion

Modern corporations rely heavily on talent. In the new enterprise, human capital surpasses physical capital in its importance for value creation and as a source of competitive advantage (Rajan and Zingales 2000; Abowd et al. 2005). However, the reliance on human capital and the high mobility of skilled labor—stemming from ample outside options in the labor market—also expose firms to an added degree of fragility. In critical times, talent may leave the firm and seek employment elsewhere. This loss of talent in times of financial distress constitutes an additional source of risk that unlevered firms do not have to bear (financial distress only affects levered firms). Hence, firms that rely to a larger extent on talent face higher costs of financial distress and may consequently choose to operate with lower leverage. In this paper, we analyze the evolution of the labor force composition as firms approach bankruptcy. We document a decrease in the ability of firms to retain talent as they approach financial distress. To ensure that our findings are indeed driven by financial distress, we study a quasi-experiment that employs exogenous currency shocks in a sample of export-intensive firms with different capital structures. We find that following a large negative export shock, talent becomes more prone to leaving the firm, but only if the exporter experiencing the negative shock is highly leveraged. We interpret this as further evidence that our results are driven by financial and not economic distress.

We then study how this risk of losing talent affects ex-ante financial policies. To capture the subtle effects of talent on leverage, we study two dimensions of talent at the firm level: average talent and talent concentration. Our evidence suggests that the two are relevant. Both the average skill level in the organization and the degree to which skills are concentrated in a few key individuals within the firm are negatively associated with financial leverage.

Overall, the results in this paper suggest that the reliance on talent may introduce an additional level of risk for leveraged firms due to the possibility of losing key employees during times of financial distress.

References

Abowd, John. M., John Haltiwanger, Ron Jarmin, Julia Lane, Paul Lengermann, Kristin McCue, Kevin McKinney, and Kristin Sandusky, 2005, "The Relation among Human Capital, Productivity, and Market Value: Building Up from Micro Evidence", in: "Measuring Capital in the New Economy", edited by Corrado, C., J. Haltiwanger, and D. Sichel, University of Chicago Press.

Adams, R., Keloharju, M. and Knüpfer, S., 2018, "Are CEOs born leaders? Lessons from traits of a million individuals", *Journal of Financial Economics*, 130(2), pp.392-408.

Andrade, Gregor, and Steven N. Kaplan, 1998, "How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed", *Journal of Finance*, 53, 1443-1493.

von Below, David, and Peter Skogman Thoursie, 2010, "Last in, first out? Estimating the effects of seniority rules in Sweden", *Labor Economics*, 17, 987-997.

Brown, Jennifer, and David A. Matsa, 2016, "Boarding a sinking ship? An investigation of job applications to distressed firms", *Journal of Finance*, 71, 507-550.

Caggese, Andrea, Vincente Cunat, and Daniel Metzger, 2019, "Firing the Wrong Workers: Financing Constraints and Labor Misallocation", *Journal of Financial Economics* 133(3), pp.589-607.

Graham, John R., Hyunseob Kim, Si Li, and Jiaping Qiu, 2016, "Employee Costs of Corporate Bankruptcy", working paper.

Graham, John R., and Mark T. Leary, 2011, "A review of empirical capital structure research and directions for the future", *Annual Review of Financial Economics*, 3, 309-345.

Grossman, Sanford J., and Oliver D. Hart, 1986, "The costs and benefits of ownership: A theory of vertical and lateral integration", *Journal of Political Economy*, 94, 691-719.

Hart, Oliver D., and John H. Moore, 1990, "Property Rights and the Nature of the Firm", *Journal of Political Economy*, 98, 1119-1158.

Hart, Oliver D., and John H. Moore, 1994, "A Theory of Debt Based on the Inalienability of Human Capital", *Quarterly Journal of Economics*, 109, 841-879.

Heckman, J.J., Stixrud, J. and Urzua, S., 2006, "The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior", *Journal of Labor Economics*, 24(3), pp.411-482.

Hortaçsu, Ali, Gregor Matvos, Chad Syverson, and Sriram Venkataraman, 2013, "Indirect costs of financial distress in durable goods industries: The case of auto manufacturers", *Review of Financial Studies*, 26, 1248-1290.

Imbens, Guido W., Alberto Abadie, David Drukker and Jane Leber Herr, 2004, "Implementing Matching Estimators for Average Treatment Effects in Stata", *The STATA Journal*, 4, 290-311.

Klasa, S., Ortiz-Molina, H., Serfling, M. and Srinivasan, S., 2018. "Protection of trade secrets and capital structure decisions", *Journal of Financial Economics*, 128(2), pp.266-286.

Kolsrud, J., Landais, C., Nilsson, P. and Spinnewijn, J., 2018. "The optimal timing of unemployment benefits: Theory and evidence from Sweden", *American Economic Review*, 108(4-5), pp.985-1033.

Landais, C., Nekoei, A., Nilsson, P., Seim, D. and Spinnewijn, J., 2018, "Risk-based Selection in Unemployment Insurance: Evidence and Implications.", working paper

Lindqvist, Erik and Roine Vestman, 2011, "The Labor Market Returns to Cognitive and Noncognitive Ability: Evidence from the Swedish Enlistment", *American Economic Journal: Applied Economics*, 3, 101-128.

Maksimovic, Vojislav, and Gordon Phillips, 1998, "Asset efficiency and reallocation decisions of bankrupt firms," *Journal of Finance*, 53, 1495-1532.

Matsa, David A., 2018, "Capital Structure and a Firm's Workforce," Annual Review of Financial Economics, 10, 387-412.

Mueller, H.M., Ouimet, P.P., and Simintzi, E., 2017, "Within-firm pay inequality", *The Review of Financial Studies*, 30, 3605-3635.

