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Employment protection and human capital investments as drivers of downsizing: Evidence from Belgian SMEs

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ABSTRACT

Although employment downsizing has received some research attention, evidence on the influence of employment characteristics is limited. This study investigates the effect of employment protection and human capital investments on the probability of downsizing decisions, by exploiting firm-level differences in labor protection and training-related investments. We posit that the ex-ante effect of employment protection is unclear, while the effect of investments in human capital will be negatively related to downsizing likelihood. The evidence is consistent with this prediction. Moreover, we find robust results that employment protection increases downsizing likelihood. Using a sample of 2,221 Belgian SMEs between 2009 and 2019, we show that these effects are moderated by financial constraints and employment characteristics. Collectively, these results show the importance of taking firm-level employment characteristics, and its according labor frictions, into account in addition to the more commonly examined financial characteristics.

JEL classification:

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1. Introduction

"Employee engagement isn't just an "HR thing" - it's a finance, accounting and valuation thing."

"The value of a business is a function of how well the financial capital and the intellectual capital are managed by the human capital. You'd better get the human capital part right."

(Bookbinder., 2017, p 19)

The effect of labor market frictions, caused by employment protection, and the effect of investment in human capital development on firm performance are two long-standing research questions in (labor) economics. Evidence on employment protection, however, does not find consistent results. Employment protection, for instance, has been shown to decrease productivity (Bai et al., 2019; Bjuggren, 2018), lower capital investments (Bai et al., 2019) and impede employment investment efficiency (Guo et al., 2021). Yet, studies also highlight that it stimulates knowledge-deepening (Autor et al., 2007) and so, spurs innovation (Acharya et al., 2013; Bena et al., 2022). Research on human capital development, on the other hand, finds more consistent, and positive results, focusing on: productivity (Georgiadis & Pitelis, 2016; Van de Wiele, 2010), profitability (O'Connell & Byrne, 2012) and market valuation (Riley et al., 2017). Moreover, not only corporate finance researchers have shown interest in the topic, also macroeconomists have examined country-level differences of employment protection and human capital development in relation to firm's location decisions (e.g. innovation activities (Griffith & Macartney, 2014)) and on country-level unemployment (Duygan-Bump et al., 2015). In general, research tends to be inconclusive on the impact of labor frictions on firm performance (Jung et al., 2022). What several studies do tend to agree upon, is that the costs related to these frictions outweigh the benefits for small businesses (Estevez-Abe et al., 2001; Watson & Arunachalam, 2018).

Even though some degree of labor protection is necessary, the resulting frictions have an important impact on a firm's labor allocation decisions, due to increased cost of dismissal. Yet, these labor frictions, although prominent and still rising in importance in the financial

literature, have been largely neglected in the restructuring literature. This is an important research gap as the vast majority of firms will at some point in their existence be confronted with circumstances in which they need to consider strategic changes – in operations, financing, or employment – to increase their efficiency, performance, and ultimately their likelihood of survival. This gap becomes even more important in a small business environment as Small and Medium-sized enterprises (henceforth SMEs) are more resource constraint and have less market power, and thus have less strategic choices and require peculiar management approaches compared to large enterprises (Smallbone et al., 2012). So in many cases, enterprises, and especially SMEs, do not have as many possibilities to restructure their business (e.g., asset and debt restructuring), limiting their options to employment downsizing (Kitching & Marlow, 2013; Lai et al., 2016). Consequently, existing labor frictions can become an important hurdle in their downsizing decisions as they hinder a firm's labor flexibility through increased labor adjustment costs.

The resource constraints surrounding SMEs, not only limit a SMEs strategic choices, it also increases the impact of downsizing decisions, making management often more reluctant to make workforce adjustments, for two reasons. First, the impact of their downsizing decisions is often extensive as they have fewer resources to absorb the loss of employees (Josefy et al., 2015). So when firms face the same level of employment change, operational disruptions will be larger for smaller firms and even more so when it concerns involuntary dismissals (Park & Shaw, 2013). Secondly, SMEs are characterized by a strong people oriented working environment, since human capital often constitutes the core asset of SMEs. In addition, management tends to be closer to its employees in the day-to-day operations (Josefy et al., 2015; Meijaard et al., 2005). Overall, management is often reluctant to make workforce adjustment, even when it concerns small adjustments (e.g. single employee layoff), such that when they are confronted with a challenging and changing business environment or (financial) distress, management is almost forced to make disruptive labor cuts (downsizing) as a last resort

to restore efficiency and keep the firm going concern[1]. Despite the importance of SME's downsizing decisions, empirical evidence on the subject is scarce as the mainstream restructuring research is focused on large enterprises, sustained by higher media exposure and apparent societal impact, and data availability issues. This paper will fill this gap in the literature by researching the effect of labor frictions and human capital on downsizing decisions.

The ex-ante expected effect of employment protection on downsizing likelihood is unclear. A first line of reasoning claims that the flexibility to hire and fire employees is a source of competitive advantage both at the country (Bentolila & Bertola, 1990) as well as at the firm level (Belenzon & Tsolmon, 2016). More recent evidence shows that employment protection increases labor investment inefficiency and over-employment (Guo et al., 2021). Opponents further claim that employment protection makes labor rather a fixed cost of production than a variable one, hence it increases a firm's operating leverage (Beuselinck et al., 2021; Dewaelheyns et al., 2019; Serfling, 2016; Simintzi et al., 2014). This higher operating leverage not only results in higher likelihood of financial distress, but also increases the costs of financial distress due to the larger labor adjustment costs. Based on the argumentation above, it can be claimed that labor frictions hinder labor adjustment decisions, putting more pressure on management to make significant employment cuts when distress or unexpected business changes occur. Yet, an opposing line of reasoning points out that employment protection can actually help to build human capital. Indeed, research has found that as employees will more likely invest in tacit and firm-specific knowledge when they are better protected against unvoluntary dismissals (Autor et al., 2007; Estevez-Abe et al., 2001; Watson & Arunachalam, 2018). This would also stimulate firm-level investments in countries with better protected employment as it also increases the enforceability of labor contracts (Griffith & Macartney, 2014). Ultimately, proponents claim that employment protection can help to build human

[1] Evidence can be found in the reorganization literature, where it is often claimed that small business managers wait too long to take strong strategic actions (e.g. Verreydt, Dewaelheyns and Van Hulle (2022)).

capital. Therefore, management will hold on to these employees in order to overcome changing business environments or distress.

With regards to human capital investments, we posit that it will have a negative impact on downsizing likelihood. Building on the seminal paper of Becker (1962), we argue that human capital and investments therein (e.g. through training expenses) are important resources to create a competitive advantage and strengthen a firm's ability to compete. This on its turn can influence financial soundness and financial risk taking (Pham et al., 2022), while also influencing firm value (Riley et al., 2017). Ultimately, we argue that letting go of these employees, and their according firm specific knowledge, would incur several costs, related to employment productivity and hiring procedures, and so impact firm performance (Shaw et al., 2013).

This research is based on Belgian small and medium-sized enterprises. Belgium renders an ideal and unique context to conduct our research for several reasons. First, Belgian SMEs are required to publish annual accounts, which are also audited by external parties, making the data more reliably. Secondly, Belgian firms are obliged to publish a social balance sheet, which contains detailed information on employees 'contract stipulations, characteristics (e.g. education, gender, etc.) and, most importantly, employment movements (Dierynck et al., 2012). Given this rich data availability on employment characteristics, Belgium offers an optimal context to analyze the impact of labor characteristics on downsizing. For instance, current downsizing literature often operationalizes downsizing rates as the change in total employment (Bai et al., 2019; Balduzzi et al., 2018; Serfling, 2016; Varum & Rocha, 2013) or more recently, the abnormal deviation from change in total employment as justified by economic fundamentals (referred to as labor investment efficiency) (Cao & Rees, 2020; Jung et al., 2022). Although these operationalization concern two reasonable measures, they fail to disentangle the underlying reasons of the incoming (e.g. promotions, new entrants, etc.) and outgoing (e.g.

voluntary turnover, retirement, etc.) employment movements[2] (Park & Shaw, 2013), which is one of the main shortcomings of the current downsizing literature (Ahmadjian & Robinson, 2001; Baghai et al., 2021). Likewise for our variable of Human Capital, the social balance sheet offers a reliable and firm-specific measure, namely training expenses. Although several measures of human capital exist, recent evidence by Pham et al. (2022) show that training expenses are an important measure of working environment quality. Thirdly, Belgium is one of the few European countries where employment protection differs between contract types[3]. Building on these differences, we are able to construct a firm-specific measure on labor protection, while prior research had to make use of heterogeneity in dismissal law across countries. These cross-country differences, however, can be endogenous and make it an unreliable proxy. Finally, although labor rigidity is established by institutional differences in Belgium, labor rigidity in general (whether created by law or labor unions), is eminently important in every country, especially in the European Union (Bentolila & Bertola, 1990). As Belgium's level of employment protection, concerning individual and collective dismissals, is very similar to the OECD average[4], our results can be extrapolated to outside this setting and, so, be of interest for regulators across the OECD.

Our baseline sample consists of 2,221 unique Belgian SMEs corresponding to 9,551 firm-year observations, whereof 1,212 restructuring events. We first document that labor rigidity, caused by increased employment protection at the firm level, significantly increases the likelihood to downsize the workforce. This reasoning is in line with the argumentation that

[2] For example, consider a firm that employs 100 employees in year 1 and 90 employees in year 2. Now the following questions are important to investigate the change of 10 employees (or 10% change in employment): who has left the firm and under which mode of "exit". In a perfect world researchers assume that this is caused by dismissing 10 employees (10% layoff), however, it is also possible that the firm dismissed 30 employees (30% layoff), while at the same time hiring 20 new employees. Although there are many other employment movements, for example, (early)retirement and voluntary turnover, this example indicates that a 10% change in employment can significantly differ in its underlying employment movements.

[3] These differences have become smaller since legal changes in 2014. Yet, as the bulk of contracts remained unchanged, it is still influential. We provide a robustness check to show that our results still hold.

[4] The OECD reports statistics on the strictness of employment protection per country. To give an example, Belgium has an index of 2.07 and the average score of the OECD countries is 2.06. https://stats.oecd.org/Index.aspx?DataSetCode=EPL_OV

employment protection hinders business flexibility and increases costs of financial distress, wherefore large downsizing decisions are often the last resort to increase efficiency and keep the firm going concern. We next provide evidence that human capital investments, measured as continued on the job training, decrease restructuring likelihood. To further examine the role of employment protection and human capital investments on downsizing decisions, we partition our sample in different subsamples. Based on these subsample analyses, we show that the effect of employment protection is driven by firms that have less financial flexibility (e.g. higher leverage, less operating cashflow and productivity) and lower levels of human capital (e.g. low knowledge intensive firms and more capital intensive). Taken together, these results provide important insights in the up– and downsides of employment protection. On the one hand, employment protection increases financial distress causing especially financial constraint firms to resort to downsizing. On the other, employment protection can also help to build a human capital which is especially important in knowledge intensive firms, and thus these firms will more likely retain their employment. We further find that human capital investments decrease downsizing likelihood, especially when human capital constitutes a core asset (e.g. labor - and knowledge intensive firms). Collectively, these results show the importance to take into account firm-level employment characteristics, and its according labor frictions, in addition to the more commonly examined financial characteristics.

