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Employment Protection and Organizational Structure

Finance Working Paper N° 1026/2024
January 2026

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Abstract

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Keywords: Business Groups, Dismissal Costs, Employment Protection, Internal Labor Markets, Organizations

JEL Classifications: G34, L41, J63

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October 23, 2025

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1 Introduction

Business groups are widespread organizations that operate internal capital and labor markets, a feature that may present important advantages when external markets are plagued by frictions (Khanna and Palepu, 1997; Khanna and Yafeh, 2007). A related recent literature has shown that the ability to rely on internal labor markets (ILMs) allows group-affiliated firms to mitigate labor adjustment costs in the presence of shocks. Faced with growth opportunities, group-affiliated (BG) firms can bypass hiring frictions and expand rapidly (Cestone et al., 2024); faced with adverse shocks, they can reallocate workers to affiliated units, avoiding firing costs (Cestone et al., 2023). This suggests that labor market reforms that exacerbate or alleviate frictions should have a less pronounced impact on BG firms as compared to their stand-alone peers. It also suggests that group-affiliation should become less valuable, hence less prevalent, following major liberalizations of labor markets.

To test these two hypotheses, we exploit a labor market reform that substantially reduced the direct and indirect costs of employee dismissals for Spanish firms. This allows us to provide evidence that group-affiliated firms are partly shielded from the impact of employment protection legislation (EPL hereafter) and that ILMs - as opposed to groups' internal capital markets - are a key factor behind this resilience. By studying the evolution of business groups around the reform, we also provide causal evidence for the longstanding claim that labor market frictions are a major factor behind the emergence of group structures (Khanna and Palepu, 1997; Khanna and Yafeh, 2007).

In 2012, the Spanish government unexpectedly enacted a structural reform of the labor market, aimed at reshaping Employment Protection Legislation. The *Real Decreto Ley 3/12* contained various provisions to mitigate the costs of labor adjustment in the face of economic shocks. For instance, it broadened the definition of fair dismissal, significantly reduced compensation for unfair dismissal, and eliminated the requirement for administrative authorization in cases of collective dismissals. Early assessments propose that the legislation substantially reduced dismissal costs and promoted hiring (OECD, 2013), facilitating firms' growth and expansion (Garcia-Vega et al., 2021). These features of the reform make it an ideal setting to study the impact of EPL changes on organizations.

We first focus on the question of whether group-affiliated firms are less sensitive to EPL changes. To guide our empirical analysis, we use a simple model studying how optimal hiring responds to a change in firing costs, in a two-firm business group operating an ILM versus a stand-alone firm. Firing costs induce firms to postpone hiring in the presence of uncertainty about firm profitability; however, business groups can transfer part of the redundant workers within the ILM, avoiding firing costs. The model generates two main predictions. First, in the presence of an active ILM operated by the group headquarters, a change in firing costs has a smaller impact on the labor demand of BG-firms versus the labor demand of a stand-alone firm. Second, the response to changes in firing costs is more subdued in business groups with a less frictional ILM and in groups whose units are exposed to uncorrelated profitability shocks (thus offering more opportunities for internal employee reallocation).

To perform our empirical analysis, we use data from Bureau van Dijk's *Amadeus* database for private firms. The unique feature of this database is that, besides firms' balance sheets and profit and loss statements, it provides information on ownership structure: this allows us to identify firms with a common controlling shareholder and reconstruct the structure of business groups in Spain.

In the baseline analysis, we rely on a difference-in-difference empirical strategy to study the employment growth response to the 2012 reform in BG firms versus stand-alone firms. More specifically, we compare the evolution of employment growth in firms affiliated with small *two-firm* groups versus their stand-alone peers (Larrain et al., 2019). Comparing stand-alone legal entities with small BGs alleviates the concern that firms affiliated with large groups might respond differently to shocks because of a multitude of unobservable factors, including managerial talent and political connections. However, affiliation to a small group may still provide mechanisms to alleviate the impact of frictions in external factor markets.[1] We find that following the reform, BG firms experience a significantly smaller increase in employment growth when compared to their stand-alone peers: the employment growth rate is about 2.8 percentage points smaller in (*two-firm*) BG firms. We also study the evolution

[1]Small *two-firm* groups have been shown to mitigate credit constraints for member firms thanks to collateral and cash-flow cross-pledging (Larrain et al., 2019, 2023). Cestone et al. (2024) show that industry diversification and geographical focus of groups, rather than group size *per se*, facilitate internal labor market activity within groups.

of employment growth in a 7-year window around the reform using a dynamic specification. While we do not observe any pre-reform differential, employment growth (as compared to the pre-reform baseline) in BG firms two and three years after the reform is 3.7 and 4.1 percentage points smaller than in stand-alone firms. In sum, a major EPL reform aimed at reducing the costs of labor adjustments was not as effective in stimulating hiring by BG firms as it was for stand-alone firms. This suggests that prior to 2012, group-affiliated firms in Spain were partly shielded from the burdensome EPL provisions that the reform set out to soften.

To investigate the mechanisms that may explain this muted response, we exploit heterogeneity in firm and group characteristics that can proxy for ILM frictions. We find that the muted response to EPL is concentrated in geographically focused groups, i.e., those whose affiliated firms are located within the same city. We also find that diversified groups, i.e., those operating across different two-digit industries, respond less to the reform - particularly when there is greater occupational and skill overlap between their industries. These results support our model prediction that a frictionless ILM (captured by geographical proximity and skill compatibility between subsidiaries) allows groups to bypass external labor market frictions due to employment protection legislation. Our results also align with previous work showing that firms in diversified but geographically focused groups are in a better position to rely on the Internal Labor Market (Tate and Yang, 2015; Cestone et al., 2024).

We next investigate alternative explanations for our results. One possibility is that the macroeconomic recovery that followed the financial crisis, which partly overlaps with the post-reform period, may disproportionately benefit stand-alone firms relative to BG firms, enabling them to expand more rapidly. Another potential explanation is that the observed differential response of groups to the labor reform is simply driven by internal capital markets (ICMs). Capital reallocation within business groups may help affiliated firms better adapt to idiosyncratic shocks, making them less sensitive to EPL. However, our empirical tests do not support these alternative explanations for group firms' subdued response to the reform.

We then focus our analysis on groups with $n \geq 2$ subsidiaries, and compare the employment response to the reform in BG firms with high versus low access to ILM. In the same spirit as Cestone et al. (2024) we measure *ILM Access* of a BG firm as the number of workers

employed in affiliates of the same group that (i) are located in the same city as the focal firm, (ii) operate in different two-digit SIC industries, and (iii) whose industries exhibit high occupational overlap with the focal firm. In line with our ILM story, we find that the employment growth response to the EPL reform is significantly less pronounced in BG firms that enjoy higher ILM access. This evidence suggests that Internal Labor Markets are a critical feature of group affiliation, allowing groups to bypass labor market frictions and partly insulating them from the impact of EPL legislation.