Philippon, Thomas and Ariell Reshef, 2012, "Wages and human capital in the U.S. finance industry: 1909 – 2006", *The Quarterly Journal of Economics*, 127, 1551-1609

Rajan, Raghuram G., and Luigi Zingales, 2000 "The governance of the new enterprise", *National Bureau of Economic Research*.

Silva, Rui C., 2016, "Internal labor markets, wage convergence and investment", working paper.

Simintzi, Elena, Vikrant Vig, and Paolo Volpin, 2015, "Labor Protection and Leverage" *Review of Financial Studies*, 28, 561–591,

Tåg, Joacim, 2013, "Production Hierarchies in Sweden", *Economics Letters*, 121, 210-213.

Tate, Geoffrey, and Liu Yang, 2015a, "The Bright Side of Corporate Diversification: Evidence from Internal Labor Markets", *Review of Financial Studies*, 28, 2203-2249.

Tate, Geoffrey, and Liu Yang, 2015b, "The human factor in acquisitions: Cross-industry labor mobility and corporate diversification", working paper.

Weiss, Lawrence A., 1990, "Bankruptcy resolution: Direct costs and violation of priority of claims", *Journal of Financial Economics*, 27, 285-314.

Table 1: Summary statistics – matched sample of bankruptcy and non-bankruptcy firms

Panel A of this table presents summary statistics for the characteristics of the firms in the *bankruptcy* and *non-bankruptcy* groups in the year *t-5* relative to the start of the bankruptcy. In the last column we report the p-value of the t-test of the difference between the means of the characteristics of firms in the two groups. Firms in the bankruptcy group are those that file for bankruptcy between 2003 and 2011. The variables, as well as the matching procedure used to construct the control group, are described in detail in Section II of the paper. Panel B reports the distribution of bankruptcies across industries in our matched sample. Panel C tabulates the number of bankruptcies in our matched sample across years.

Panel A: characteristics of bankruptcy and non-bankruptcy firms

	Non-bankruptcy			Bankruptcy			Difference
	Obs.	Mean	S. D.	Obs.	Mean	S. D.	t-test (p-value)
Ln(Assets)	2,436	8.774	1.196	2,436	8.733	1.234	0.240
Return on assets	2,436	0.090	0.229	2,436	0.083	0.245	0.300
Leverage	2,436	0.198	0.208	2,436	0.206	0.209	0.195
Number of employees	2,436	23.755	103.236	2,436	25.808	112.252	0.506
Tangibility (not matched)	2,436	0.274	0.241	2,436	0.245	0.230	0.000
Firm age (n. m.)	2,436	17.370	14.911	2,436	14.420	13.203	0.000
Average talent	2,436	9.687	1.439	2,436	9.676	1.484	0.780
Average wage	2,436	2,007.718	687.827	2,436	2,013.737	712.690	0.764
Average age (n. m.)	2,436	36.984	5.969	2,436	36.580	6.014	0.019
Short tenure share (n. m.)	2,436	0.549	0.286	2,436	0.636	0.290	0.000
Average experience in industry (n. m.)	2,436	5.864	2.655	2,436	5.548	2.582	0.000
Average education years (n. m.)	2,436	11.000	1.101	2,436	11.032	1.048	0.293
Talent concentration (n. m.)	2,436	0.070	0.009	2,436	0.071	0.009	0.012
Number of test-takers (n. m.)	2,436	13.596	56.971	2,436	15.475	67.656	0.295
Average talent in top 5% (n. m.)	2,436	13.453	1.923	2,436	13.533	1.882	0.142
Ln(Exports) (n.m.)	1,783	3.045	5.824	1,783	3.347	6.042	0.129

Panel B: Corporate bankruptcies across industries

Industry	Nb. of bankruptcies	Percent
Agriculture	5	0.2
Commerce	381	15.6
Construction & mining	377	15.5
Finance	63	2.6
Manufacturing	659	27.1
Professional services	404	16.6
Services	284	11.7
Transportation & utilities	263	10.8
Total	*2,436*	*100.0*

Panel C: Corporate bankruptcies over time

Year	Nb. of bankruptcies	Percent
2003	355	14.6
2004	298	12.2
2005	237	9.7
2006	182	7.5
2007	169	6.9
2008	226	9.3
2009	405	16.6
2010	317	13.0
2011	247	10.1
Total	*2,436*	*100.0*

Table 2: Talent distribution across industries and levels of corporate hierarchies

Panel A reports the talent distribution across industries. Panel B reports the talent distribution across levels of the corporate hierarchy. In this table, talent is defined as the sum of cognitive and non-cognitive skill scores (from military enlistment records). Levels of hierarchy are constructed following Tåg (2013) using employee-level occupational codes from Statistics Sweden. The underlying sample consists of Swedish limited liability firms; we focus on observations with non-missing information on assets, at least five employees, and with at least five consecutive years of data (information from the Serrano database). The sample spans the period 1998 – 2011 in Panel A and 2001 – 2011 in Panel B.

Panel A: Talent distribution across industries

Industry	Mean	S. D.
Agriculture	9.980	2.952
Commerce	10.248	2.825
Construction and mining	9.632	2.639
Finance	10.383	2.987
Manufacturing	9.927	2.976
Professional services	11.118	3.004
Services	10.577	2.959
Transportation and utilities	9.753	2.910
Total	*10.203*	*2.955*

Panel B: Talent distribution across levels of hierarchy

Hierarchy level	Mean	S. D.
Clerks and "blue-collar" workers	9.180	2.738
Supervisors	11.721	2.544
Senior staff	12.082	2.546
CEOs and directors	11.726	2.714
Total	*10.185*	*2.954*

Table 3: Summary statistics – regression samples

This table reports summary statistics for the different regression samples. Panel A presents the summary statistics for individuals included in our analysis of the selection of workers who leave or join firms approaching bankruptcy. Panel B reports summary statistics for the characteristics of firms in the sample of exporting firms. Panel C reports summary statistics for the characteristics of workers in the sample of exporting firms. Finally, Panel D reports the summary statistics for the firms in our cross-sectional study of capital structure. For details, see Section II of the paper.