Our study contributes to growing body of literature that investigates the interplay between HRM and corporate finance. First, labor protection is increasingly examined in relation to labor investment efficiency (Alpysbayeva & Vanormelingen, 2022; Guo et al., 2021; Jung et al., 2022). For instance, Guo et al. (2021) show that increased labor protection, caused by China's *labor Contract Law*, has a detrimental effect on labor investment efficiency in labor intensive enterprises. Specifically, the law enforcement increased labor costs, especially labor adjustment costs, and so increased employment changes, both up- and downwards, above and below the expected and efficient level. Similarly, Jung et al. (2022) find that stronger employment

protection laws cause labor investment inefficiency, whereby firms retain more employees than needed compared to economically justified levels. Secondly, our study also complements research on financial distress caused by labor frictions. This strand of literature has examined, for instance, the labor cost of financial distress (Baghai et al., 2021) and the link between workforce composition and cost of capital (Li et al., 2022) and employment protection and cost of debt (Shen, 2022). Generally, these studies highlight that financial markets take into account labor frictions when deciding on the cost of capital. Thirdly, our work also extends the existing body of research that investigates corporate outcomes of (investments in) human capital (De Winne et al., 2019; Pham et al., 2022; Riley et al., 2017; Shaw et al., 2013; Van de Wiele, 2010). By example, Riley et al. (2017) examine how investment in training influences market valuation of firms and find that skill investments increase firm value. Additionally, Pham et al. (2022) provide evidence that better training development policies causes firms to decrease (excessive) financial risk taking (e.g. increase corporate cash holdings). While all the above mentioned bodies of literature highlight the influence of human capital (frictions) on financial consequences and corporate decision making, empirical evidence on its influence on corporate downsizing (e.g. collective dismissals) is generally neglected. Our paper wants to address this research gap.

2. Literature review and hypotheses development

2.1 Employment protection

In Belgian labor law, the level of employment protection differs between contract types, with white-collar workers[5] enjoying better labor protection than blue-collar workers[6]. There are differences in sickness leave, redundancy payments, and notice periods prior to dismissal

[5] White-collar workers are defined to be employees that perform work that requires predominantly mental rather than physical effort (Eurofound, 2014).
[6] Blue-collar workers are defined to be employees that perform work that requires predominantly manual work (Eurofound, 2014).

(Eurofound, 2014). Particularly the length of the notice period can have an impact on employment (restructuring) decisions as it makes it more difficult to lay off (white-collar) employees while at the same time increasing the cost of hiring and firing (the so-called labor adjustment costs) of these employees. Therefore, firms that employ more white-collar workers, are subject to stronger labor frictions when deciding upon workforce composition, particularly for downsizing. These differences in the level of protection have become smaller in recent years due to legal changes but are still meaningful[7].

Employment protection does not only diminish a firm's flexibility to make adjustments to the workforce in general, and during periods of distress in particular, but it also increases the fixed nature of labor costs. This rigid cost structure has indeed been shown to enhance a firm's operating leverage (Serfling, 2016; Simintzi et al., 2014). Consequently, the inability to efficiently dismiss employees increases the likelihood of financial distress as well as the cost of financial distress (Beuselinck et al., 2021; Dewaelheyns et al., 2019; Li et al., 2022; Serfling, 2016; Simintzi et al., 2014). To that end, empirical research has examined how labor frictions impact corporate financial decision making (Agrawal & Matsa, 2013; Shen, 2022). For instance, Agrawal and Matsa (2013) and Matsa (2010) present evidence that firms who are more exposed to labor protection will choose higher corporate leverage levels as a means to lower bargaining power of their labor force. Furthermore, research has focused on how financial markets take into account the increased labor protection and highlight that investors indeed require a risk premium for investing in firms with more rigid labor contracts (Li et al., 2022; Serfling, 2016).

More evidence on the disadvantages of employment protection can be found in the work of Bentolila and Bertola (1990) and Guo et al. (2021). Bentolila and Bertola (1990) argue that especially the high level of employment inflexibility in European labor markets can explain the

[7] We perform a robustness test, where we use the split sample approach, to show that our results remain the same, even after this legal reform. The results will be discussed in section *4.3 robustness checks*.

poor performance of European economies at the end of the 20th century, resulting in "Eurosclerotic" economies. This is potentially even more important when looking at SMEs as they compete with larger enterprises, using output flexibility (Fiegenbaum & Karnani, 1991). More recently, Guo et al. (2021) provide robust evidence that increased labor adjustment costs lead to labor investment inefficiency, more specifically over-employment. These results are more pronounced in labor intensive and state-owned enterprises. Jung et al. (2022) find similar results based on country-level differences in employment protection. In addition, Banker et al. (2013) claim that employment protection results in slow managerial decision-making when it comes to dismissing employees, even when product demand declines and the net present value of an employee becomes negative. These findings are consistent with the notion that employment protection, and the according labor adjustment costs, hinders the efficiency of corporate decision making, resulting in employment decisions that deviate from the optimal level.

Taken together, the above mentioned studies provide evidence that labor rigidity has an important impact on a firm's financing, as well as, employment decisions. So while management becomes more reluctant to dismiss employees (e.g. individual dismissals), due to the high firing costs, the firm's operating leverage increases, as well as their financial distress. Accordingly, multi-industry firms (Tate & Yang, 2015) and firms that operate in different states (Bai et al., 2019) are found to exploit their internal labor market to off-set distress. This, however, is no feasible option for SMEs, who often operate in one location and only one industry, leaving no other option than to make significant changes in their workforce, which will become more important when management faces increased market pressure (e.g. declining credit supply). To that end, we posit that management will become more likely to take strong strategic actions, and so significantly reduce their employment (downsize), when their workforce enjoys better employment protection.

Hypotheses 1a (H1a). SMEs that employ more rigid labor contracts are, ceteris paribus, more likely to downsize.

Nonetheless, there are also two lines of reasoning that argue that firms benefit from employment protection and therefore will be less likely to downsize. A first reason is built on the trade-off theory and claims that enterprises with higher operating leverage are expected to reduce their debt ratios to compensate for the distress due to increased operating leverage. Empirical evidence of this effect can be found in the studies of Dewaelheyns et al. (2019), Serfling (2016) and Simintzi et al. (2014). Furthermore, firms will also increase their precautionary savings through larger corporate cash holdings in order to pay the higher hiring and firing costs (Beuselinck et al., 2021; Cui et al., 2018; Karpuz et al., 2020). In a more recent paper, Shen (2022) provides evidence that firms, who experience an increase in labor protection due to law changes, benefit from lower bank loan costs. The explanation put forward is that better protected employees have lower costs when being dismissed, and thus will require a lower ex ante compensating wage differential. Accordingly, these firms have an improved bargaining position, making employees less likely to capture firm profits through higher compensations.

A second argumentation why employment protection can lower downsizing is based on the research of Becker (1962), who claims that costs and benefits of investments in human capital are jointly divided between employer and employee, which creates aligned incentives between the two parties to avoid a unilateral termination of the employment contract. To that end, research has found evidence that employees increase their innovative efforts by enhancing their firm and industry specific skills and knowledge when they are more protected against unvoluntary dismissals (Autor et al., 2007; Estevez-Abe et al., 2001; Watson & Arunachalam, 2018). Indeed, firm specific knowledge deepening is a precarious investment, as this kind of knowledge is tacit and cannot (easily) be transferred to other jobs and enterprises, and thus makes employees vulnerable as they become more dependent on their employer. So when

employees don't have a safety net, created by employment protection, they don't have the incentive to gain specific knowledge. This, on its turn, stimulates firms to increase their innovation and other knowledge-intensive activities, which are often risky yet potentially groundbreaking. Acharya et al. (2013) provides evidence for this claim and adds to this finding that innovation increases are solely driven by dismissal laws, and not by other labor laws (e.g. the right to form unions).

Yet, not every enterprise, and not every department of an enterprise, requires as much firm-specific knowledge. So when examining firm's location choices, Griffith and Macartney (2014) find that MNEs prefer doing their innovation activities in countries with stricter employment protection laws as a result of better job security and greater enforceability of the labor contract. Finally, Watson and Arunachalam (2018) focus on stock market reactions to employment protection law enforcements and find that, while general stock reactions are neutral, firms that rely on employees with specific skills react more positive. This finding is in line with the reasoning outset above, namely employment protection favors skill and knowledge deepening and so can increase profitability and enhance competitiveness. Yet, this effect is mainly driven by large firms as small firms are more capital constrained, making the costs of labor rigidity higher compared to large firms (Estevez-Abe et al., 2001; Watson & Arunachalam, 2018).

Based on the above findings, we argue that employment protection does not only cause frictions in the labor market, but also an opportunity for a comparative advantage at the country level as well as a competitive advantage at the firm level. Therefore, SMEs could benefit from a better protected labor force as a result of better job security and aligned incentives, which creates loyal employees to overcome difficult periods. Indeed, Berk et al. (2010) argues that better protected employees will bear more bankruptcy costs related to human capital, as they are more entrenched to the firm. Employees in stricter employment protection settings will therefore have greater incentives to keep the firm going concern, which is especially important

when a firm faces distress or challenging business disruptions. Taken together, we posit that SMEs will be less likely to resort to employee downsizing, when employees are better protected by law. This leads to the following hypothesis:

Hypotheses 1b (H1b). SMEs that employ more rigid labor contracts are, ceteris paribus, less likely to downsize

2.2 Investment in Human Capital

According to the resource-based view, a firm's inimitable, unique and non-substitutable resources can impact a firm's (superior) performance through the creation of a competitive advantage (Barney, 1991). Human capital and investments therein are claimed to be such resources that strengthen a firm's ability to compete (Hatch & Dyer, 2004). Indeed, higher levels of human capital are linked to financial soundness and lower risk taking (Pham et al., 2022) and increasing firm value (Riley et al., 2017). This becomes especially important in SMEs, as they are characterized as being more people-oriented as a result of less formal and complex (human resource) management (Josefy et al., 2015; Meijaard et al., 2005). Human capital, as such, often constitutes the core asset of the enterprise. Yet, variation across firms exists, with some firms devoting more attention to the development of their human capital. Although human capital can be viewed as a broad concept, which can be examined at the individual, team or even organizational level, as well as during different stages of the employment lifecycle (e.g. at the hiring process, start of tenure,…), we will specifically focus on human capital development, measured as formal job training per employee.