Our results suggest that ILMs, and thus group affiliation, become less valuable when major reforms mitigate labor market frictions. In the final part of the paper, we test this prediction by studying the impact of the 2012 reform on firm incorporation and the expansion of group affiliation. Our empirical strategy is to compare business group affiliation in neighboring Spanish and French regions, with the latter being a valid control as they were not subject to the reform (the *treatment* in our setting). We begin by analyzing the incorporation of new firms as in Bena and Ortiz-Molina (2013), and ask whether new firms are less likely to be part of business groups after the reform. After controlling for firm characteristics and a host of fixed effects, we find that the reform reduces the likelihood of new firms being established as group-affiliated by 6.0 percentage points. We then turn to the group-level analysis, which also provides consistent evidence, with the expansion of group affiliation significantly slowing down following this large EPL liberalization.

Our paper builds a bridge between the recent literature on Internal Labor Markets in organizations and earlier work attempting to document and explain the prevalence of business groups across periods and countries.

Within the business group literature, many papers argue that groups are more resilient to shocks than stand-alone firms, due to their ability to reallocate production factors internally (Khanna and Palepu, 1997; Khanna and Yafeh, 2007). This view is supported by the observation that groups are more prevalent where labor and financial markets display important frictions, as is the case in emerging markets. A large literature has analyzed internal capital markets in groups and multi-divisional firms (e.g., Boutin et al., 2013; Buchuk et al., 2014; Gopalan et al., 2014; Matvos and Seru, 2014; Almeida et al., 2015; Matvos et al., 2018), highlighting for instance that ICM activity manifests in increased investment *and* employ-

ment in units faced with expansion opportunities (Giroud and Mueller, 2015). However, evidence that these organizations also operate internal labor markets is more recent (Faccio and O'Brien, 2021; Huneeus et al., 2021; Cestone et al., 2024). Cestone et al. (2023) provide evidence that more stringent regulations on employee dismissal encourage BG firms to reallocate more workers to their group affiliates when faced with adverse shocks. This suggests that the ability to redeploy workers via the ILM can partly insulate group-affiliated firms from the impact of employment protection regulations. In line with this hypothesis, we provide novel evidence suggesting that stand-alone firms, rather than BG affiliates, are the main beneficiaries of labor market liberalizations.

Our paper is also related to the literature studying how labor market frictions affect corporate policies (see Matsa, 2018). While the literature focuses on the impact of EPL on leverage (Simintzi et al., 2015; Serfling, 2016), capital expenditures (Bai et al., 2020), innovation (Acharya et al., 2014; Garcia-Vega et al., 2021), and acquisitions (Dessaint et al., 2017), there is no causal evidence on EPL as a driver of organizational structure. Belenzon and Tsolmon (2015) analyze the relation between group-affiliation and EPL across countries, and show that group affiliation is more prevalent in countries with more rigid EPL, especially in high labor turnover industries, pointing to ILMs as the main explanation. By exploiting the 2012 Spanish labor market reform within a DiD setting, we complement this work by providing causal evidence that legislation limiting the burden of dismissal costs for employers reduces the prevalence of business group affiliation. In pointing to labor market frictions as a driver of organizational structure, our paper complements prior work showing that capital market frictions favor the creation of conglomerates (Matvos et al., 2018) and corporate groups (Belenzon et al., 2013).

The rest of the paper proceeds as follows. Section 2 presents the theoretical framework. Section 3 describes the institutional background and the 2012 Spanish labor reform. Section 4 presents the data and the sample construction. Empirical methodology and results are discussed in Sections 5 - 8. Section 9 concludes.

2 Theoretical Background

We illustrate our empirical predictions with the aid of a simple model where firms make hiring decisions in the presence of firing costs due to employment protection. A formal analysis of the model is provided in Internet Appendix B.

At $t = 0$, each firm chooses to hire L_i workers. Workers hired at $t = 0$ receive on-the-job training; we normalize to zero the per worker training cost. At $t = 1$, the firm learns whether it is productive, i.e. there is demand for its product (this has probability $x \in (\frac{1}{2}, 1)$), or in distress, i.e. there is no demand (this has probability $1 - x$). After learning the state of demand, the firm has two options: it can continue production, possibly hiring additional workers ℓ_i, or stop production. Late hiring of additional workers at $t = 1$ entails a search/training cost $h(\ell) = h\ell^2/2$, hence $h' > 0$, $h'' > 0$ and $h(0) = 0$. If the firm continues after $t = 1$, actual production takes place and a productive firm pays wages $w \times (L_i + \ell_i)$ to the workforce and generates revenues $g(L_i + \ell_i)$, where the function g satisfies $g' > 0$ and $g'' < 0$. We also assume $g''' > 0$ as e.g. in a Cobb-Douglas production function. By contrast, being in distress at $t = 1$ means that the firm will be unable to generate any revenues. We assume that if the firm is discontinued it can liquidate the assets for proceeds C but bears a separation cost $F < w$ per worker.

There are two types of organizations in our model: business groups and stand-alone firms. A stand-alone firm faces the following hiring decision at $t = 0$:

$$\max_{L_{sa}} x[g(L_{sa} + \ell_{sa}) - w(L_{sa} + \ell_{sa}) - h\frac{\ell_{sa}^2}{2}] + (1 - x)[C - FL_{sa}],$$

anticipating that after learning it is productive, it will hire ℓ_{sa} additional workers so as to maximize $g(L_{sa} + \ell_{sa}) - w(L_{sa} + \ell_{sa}) - h(\ell_{sa})$, i.e. ℓ_{sa} (the optimal labor adjustment after good news) satisfies $g'(L_{sa} + \ell_{sa}) = w + h\ell_{sa}$ for a given initial stock of employees L_{sa}. If in distress at $t = 1$, the firm optimally fires all its workers at cost FL_{sa} and liquidates its assets.

In Internet Appendix B, we assume that h is "large enough" relative to F, so that the firm chooses to hire in both periods: $L_{sa}^* > 0$ and $\ell_{sa}^* > 0$.[2] The firm equates the expected

[2]When instead late hiring/training costs are small relative to firing costs, the firm adopts a "wait-and-see" approach and postpones all hiring after uncertainty is resolved.

marginal cost of late hiring to the expected marginal cost of firing: $h\ell_{sa} = \frac{1-x}{x}F$, which together with

$$g'(L_{sa} + \ell_{sa}) = w + \frac{1-x}{x}F \tag{1}$$

defines the optimal hiring policy for a stand-alone firm. Equation (1) implies that $\partial L^*_{sa}/\partial F < 0$: in the presence of uncertainty about future profitability ($x < 1$), firing costs discourage hiring.

A business group consists of two firms (k and j) controlled by a common parent. Hiring and firing decisions at both $t = 0$ and $t = 1$ are made at the firm level. However, at $t = 1$ a decision whether the labor adjustment must resort to the external or the internal labor market (ILM) is made by the group headquarters, with the objective to maximize total group value. For simplicity, we assume that workers can be reallocated at no extra cost across the two units. However, following Cestone et al. (2024), we assume that only a fraction $\mu \in (0, 1]$ of a subsidiary's existing stock of workers can be redeployed to the other subsidiary. This assumption captures, for instance, the fact that some workers employed in a group affiliate may not agree to be reallocated to another affiliate if this falls outside a reasonable commuting distance from the current job. Alternatively, only a fraction of a BG firm's workers have the skills that are needed in the other group affiliate. A greater geographical distance, or lower skill compatibility, between the two BG units would thus be associated with a smaller value of μ, capturing a more frictional ILM.