Panel A: Worker characteristics: baseline sample (1998 – 2010)

Variable	Obs.	Mean	S. D.
Leave	345,899	0.187	0.390
Join	345,899	0.243	0.429
Talent	345,899	0.108	0.310
Close	345,899	0.592	0.491
Bankrupt	345,899	0.523	0.499
Age	345,899	35.311	10.107
Short tenure	345,899	0.474	0.499
Experience in industry	345,899	7.181	4.831
Ln(Years of education)	345,899	2.428	0.159
Ln(Wage)	345,899	7.036	1.774
Other municipality	345,899	0.063	0.244
Unemployed	345,899	0.077	0.267
Jumped the queue	30,292	0.279	0.448

Panel B: Firm characteristics: export sample (2001 – 2010)

Variable	Obs.	Mean	S. D.
Bankrupt within 2 years	63,959	0.014	0.119
High leverage	63,959	0.504	0.500
Exchange rate shock	63,959	0.060	0.238
Tangibility	63,919	0.193	0.189
Profitability	63,919	0.064	0.109
Ln(Assets)	63,919	10.710	1.447

Panel C: Worker characteristics – export sample (2001 – 2010)

Variable	Obs.	Mean	S. D.
Leave	4,086,630	0.130	0.336
High leverage	4,086,630	0.279	0.449
Exchange rate shock	4,086,630	0.058	0.234
Talent	4,086,630	0.061	0.239
Age	3,993,092	38.096	9.995
Short tenure	3,993,092	0.438	0.496
Experience in industry	3,993,092	8.851	5.034
Ln(Years of education)	3,993,092	2.476	0.173
$Ln(Wage)_{t-1}$	3,993,092	7.674	0.863

Panel D: Firm characteristics – cross-sectional leverage sample (1999 – 2011)

Variable	Obs.	Mean	S. D.
Leverage	388,808	0.133	0.184
Talent concentration	388,808	0.069	0.009
Average talent	388,808	10.035	1.587
Average experience in industry	388,624	6.998	2.969
Short tenure share	388,808	0.484	0.263
Tangibility	388,808	0.236	0.237
Profitability	388,808	0.068	0.113
Ln(Assets)	388,808	9.437	1.456
Firm age	388,808	21.154	17.154
Constrained	215,748	0.511	0.500

Table 4. Selection of workers that leave firms approaching bankruptcy

This table reports coefficients of OLS regression models studying the composition of workers that leave firms approaching bankruptcy. *Leave*, the dependent variable, is a dummy variable that takes the value of one in the year the worker leaves the firm, and zero otherwise. *Bankrupt* takes the value of one for workers employed by a firm that goes bankrupt at some point during the sample period. *Close* takes the value of one in years *t-3*, *t-2*, and *t-1* relative to the bankruptcy event (*t0*) and the matching year (*t-5*). *Talent* is a dummy variable taking the value of one for the top 5% of talent (measured using combined cognitive and noncognitive test scores) within a firm. The sample spans the period 1998 – 2010. Robust standard errors, clustered at the firm level, are reported in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
		Leave	
Close × Bankrupt	0.071***	0.066***	0.039
	(0.007)	(0.007)	(0.071)
Close × Bankrupt × Talent		0.036***	0.035***
		(0.009)	(0.009)
Talent		0.037***	0.036***
		(0.005)	(0.005)
Bankrupt × Talent		-0.013*	-0.010
		(0.007)	(0.007)
Close × Talent		-0.025***	-0.022***
		(0.006)	(0.006)
$Ln(Wage)_{t-1}$			-0.025***
			(0.001)
$Ln(Wage)_{t-1}$ × Close			-0.001
			(0.002)
$Ln(Wage)_{t-1}$ × Bankrupt			0.003*
			(0.002)
$Ln(Wage)_{t-1}$ × Close × Bankrupt			0.001
			(0.002)
Age			-0.005***
			(0.000)
Close × Age			0.000
			(0.000)
Bankrupt × Age			-0.001***
			(0.000)
Close × Bankrupt × Age			0.000
			(0.000)
Short tenure			0.029***
			(0.005)
Bankrupt × Short tenure			-0.019**
			(0.008)
Close × Short tenure			-0.008
			(0.006)
Close × Bankrupt × Short tenure			0.020*
			(0.011)

Experience in industry			-0.003***
			(0.001)
Bankrupt × Experience in industry			0.002**
			(0.001)
Close × Experience in industry			0.000
			(0.001)
Close × Bankrupt × Experience in industry			0.002
			(0.001)
Ln(Years of education)			0.007
			(0.018)
Bankrupt × Ln(Years of education)			-0.002
			(0.027)
Close × Ln(Years of education)			-0.017
			(0.014)
Close × Bankrupt × Ln(Years of education)			-0.002
			(0.028)
Firm F.E.	Yes	Yes	Yes
Industry × year F.E.	Yes	Yes	Yes
Close × enrolment period F.E.	Yes	Yes	Yes
Observations	345,899	345,899	345,899
Adjusted R^2	0.123	0.124	0.143

Table 5. Selection of workers that leave firms approaching bankruptcy: additional specifications