Pham et al. (2022), for instance, find that when taking into account several measures of a qualitative working environment, better training and development policies are the main drivers of financial soundness. Further evidence pleads that on the job training is important in increasing firm performance (De Winne et al., 2019; Shaw et al., 2013; Van de Wiele, 2010). Hence, letting go of these employees, and their according human capital development, would

incur several costs and so impact firm performance (Shaw et al., 2013). First, by losing these knowledge assets, firms could harm their performance via workforce productivity resulting in lower return on their human capital investments (e.g. firm-specific training) (Shaw, 2011; Shaw et al., 2013). Secondly, hiring new employees requires higher investments in human capital in order to obtain the same level of human capital (e.g. firm-specific knowledge), and this during several stages of the onboarding procedure (e.g. for recruitment, socialization and training) (De Winne et al., 2019; McElroy et al., 2001). Thirdly, replacing these employees with incumbent employees, who might possess firm-specific knowledge, tends to be costly as well. The reason for this is task-specific knowledge, accumulated by task-specific learning by doing, which is even more tacit, harder to transfer and more time consuming to accumulate compared to firm specific knowledge (Gibbons & Waldman, 2004).

While prior research has mainly focused on voluntary employment turnover, these effects are likely to hold, or even be stronger in an involuntary dismissal setting (McElroy et al., 2001; Park & Shaw, 2013). Indeed, researchers highlight that the so-called survivor syndrome cause deterioration of the remaining employees' morale and motivation which has a direct effect on productivity (Sahdev, 2004), but also indirectly by harming the socialization stage of newly hired employees.

In line with the reasoning outset above, Wang et al. (2017) show that firms who are more committed to their knowledge assets, have higher CEO compensation and lower CEO dismissal to stimulate long-term investments. Hence, it can be argued that firms that rely more on human capital want to retain these knowledge assets, to create and maintain a competitive advantage. Also Sullivan and Marvel (2011) plead that higher levels of human capital, with greater business knowledge, facilitate to frame newly acquired information and therefore can help to react more appropriate to a changing business environment (Cohen & Levinthal, 1990; Shane, 2000). Moreover, Autor (2003) show that medium-skilled employees are more at stake to lose their job due to reorganizations through outsourcing as they often perform tasks that

require less firm-specific knowledge and are more repetitive in nature (Autor et al., 2008). When it comes to employee restructuring, Ahmadjian and Robinson (2001) more clearly claim that greater dependence on highly trained human capital with high levels of firm-specific knowledge will lower the likelihood of dismissals, even in economic unstable time-periods.

Overall, while labor protection is created by law, the level of human capital development, and so human capital investments, can vary across enterprises. Building on these differences and the arguments above, we posit that enterprises with greater levels of human capital will be more likely to retain these employees and so will less likely downsize.

Hypotheses 2 (H2). SMEs that invest more in human capital development will, ceteris paribus, be less likely to downsize

3. Sample and Descriptive Statistics

In this section, we detail the data collection procedure and elaborate on the model that is used to investigate our research question. Additionally, the summary statistics and correlation matrix are discussed. Appendix A1 provides the detailed variable descriptions.

3.1 Data Collection

To study the effect of labor characteristics on a firm's downsizing decision, we rely on a sample of Belgian SMEs, who published complete annual accounts[8] between 2009 and 2019. This information is retrieved from Belfirst (Bureau Van Dijk EP). We follow the European Commission's definition of SMEs (Art 2.1 recommendation 2003/361/EC) [9] which is based on employment (fewer than 250 FTE), turnover (less than 50 million EUR) and balance sheet criteria (less than 43 million EUR). We further exclude micro firms, to avoid small denominator

[8] All firms who publish complete annual accounts are externally audited, which increases the reliability of data used.
[9] https://ec.europa.eu/growth/smes/sme-definition_en

problems[10]. Moreover, we focus on standalone SMEs, thus SMEs who are part of a business group, either as a subsidiaries or as a parent company, are excluded from the sample. Following common practice, financial firms, insurance companies, real-estate firms and public services companies are excluded. After using all the above exclusion criteria, we end up with a sample of 9,551 year-observations for 2,221 firms.

3.2 Model and variables

In order to explore these downsizing decisions, we estimate the following random effects logit model:

$$DOWNSIZE_{it} = \beta_0 + \beta_1 * WHITECOLLAR_{it-1} + \beta_2 * TRAINING_{it-1} + \sum Firm_{it} + \gamma_k + \alpha_j + \varepsilon_{it} \quad (1)$$

For our main analysis, we are interested in verifying the drivers of downsizing events, where the dependent binary variable DOWNSIZE denotes whether a firm has made a significant change in the workforce that can be identified as downsizing. While prior literature had to rely on the one-year percentage decrease in total employment (Bai et al., 2019; Balduzzi et al., 2018; Serfling, 2016; Varum & Rocha, 2013), we are able to distinguish the underlying reasons of turnover (e.g. voluntary turnover, dismissal, etc.) and so our measure of dismissed employees is operationalized using total number of dismissals during the fiscal year divided by total number of FTE of the previous fiscal year. This operationalization creates a measure that solely captures forced turnover (dismissals), which is "rarely coded in any data set" following Baghai et al. (2021, p 2910). Next, we use a 10% cutoff of this layoff ratio, based on Belgian restructuring law, Renault law[11], which identifies a *collective dismissal* as the dismissal of at

[10] We will also perform robustness analyses where we exclude the smallest category of small enterprises (fewer than 20 employees) as restructuring strategies available for these firms will be extremely limited (Chowdurry & Lang., 1996) and as they are subject to different legal restrictions with regard to layoffs. We show that our results are robust for this exclusion. Results of this robustness test are available upon request.

[11] Loi du 13 février 1998 portant des dispositions en faveur de l'emploi de loi Renault (M B. du 19/2/1998)/Wet of 13 februari 1998 houdende bepalingen tot bevordering van de tewerkstelling/ Law of 13 February 1998 regarding measures in favor of employment (so-called 'Renault Law')

least 10% of the workforce[12] for firms that employ at least 20 FTE. Following these steps, our variable DOWNSIZE thus captures downsizing events where a firm has dismissed at least 10% of its workforce.

All labor related measures, including the number of dismissed employees, are based on employment characteristics retrieved from the social balance sheet[13]. WHITECOLLAR represents our measure of labor rigidity and is calculated as the ratio of white-collar workers over total employment. As in Belgian labor law, white-collar workers are better protected against unvoluntary dismissals compared to blue-collar workers, this variable measures employment protection at the firm level. Next, we are also interested in the effect of a firm's investments in human capital development, which is captured by TRAINING (Pham et al., 2022; Riley et al., 2017). We construct this measure by dividing the reported costs of continued professional education by total number of FTE.

FIRM represents a set of firm-level control variables, capturing both financial as labor characteristics, that are common in downsizing literature. First, what concerns labor frictions, we control for the ratio of temporary employees (TEMP), which are employees with a fixed term or fixed job contract, over total employment. These employees offer more flexibility to the firm as they are more easy to dismiss at a lower cost (Dewaelheyns et al., 2021). We further control for employment characteristics, such as education level (HIGH_EDUC) and cost of employment (COSTEMPLOYEE). Where the former is measured as the ratio of higher educated employees (with a bachelor or master's degree) over total employment, and the latter as cost of employment scaled by total number of FTE. Secondly, we also control for the firm's financial structure by including profitability (ROA) and leverage (LEVERAGE). To capture a firm's level of efficiency, we add sales ratio (SALES_RATIO) to the equation, where we scale

[12] When following the strict definition of the law, the dismissals should take place within 60 days to fall within scope of national legislation. We can, however, not distinguish the timing of the dismissals such that we are not certain whether the dismissals happened at the same time-period or were decided upon separately over the year.
[13] All measures concerning employment data will be retrieved in Full Time Equivalents (FTE).

turnover with total assets. Lastly, also age (AGE) and size (SIZE) are added to the model as these can have an impact on downsizing decisions (Datta et al., 2010). We measure size as the natural logarithm of total assets.

We lag all firm specific control variables with one time period to avoid simultaneity issues. γ_k and α_t represent industry and year-fixed effects, respectively. Standard errors are clustered at the firm level across all the estimated models to account for serial correlation and possible heterogeneity.

3.3 Summary statistics

We report the summary statistics of our sample in Table 1. Panel A shows the distribution of the sample across six broad sector groups[14] and the number of downsizing firms per sector. As Belgium has an open and developed economy, the majority of SMEs is active in wholesale and retail (44.02%) and manufacturing (20.36%) (Dewaelheyns et al., 2021). The percentage of downsized enterprises is the lowest for agriculture and mining (8.00%), closely followed by the manufacturing sector (8.29%) and the highest in wholesale and retail (15.07%). Panel B reports sample distribution across fiscal years, and shows that downsizing decisions have decreased over the sample period, especially after 2013. Our findings are consistent with Cornille et al. (2019), who find that most layoffs resulting from the financial crisis are situated in the period 2011-2013 rather than at the onset of the crisis (2008-2009), due to the comprehensive use of temporary layoffs during the financial crisis. The use of temporary layoffs by Belgian firms, which delayed the actual wave of layoffs, is often referred to as "employment stickiness" (Degryse et al., 2017).

[14] For our main analyses, we control for industry fixed effects based on this classification. The reason for this rather unconventional choice is that we lose some observations as the two-digit NACE classification is too small or has no heterogeneity in restructuring events (predict failure perfectly). However, we also perform robustness test where we control for the two-digit NACE classification. Results are robust and are available upon request.

Overall, our sample consists of 1,212 downsizing events of at least 10%[15], representing a 12.62% downsizing rate across the sample period[1]. Note that these 1,212 downsizing events were decided upon by 711 unique firms, so we do not limit firms to have one downsizing event. This sample of 711 downsizers, constituted of 420 firms who only had one downsizing event and 291 firms with multiple downsizing events over the sample period. We perform two robustness checks to give reassurance that our results are robust for the inclusion of these multiple downsizers: (1) we exclude multiple downsizers (291 firms) and (2) we allow multiple downsizers to enter our dataset, however, only using the first downsizing event[16] of a firm (501 downsizing events were excluded). Our results are robust for taking into account the number of downsizing events. Yet, when looking at the sample of single-downsizers, the effect of human capital investments is no longer significant.

Panel C of Table 1 reports the summary statistics on the main variables[17] used in this study. We find that the average percentage of white-collar workers in our sample is 50%, accompanied by a relatively high standard deviation (0.332). Looking at training expenses, we find that an average SME in our sample invest 188.12 EUR on costs of continued education per FTE[18], with a standard deviation of 412.01 EUR. This indicates that the SMEs in our sample are heterogenous in employment protection as well as their investments therein. Regarding the firm (financial) controls, the average SME in our sample has firm size that equals 7 million

[15] The average (median) downsizing firm in our sample employs 38.64 (29) employees in the year of the downsizing. Based on our definition of downsizing, our average (median) sample firm, thus dismisses at least 4 (3) employees.