We allow the shocks affecting the two group units to be imperfectly correlated. When firm j is in distress at $t = 1$, the conditional probability of k being productive is $1 - \nu > 0$: a higher value of ν captures a higher correlation of shocks. When firm j is productive at $t = 1$, the conditional probability that k is in distress is $1 - \lambda > 0$.[3] In the presence of firing costs, whenever unit j is in distress while unit k is productive (hence with probability $(1-x)(1-\nu)$), the group headquarters reallocates $i \leq \mu L_j$ workers from j to k (transferring "redeployable" workers within the ILM does not entail firing/hiring costs).

In Internet Appendix B, we study how the two BG units perform labor adjustment at $t = 1$ and choose early hiring L^*_j and L^*_k at $t = 0$. We focus on the symmetric equilibrium,

[3]The case of perfectly correlated shocks corresponds to $\lambda = \nu = 1$.

where both BG units hire at $t = 0$, and show that $\partial L_j^*/\partial F = \partial L_k^*/\partial F < 0$.

The optimal date-0 hiring policy for a BG-affiliated firm takes into account whether ILM reallocation across units is feasible at $t = 1$. There are two reasons for this. First, when firm j is profitable at $t = 1$ and firm k is not, firm j can draw on the redeployable workers of firm k (μL_k) and reduce its late hiring costs. Second, when firm j is in distress and firm k is healthy at $t = 1$, firm j can partly bypass firing costs by redeploying a fraction μ of its workers to k. In other words, an active ILM partly shields BG firms from the impact of firing costs: this generates two intuitive results that we formally derive in Internet Appendix B and present here.

Result 1: The sensitivity of date-0 hiring with respect to firing costs is larger in absolute value for the stand-alone firm than a group-affiliated firm: $|\frac{\partial L_{sa}^*}{\partial F}| \geq |\frac{\partial L_j^*}{\partial F}|$, with a strict inequality if shocks are not perfectly correlated across group units (i.e. $\lambda < 1$, $\nu < 1$).

Result 2: For a BG-firm, the sensitivity of date-0 hiring with respect to firing costs is: (i) more pronounced, the higher the correlation of shocks across group subsidiaries: $\frac{\partial^2 L_j}{\partial F \partial \nu} < 0$; (ii) less pronounced, the more redeployable are its workers via the Internal Labor Market: $\frac{\partial^2 L_j}{\partial F \partial \mu} > 0$.

3 Institutional and Legal Background

3.1 The Spanish economy around 2012

The global financial crisis had a big impact on the Spanish economy. Since the beginning of the crisis, the number of unemployed workers in Spain increased by more than 4 million. In 2010, the country's GDP per capita fell by 4.9%, and its labor market experienced the third-highest rise in unemployment levels in Europe, behind only Greece and Cyprus. The unemployment rate in Spain peaked at 26.7% in October 2013, nearly three times the European average level of 10.8%. Even more worryingly, the proportion of long-term unemployment, those who are unemployed for more than 12 months, also rose dramatically and accounted for 50.4% of all unemployment in 2013 (versus 19.1% in 2007).

The adverse macroeconomic environment during the crisis period led to heightened financial constraints for firms. As shown in panel A of Figure 1, access to finance remained a major concern for Spanish enterprises throughout the crisis, with nearly one-quarter of firms reporting it as their most pressing problem as late as 2013.[4] This period of distress is also reflected in firm dynamics: the number of bankrupt debtors increased steadily and peaked in 2013 (panel B), indicating widespread financial instability. At the same time, enterprise demography data show that firm closures consistently outpaced firm formations between 2009 and 2013 (panel C). Beginning in 2013, the Spanish economy began to stabilize and gradually recover. The share of firms reporting financing difficulties and macroeconomic pessimism declined significantly after 2013, accompanied by a reduction in bankruptcies and a reversal in firm dynamics - firm births began to exceed firm deaths for the first time in years. This broader picture may raise concerns that the post-2013 financial recovery, rather than the 2012 labor reform, could explain our results. In Section 6.1.3, we address these concerns.

3.2 Provisions of the 2012 Spanish labor reform

Spain's labor regulations provide strong protections against unfair dismissals. They outline detailed procedures for redundancy, including notice periods, the involvement of third parties (e.g., courts, labor unions, workers' representatives), and the legal process through which workers can sue their employers (Bassanini et al., 2009). The regulations also define fair dismissal and specify sanctions for violations, allowing workers to claim substantial monetary compensation for contractual losses.[5] As a result, firms face significant firing and legal costs when terminating employees. Compared to other countries, dismissal costs in Spain were exceptionally high prior to 2012. For example, an employee with 20 years of tenure could receive 30 months' wages for an unfair dismissal (and 12 months' wages for a fair dismissal),

[4]The European Commission published the first country-level survey in 2011, and it has been released annually since 2013.

[5]Given that firms lose approximately three out of every four court cases, most avoid litigation - only about 2% of dismissals are taken to court. Instead, employers often classify dismissals as disciplinary, even when they are economically motivated. This allows them to bypass the advance notice requirement and avoid court proceedings by acknowledging the dismissal as unfair and paying the 45-day severance compensation upfront (Bentolila et al., 2012). This practice reflects the difficulty employers faced in proving the economic justification for dismissals before 2012.

whereas the OECD average for unfair dismissal was only 13.7 months (OECD, 2013).[6]

In response to the economic decline and surge in unemployment following the financial crisis, the Spanish government enacted a major labor market liberalization. This was introduced as Royal Decree-Law 3/2012 in February 2012 and was ratified, without substantial modifications, by the Spanish Parliament in July 2012. As highlighted by Garcia-Vega et al. (2021), the reform was largely unanticipated as it was enacted by the newly elected government without being in the party's manifesto.

The reform comprised several provisions (OECD, 2013). First, it prioritized collective bargaining agreements at the firm level over those at the sector or regional level. It simplified the process for firms to opt out of a collective agreement and implement flexibility measures to curtail job losses.[7] Second, it broadened the definition of fair economic dismissal by establishing objective circumstances under which contract termination could be justified.[8] With respect to collective dismissals, the requirement of administrative authorization for collective redundancies was eliminated after 2012. Third, it reduced monetary compensation for unfair dismissal. Specifically, compensation was lowered from 45 days of wages per year of service (capped at 42 months) to 33 days per year (capped at 24 months). In addition, the reform relieved employers of the obligation to pay interim wages covering the period between the effective dismissal date and the final court ruling. Finally, it introduced a new permanent contract for small firms (fewer than 50 employees), known as the *Contrato de Apoyo a Emprendedores*. This contract offers several hiring incentives and fiscal rebates, and notably extends the trial period (i.e., no compensation for dismissal) to one year, thereby enhancing flexibility and enabling employers to better experiment with and screen new workers. Overall, the 2012 labor market reform effectively reduced dismissal costs and infused greater dynamism into the Spanish labor market (OECD, 2013).