This table reports coefficients of OLS regression models studying the composition of workers that leave firms approaching bankruptcy. *Leave*, the dependent variable, is a dummy variable that takes the value of one in the year the worker leaves the firm, and zero otherwise. *Bankrupt* takes the value of one for workers employed by a firm that goes bankrupt at some point during the sample period. *Close* takes the value of one in years *t-3*, *t-2*, and *t-1* relative to the bankruptcy event (*t0*) and the matching year (*t-5*). *Talent* is a dummy variable taking the value of one for the top 5% of talent (measured using combined cognitive and noncognitive test scores) within a firm. The sample in specification (1) spans the period 1998 – 2010, while it covers the years 2001 – 2010 in specifications (2) and (3) due to (hierarchy) data availability. We also include the following variables (as well as all their interactions with *Bankrupt* and *Close*) in the regressions, but do not report coefficients for the sake of brevity: *Age*, *Short tenure*, *Experience in industry*, *Ln(Years of education)*, lagged *Ln(Wage)*. Robust standard errors, clustered at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
		Leave	
Close × Bankrupt × Talent	0.019**	0.029***	0.027***
	(0.009)	(0.010)	(0.010)
Close × Bankrupt		0.046	
		(0.089)	
Talent	0.039***	0.020***	0.020***
	(0.005)	(0.006)	(0.006)
Bankrupt × Talent	-0.003	-0.008	-0.007
	(0.007)	(0.008)	(0.008)
Close × Talent	-0.014**	-0.014**	-0.014**
	(0.006)	(0.007)	(0.007)
Controls and interactions	Yes	Yes	Yes
Firm × year F.E.	Yes		
Close × enrolment period F.E.	Yes	Yes	Yes
Firm F.E.		Yes	Yes
Industry × year F.E.		Yes	Yes
Hierarchy F.E.		Yes	
Close × Bankrupt × Hierarchy F.E.			Yes
Observations	345,469	270,343	270,343
Adjusted R^2	0.213	0.123	0.123

Table 6. Selection of workers that leave firms approaching bankruptcy: voluntary vs. involuntary departures

This table reports coefficients of OLS regression models studying the composition of workers that leave firms approaching bankruptcy. In columns 1 and 2, the dependent variable is *Unemployed*, a dummy variable equal to one if a worker transitions to unemployment when leaving a firm. In columns 3 and 4 the dependent variable is *Leave*, a dummy variable equal to one in the year a worker leaves a firm. In columns 5 and 6 the dependent variable is *Jumped the queue*, a dummy variable equal to 1 if a worker leaves a firm and his tenure in the firm is higher than the tenure of the *n*-th worker ranked by tenure, where *n* is the number of workers leaving the firm that year. The sample underlying columns 3 and 4 only includes employees of firms with 11 or more workers. In columns 5 and 6, only workers leaving firms during *t-3* to *t-1* relative to the bankruptcy are included. The sample period is 1998 – 2010. Robust standard errors, clustered at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Unemployed		Leave		Jumped the queue	
Close × Bankrupt	0.030***	-0.004	0.061***	0.052		
	(0.003)	(0.032)	(0.008)	(0.075)		
Close × Bankrupt × Talent		0.005		0.031***		
		(0.006)		(0.010)		
Talent		-0.025***		0.042***	0.030***	0.031***
		(0.003)		(0.006)	(0.009)	(0.009)
Bankrupt × Talent		-0.007		-0.011		
		(0.004)		(0.008)		
Close × Talent		0.004		-0.022***		
		(0.004)		(0.007)		
$Ln(Wage)_{t-1}$		-0.006***		-0.025***		0.035***
		(0.001)		(0.002)		(0.002)
$Ln(Wage)_{t-1}$ × Close		0.003***		-0.001		
		(0.001)		(0.002)		
$Ln(Wage)_{t-1}$ × Bankrupt		0.001		0.004*		
		(0.001)		(0.002)		
$Ln(Wage)_{t-1}$ × Close × Bankrupt		0.005***		0.001		
		(0.002)		(0.003)		
Age		0.002***		-0.005***		-0.003***
		(0.000)		(0.000)		(0.001)
Close × Age		-0.000		0.000		
		(0.000)		(0.000)		
Bankrupt × Age		-0.000		-0.001**		
		(0.000)		(0.000)		
Close × Bankrupt × Age		0.001**		-0.000		
		(0.000)		(0.000)		
Short tenure		0.054***		0.024***		
		(0.003)		(0.006)		
Bankrupt × Short tenure		0.005		-0.016*		
		(0.005)		(0.009)		
Close × Short tenure		-0.006		-0.004		

		(0.004)		(0.007)		
Close × Bankrupt × Short tenure		0.017***		0.023*		
		(0.006)		(0.012)		
Experience in industry		-0.005***		-0.003***		0.031***
		(0.000)		(0.001)		(0.002)
Bankrupt × Experience in industry		-0.001		0.002**		
		(0.001)		(0.001)		
Close × Experience in industry		0.001*		0.000		
		(0.000)		(0.001)		
Close × Bankrupt × Experience in industry		-0.000		0.002		
		(0.001)		(0.001)		
Ln(Years of education)		0.037***		0.017		0.019
		(0.009)		(0.020)		(0.019)
Bankrupt × Ln(Years of education)		0.010		-0.001		
		(0.013)		(0.029)		
Close × Ln(Years of education)		-0.021**		-0.026		
		(0.009)		(0.016)		
Close × Bankrupt × Ln(Years of education)		-0.010		-0.007		
		(0.013)		(0.029)		
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Industry × year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Close × enrolment period F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Observations	345,899	345,899	294,816	294,816	30,292	30,292
Adjusted R^2	0.066	0.085	0.120	0.140	0.159	0.247