[16] We do not fully exclude multiple downsizers as these additional downsizing decisions (following the first one) are often related to the first, and can constitute of a larger restructuring plan. To that end, we believe that the first time a firm decides upon a downsizing event is the most important to look at.

[17] All continuous variables are winsorized at 1% to curtail the impact of outliers. We further performed robustness analyses where we exclude observations that have a significant impact on the coefficients in our regression, measured using dfbeta values. Consequently, when the absolute value of the dfbeta of an observation was larger than $2/\sqrt{n}$ for all coefficients of our main regression, the observation was excluded. Our results are robust for the exclusion of these "extreme" observations. The according tables are available upon request.

[18] In 2005, the National Bank of Belgium published a report on training costs in Belgium firms. Looking at all size categories of firms, the average Belgian firm spend 1,343 EUR per person trained, while only 33% of the workforce enjoyed training. This number is thus equivalent to +/- 447.67 EUR per person when training costs were divided across all employees. Our average training costs per FTE are lower (188.11 EUR per FTE), which can be explained by the fact that we solely look at SMEs, who have less formal Human Resource Management practices and often don't have the resources to spend on training costs.

euros in total assets, of which 60% is financed with debt, is 24 years in business and realizes a return on assets of 12.06% and turnover of 2.09 times total assets. Finally, we note that on average 19.71% of the workforce has obtained a higher degree (e.g. bachelor or master's degree), 5.9% of total employment has a temporary labor contract, and the average SME has a yearly cost per FTE of 51,813 euro.

< Insert Table 1 about here. >

The correlation matrix is reported in Table 2. The reported correlations show that our measure of labor protection (WHITECOLLAR) has a high correlation with education level (0.5358) and cost of employment (0.4032). This is not surprisingly as white-collar workers perform work that requires predominantly mental rather than physical effort (Eurofound, 2014), and so are often higher educated and require a larger wage-differential. Overall, we find that the correlations between our variables do not raise any concerns of multicollinearity.[19]

< Insert Table 2 about here. >

4. Empirical results

4.1 labor rigidity and collective dismissals

The results of Equation (1) are presented in Table 3. First, looking at column 5 and 6, we note that firms that employ more white-collar workers (WHITECOLLAR), thus firms that have a more rigid workforce composition, are more likely to downsize (p-value <0.01). This finding is consistent with Hypothesis 1a and highlights the negative influence of employment protection, and its according frictions, which could impose (financial) distress through

[19] The mean VIF value in our main regression equals 1.64, with a maximum value of 2.86. These are well below the traditionally accepted threshold of 5.

increased operating leverage. Furthermore, corroborating our second hypothesis, firms that invest more in human capital development (TRAINING) are less likely to downsize their workforce (p-value <0.10). Although our correlation matrix did not raise concerns of multicollinearity, we do rerun our regression analyses where we exclude HIGH EDUC (columns 1 and 2) and COSTEMPLOYEE (columns 3 and 4). Our variables of interest are consistently significant across all regressions. The education level (HIGH EDUC) of the workforce is significant and negatively related to downsizing (p-value <0.05). Yet, when also adding cost of employment (COSTEMPLOYEE) to our model (columns 5 and 6), this effect disappears, while the coefficient of *COSTEMPLOYEE* is negative and significant at the 5%-level. This finding highlights that although employment becomes more expensive, wages help to build human capital which is consistent with the findings of Dewaelheyns et al. (2021). Another important finding concerns temporary employment (TEMP) which does not seem to influence downsizing. So although temporary employees offer more flexibility to the firm, it does not lower downsizing likelihood. One possible reason why WHITECOLLAR is a better predictor of downsizing compared to TEMP is that the ratio of white-collar workers better reflect the contract strategy of the firm compared to the ratio of temporary employees (Dewaelheyns et al., 2021). Overall, these findings highlight that taking into account characteristics of human capital, in addition to financial characteristics, is important when investigating downsizing decisions as they do influence management's decision making. All other control variables are in line with downsizing literature (see, for instance, Datta et al. (2010)). Downsizing firms were significantly smaller, younger, more leveraged and less profitable.

< Insert Table 3 about here. >

4.2 Additional Analyses

The results discussed in section 4.1 suggest that downsizing as a corporate decision is influenced by employment protection and investment in human capital. Nevertheless, we expect

this relationship to be contingent on various financial- and employment-characteristics. We first investigate the moderating impact of (firm-level) financial constraints and workforce characteristics on the relationship between employment protection and downsizing. Next, we explore the moderating impact of workforce characteristics on the relationship between investments in human capital and downsizing decisions, to show when human capital becomes more important.

4.2.1 Additional Analyses: employment protection

4.2.1.1 The moderating impact of firm-level financial constraints

There is a growing body of literature that not only looks at the effect of financial constraints on employment but also which employees are (more) at risk. More specifically they aim to identify the heterogeneity in the employment characteristics. To begin with, Wasmer and Weil (2004) and Petrosky-Nadeau and Wasmer (2013) claim that employment decisions can be influenced by financial frictions, and even more so when labor is represents a fixed cost rather than a variable one. Consequently, the researchers argue that when labor is better protected or has increased levels of investment through training, employment becomes more fixed and as such more at risk for financial constraints (Barrot & Nanda, 2020).

Taken together, these findings boil down to the following reasoning, established by Matsa (2018), financing employees differ significantly from financing capital as a result of labor frictions. Indeed, as employees can act strategically (e.g. by negotiating working conditions and remuneration) and are protected by (labor) law and labor unions, credit constraints might differentially impact labor compared to capital, and more specifically differentially impact different categories of employees (e.g. better trained employees, etc).

In section 2.1 of this paper, we discussed two potential effects of employment protection. First, employment protection hinders a firm's ability to efficiently reallocate labor, which increases the likelihood of financial distress as well as the cost of financial distress

(Beuselinck et al., 2021; Dewaelheyns et al., 2019; Li et al., 2022; Serfling, 2016; Simintzi et al., 2014). Second, employment protection favors skill and knowledge deepening making employment more entrenched to the firm and less replaceable. In our main analyses, we show that more white-collar workers increase the likelihood of downsizing decisions, suggesting that employment protection increases a firm's operating leverage causing financial distress. To explore whether financial distress is indeed driving our results, we investigate the moderating impact of financial exposure, measured as leverage, productivity and operating cashflow. The descriptive statistics and variable definitions can be found in Table A3 and A2, respectively. Results on this additional analyses, using a split sample approach, where we divide our sample in two subsamples based on the median value of the variables, can be found in Table 4.

We show that our finding is driven by firms who are more financially constrained: highly leveraged (p-value < 0.01) and less productive firms (p-value < 0.01) with lower levels of operating cashflow (p-value < 0.01). These results highlight that firms facing more financial and cash constraints are more likely to downsize when the workforce is more rigid. This is in line with the reasoning that labor protection increases operating leverage and so increases a firm's business risk. So when a firm faces more (financially) distress, firms that have higher share of white-collar workers, representing rather a fixed cost of production, will more likely to resort to downsizing to cut costs and decrease their financial distress. Overall, we conclude that firms with higher labor rigidity will be forced to take strong strategic decisions to overcome periods of financial distress and to keep the firm going concern.

Finally, to show that our findings are not dependent on the chosen cutoff, we also run our additional analyses based on subsamples of the top and bottom quartile (available upon request). Results remain the same, but it should be noted that when we split our sample based on the top- and bottom quartile values of LEVERAGE, that the coefficient of WHITECOLLAR becomes positive and significant (p-value<0.01) in both subsamples. A potential explanation could be that firms with very low levels of leverage are also constraint as this low level is

potentially not a choice, but rather a result of their inability to obtain external credit. Another potential reason is that firms with lower levels of leverage, have less investment opportunities and so do not need to obtain external credit. Therefore, they require less credit to fulfill future investment, and as a result also require less employment as growth potential is small (Mulier et al., 2016).

< Insert Table 4 about here. >

4.2.1.2 The moderating impact of credit constraints: evidence from the Bank Lending Survey

Prior research has signaled important concerns with regard to endogeneity when using firm specific measures like cash flow to measure financial constraints (Cingano et al., 2016). We will deal with this concern by using an alternative and exogenous indicator of credit supply: bank lending standards from the ECB Bank Lending Survey (BLS)[20]. Earlier studies have suggested that measures based on the bank lending standards are a credible indicator of actual credit supply movements (e.g. Degryse et al. (2019)). Hence, we will use this measure on credit supply to test whether employment protection is more damaging when credit dries up and firms become more constraint. To this end, we retrieve data concerning the answers of the four main Belgian credit institutions to the Bank Lending Survey[21], namely the diffusion index . Based on this index, we can identify whether the Belgian credit institutions have either increased (positive index values) or decreased their credit requirements (CR) (negative index values)[22]. As the BLS is conducted on a quarterly basis, so likewise, the diffusion index values are also provided on a

[20] The euro area bank lending survey is executed by the European Central Bank and provides information on bank lending conditions in the euro area. Nonetheless, information is also available per country and is managed by the National Bank (NBB) for Belgium. https://stat.nbb.be/Index.aspx?DataSetCode=BLS

[21] One of the most relevant questions for this paper is the following: *"Over the past three months, how have your bank's credit standards as applied to the approval of loans or credit lines to enterprises changed"?* Banks can choose between the following answers: *"Tightened considerably"*, *"Tightened somewhat"*, *"Remained basically unchanged"*, *"Eased somewhat"*, and *"Eased considerably"*.

[22] Credit institutions are also allowed to answer to either increase or decrease their credit requirements "slightly". Such answers are weighted with a value 0.5 such that we can distinguish between large and slight differences in requirements. Because of this allowance to identify the "magnitude" of an answer, the index is called the diffusion index.

quarterly basis. A detailed overview on how we construct our yearly measure can be found in the Appendix A3. Summary statistics and variable definitions are provided in Table A2 and A3.

First of all, if increased credit requirements create credit constraints, we expect that stricter credit requirements are associated with more downsizing. Secondly, if employment protection creates financial distress, than this positive relationship between credit requirements and downsizing should be larger for firms that employ more white-collar workers. We test this line of reasoning in Table 5 Panel A. Results highlight that more white-collar workers increase the likelihood of downsizing, both in years of increasing as well as decreasing credit requirements (p-value< 0.01). Additionally, we also test this relation using multivariate analyses. Results on the main effect show that both WHITECOLLAR and CR are positively related to downsizing decisions. Moreover, looking at the interaction term in the full sample, we confirm the notion that increased credit requirements, and so credit constraints, are more damaging for firms that employ more white-collar workers, and so will more likely take strong action through large employment cuts (p-value <0.01).