[6]Temporary contract workers were entitled to severance pay equivalent to 12 days' wages per year of service upon contract termination. In cases of unfair dismissal, they could receive the same severance compensation as permanent workers (Garcia-Vega et al., 2021).

[7]For instance, the reform allows employers to unilaterally change working conditions - such as working hours, schedules, and wages - provided there are objective economic or technical reasons.

[8]Under the new rules, a dismissal could be justified if a firm experiences persistent decline (over three consecutive quarters) in revenues or ordinary income. Moreover, the firm no longer needed to prove that the termination is essential for its future profitability. Thus, the justification of fair economic dismissals became broader and more straightforward than before.

3.3 Labor mobility within groups

Spanish labor regulations permit the transfer of employees between firms within the same corporate group, either on a temporary or permanent basis. Legally, the transfer process is relatively straightforward. A mechanism known as *novation* allows both parties (employer and employee) to mutually agree on modifying the original contract by updating specific terms such as location, responsibilities, and salary. However, for a transfer to occur, the employee must give consent. Under no circumstances can the move result in a deterioration of the employee's working conditions; violations may result in legal penalties.

4 Data and Summary Statistics

4.1 Sample selection

Data on group affiliation are constructed using Bureau van Dijk's (BvD) Amadeus ownership and financial database, covering the period from 2009 to 2015. The key advantage of these data is their comprehensive and representative coverage of both private and public firms in Europe thanks to mandatory disclosure regulations for private firms (Bernard et al., 2018). The accounting information is obtained from Amadeus and includes balance sheet and profit and loss figures. The ownership data details the names of shareholders, their ownership stakes, and information on whether they are individuals (families), non-financial companies, banks, or other types of corporations.

Following Belenzon et al. (2013) and Belenzon and Tsolmon (2015), we define a business group as a collection of at least two legally distinct firms controlled by an ultimate shareholder. Specifically, a firm is classified as group affiliated if it meets at least one of the following criteria: (1) the firm itself is a parent company of another firm in our sample (i.e., it has a subsidiary); (2) its controlling shareholder is a corporation (i.e., it is a subsidiary); (3) it shares the same controlling shareholder with at least one other firm in our sample. The minimum ownership stake required to be considered as a controlling shareholder is 50%. Any firm that does not meet at least one of the three criteria above is a stand-alone.

Since some groups have hundreds of affiliated firms (Larrain et al., 2021), comparing BG

firms to standalone firms might not be appropriate as affiliated firms enjoy financial and managerial support from the rest of the group. Therefore, a crucial step for our identification strategy in the first part of the paper is to focus on business groups with only two firms (*two-firm BGs*) where the differences with stand-alone firms are likely to be minimized (Larrain et al., 2019).

To further ensure the quality and homogeneity of our data, we apply several restrictions. First, we exclude all firms that experience any change in affiliation status during the sample period. Second, since the main target of this reform are small and medium-sized employers, when we perform a firm-level analysis we limit the sample to firms with fewer than 100 employees (OECD, 2013).[9] Third, we require that a firm appears in our sample for at least one year before the reform, and at least two years afterwards. Finally, in order to minimize endogeneity concerns due to omitted variable bias, we need to ensure that business group and stand-alone firms are as similar as possible. To do this, we perform a one-to-one propensity score matching, based on the three-digit SIC code, size (book assets), and the number of employees in the year before the reform.[10]

4.2 Summary statistics

Table 1, panel A, provides detailed definitions and summary statistics for the main variables in our analysis. To minimize the effects of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. Our main dependent variable is *Employment Growth*, calculated as the change in the log of firm employment between years t and $t-1$. Employment growth has a mean value of -3%. The rest of the panel summarizes our control variables. For example, the average firm in our sample has a book value of assets of €2.72 million, a leverage ratio of 50%, and tangibility of 41%. In terms of performance, median ROA is 1.07% and median sales growth is -2%. Panel A also presents industry characteristics. For example, industry labor intensity is the average ratio of employment relative to fixed assets, computed at the two-digit SIC code using U.S. data. Following Rajan and Zingales (1998), we measure the

[9]The OECD (2013) report suggests that the effect of the reform is concentrated in small and medium firms (those below 100 employees). Our results remain unchanged if we include firms with more than 100 employees in the analysis.

[10]Internet Appendix Figure A.1 displays the distribution of size and employment for both sets of firms. As expected from the matching procedure, the two distributions are basically overlapping.

external financial dependence of an industry as the average fraction of investment not financed by internal cash flows, and external equity dependence as the average fraction of investment financed with equity.

Panel B summarizes the characteristics of business group firms and their matched stand-alone firms. As expected from the matching procedure, the average size and employment are similar. However, BG firms have higher leverage and tangibility, lower cash holdings, a lower sales-to-assets ratio, and greater sales growth, although most differences are not economically relevant. In panel C, we show the characteristics of two-firm business groups, focusing on those for which we have geographical location information for both affiliates. This reduces the sample size to 6,530 observations. We define a *BG (same city)* indicator which equals one if both firms are located in the same city, and zero otherwise. The *BG (same city)* indicator has a value of 0.73, showing that most groups in our sample are geographically concentrated. The *BG (same sic2)* indicator is equal to one if both firms belong to the same two-digit SIC industry, and zero otherwise. Finally, the *BG (same city#diff sic2#high HCR)* indicator is defined as taking a value of one if all the following criteria are met: (i) both units are located in the same city, (ii) the two units have different two-digit SIC industry codes, and (iii) these industries exhibit high human capital relatedness (i.e., above the sample median).[11]

5 Employment Response to the EPL Reform: BG firms versus Stand-Alone Firms

We employ a DiD approach to compare the employment growth of firms belonging to a two-firm business group with that of stand-alone firms. Specifically, we run the following regression:

$$Employment\ Growth_{i,t} = \alpha + \beta BG_i \times Post_t + \lambda Controls_{i,t-1} + \delta_i + \zeta_t + \epsilon_{i,t} \qquad (2)$$

where $Employment\ Growth_{i,t}$ is the growth in employment for firm i in year t. BG_i is

[11] A measure of the relatedness of human capital between pairs of industries will be discussed in Section 6.1.1.

a dummy that equals one if firm i is affiliated with a two-firm business group, and zero otherwise. *Post* is a dummy equal to one if the observation year is after 2012, and zero otherwise. All specifications include firm (δ_i) and year fixed effects (ζ_t), which control for firm-level time invariant characteristics and country-level economic conditions. $Controls_{i,t-1}$ is a vector of lagged firm-level control variables, including size (logarithm of total assets), leverage, tangibility, cash holdings, cash flow, and profitability (return on assets, ROA). We cluster the standard errors at the firm level.[12]

Table 2 reports the regression results, with our focus on the interaction term $BG \times Post$, and β being our coefficient of interest. The aim is to understand whether there is a differential employment growth response to the 2012 reform across group-affiliated and stand-alone firms. Our results in columns (1) and (2) show that β is -0.028 and significant at the 1% level, indicating that the post-reform increase in employment growth is significantly less pronounced for group-affiliated firms. In terms of economic significance, the differential change is sizable when compared to the sample mean (-0.03) and the standard deviation (0.296) of employment growth. Adding year-dummies (column 2) or controlling for firm-level lagged variables (column 3) does not change our results.