Table 7. Selection of workers that join firms approaching bankruptcy

This table reports coefficients of OLS regression models studying the composition of workers that join firms approaching bankruptcy. *Join*, the dependent variable, is a dummy variable that takes the value of one in the year the worker joins the firm, and zero otherwise. The sample used spans the period 1998 – 2010. Robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
		Join	
Close × Bankrupt	-0.012	-0.014*	-0.050
	(0.008)	(0.009)	(0.057)
Close × Bankrupt × Talent		0.019*	0.010
		(0.010)	(0.009)
Talent		0.011**	0.001
		(0.005)	(0.005)
Bankrupt × Talent		-0.017**	-0.010
		(0.009)	(0.007)
Close × Talent		-0.011*	-0.004
		(0.007)	(0.006)
$Ln(Wage)_{t-1}$			-0.100***
			(0.002)
$Ln(Wage)_{t-1}$ × Close			-0.006***
			(0.001)
$Ln(Wage)_{t-1}$ × Bankrupt			0.007***
			(0.002)
$Ln(Wage)_{t-1}$ × Close × Bankrupt			-0.004*
			(0.002)
Age			0.003***
			(0.000)
Close × Age			-0.000
			(0.000)
Bankrupt × Age			-0.001**
			(0.000)
Close × Bankrupt × Age			-0.000
			(0.000)
Experience in industry			-0.030***
			(0.001)
Bankrupt × Experience in industry			-0.003**
			(0.001)
Close × Experience in industry			0.008***
			(0.001)
Close × Bankrupt × Experience in industry			0.002*
			(0.001)
Ln(Years of education)			0.028**
			(0.014)
Bankrupt × Ln(Years of education)			0.009
			(0.018)

Close × Ln(Years of education)			0.008
			(0.014)
Close × Bankrupt × Ln(Years of education)			0.024
			(0.023)
Other municipality			0.054***
			(0.009)
Bankrupt × Other municipality			-0.006
			(0.011)
Close × Other municipality			0.011
			(0.010)
Close × Bankrupt × Other municipality			-0.019
			(0.013)
Firm F.E.	Yes	Yes	Yes
Industry × year F.E.	Yes	Yes	Yes
Close × enrolment period F.E.	Yes	Yes	Yes
Observations	345,899	345,899	345,899
Adjusted R^2	0.164	0.164	0.365

Table 8. Selection of workers that join firms approaching bankruptcy: additional specifications

This table reports coefficients of OLS regression models studying the composition of workers that join firms approaching bankruptcy. *Join*, the dependent variable, is a dummy variable that takes the value of one in the year the worker joins the firm, and zero otherwise. We also include the following variables (as well as all their interactions with *Bankrupt* and *Close*) in the regressions, but do not report coefficients for the sake of brevity: *Age*, *Other municipality*, *Experience in industry*, *Ln(Years of education)*, lagged *Ln(Wage)*. The sample in specification (1) spans the period 1998 – 2010, while it covers the years 2001 – 2010 in specifications (2) and (3) due to (hierarchy) data availability. Robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
		Join	
Close × Bankrupt × Talent	0.011	0.007	0.006
	(0.008)	(0.011)	(0.011)
Close × Bankrupt		-0.114	
		(0.071)	
Talent	0.007	0.000	0.000
	(0.005)	(0.006)	(0.006)
Bankrupt × Talent	-0.007	-0.005	-0.004
	(0.007)	(0.009)	(0.009)
Close × Talent	-0.008	-0.004	-0.005
	(0.006)	(0.007)	(0.007)
Controls and interactions	Yes	Yes	Yes
Firm × year F.E.	Yes		
Close × enrolment period F.E.	Yes	Yes	Yes
Firm F.E.		Yes	Yes
Industry × year F.E.		Yes	Yes
Hierarchy F.E.		Yes	
Close × Bankrupt × hierarchy F.E.			Yes
Observations	345,469	270,343	270,343
Adjusted R^2	0.408	0.304	0.304

Table 9: Placebo test

In this table, we repeat the analyses of Table 3 and Table 6, but for a "placebo" event period: we keep the composition of bankruptcy and non-bankruptcy groups but define the sample period as *t-8* to *t-4* relative to bankruptcy. The variable *Placebo close* takes a value of one in the years *t-6* to *t-4* relative to the bankruptcy event (*t0*) and the matching year (*t-5*). In columns 1 – 3 we present the placebo analysis for "leavers" while in columns 4 – 6 we present the placebo results for the "joiners." In all specifications, we include but do not report the constituent interaction terms between *Placebo close*, *Bankrupt*, and *Talent*. We also include the following variables in the regressions in columns 2 and 3 (including all the interactions with *Placebo close* and *Bankrupt*), but do not report coefficients for the sake of brevity: *Age*, *Short tenure*, *Experience in industry*, *Ln(Years of education)*, lagged *Ln(Wage)*. In columns 5 and 6, we also include the following variables (including all the interactions with *Placebo close* and *Bankrupt*), but do not report coefficients: *Age*, *Other municipality*, *Experience in industry*, *Ln(Years of education)*, lagged *Ln(Wage)*. The sample period is 1998 – 2007. Robust standard errors, clustered at the firm level, are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Leave			Join	
Placebo close × Bankrupt × Talent	0.002	0.002	0.010	-0.016	-0.011	-0.004
	(0.010)	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
Placebo close × Bankrupt × Ln(Wage)$_{t-1}$		0.003	0.003		0.005	0.004
		(0.003)	(0.003)		(0.003)	(0.003)
Placebo close × Bankrupt × Age		-0.001*	-0.001**		-0.001	-0.001*
		(0.000)	(0.000)		(0.001)	(0.000)
Placebo close × Bankrupt × Short tenure		-0.008	-0.010			
		(0.009)	(0.010)			
Placebo close × Bankrupt × Experience in industry		0.001	0.000		0.000	-0.001
		(0.001)	(0.001)		(0.002)	(0.003)
Placebo close × Bankrupt × Ln(Years of education)		0.024	0.003		-0.023	-0.026
		(0.020)	(0.023)		(0.031)	(0.022)
Placebo close × Bankrupt × Other municipality					-0.011	-0.012
					(0.020)	(0.020)
Controls and interactions	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes		Yes	Yes	
Industry × year F.E.	Yes	Yes		Yes	Yes	
Close × enrolment period F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm × year F.E.			Yes			Yes
Observations	283,585	283,585	283,298	283,585	283,585	283,298
Adjusted R^2	0.103	0.126	0.146	0.198	0.393	0.452