To give more reassurance of the above made notion, we test whether this effect is driven by highly leveraged firms. Indeed, if credit requirements increase, and so it becomes more costly to obtain credit, this would be especially worrying for firms that already have more leverage and cannot, or hardly, obtain additional credit to pay off their debts. Results in Table 5 Panel B show that our variable of interest (CR*WHITECOLLAR) is only significant for the sample of highly leveraged firms (p-value <0.05), while it is insignificant in the low leveraged firms. Thus, these results tend to suggest that labor protection increases the likelihood of downsizing, and even more so when credit dries up in highly leveraged enterprises which is in line with the reasoning that management is more likely to make to large employment cuts to cope with distress.

Finally, we also perform a robustness test where we divide our sample based on the top- and bottom quartile of LEVERAGE (results are available upon request). By doing so, we can

also test the notion whether firms with low levels leverage do this by choice (e.g. low investment opportunities) or as a result of credit constraints (e.g. low credit supply). We do not find a significant interaction term between credit requirements (CR) and WHITECOLLAR in both samples. However partly supporting our notion, we do find that more strict credit requirements only increase downsizing likelihood in the sample of the top-quartile leverage firms (p-value < 0.01), while it does not have an impact on the low-leverage firms. This seems to suggest that the firms with low leverage levels, do so by choice, rather than as a result of credit requirements. To conclude, we provide robust evidence that the effect of labor inflexibility is more important when firms are confronted with stricter credit requirements and so need to take strategic actions to cope with financial distress.

< Insert Table 5 about here. >

4.2.1.3 The moderating impact of employment characteristics

Our findings can also be influenced by employment characteristics. Indeed, the potential financial distress resulting from labor inflexibility will not be as large for every firm (e.g. depending on the share employees compared to size). In addition, the potential to build human capital, supported by labor protection, is also not as important for every firm, where firms that rely on high levels of human capital, and the according knowledge, will be more likely to benefit from employment protection. We will test these two notions, using split samples based on four employment characteristics: labor intensity (LABORINTENSITY)[23], investment in human capital (TRAINING), knowledge intensity of the industry (KII) and intangibility (INTANGIBILITY). Variable definitions and summary statistics can be found in Table A2 and A3.

[23] It is already pointed out in previous research that Belgium has developed a competitive advantage in capital-intensive industries (Coucke, Pennings, & Sleuwagen., 2007). Therefore, firms with higher levels of human capital will reduce their workforce as they can not benefit from the Belgian competitive advantage, while they can benefit the most from employment cost reductions.

First, the number of FTE is important for the calculation of a firm's total labor costs. Consequently, if a firm employs more employees relative to size, it will, ceteris paribus, have a larger proportion of production cost devoted to labor (Guo et al., 2021; Shen, 2022). To that end, we would expect the effect of white-collar workers to be larger in labor intensive industries, where more employees are hired compared to total assets. Table 6 (Column 1 and 2) shows that this assumption is true, and that the effect is stronger in the labor-intensive subsample (p-value<0.01).

Secondly, we further explore whether we can provide evidence supporting H1b, that employment protection decreases the likelihood of downsizing. Prior research has claimed that employment protection aligns incentives between employees and management (Becker, 1962), stimulates knowledge deepening (Autor et al., 2007; Estevez-Abe et al., 2001) and increases the enforceability of labor contracts (Griffith & Macartney, 2014). As a logical consequence, we expect that these positive effects are more important in firms that rely more on human capital. For instance, Watson and Arunachalam (2018) show in their research that market reactions to increased labor protection were more pronounced, and positive, in knowledge intensive industries. To test this assumption in our setting, we split our sample based on the knowledge intensity of an industry (KII), investments in human capital (TRAINING) and intangibility of the firm (INTANGIBILITY).

Table 6 (Columns 5 and 6) reports the results where we look at the distinction of samples based on knowledge intensity of an industry. The results show that employment protection increases the likelihood of downsizing in low knowledge intensive industries (p-value <0.01), while it has no significant effect in high knowledge intensive industries. This finding is in line with the research of Watson and Arunachalam (2018), that employment protection is especially beneficial in knowledge intensive industries, where it can stimulate knowledge deepening. However, we find no empirical relation rather than a negative for the high knowledge intensive industries.

Columns 3 and 4 of Table 6 present evidence that supports the reasoning outset above, but where level of human capital is measured by investment in human capital (TRAINING). Firms that invest less in their human capital, making it less important, are more likely to downsize with increasing levels of employment protection (p-value < 0.01). However, no effect is found for firms that invest more in formal training.

We also examine whether the intangibility of a firm influences our results. We use this sample split as Arcuri and Levratto (2020) claim that intangible assets are more important to create a competitive advantage and growth. As already highlighted before, these competitive advantages, and so intangible assets, are created by human capital. Results in Columns 5 and 6 of Table 5 show that indeed firms with less intangible assets will more likely downsize with increasing levels of employment protection, while firms with above the median levels of intangible assets show no significant result.

Overall, these findings suggest that when human capital is less important for the firm, strong labor contracts do harm a firm's business strategies and so management will become more likely to severely cut employment. Thus, the frictions do not seem to be as detrimental when human capital levels are more important. To make sure that these results are not driven by our choice of subsample design, we perform robustness analyses where we split our sample based on the top versus bottom quartile[24]. Results are consistent, and are available upon request.

< Insert Table 6 about here. >

4.2.2 Additional Analysis: Investment in Human Capital Development

In section, we will further explore what moderates the effect of investment in human capital on downsizing decisions.

[24] Note that this is only possible for our continuous variables, being LABORINTENSITY, TRAINING and INTANGIBILITY. KII is already a dummy variable, based on the EU commissions definition and cannot be further divided into quartiles.

4.2.2.1 The moderating impact of workforce characteristics

Our findings on investment in human capital and a firm's downsizing decision can be influenced by the firm's employment characteristics. More specifically, firms will be more willing to take into account their human capital when deciding on downsizing, when human capital is more important to the firm. We will therefore analyze, whether our effect of human capital investment is indeed driven by firms that require high levels of human capital. To that end, we will use split samples based on three employment characteristics: labor intensity (LABORINTENSITY), knowledge intensity of the industry (KII) and intangibility (INTANGIBILITY). Variable definitions and summary statistics can be found in Table A2 and A3.

Pfeffer (1994) and Zingales (2000), for instance, claim that human capital can be seen as a firm's most valuable asset and an important source in the creation of a competitive advantage, especially for human-capital intensive firms in the current knowledge-driven economy (Cao & Rees, 2020). To begin with, we posit that if a firm is labor intensive (LABORINTENSITY), and so employees are an important asset for value creation, investments in their human capital become (even) more important. Findings of the subsample regressions, are reported in Table 6, and reveal that investments in human capital are indeed more important to lower downsizing likelihood for firms that are labor intensive (p-value<0.05). Opposing this result, capital intensive firms show no statistical significant effect of investment in human capital.

Secondly, we will also look the level of human capital, measured as the knowledge intensity of the industry[25]. If investments in human capital do indeed lower downsizing likelihood, because of greater dependence on these employees to create and maintain a competitive advantage, we expect that this effect is mainly driven by firms operating in

[25] This measure is commonly used when investigating labor characteristics (e.g. Cao, Z., & Rees, W. (2020). Do employee-friendly firms invest more efficiently? Evidence from labor investment efficiency. *Journal of Corporate Finance*, *65*, 101744. https://doi.org/https://doi.org/10.1016/j.jcorpfin.2020.101744)

knowledge intensive industries (KII). Prior research has highlighted that knowledge intensive firms rely on a more skilled workforce in order to control the complex knowledge and skills needed in these industries. As skilled human capital is the main driver of corporate success, it is essential to train and retain their human resources (Becker, 1962; Coff, 1997). In line with this reasoning, we find that the coefficient of TRAINING is positive and significant (p-value <0.01) in the knowledge intensive industries, while no effect is found in de low knowledge intensive industries. These results are reported in Table 6.

Thirdly, we examine whether the intangibility of a firm influences our results, as more intangibility can be associated with higher levels of R&D and so high-knowledge workers to support innovation. Columns 5 an 6 of Table 6 show that the coefficient is only significant in the high intangible subsample, in line with our prediction.

To make sure that these results are not driven by our choice of subsample design, we perform robustness analyses where we split our sample based on the top versus bottom quartile[26]. Results are consistent and available upon request.

4.3 Robustness checks

We implement various robustness checks to ensure the validity of our findings. The first two robustness checks concern the variable definition of our two variables of interest, namely WHITECOLLAR and TRAINING. Next, we will examine whether the labor contract reform of 2014 influences our results. As pointed out in section *3.3 Summary statistics,* we allow firms with multiple downsizing events during the sample period in our analyses. We will perform two robustness checks, to make sure that these multiple downsizers do not influence our results. Lastly, we will run our analysis using linear probability models, instead of random effects logit

[26] Note that this is only possible for our continuous variables, being LABORINTENSITY and INTANGIBILITY. KII is already a dummy variable, based on the EU commissions definition and cannot be further divided into quartiles.

models. Results are reported in Table 7. Table A2 an A3 in appendix, report variable definitions and summary statistics on these robustness analyses.

4.3.1 Employment protection

We examine an alternative measure of employment protection, where we take into account the heterogeneity across industries. We to do so by using two measures of a firm's industry-corrected employment protection where we subtract: (1) the industry (two-digit NACE) mean and (2) the industry median (I_WHITECOLLAR). We observe that coefficients remain positive and significant (p-value <0.01) in all four regressions. These findings thus highlight that firms, with more white-collar workers compared to their industry counterparts, are more likely to downsize their workforce. Results are available upon request.

4.3.2 Training

In this paragraph, we examine two alternative measures of TRAINING. Currently, we define training as the costs of continued professional education divided total number of FTEs. A first criticism on this variable could be that measuring it in one period (before the year of downsizing) is biased as firms will likely not invest in their human capital as such downsizing decision is likely to happen. We will therefore run robustness tests using the geometric three year average of our training variable. The coefficient remains positive and significant (p-value <0.05) which indicates that also over long term period, this variable has an negative impact on downsizing likelihood.

Secondly, our effect could be size-driven as larger firms will more likely invest in Human Capital (Haanwinckel & Soares, 2021; O'Connell & Byrne, 2012). To this end, we construct an additional measures to deal with this concern where divide training costs by size (= ln(total assets)). Results, which are available upon request, show that taking into account firm size in the variable definition does not harm our initial findings.

4.3.3 Labor contract reform

Since 1 January 2014, a legal reform (Wet van 26 december 2013 betreffende de invoering van een eenheidsstatuut tussen arbeiders en bedienden inzake de

opzeggingstermijnen en de carenzdag en begeleidende maatregelen) decreased the differences between blue-collar and white-collar workers. While the legal notice periods were made equal after 2014 , all existing contracts before the reform kept in place all rights. Consequently, the majority of the employees are still treated differently if they are fired (Alpysbayeva & Vanormelingen, 2022). In addition, some industries (e.g. large retail stores) were exempted from this labor contract reform until December 2017 (Alpysbayeva & Vanormelingen, 2022). Moreover, also after the reform, it is still more easy to interrupt contracts of blue-collar workers because of the so called "temporary layoffs" (e.g. economic reasons, technical disturbances,…)[27] (Dewaelheyns et al., 2021). On top of that, various (significant) differences between blue- and white-collar workers still remain (e.g., wages, holiday pay, social security contributions).