Next, we substantiate the validity of our difference-in-differences estimates by showing the differential pre-trends between group and stand-alone firms.[13] Specifically, we set up a dynamic specification by replacing the *Post* dummy in Equation (2) with six dummies, $Reform_{\tau,t}$, where τ ranges from -3 to $+3$. $Reform_{\tau,t}$ is a treatment indicator that equals 1 if year t is τ years away from the 2012 labor reform. $\tau = -1$ indicates the benchmark year 2011 and is omitted from the regression. The estimates are reported in Figure 3. We do not observe any statistically significant differences in employment growth in the years before the reform, suggesting that our results are not driven by pre-reform trends. However, after the reform, BG firms exhibit a significantly lower employment growth.

Since our results could be driven by industry and/or regional shocks, in columns (4) - (5) we include industry-year and region-year fixed effects, yet the coefficient estimates of $BG \times Post$ remain negative and significant. Last, we deal with the concern that some specific

[12]Results remain unchanged if we cluster the standard errors by industry.

[13]Figure 2 illustrates the results in an event-study fashion.

provisions in the reform apply only to firms below certain size thresholds, notably 50 and 25 employees (OECD, 2013).[14] This might explain a differential response to the reform if group and stand-alone firms belong to different size categories. To mitigate this concern, we re-estimate equation (2) after ensuring that BG firms and their matched stand-alone firms have exactly the same number of employees in 2011 (a restriction that results in a significant reduction in the number of observations). As shown in column (6), our results remain qualitatively unchanged.

In sum, the results in Table 2 show that group-affiliated firms experience lower employment growth after the reform relative to stand-alone firms. Our results are in line with our first model prediction: if group-affiliated firms can bypass labor market frictions (including firing costs) by using Internal Labor Markets, they are less affected by changes to employment protection regulation. In Section 6, we set to test other predictions from our model and explore whether alternative mechanisms (e.g. an Internal Capital Market channel) may explain our results.

5.1 Alternative empirical strategy: comparing firms in neighboring Spanish and French regions

To check the robustness of the findings in Table 2, we adopt an alternative empirical strategy. Specifically, we compare the evolution of employment growth for group and stand-alone firms in Spain and France, as the latter were not affected by the reform. The idea is as follows: if our results are driven by unobservable characteristics common to business groups, then they should also be observed when comparing employment growth between French BG-firms and stand-alone firms. To explore this, we identify firms located in neighboring Spanish (Pais Vasco, Navarra, Aragon, and Cataluña) and French (Nouvelle Aquitaine and Occitanie) regions, with the former being the treated group and the latter the control.

In Figure 4, we illustrate the trend of employment growth for Spanish and French BG firms and stand-alone firms during the 2009-2015 period (the figure displays the yearly re-scaled average values of employment growth). We observe that, compared with firms in France,

[14] For example, the reform extended an existing subsidy, equivalent to 40% of ordinary severance pay, to all cases of fair dismissal for firms employing fewer than 25 workers.

both group and stand-alone firms in Spain (the treated units) exhibit a positive trend in employment growth following the reform. More importantly, firms affiliated with a Spanish business group experience a smaller increase in employment growth relative to stand-alone ones, whereas there are no differences among French BG firms and stand-alone firms. Formal regression analysis in Table A.1 in the Internet Appendix shows that our results are similar when controlling for firm characteristics as well as firm and year-fixed effects. Both stand-alone and BG firms' employment growth is higher in Spain, and the differential is larger for stand-alone ones. These results are in line with our findings in Table 2, and consistent with the theory that the loosening of employment protection should mainly benefit stand-alone firms as opposed to BG firms.

6 The Role of Internal Labor Markets versus Internal Capital Markets

In the previous section, we show that BG firms are less sensitive to a major EPL reform when compared to stand-alone firms. This finding is compatible with a model where internal labor markets allow BG-affiliated firms to bypass frictions generated by employment protection regulations. However, alternative explanations for that result could rely on the fact that BG firms have access to the group's Internal Capital Markets (ICMs) (Boutin et al., 2013; Buchuk et al., 2014; Almeida et al., 2015). In this section, we deal with this empirical challenge in the following ways. First, we test additional predictions that are specific to a theory of internal labor markets as set out in our model. We measure the "ILM access" of BG firms based on *labor-related factors* like geographical proximity and skill compatibility between group affiliates, and ask whether firms with better ILM access respond less to the 2012 reform. We also verify that BG firms' response to the EPL reform is more subdued in industries with high labor intensity/turnover. Second, we explore whether Spanish stand-alone firms (that lack access to an ICM) might have benefited more than BG firms from improved access to external financing in the post crisis recovery of 2013-2015, which would explain their faster expansion. Finally, we measure the "ICM access" of BG firms based on the cash holding and tangibility of their affiliates, and ask whether firms with better ICM access expanded less

after 2012.

6.1 Comparing BG firms with stand-alone firms

6.1.1 The role of "ILM access"

Our model predicts that the sensitivity of BG firms' hiring to firing costs is smaller, the more redeployable are its workers via the group's ILM. In Table 3, we test this prediction using different measures of ILM's (lack of) frictions inspired by Huneeus et al. (2021) and Cestone et al. (2024).

First, we exploit heterogeneity in geographical concentration among our two-firm business groups. The geographical distance between group firms is a key determinant of frictions within the internal labor market. This is because moving employees across firms is likely to incur substantial costs, both tangible (such as relocation expenses) and intangible (employee resistance to relocation tends to increase with the distance of the move). Moreover, geographical proximity between different subsidiaries could promote prior communication, thereby reducing information asymmetry regarding workers' characteristics. Therefore, ILM frictions should be less pronounced for business groups located in the same city. We expect firms affiliated with these groups to enjoy fewer benefits from the EPL reform.

In column 1 of Table 3, we interact *BG (same city)* and *BG (different city)* with *Post*: the coefficient on *BG (same city)* × *Post* is -0.029 and significant at the 1% level, while that on *BG (different city)* × *Post* is -0.009 and statistically insignificant. This indicates that the diminished sensitivity of employment growth to the labor reform is concentrated among geographically focused groups.

We then exploit heterogeneity in industry diversification across our two-firm groups. Tate and Yang (2015) and Cestone et al. (2024) document more intense ILM activity within diversified organizations. Industry diversification allows different units in a group to be exposed to unrelated sectoral shocks, thus creating more scope for workforce reallocation across different units. If diversified groups have more opportunities for ILM reallocation, BG firms operating in different industries should be less sensitive to the EPL reform (Result 2). To test this prediction, we interact *BG (same sic2)* and *BG (diff sic2)* with *Post* in column

(2). The coefficient of *BG (diff sic2)* × *Post* is negative and significant, while that on *BG (same sic2)* × *Post* is not. This suggests that our results are stronger among diversified groups, in line with the ILM mechanism.