Table 10: Export shock and financial distress

This table reports coefficients from OLS regressions studying the relationship between leverage, exchange rate shocks, and bankruptcy. *Bankrupt within 2 years* is a dummy variable that takes the value of one if the firm files for bankruptcy in the current year, next year, or the one therafter, and zero otherwise. *High leverage* is a dummy variable that takes the value of one if the firm's average leverage in the first two years in the sample is above the sample median. *Exchange rate shock* is a dummy variable that takes the value of one in the year the firm suffers an unfavorable exchange rate shock, and takes the value of zero otherwise. The control variables *Tangibility*, *Profitability*, and *Ln(Assets)* are lagged by one year. The sample and variable construction are discussed in Section II. Robust standard errors, clustered at the firm level, are reported in parentheses below the coefficients. Statistical significance at 1%, 5% and 10% is market with ***, ** and * respectively.

	(1)	(2)
	Bankrupt within 2 years	
High leverage × Exchange rate shock	0.007**	0.008**
	(0.003)	(0.003)
Exchange rate shock	-0.003	-0.003
	(0.002)	(0.002)
Tangibility		0.002
		(0.009)
Profitability		-0.045***
		(0.009)
Ln(Assets)		-0.008***
		(0.003)
Firm F.E.	Yes	Yes
Industry × year F.E.	Yes	Yes
Observations	63,959	63,919
Adjusted R^2	0.519	0.520

Table 11: Financial distress and labor mobility

This table reports coefficients from OLS regression models studying the composition of workers leaving firms following an unfavorable exchange rate shock. *Leave*, the dependent variable, is a dummy variable that takes the value of one in the year the worker leaves the firm, and zero otherwise. *High leverage* is a dummy variable that takes the value of one if the firm's average leverage in the first two years in the sample is above the sample median. *Exchange rate shock* is a dummy variable that takes the value of one in the year the firm suffers a severe exchange rate shock, and takes the value of zero otherwise. The sample and variable construction is discussed in the data section of the paper (Section II). Robust standard errors, clustered at the firm level, are reported in parentheses below coefficients. Statistical significance at 1%, 5% and 10% is market with ***, ** and * respectively.

	(1)	(2)	(3)
		Leave	
Exchange rate shock × High leverage × Talent	0.013**	0.014**	0.014***
	(0.006)	(0.006)	(0.005)
Exchange rate shock × Talent	0.001	-0.000	-0.004
	(0.003)	(0.003)	(0.003)
High leverage × Talent	-0.001	-0.002	-0.003
	(0.002)	(0.002)	(0.002)
Talent	0.036***	0.033***	0.023***
	(0.001)	(0.001)	(0.001)
Age		-0.002***	-0.002***
		(0.000)	(0.000)
Short tenure		0.019***	0.020***
		(0.001)	(0.001)
Experience in industry		-0.001***	-0.001***
		(0.000)	(0.000)
Ln(Years of education)		0.071***	0.057***
		(0.003)	(0.003)
$Ln(Wage)_{t-1}$		-0.059***	-0.042***
		(0.001)	(0.001)
Firm × year F.E.	Yes	Yes	Yes
Enrolment period F.E.	Yes	Yes	Yes
Hierarchy F.E.			Yes
Observations	4,086,630	3,993,092	3,822,404
Adjusted R^2	0.209	0.236	0.230

Table 12: Financial distress and labor mobility: additional specifications

This table reports coefficients from regression models studying the composition of workers leaving firms following an unfavorable exchange rate shock. *Leave*, the dependent variable, is a dummy variable that takes the value of one in the year the worker leaves the firm, and zero otherwise. *High leverage* is a dummy variable that takes the value of one if the firm's average leverage in the first two years in the sample is above the sample median. *Exchange rate shock* is a dummy variable that takes the value of one in the year the firm suffers a severe exchange rate shock, and takes the value of zero otherwise. We also include the following variables (as well as all their interactions with *Exchange rate shock* and *High leverage*) in the regressions, but do not report all the coefficients for the sake of brevity: *Age*, *Short tenure*, *Experience in industry*, *Ln(Years of education)*, lagged *Ln(Wage)*. The sample and variable construction is discussed in the data section of the paper (Section II). Robust standard errors, clustered at the firm level, are reported in parentheses below the regression coefficients. Statistical significance at 1%, 5% and 10% is market with ***, ** and * respectively.