We perform a robustness test to decrease the concern that the reform influences our results, using a split sample approach. Table 7 (Panel A) reports that the coefficient of WHITECOLLAR remains significant and positive in both samples. In addition, the interaction term (WHITECOLLAR_POST2014) is insignificant. Based on the above analyses, we provide evidence that the difference remain important also after the reform.

4.3.4 Linear Probability Model

While logit models are the most conventional for modeling binary item responses, Linear Probability Models (LPM) are recently also more accepted as research has highlighted that LPM return unbiased results (Huang, 2022). As a robustness we therefore re-estimate our models using a linear probability regression. Following common practice when working with panel data, we first perform the Hausman test to determine whether fixed or random effects is most appropriate. The test results (Chi^2 = 13.80; P-value=0.7419) corroborated that a random-model design should be preferred over a fixed-effects design. Results of our random effects

[27] As shown by Cornille et al. (2019), most layoffs resulting from the financial crisis are situated in the period 2011-2013 rather than at the onset of the crisis (2008-2009). The researchers argue that the comprehensive use of temporary layoffs during the financial crisis delayed the actual wave of layoffs.

LPM are reported in Table 7 (Panel B) and show that our results are robust to using different econometric models.

4.3.5 Multiple downsizers

Our baseline sample consists of 1,212 downsizing events of 711 unique firms, so we do not limit firms to have one downsizing event. The sample of downsizers, constituted of a total of 711 firms whereof 420 firms who only had one downsizing event (= single downsizers) and 291 firms with multiple downsizing events over the sample period (= multiple downsizers). We perform two robustness tests to examine whether our results are robust for the inclusion of these multiple downsizers: in Column (1) we fully exclude multiple downsizers (291 firms) and in Column (2) we allow multiple downsizers to enter our dataset, however, only using the first downsizing event[28] of the firm (501 downsizing events were excluded). Our results are robust for taking into account the number of downsizing events. Yet, when looking at the sample of single-downsizers, the effect of human capital investments is no longer significant. This finding might suggest that firms who downsize multiple times take human capital investments more into account as the impact might become more important as it might be part of a larger "restructuring plan" compared to firms who only downsize ones. All other results are consistent across the robustness analyses and are reported in Table 7 (Panel C).

< Insert Table 7 about here. >

5. Conclusion

In this paper, we examine employment protection and investments in human capital as drivers of corporate downsizing decisions. Prior literature argues that employment protection could both increase or decrease downsizing likelihood, dependent on the underlying characteristics

[28] We do not fully exclude multiple downsizers as these additional downsizing activities (following the first one) are often related to the first decision to downsize, and can constitute of a larger restructuring plan. To that end, we believe that the first time a firm decides upon a downsizing event is the most important to look at.

of the firm, such as knowledge intensity and financial constraints. Generally, we provide robust results that employment protection increases a firm's likelihood to downsize. Yet, we provide evidence that this effect is mainly driven by firms who rely less on human capital, while knowledge intensive enterprises have no impact of employment protection. In addition, the positive increase in downsizing likelihood because of labor rigidity is also more pronounced in firms that are more financially constraint. Overall, management will thus more likely try to cope with distress by cutting employment. Next, we also find evidence that firms who rely more on human capital, measured as training expenses, will less likely downsize. This is in line with the reasoning that human capital does provide a competitive advantage and so is an important asset in firm's business operations. This effect is more pronounced in high knowledge requiring industries and capital intensive enterprises.

We contribute to existing downsizing literature by adding employment characteristics to the model, in addition to the traditional financial characteristics. In particular, we are able to construct firm specific measures of human capital and labor frictions. Moreover, as a result of detailed data concerning employment movements, we are able to construct a more fine-grained measure of dismissals compared to earlier research (e.g. (Baghai et al., 2021)). Furthermore, we focus on SMEs, which are often neglected in the downsizing literature, while downsizing decisions are especially important for these smaller sized firms. Finally, we contribute to the growing body of literature that examines the interplay of finance and HRM by highlighting that firms in financial distress are more likely to downsize, especially when labor is a fixed input of production rather than a variable one.

Next to our contributions to the literature, we also have important policy and managerial implications. To begin with, our paper highlights the importance of employment protection on downsizing, and so potentially on country unemployment rates (especially during downturns). While employment protection offers more security and protection to the employee, it creates an increased business risk for the employer. Yet, this is not necessarily a bad thing and especially

when human capital is important for a firm's business (e.g. knowledge intensive industries). To that end, we suggest that regulators should align their dismissal law with other policies and business support policies to create a comparative advantage at the country level. More specifically, when dismissal law is more strict, the government should also focus more on supporting their education system such that they increase the overall potential of their human capital. Next, regulators could also stimulate firms to invest in human capital, either through law enforcements (e.g. set minimum on training expenses per firm) or by subsidies (e.g. give tax benefits to firms who invest in their human capital through training). By doing so, policy makers could create a comparative advantage in knowledge-intensive industries, and so decrease the likelihood of downsizing because of employment protection.

In similar vein, this paper offers interesting insights for small business managers. When employees are better protected, this could create some slack resources, which are detrimental for a firm's business performance (Vanacker et al., 2017). However, this papers shows that slack resources don't necessarily need to be a concern when they possess higher levels of human capital. This finding is in line with earlier research that shows that human resource slack (e.g. excess employees) do not hamper firm performance when these employees have firm specific and tacit knowledge (Lecuona & Reitzig, 2014). To that end, management should focus on the creation of valuable human capital through different stages of the employment lifecycle, starting with increased searching efforts during the hiring process as well as during their employment, by focusing on training. By doing so, management can increase the redeployability of these employees, and so hamper the negative effect of labor inflexibility on firm performance. Ultimately, we propose that labor represents more than just a cost for a firm and so, we fully agree with Bookbinder (2017, p19)'s quote opening this paper: "The value of a business is a function of how well the financial capital and the intellectual capital are managed by the human capital. You'd better get the human capital part right."

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Table 1: Sample composition and Descriptive statistics

Panel A: Observations per sector

	Number of downsized firm years	Total number of firm years	Percentage of Total sample	Downsizing rate during sample period
AGRICULTURE & MINING	8	100	1.04%	8.00%
MANUFACTURING	162	1955	20.36%	8.29%
CONSTRUCTION	149	1322	13.77%	11.27%
RETAIL & WHOLESALE	637	4228	44.02%	15.07%
TRANSPORTATION	87	704	7.33%	12.36%
SERVICES	169	1295	13.48%	13.05%
TOTAL	1,212	9,604		12.62%

Panel B: Observations per year

	Number of downsized firm years	Total number of firm years	Percentage of Total sample	Downsizing rate during sample period
2010	194	1110	11.56%	17.48%
2011	216	1279	13.32%	16.89%
2012	220	1379	14.36%	15.95%
2013	178	984	10.25%	18.09%
2014	101	882	9.18%	11.45%
2015	85	986	10.27%	8.62%
2016	63	857	8.92%	7.35%
2017	44	664	6.91%	6.63%
2018	51	746	7.77%	6.84%
2019	60	717	7.47%	8.37%
TOTAL	1,212	9,604	100.00%	12.62%

Panel C: Summary statistics

	Obs	Mean	St. Dev	Min	Q1	Median	Q3	Max
Dependent variable								
DOWNSIZE	9,604	0.1261	0.332	0	0	0	0	1
Variables of interest								
WHITECOLLAR	12,381	0.5015	0.3344	0	0.209	0.42222	0.8571	1
TRAINING	12,393	188.1184	412.0146	0	0	9.0666	170.8929	2,508.194
Firm level controls								
SIZE	12,390	15.7675	0.894	13.6001	15.252	15.7188	16.258	18.7179
AGE	12,390	3.1729	0.6839	1.0986	2.8332	3.258	3.6375	4.5108
LEVERAGE	12,390	0.6	0.2587	0.0709	0.4109	0.6195	0.7854	1.4071
ROA	12,385	0.1206	0.1126	-0.2298	0.0559	0.1061	0.1708	0.5395
TEMP	12,393	0.0591	0.1055	0	0	0.0144	0.0735	0.6153
HIGH EDUCATION	12,393	0.1971	0.2715	0	0	0.0816	0.2666	1
COSTEMPLOYEE	12,355	10.8554	0.2981	10.1286	10.672	10.8234	11.0165	11.7454
SALES RATIO	12,387	2.0957	1.2809	0.0663	1.2917	1.8484	2.6188	7.348

Note: The table shows the descriptive statistics of the main variables used in this study. All continuous variables are winsorized at the first percentile. Variables are defined in the appendix, Table A1.

Table 2: Pearson correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. DOWNSIZE	1										
2. WHITECOLLAR	0.0790	1									
3. TRAINING	-0.0293	0.1317	1								
4. SIZE	-0.1007	-0.0247	0.1433	1							
5. AGE	-0.1188	-0.0981	0.0040	0.2411	1						
6. LEVERAGE	0.0942	0.0345	0.0068	-0.1281	-0.2866	1					
7. ROA	-0.0430	-0.0405	-0.0253	-0.1075	-0.036	-0.1884	1				
8. TEMP	0.0148	-0.1137	-0.0449	0.0653	-0.0679	-0.0005	0.0449	1			
9. HIGH EDUCATION	0.0086	0.5358	0.2117	0.0904	-0.0679	-0.0053	-0.0191	-0.1110	1		
10. COSTEMPLOYEE	-0.0068	0.4032	0.2212	0.1698	0.0132	-0.0342	-0.0169	-0.1135	0.5117	1	
11. SALES RATIO	0.0602	0.0613	-0.0255	-0.4012	-0.1632	0.2141	0.123	0.0124	-0.0829	-0.0858	1

The table shows the Pearson correlations of the main variables used in this study. Variables are defined in the appendix, Table A1.