Finally, another important dimension that facilitates internal labor markets can be skill compatibility across different BG units. Existing studies show that workers are more likely to move between industries that have occupational and skill overlaps (Papageorgiou, 2014; Neffke et al., 2017). Following Lee et al. (2018), we construct a measure of human capital relatedness (HCR) within industry pairs based on industry-level human capital profile vectors, using data from the Occupational Employment Statistics (OES) provided by the US Bureau of Labor Statistics (BLS). This measure captures the similarity in occupational composition between two industries.

Based on this measure we define two additional dummy variables. *BG (diff SIC2#high HCR)* equals one for business groups whose affiliates operate in different two-digit SIC industries that exhibit high HCR.[15] *BG (same city #diff SIC2#high HCR)* equals one when the two BG affiliates are located in the same city and operate in different two-digit SIC industries that exhibit high HCR. One would expect these groups to have very active internal labor markets. As shown in columns (3) and (4), the coefficients on *BG (diff SIC2#high HCR)* × *Post* and *BG (same city #diff SIC2#high HCR)* × *Post* are both negative, statistically significant, and have the largest magnitude.

Taken together, the results in this section provide support for the ILM mechanism: the diminished sensitivity of BG employment growth to the 2012 labor reform is mainly exhibited by group firms that are more likely to enjoy ILM access.

6.1.2 Exploiting industry labor dependence

Next, we exploit cross-sectional variation in labor dependence and labor turnover across industries. If business groups can effectively reallocate employees across units through the ILM, this ability should be particularly valuable for those operating in labor-intensive industries, and in industries that experience frequent labor adjustment. If the ILM channel is driving

[15] *High HCR* is a dummy that takes the value of one if the human capital relatedness between the two industries is above the sample median, and zero otherwise.

our results in Table 2, we would expect the diminished BG firm sensitivity to the reform to be more pronounced in these industries.

Following previous work (Rajan and Zingales, 1998; Belenzon and Tsolmon, 2015; Levine et al., 2020), we construct two measures based on U.S. data: the first measure, '*labor intensity*', is the ratio of employment relative to fixed assets; the second measure is '*labor turnover*', the absolute change in employment relative to lagged employment.[16]

We then define the *High labor intensity (turnover)* indicator as one if the industry level labor intensity (turnover) is above the sample median, and zero otherwise. To test our predictions, we conduct triple difference-in-differences tests by augmenting our main specification with an interaction term, $BG \times$ *High labor intensity (turnover)* $\times$ *Post*. As reported in Table 4, the coefficients on the triple interaction terms are all negative and significant. This indicates that our main findings are more pronounced for firms in industries that rely more on human capital, which is in line with the internal labor market mechanism.

6.1.3 Recovery from the financial crisis and Internal Capital Markets

As shown in Figure 1, the Spanish economy began to improve after 2013, when firms experienced looser financial constraints. This raises the question of whether the results in Table 2 may reflect this macroeconomic recovery rather than the 2012 labor reform itself. In particular, compared to BG firms, that have access to Internal Capital Markets, stand-alone firms may have benefited more from the positive macroeconomic shock and the softening of financial constraints, thus expanding more rapidly after 2012.

In Table 5, we examine this possibility in two ways. First, in panel A, we estimate regressions where the dependent variables are a debt issuance indicator and the (log) level of debt. Following Larrain et al. (2019), we define a debt issuance indicator equal to one if the annual change in debt relative to lagged assets exceeds 5%, and zero otherwise. The coefficients on the interaction term $BG \times Post$ are neither negative nor statistically significant, suggesting

[16]Rajan and Zingales (1998) build industry-level measures of external financial needs using U.S. firms as benchmarks. The rationale is that, assuming that U.S. financial markets are relatively frictionless, the use of external finance in the United States primarily reflects demand for external finance rather than factors affecting supply. Following the same logic, and assuming that U.S. labor markets are relatively frictionless, Belenzon and Tsolmon (2015) and Levine et al. (2020) use data from U.S. firms to construct industry-level measures of labor dependence.

that access to external financing does not increase more for stand-alone firms relative to BG firms after 2012.

Second, in panel B, we divide the sample based on the region's post-2012 recovery and pre-crisis economic development, which we measure using both the regional GDP level (columns 1-2) and fixed assets (columns 3-4). If our findings were driven by macroeconomic recovery rather than the labor reform, we would expect stand-alone firms' employment growth to outperform that of BG firms more significantly in *regions with faster recovery* and in *more developed regions*. However, as shown in panel B, the triple interaction terms $BG \times$ *Fast post-2012 recovery* $\times$ *Post*, as well as $BG \times$ *High pre-crisis GDP/Assets* $\times$ *Post* are insignificant across all specifications. This suggests that our main findings are not driven by the macroeconomic recovery following the financial crisis, as opposed to the 2012 EPL reform.

6.1.4 Understanding the importance of the Internal Capital Market channel

In this section, we analyze further whether our results rely on an ICM mechanism rather than the ILM. Specifically, groups' internal capital markets can make BG firms more resilient, mitigating the impact of external labor frictions. For instance, BG firms with access to group deep pockets may be better able to do 'labor hoarding' and avoid paying high dismissal costs when faced with temporary adverse shocks (Sharpe, 1994). Following this line of reasoning, BG firms' ability to rely on the internal capital market might explain their diminished sensitivity to the EPL reform.

To understand whether the ICM channel plays a role in explaining our main findings in Table 2, we first exploit the heterogeneity of internal capital markets within two-firm business groups, with a focus on group cash holdings and tangibility (we exclude assets as these are correlated with employment). In previous work, affiliation with a group possessing larger cash holdings has been shown to be a source of resilience to shocks (Cestone and Fumagalli, 2005; Boutin et al., 2013). Larrain et al. (2019) show that in two-firm groups, access to credit for one firm is facilitated when its affiliate holds more tangible assets. If the employment dynamics we observe were due to an ICM channel, our results should be more pronounced for BG firms affiliated with high-cash, high-tangibility groups.

In Table 6 panel A, *BG (High partner cash/tangibility)* is equal to one if the firm is

part of a two-firm business group with a high cash/tangibility partner, and zero otherwise. *BG (Low partner cash/tangibility)* is equal to one if the firm is part of a two-firm business group with a low cash/tangibility partner, and zero otherwise. We interact these variables with *Post* and find that the coefficients of both interactions are negative and significant: both financially stronger and weaker groups display a muted response to the reform, when compared to stand-alone firms.

Our second approach is to implement triple difference-in-differences tests based on varying levels of external financial (equity) dependence, as ICMs are more likely to play a role in group firm dynamics when external financial dependence is high.[17] If our main findings in Table 2 were explained by internal capital markets, we would expect stronger results for firms in industries with high external financial (equity) dependence (Rajan and Zingales, 1998). However, as shown in panel B of Table 6, the triple interaction *BG* × *High financial (equity) dependence* × *Post* is statistically insignificant. Taken together, we do not find strong evidence pointing to an ICM channel as a major explanation for our findings.