	(1)	(2)
	Leave	
Exchange rate shock × High leverage × Talent	0.012**	0.012**
	(0.006)	(0.006)
Exchange rate shock × Talent	-0.004	-0.004
	(0.003)	(0.003)
High leverage × Talent	-0.001	-0.003
	(0.002)	(0.002)
Talent	0.033***	0.023***
	(0.001)	(0.001)
Exchange rate shock × High leverage × Age	-0.001	-0.000
	(0.000)	(0.000)
Exchange rate shock × High leverage × Short tenure	-0.012	-0.015
	(0.015)	(0.015)
Exchange rate shock × High leverage × Experience in industry	-0.001	-0.001
	(0.001)	(0.001)
Exchange rate shock × High leverage × Ln(Years of education)	0.018	0.020*
	(0.013)	(0.012)
Exchange rate shock × High leverage × $Ln(Wage)_{t-1}$	-0.002	-0.000
	(0.005)	(0.005)
Firm × year F.E.	Yes	Yes
Enrolment period F.E.	Yes	Yes
Hierarchy F.E.		Yes
Observations	3,993,092	3,822,404
Adjusted R^2	0.236	0.230

Table 13: Financial distress and labor mobility: placebo test

This table reports coefficients from OLS regression models studying the composition of workers leaving firms following an unfavorable exchange rate shock. *Exchange rate shock* is one in the year the firm suffers a severe exchange rate shock and is zero otherwise. In the specifiations below, we assign a dummy variable to the year prior to an exchange rate shock: *F1(Exchange rate shock)* is the one-year lead term of the variable *Exchange rate shock.* The other variables used are the same as in Table 12. Robust standard errors, clustered at the firm level, are reported in parentheses below the coefficients. Statistical significance at 1%, 5% and 10% is market with ***, ** and * respectively.

	(1)	(2)	(3)
		Leave	
F1(Exchange rate shock) × High leverage × Talent	-0.003	0.000	0.002
	(0.007)	(0.007)	(0.007)
F1(Exchange rate shock) × Talent	-0.000	-0.002	-0.005
	(0.003)	(0.003)	(0.003)
Exchange rate shock × High leverage × Talent	0.015**	0.013**	0.013**
	(0.007)	(0.006)	(0.006)
Exchange rate shock × Talent	0.001	0.001	-0.002
	(0.004)	(0.003)	(0.003)
High leverage × Talent	-0.001	-0.002	-0.003*
	(0.002)	(0.002)	(0.002)
Talent	0.036***	0.033***	0.023***
	(0.001)	(0.001)	(0.001)
Age		-0.002***	-0.002***
		(0.000)	(0.000)
Short tenure		0.019***	0.020***
		(0.001)	(0.001)
Experience in industry		-0.001***	-0.001***
		(0.000)	(0.000)
Ln(Years of education)		0.071***	0.057***
		(0.003)	(0.003)
$Ln(Wage)_{t-1}$		-0.059***	-0.042***
		(0.001)	(0.001)
Firm × year F.E.	Yes	Yes	Yes
Enrolment period F.E.	Yes	Yes	Yes
Hierarchy F.E.			Yes
Observations	4,086,630	3,993,092	3,822,404
Adjusted R^2	0.209	0.236	0.230

Table 14: Talent intensity and leverage in the cross-section of firms

This table reports coefficients from regression models studying the relationship between the talent-intensity of firms and financial leverage. Panel A considers all firms, while Panel B focusses on the role of financial constraints. *Constrained* is a dummy variable that takes the value of one for firms that are "small and young," and it takes a value of zero for firms that are "large and old." For details, see Section II. *Average talent* is the average of the combined cognitive and noncognitive skill scores of the employees working in a given firm and year. *Talent concentration* is the fraction of a given firm's total combined skill scores that is accounted for by workers who are at or above the 95th percentile of the combined skills distribution in the firm in a given year. All explanatory variables in the regression are lagged by one year. The sample and variable construction is discussed in the data section of the paper (Section II). Robust standard errors, clustered at the firm level, are reported in parentheses below the coefficients. Statistical significance at 1%, 5% and 10% is market with ***, ** and * respectively.

Panel A: Cross-sectional leverage regressions

	(1)	(2)	(3)	(4)	(5)
			Leverage		
Talent concentration	-0.588***	-0.459***	-0.282***	-0.428***	-0.340***
	(0.084)	(0.073)	(0.072)	(0.073)	(0.072)
Average talent	-0.023***	-0.007***	-0.003***	-0.007***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Average experience in industry				0.002***	-0.000
				(0.000)	(0.000)
Short tenure share				0.005**	0.014***
				(0.002)	(0.002)
Tangibility		0.410***	0.418***	0.410***	0.417***
		(0.003)	(0.004)	(0.003)	(0.004)
Profitability		-0.160***	-0.159***	-0.161***	-0.157***
		(0.005)	(0.005)	(0.005)	(0.005)
Ln(Assets)		-0.002***	-0.006***	-0.003***	-0.006***
		(0.001)	(0.001)	(0.001)	(0.001)
Firm age		-0.000***	-0.001***	-0.000***	-0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Year F.E.	Yes	Yes		Yes	
Industry × year F.E.			Yes		Yes
Observations	388,808	388,808	388,579	388,624	388,575
Adjusted R^2	0.037	0.278	0.295	0.278	0.295

Panel B: Cross-sectional leverage regressions, the role of financial constraints

	(1)	(2)	(3)	(4)	(5)
			Leverage		
Talent concentration × Constrained	0.996***	0.671***	0.643***	0.710***	0.626***
	(0.220)	(0.192)	(0.190)	(0.192)	(0.190)
Talent concentration	-1.507***	-1.060***	-0.871***	-1.038***	-0.905***
	(0.180)	(0.164)	(0.163)	(0.164)	(0.163)
Average talent × Constrained	0.013***	0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Average talent	-0.031***	-0.008***	-0.004***	-0.007***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constrained	-0.209***	-0.076***	-0.055***	-0.075***	-0.056***
	(0.024)	(0.021)	(0.021)	(0.021)	(0.021)
Average experience in industry				0.002***	0.000
				(0.000)	(0.000)
Short tenure share				0.003	0.012***
				(0.003)	(0.003)
Tangibility		0.401***	0.411***	0.402***	0.410***
		(0.004)	(0.005)	(0.004)	(0.005)
Profitability		-0.189***	-0.189***	-0.189***	-0.187***
		(0.007)	(0.007)	(0.007)	(0.007)
Ln(Assets)		-0.004***	-0.006***	-0.004***	-0.006***
		(0.001)	(0.001)	(0.001)	(0.001)
Firm age		-0.001***	-0.001***	-0.001***	-0.001***
		(0.000)	(0.000)	(0.000)	(0.000)
Year F.E.	Yes	Yes		Yes	
Industry × year F.E.			Yes		Yes
Observations	215,748	215,748	215,654	215,670	215,651
Adjusted R^2	0.035	0.265	0.280	0.265	0.281

Figure 1: Evolution of labor force in firms approaching bankruptcy

This figure shows the average share of workers leaving and joining firms in a given year. The timing is relative to the year a firm files for bankruptcy (*t0*) and relative to the matching year (*t-5*). The sample construction is discussed in detail in Section II.