Table 3: Main results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
WHITECOLLAR	0.8353***	0.5693***	0.7882***	0.5839***	0.9126***	0.0651***
	(0.2138)	(0.1670)	(0.2121)	(0.1670)	(0.2208)	(0.1716)
TRAINING	-0.0002*	-0.0002*	-0.0026**	-0.0002**	-0.0002*	-0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	0.0001	(0.0001)
SIZE	-0.2612***	-0.1966***	-0.2792***	-0.2080***	-0.2578***	-0.1931***
	(0.0732)	(0.0572)	(0.0730)	(0.0564)	(0.0732)	(0.0573)
AGE	-0.3712***	-0.2761***	-0.3876***	-0.2864***	-0.3740***	-0.2800***
	(0.0827)	(0.0652)	(0.0830)	(0.0654)	(0.0830)	(0.0652)
LEVERAGE	0.9004***	0.6937***	0.8999***	0.9674***	0.8966***	0.6917***
	(0.2357)	(0.1924)	(0.2353)	(0.1908)	(0.2359)	(0.1925)
ROA	-1.1272***	-0.8847***	-1.1200***	-0.8819***	-1.1216***	-0.8812***
	(0.4450)	(0.3357)	(0.4432)	(0.3334)	(0.4879)	(0.3359)
TEMP	0.5715	0.7010*	0.6024	0.7285*	0.5544	0.6749*
	(0.4893)	(0.3950)	(0.4831)	(0.3872)	(0.4879)	(0.3950)
HIGH EDUCATION			-0.4218**	-0.4293***	-0.2570	-0.2952*
			(0.2173)	(0.1725)	(0.2281)	(0.1743)
COSTEMPLOYEE	-0.5412***	-0.3951**			-0.4716**	-0.3073*
	(0.2051)	(0.1678)			(0.2160)	(0.1727)
SALES RATIO	-0.0087	-0.0083	-0.0154	-0.0100	-0.0103	-0.0098
	(0.0448)	(0.0340)	(0.0449)	(0.0338)	(0.0448)	(0.0340)
CONSTANT	7.7344***	5.9278***	2.3629**	1.9813**	6.9907***	4.9955***
	(2.3808)	(1.8805)	(1.1683)	(0.8736)	(2.4844)	(1.9285)
YEAR FE	YES	YES	YES	YES	YES	YES
INDUSTRY FE	YES	YES	YES	YES	YES	YES
RANDOM EFFECTS	YES	NO	YES	NO	YES	NO
Firm years	9,551	9,551	9,551	9,551	9,551	9,551
Number of firms	2,221	2,221	2,221	2,221	2,221	2,221

The table presents the regression results for Hypothesis 1a , 1b and 2, analyzing the determinants of layoff decisions. Robust standard errors clustered at the firm level are reported between parentheses. *,** and *** represent significance at the 10%, 5% and 1% level respectively. Dependent Variable (=DOWNSIZE): value = 1 if the firm dismisses more than 10% of its labor force in a year; 0 otherwise. Independent variables are as defined in Table A1.

Table 4: the moderating impact of financial constraints

	LEVERAGE		PRODUCTIVITY		OPERATING CASHFLOW	
VARIABLES	LOW	HIGH	LOW	HIGH	LOW	HIGH
WHITECOLLAR	0.6049*	1.1675***	1.4564***	0.4551	0.9914***	0.5627*
	(0.3264)	(0.2915)	(0.3386)	(0.3175)	(0.3494)	(0.3352)
TRAINING	-0.0003	-0.0001	-0.0001	-0.0003*	-0.0000	-0.0005**
	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
SIZE	-0.2470**	-0.2855***	-0.3615***	-0.3122***	-0.3935***	-0.0616
	(0.1089)	(0.0953)	(0.1257)	(0.1100)	(0.1074)	(0.1356)
AGE	-0.4226***	-0.4151***	-0.4198***	-0.3320***	-0.3623***	-0.5890***
	(0.1328)	(0.1036)	(0.1275)	(0.1081)	(0.1310)	(0.1543)
LEVERAGE			0.6565**	1.2789***	1.1758***	0.6038
			(0.3413)	(0.3413)	(0.3629)	(0.4068)
ROA	-1.6019**	-1.1793**	-0.8998	-1.4147**	-0.4497	-0.8546
	(0.6895)	(0.5866)	(0.6152)	(0.7036)	(1.0583)	(0.9298)
TEMP	0.0858	0.9199	0.1136	0.5830	1.1940	-0.3917
	(0.7500)	(0.6259)	(0.8838)	(0.5881)	(0.7980)	(0.8156)
HIGH EDUCATION	-0.1252	-0.3676	-0.2961	-0.1964	-0.4876	-0.2125
	(0.3507)	(0.3000)	(0.3380)	(0.3116)	(0.3600)	(0.4408)
COSTEMPLOYEE	-0.2693	-0.6365**	-0.9369***	-0.1610	-0.3782	-0.6541*
	(0.3304)	(0.2803)	(0.3204)	(0.3027)	(0.3445)	(0.3728)
SALES	0.1326*	-0.0532	-0.0704	-0.0497	-0.0429	-0.0570
	(0.0738)	(0.0548)	(0.0911)	(0.0558)	(0.0650)	(0.0737)
CONSTANT	5.2983	9.8582***	13.6239***	4.3646	7.9072**	7.2291*
	(3.9604)	(3.0862)	(4.0639)	(3.4919)	(3.8389)	(4.3156)
YEAR FE	YES	YES	YES	YES	YES	YES
INDUSTRY FE	YES	YES	YES	YES	YES	YES
RANDOM EFFECTS	YES	YES	YES	YES	YES	YES
Firm years	4,745	4,806	4,700	4,850	3,564	3,582
Number of firms	1,282	1,370	1,317	1,176	1,289	1,368

The table presents the regression results on the moderating impact of financial exposure on the relationship between WHITECOLLAR and downsizing likelihood. The sample is split based on the median value of the variable. Robust standard errors are clustered at the firm level and are reported between parentheses. *,** and *** represent significance at the 10%, 5% and 1% level respectively. Dependent Variable (=DOWNSIZE): value = 1 if the firm dismisses more than 10% of its labor force in a year; 0 otherwise. Independent variables are as defined in Table A1 and A2.

Table 5: The moderating of credit constraints: evidence from the Bank Lending Survey

PANEL A: Global credit requirements

VARIABLES	INCREASE	DECREASE	Full Sample
WHITECOLLAR	0.9825***	0.7931***	0.6906***
	-0.2565	(0.2622)	(0.2381)
CR			1.0026***
			(0.2430)
CR*WHITECOLLAR			0.5854***
			(0.2357)
Firm Controls	YES	YES	YES
YEAR FE	YES	YES	YES
INDUSTRY FE	YES	YES	YES
RANDOM EFFECTS	YES	YES	YES
Firm years	2,784	6,767	9,551
Number of firms	1,875	2,073	2,221

PANEL B: LEVERAGE

VARIABLES	HIGH	LOW
WHITECOLLAR	0.9042***	0.3777
	(0.3116)	(0.3603)
CR	1.0868***	0.8870**
	(0.3487)	(0.3525)
CR*WHITECOLLAR	0.6662**	0.5523
	(0.3291)	(0.3508)
Firm Controls	YES	YES
YEAR FE	0,	YES
INDUSTRY FE	YES	YES
RANDOM EFFECTS	YES	YES
Firm years	4,806	4,745
Number of firms	1,370	1,282

The table presents the regression results on the moderating impact of financial constraints on the relationship between WHITECOLLAR and downsizing likelihood. Panel A splits the sample based credit requirements, and whether they were increased or decreased by the Belgian financial institutions. Panel B splits the sample based on the median value of leverage. Robust standard errors are clustered at the firm level and are reported between parentheses. *,** and *** represent significance at the 10%, 5% and 1% level respectively. Dependent Variable (=DOWNSIZE): value = 1 if the firm dismisses more than 10% of its labor force in a year; 0 otherwise. Independent variables are as defined in Table A1 and A2.

Table 6: the moderating impact of employment characteristics

	LABORINTENSITY		TRAINING		KNOWLEDGE INTENSIVE INDUSTRY		INTANGIBILITY	
VARIABLES	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
WHITECOLLAR	0.5032*	1.6654***	1.2111***	0.5052	0.9269***	1.2556	1.3658***	0.5195
	(0.2902)	(0.3460)	(0.2663)	(0.3371)	(0.2327)	(0.8792)	(0.3219)	(0.3260)
TRAINING	-0.0001	-0.0004**			-0.0001	-0.0009***	-0.0001	-0.0003*
	(0.0001)	(0.0002)			(0.0001)	(0.0003)	(0.0001)	(0.0001)
SIZE	-0.1583*	-0.3226**	-0.2074**	-0.3334***	-0.2470***	-0.2510	-0.0679	-0.4280***
	(0.0890)	(0.1360)	(0.0916)	(0.1031)	(0.0805)	(0.1958)	(0.1056)	(0.1134)
AGE	-0.4557***	-0.3012**	-0.4420***	-0.3423***	-0.4431***	0.1653	-0.4770***	-0.3079***
	(0.1065)	(0.1302)	(0.1055)	(0.1181)	(0.0880)	(0.2355)	(0.1260)	(0.1158)
LEVERAGE	1.0152***	0.8239**	1.2476***	0.4873	0.8613***	0.7962	0.7259**	1.0091***
	(0.2967)	(0.3717)	(0.3130)	(0.3225)	(0.2595)	(0.5737)	(0.3377)	(0.3701)
ROA	-1.0667*	-1.4736**	-0.9278*	-1.3620**	-0.7938	-3.0063***	-0.9681	-1.9703***
	(0.5729)	(0.6974)	(0.5726)	(0.7044)	(0.5093)	(0.8554)	(0.7144)	(0.6669)
TEMP	0.7558	0.1577	0.1019	1.0609	0.3316	4.7677***	0.1527	0.9866
	(0.5886)	(0.8479)	(0.6249)	(0.7161)	(0.5113)	(1.7471)	(0.7826)	(0.7151)
HIGH EDUCATION	-0.1751	-0.4536	-0.1513	-0.5233	-0.5973**	1.0535**	-0.1659	-0.2928
	(0.2765)	(0.4100)	(0.2958)	(0.3454)	(0.2759)	(0.4995)	(0.3478)	(0.3269)
COSTEMPLOYEE	-0.2987	-0.6613**	-0.6429**	-0.2754	-0.2280	-1.9261***	-0.6326**	-0.6436**
	(0.2802)	(0.3422)	(0.2706)	(0.3151)	(0.2311)	(0.6720)	(0.3188)	(0.3119)
SALES	-0.0193	0.0125	0.0031	-0.0374	-0.0250	0.1251	0.0616	-0.1118
	(0.0536)	(0.0808)	(0.0575)	(0.0677)	(0.0468)	(0.1452)	(0.0613)	(0.0774)
CONSTANT	3.7980	9.7064***	7.8247***	6.4647*	4.4832*	20.3366**	5.5141	11.8781***
	(3.2350)	(3.7506)	(3.0958)	(3.5783)	(2.6094)	(7.9944)	(3.7010)	(3.6754)
YEAR FE	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY FE	YES	YES	YES	YES	YES	YES	YES	YES
RANDOM EFFECTS	YES	YES	YES	YES	YES	YES	YES	YES
Firm years	4,738	4,813	4,851	4,699	8,442	1,092	4,587	4,214
Number of firms	1,277	1,197	1,543	1,465	1,953	324	1,327	1,179

The table presents the regression results on the moderating impact of employment characteristics on the relationship between WHITECOLLAR and TRAINING and downsizing likelihood. The variables LABORINTENSITY, TRAINING and INTANGIBILITY are split based on the median cutoff value. The sample split of knowledge intensity of the industry uses the EU commissions definition of industry's knowledge intensity. Robust standard errors are clustered at the firm level and are reported between parentheses. *,** and *** represent significance at the 10%, 5% and 1% level respectively. Dependent Variable (=DOWNSIZE): value = 1 if the firm dismisses more than 10% of its labor force in a year; 0 otherwise. Independent variables are as defined in Table A1 and A2.