6.2 Heterogeneous ILM Access across BG firms

We finally focus our attention on BG firms only, including in our sample larger business groups besides the '*two-firm*' groups of the baseline analysis. This allows us to test the empirical predictions of our model comparing the employment response to the reform across group firms with heterogeneous levels of "ILM access".[18] Firms affiliated with a business group with more potential for ILM activity should be less influenced by the labor reform, experiencing lower employment growth afterwards. We estimate the following specification:

$$Employment\ Growth_{i,t} = \alpha + \beta ILM\ Access_i \times Post_t + \lambda Controls_{i,t-1} + \delta_i + \zeta_t + \epsilon_{i,t} \quad (3)$$

where $ILM\ Access_i$ represents different measures of internal labor market access (measured in the year 2011) for BG firm i, which we describe below. *Post* is a dummy variable equal to one if the observation year is after 2012, and zero otherwise. $Controls_{i,t-1}$ is a vector

[17] Boutin et al. (2013) show that ICMs are particularly beneficial for group firms in environments where raising external capital is difficult.

[18] In Internet Appendix Table A.2, we present summary statistics for the sample that only consists of BG firms.

of control variables used in Equation (2). All specifications include firm (δ_i) and year fixed effects (ζ_t).

We show the results in Table 7. In column (1), we use group size (the number of firms affiliated to the group) as a coarse measure of the internal labor market. The coefficient estimate on the interaction term *Group size* $\times$ *Post* is -0.001 and significant at the 1% level, indicating less employment growth after the reform for firms affiliated with larger groups. Secondly, following Cestone et al. (2024) we proxy a BG firm's access to the ILM using its geographical proximity and industry diversification with respect to other group affiliates. Specifically, the measure *ILM access (same city#diff sic2)* is equal to the sum of the employment (in thousands) of all other group affiliates that are located in the same city but do not belong to the same 2-digit industry as the focal firm. In column (2), the coefficient on the interaction term, *ILM access (same city#diff sic2)* $\times$ *Post*, is negative and significant, indicating that the employment response to the EPL liberalization is less pronounced the larger the ILM access.

Finally, in column (3), we modify Cestone et al. (2024)'s measure of ILM access to also account for skill compatibility across industries. We define *ILM access (same city#diff sic2#high HCR)* as the sum of the employment (in thousands) of all other group-affiliated firms that are located in the same city, operate in a different two-digit SIC industry, and whose industry exhibits high HCR to that of the focal firm. In line with our previous findings, we find a negative and significant coefficient on the interaction term between *ILM access (same city#diff sic2#high HCR)* and *Post*.

In an ideal experiment, BG firms with varying levels of access to the ILM should be identical in all other respects once controlling for firm characteristics and fixed effects. However, it might well be the case in our setting that BG firms with greater ILM access, as for instance captured by *Group size*, might also have more scope for using internal capital markets. Therefore, we study whether our results are robust after controlling for measures of (potential) ICM activity. We measure potential ICM activity by calculating the cash holdings and tangibility of the firm's partners within the same group (i.e., the rest of the group's cash/tangibility). In columns (4) - (6), we show that our main results remain qualitatively unchanged when controlling for ICM factors. In addition, we do not find significant negative

coefficients on the interactions of *Post* and various ICM measures. Overall, these results do not support the ICM channel.

7 Effects of the Reform on Other Firm Outcomes

In this section, we investigate the differential impact of the 2012 reform on other firm outcomes. Stringent employment protection regulations impose rigidities that make labor adjustments more difficult and costlier. In such an environment, internal labor markets may offer group-affiliated firms a competitive advantage, which is likely to evaporate after the reform. Therefore, we expect that group affiliates underperform stand-alone firms afterwards.

To test this prediction, we focus on two measures of operating performance: return on assets (ROA) and sales growth. *ROA* is the ratio of net income to book value of assets. *Sales growth* is the growth in sales from one fiscal year to the next. Table 8 presents the regression results when repeating our specification from Table 2 with firm controls as well as firm and year fixed effects. In panel A, we compare firms affiliated with two-firm groups with their stand-alone peers. As shown in columns (1) - (4), the coefficient of *Post* is positive, in line with the overall positive effects of the reform (OECD, 2013). We also find that the interaction term $BG \times Post$ is negative, indicating a drop in the relative performance of group affiliated firms as compared to stand-alones, although the effect is insignificant for *ROA*.

In Table 8 panel B, we repeat the previous analysis in our sample of group-affiliated firms and compare the evolution of performance across BG firms with varying levels of ILM access (similar to our analysis in Table 7). Consistent with the findings above, the interaction terms *ILM access (same city#diff sic2)* $\times$ *Post*, and *ILM access (same city#diff sic2#high HCR)* $\times$ *Post* are both negative and statistically significant across all specifications. These results suggest that greater ILM access translates into a worse performance change following the reform.[19]

[19]In Internet Appendix Table A.3, we do not observe any differential effects of the labor reform on other firm outcomes, such as leverage, investment, and cash holdings, either between BG firms and stand-alone firms or among BG firms with different levels of ILM access. All in all, these results show that the effects of the reform are focused, as intended, on easing labor market frictions which means that groups lose some of their labor-adjustment advantages and benefit relatively less from the reform. They also provide indirect evidence suggesting that our main findings are not driven by the internal capital market channel.

8 Does the EPL Reform Affect Group Affiliation?

8.1 New firm incorporation

A corollary of our previous results is that EPL reforms that mitigate firing costs remove one of the advantages that business groups hold over stand-alone firms. To the extent that groups emerge as organizational forms allowing firms to bypass frictions (Khanna and Palepu, 1997), we expect the 2012 EPL reform to drive down group affiliation.

For this purpose, we borrow the setting from Bena and Ortiz-Molina (2013), who study the role of pyramidal ownership structures in the incorporation of new firms. Here we also focus on firm incorporation and test whether new firms are less likely to be part of groups after the reform, when access to the Internal Labor Market is less beneficial. We use the year of incorporation to calculate firms' age, defining new firms as those between 1-3 years old (some firms only first appear in our data when they are 2 or 3 years old). The sample of new firms only contains the first year a firm is observed in the data, which means we keep only one observation per firm. We then replicate the approach of Section 5.1 by adding French data and focusing on firms in neighboring Spanish-French regions (Pais Vasco, Navarra, Aragon, Cataluña, versus Nouvelle Aquitaine and Occitanie). As before, Spanish firms are treated and French firms are controls. We then estimate the following equation:

$$BG_i = \alpha + \beta_1 Treat + \beta_2 Post + \beta_3 Treat \times Post + \lambda Controls_{i,t-1} + \delta_j + \zeta_t + \epsilon_{i,t} \quad (4)$$

where BG_i is a dummy that equals one if the new firm i is affiliated with a business group, and zero otherwise. $Treat$ is a dummy variable equal to one if the firm is located in Spain, and zero for French firms. $Post$ is a dummy variable equal to one if the observation year is after 2012, and zero otherwise. $Controls_{i,t-1}$ is the vector of control variables used in Equation (2). All specifications include industry (δ_j) and year fixed effects (ζ_t).