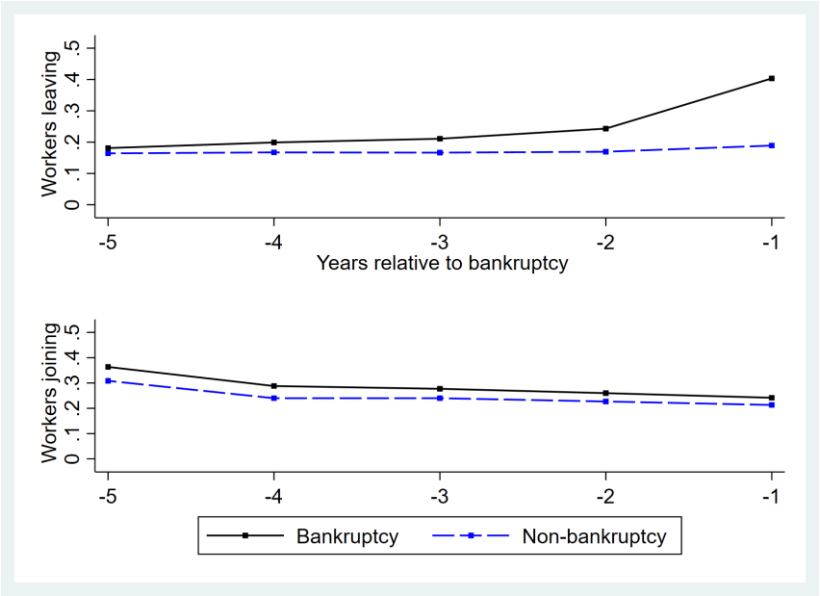

Figure 2: Talent leaving and joining bankruptcy and non-bankruptcy firms

This figure shows the share of talent (as a fraction of total workers employed in the firm in a given year) leaving and joining firms. "Talented" are those workers who lie in the top 5% of the distribution of the sum of cognitive and noncognitive skills scores within the firm in a given year. The timing is relative to the year a firm files for bankruptcy (*t0*) and relative to the matching year (*t-5*). The sample construction and variables definition is discussed in detail in Section II.

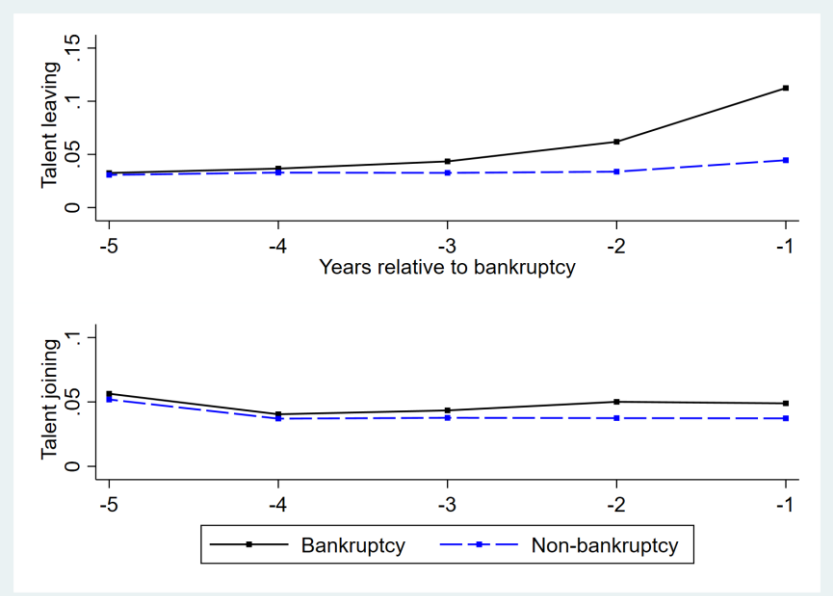

Figure 3: Evolution of the talent wage premium, 1998 – 2011

The figure shows the evolution of the talent wage premium in Sweden between 1998 and 2011. The sample is constructed as follows. The underlying sample consists of Swedish limited liability firms; we focus on observations with non-missing information on assets, at least five employees, at least five military test-takers in the first year that the firm enters the sample, and with at least five consecutive years of data (information from the Serrano database). Furthermore, we consider all individuals that took military enlistment tests. We estimate the following regression model: $Ln(Wage)_{i,t} = \alpha_t T_{i,t} + X'\beta$. *Ln(Wage)* is the natural logarithm of the labor income obtained by an individual from the main employer in a given year. The matrix *X* includes the following fixed effects: worker age × year, industry, years of education, and *Talent (economy-wide)*. *Talent (economy-wide)* is a dummy variable that takes the value of one if a given worker is in the top 5% (alternatively, top 50%) of the skill distribution in the economy in a given year, where skill is measured using the combined cognitive and noncognitive military test scores. *T* is *Talent (economy-wide)* interacted with year dummies. The coefficients α_t, plotted in the figure below, is the talent wage premium in a given year relative to that in the year 1998.