Table 7: Robustness checks

Panel A: Labor contract reform

VARIABLES	before 2014	Post 2014	Full Sample
WHITECOLLAR	1.0924***	0.6548*	0.9182***
	(0.2531)	(0.3772)	(0.2449)
post2014			-0.9507**
			(0.1463)
post2014*WHITECOLLAR			-0.0639
			(0.2973)
TRAINING	-0.2449	-0.6124**	-0.3595**
	(0.1687)	(0.2645)	(0.1463)
SIZE	-0.2051**	-0.2977**	-0.2288***
	(0.0842)	(0.1290)	(0.0735)
AGE	-0.4126***	-0.4196***	-0.3843***
	(0.0935)	(0.15556)	(0.0830)
LEVERAGE	0.7493***	1.1017***	0.8962***
	(0.2639)	(0.4270)	(0.2358)
ROA	-0.9137*	-1.3996	-1.1124**
	(0.4958)	(0.9098)	(0.4460)
TEMP	0.4923	1.3380*	0.5563
	(0.6199)	(0.7927)	(0.4879)
HIGH EDUCATION	-0.2954	-0.7005*	-0.2685
	(0.2754)	(0.4094)	(0.2297)
COSTEMPLOYEE	-0.7452***	0.2096	-0.05268**
	(0.2498)	(0.3645)	(0.2141)
SALES	0.0201	-0.0734	-0.0041
	(0.0528)	(0.0758)	(0.0448)
CONSTANT	9.1015***	0.0933	7.2449***
	(2.8839)	(4.1155)	(2.4721)
YEAR FE	YES	YES	YES
INDUSTRY FE	YES	YES	YES
RANDOM EFFECTS	YES	YES	YES
Firm years	4,722	4,829	9,551
Number of firms	1,836	1,290	2,221

Panel B: Linear Probability Model

VARIABLES	Y	Y	Y
WHITECOLLAR	0.0659***	0.0779***	0.0828***
	(0.0194)	(0.0199)	(0.0209)
TRAINING	-0.0001**	-0.0001*	-0.0001*
	(0.0000)	(0.0000)	(0.0000)
SIZE	-0.0222***	-0.0216***	-0.0195***
	(0.0059)	(0.0059)	(0.0059)
AGE	-0.0379***	-0.0359***	-0.0367***
	(0.0078)	(0.0077)	(0.0078)
LEVERAGE	0.0754***	0.0735***	0.0732***
	(0.0205)	(0.0205)	(0.0206)
ROA	-0.0973**	-0.0986**	-0.0971**
	(0.0403)	(0.0403)	(0.0402)
TEMP	0.0419	0.0369	0.0358
	(0.0419)	(0.0437)	(0.0403)
HIGH EDUCATION	-0.0387**		-0.0209
	(0.0192)		(0.0198)
COSTEMPLOYEE		-0.0586***	-0.0575***
		(0.0198)	(0.0203)
SALES	-0.0011	-0.0006	0.9997
	(0.0041)	(0.0041)	(0.0041)
CONSTANT	0.5746***	1.1728***	1.1398***
	(0.0990)	(0.2251)	(0.2310)
YEAR FE	YES	YES	YES
INDUSTRY FE	YES	YES	YES
RANDOM EFFECTS	YES	YES	YES
Firm years	9,551	9,551	9,551
Number of firms	2,221	2,221	2,221

Panel C: Single versus multiple downsizers

VARIABLES	(1)	(2)
WHITECOLLAR	0.3805**	0.5832***
	(0.1983)	(0.1925)
TRAINING	-0.0002	-0.0002*
	(0.0001)	(0.0001)
SIZE	-0.2045***	-0.1985***
	(0.0618)	(0.0587)
AGE	-0.2252***	-0.3005***
	(0.0715)	(0.0950)
LEVERAGE	0.6192***	0.6542***
	(0.2102)	(0.2139)
ROA	-1.3392***	-0.7301**
	(0.4402)	(0.3694)
TEMP	0.4864	0.4534
	(0.5185)	(0.3871)
HIGH EDUCATION	0.0448	-0.1222
	(0.2131)	(0.1811)
COSTEMPLOYEE	0.1756	(0.2864
	(0.2072)	(0.2120)
SALES	-0.0063	-0.0098
	(0.0414)	(0.0323)
CONSTANT	-0.8402	4.8399*
	(2.2734)	(2.5321)
YEAR FE	YES	YES
INDUSTRY FE	YES	YES
RANDOM EFFECTS	YES	YES
Firm years	7,868	9,052
Number of firms	1,930	2,221

The table presents the regression results on the robustness analyses. Panel A examines the influence of the labor contract reform in 2014. Next, Panel B examines the influence of multiple and single downsizers. Finally, Panel C tests the robustness for the use of Linear Probability Models. Robust standard errors are clustered at the firm level and are reported between parentheses. *,** and *** represent significance at the 10%, 5% and 1% level respectively. Dependent Variable (=DOWNSIZE): value = 1 if the firm dismisses more than 10% of its labor force in a year; 0 otherwise. Independent variables are as defined in Table A1 and A2.

Appendix

A.1 Variable definitions

Table A1: Variable definitions

	Variable definitions
Dependent variable	
DOWNSIZE	Indicator variable equal to 1 if a firm has dismissed at least 10% of it's workforce. We calculate the percentage layoff as: number of dismissed employees scaled by the number of FTE at the end of the previous fiscal year.
Variables of interest	
WHITECOLLAR	Number of white-collar workers/(white-collar + blue-collar workers)
TRAINING	Cost of continued formal education/ number of FTE
Firm level controls	
SIZE	Natural logarithm of total assets
AGE	Natural logarithm of number of years since date of incorporation
LEVERAGE	Total liabilities scaled by total assets
ROA	EBITDA scaled by total assets
TEMP	Number of temporary employees (= employees with a fixed term contract or a fixed job contract) scaled by total number of FTE
HIGH EDUCATION	Percentage of the total workforce that has obtained degree in higher education (Graduate and undergraduate degree)
COSTEMPLOYEE	Natural logarithm of total employment costs scaled by the number of FTE
SALES RATIO	Turnover scaled by total assets

Note: The table shows the variable definitions of the main variables used in this study.

Table A2: Variable definitions additional analyses and robustness tests

	Variable definitions
Additional Analyses	
KII	Indicator variable to show whether a firm is active in a Knowledge-intensive industry or not as defined by the European Commission. https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an2.pdf
LABORINTENSITY	Number of FTE scaled by SIZE
INTANGIBILITY	Intangible assets scaled by total assets
CR	Indicator variable, based on the diffusion index of the NBB, to show how credit requirements have changed; 1 if credit requirements have become stricter, and 0 if they remained unchanged or decreased.
SALES GENERATION	Turnover scaled by total number of FTE
OPERATING CASHFLOW	operating cashflow scaled by total assets
Robustness	
I_WHITECOLLAR	Industry-corrected (at the 2-digit NACE level) WHITECOLLAR
TRAINING_GMEAN	Three year geometric average of TRAINING
TRAINING_SIZE	Cost of continued formal education scaled by SIZE

Note: the table shows the variable definitions of the variables used in the additional analyses and robustness tests in this study.

A.2 Descriptive statistics of additional and robustness variables

Table A3: Summary statistics additional and alternative variables

	Obs	Mean	St. Dev	Min	Q1	Median	Q3	Max
Additional Analyses								
KII	12,398	0.1221	0.3275	0	0	0	0	1
LABORINTENSITY	12,390	2.7589	2.2432	0.6365	1.2367	2.0147	3.2584	12.1324
INTANGIBILITY	11,554	0.0092	0.0301	0	0	0	0.0032	0.2137
CR	12,398	-4.0611	20.03118	-37.5	-25	0	12.5	25
PRODUCTIVITY	12,387	524,623	560,509	38,548.67	195,772.2	353,907.1	627,817.8	3518,503
OPERATING CASHFLOW	9,574	0.0863	0.1118	-0.288	0.0314	0.0763	0.1329	0.5235
Robustness								
I_WHITECOLLAR (mean)	12,381	-0.0003	0.2517	-0.6072	-0.1527	-0.008	0.149	0.6459
I_WHITECOLLAR (median)	12,381	0.0008	0.2618	-0.6969	-0.1146	0	0.1169	0.7681
TRAINING_GMEAN	12,393	144.0448	322.7142	0	0	6.236	123.0453	1,913.67
TRAINING_SIZE	12,385	585.8207	1,474.599	0	0	14.0039	439.9102	9,841.088

Note: The table shows the descriptive statistics of the additional and alternative variables used in this study. All continuous variables are winsorized at the first percentile. Variables are defined in the appendix, Table A2. While all mediators are translated into dummies for the analyses, they reported as continuous variables in the summary statistics for maximum transparency.

A.3 Bank Lending Survey

To construct a reliable year-based measure, we will use two different methods. Following our first approach, we will determine the maximum and minimum quarter value within a year, and take the highest absolute value of these two. So for example in 2014, the following numbers are provided 0 -12.5[29] -25[30] 0 for quarter 1 until 4, respectively, indicating that credit requirements were relaxed during the second and third quarter of the year. Specifically, we have 0 as the maximum value and -25 as a minimum value. Ultimately, our annual value will be -25 as it has the largest absolute value. Secondly, to more accurately measure the overall tendency in credit policy implications in a given year, we will also use the average of the maximum and the minimum value. Using the same example as provided above, we will have -12.5[31]. Both approaches would indicate an overall relaxation in credit constraints for the year 2014.

In our main analyses, we will use the first method, based on the absolute value. However, it should be noted that the two methods are almost identical, and so almost perfectly correlated. The reason for this is that the numbers in all years, except for 2013, show either only positive values or only negative values, however no combination of the two. Therefore, either the maximum or the minimum value is always 0, for which the maximum absolute value (of the first method) is always divided by 2.

This method obviously does not indicate specific bank relations with the SMEs in our sample, but it provides us yearly estimates of the overall stringency of credit policy by Belgian banks towards firms. Although less specific compared to firm based measure of credit constraints, it provides valid and an exogenous proxy of financial constraints faced by the SMEs in our dataset in a particular year.

[29] Looking at this value, we know for sure that only one bank has decreased their credit requirements slightly.
[30] Looking at this value, we are not sure whether one bank has decreased their credit requirements significantly, or two banks have both decreased their requirements slightly.
[31] The average of the maximum (0) and minimum value (-25) is -12.5.