Table 9, panel A presents the estimation results. In column (2), we find that the coefficient is -0.060 and significant at the 1% level, suggesting that the 2012 labor reform decreases the likelihood of new firms being affiliated with a business group by approximately 6.0 percentage points. Columns (3) - (4) further show that our results are robust when we only consider firms

that are one year old. These results are consistent with the prediction that EPL liberalization, by reducing labor market frictions, makes group affiliation less valuable and less prevalent.

8.2 Group expansion

Next, we aggregate the firm-level data at the group level and turn to a group-level analysis. We are interested in how changes in EPL affect the expansion of groups. As labor rigidities decrease following the reform, business groups may become less attractive, slowing their expansion. To test this prediction, we compare business group expansion for Spanish and French groups, regardless of their location within the country. We then conduct the following regression at the group level, controlling for group and year fixed effects:

$$Group\ Size_{g,t} = \alpha + \beta Treat \times Post + \lambda Controls_{g,t-1} + \delta_g + \zeta_t + \epsilon_{g,t} \tag{5}$$

where $GroupSize_{g,t}$ is the number of firms within group g. $Treat$ is a dummy variable equal to one if the group is located in Spain, and zero for control groups. $Post$ is a dummy variable equal to one if the observation year is after 2012, and zero otherwise. $Controls_{g,t-1}$ is a vector of lagged group-level control variables. All specifications include group (δ_g) and year fixed effects (ζ_t).

Panel B of Table 9 reports the results. We find that the coefficient estimates on the interaction term are negative and statistically significant across all columns. In column (1), the coefficient of -0.104 implies that Spanish business groups reduce their group size by 10.4% relative to French groups following the reform. Column (2) shows that including group-level control variables does not change our results. In line with previous findings, these results suggest that the labor reform has a negative impact on the expansion of Spanish business groups.

The findings in this section provide new insights into the role that employment protection regulation and internal labor markets play in the emergence and advantages of business group organizations. Taken together, they support the claim that labor market frictions are a major factor behind group formation (see Khanna and Yafeh, 2007).

9 Conclusion

In this paper, we investigate the interaction between business group affiliation and employment protection. We predict that firms affiliated with a business group should be partly insulated from employment protection regulations, as they can bypass labor market frictions through their internal labor market. To empirically test this theory, we exploit a major labor market reform which substantially reduced dismissal costs for a large proportion of Spanish firms in 2012.

Our findings confirm that firms affiliated with a business group are less affected by employment protection legislation: when compared with similar stand-alone peers, BG firms experience a smaller increase in employment growth following the 2012 reform. In line with the ILM story, this differential response is more pronounced in BG firms that have greater access to their group's Internal Labor Market. Furthermore, we provide consistent evidence when we focus exclusively on group-affiliated firms and examine how our results vary with different group characteristics. Finally, we show that following this large employment liberalization, group affiliation becomes less prevalent. This finding provides the first causal evidence for the longstanding claim that external labor market frictions are a key determinant of organizational structure and favor the emergence of business groups.

Our paper has significant policy implications. First, our results suggest that policymakers estimating the impact of labor market reforms should take into account the prevalent ownership structures in the economy. While stand-alone companies benefit and expand after liberalizations, group-affiliated firms are less likely to respond. This is particularly relevant for European economies, where small and medium-sized enterprises, which are the explicit target of many EPL reforms, are often group affiliated. Our results also highlight that legislation on employment protection can be expected to induce changes in ownership structures in the economy, in addition to employment adjustments.

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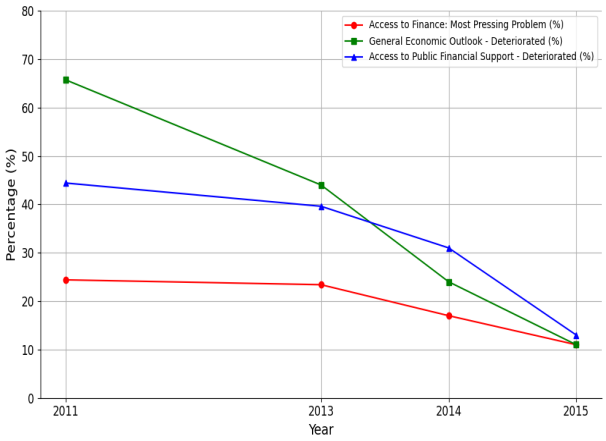
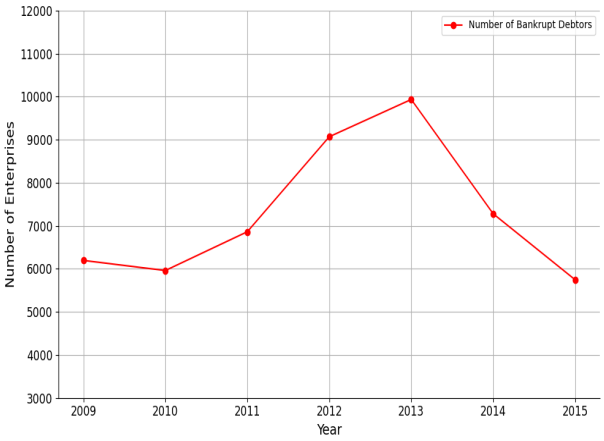
Figure 1: Financial Constraints and Firm Dynamics in Spain, 2009 - 2015

This figure shows macroeconomic distress and firm-level dynamics in Spain from 2009 to 2015. Panel (a) shows trends in firms' perceived access to finance, economic outlook, and public support from the Survey on the Access to Finance of Enterprises (SAFE), produced by the European Commission and the European Central Bank. Panel (b) reports the annual number of bankrupt debtors in Spain using data from Spain's national statistics institute (INE). Panel (c) illustrates the number of enterprise births and deaths based on data from Eurostat.

(a) Survey on the Access to Finance of Enterprises



(b) Annual Number of Bankrupt Debtors



(c) Enterprise Births and Deaths

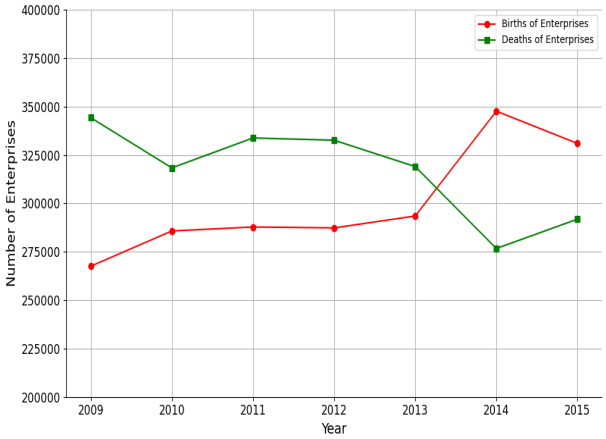


Figure 2: Employment Growth of Business Group and Stand-Alone Firms

The figure shows the yearly rescaled average employment growth in the 7-year window around the 2012 labor reform for two-firm business group affiliated firms and stand-alone firms. Data are from Amadeus (Bureau van Dijk).

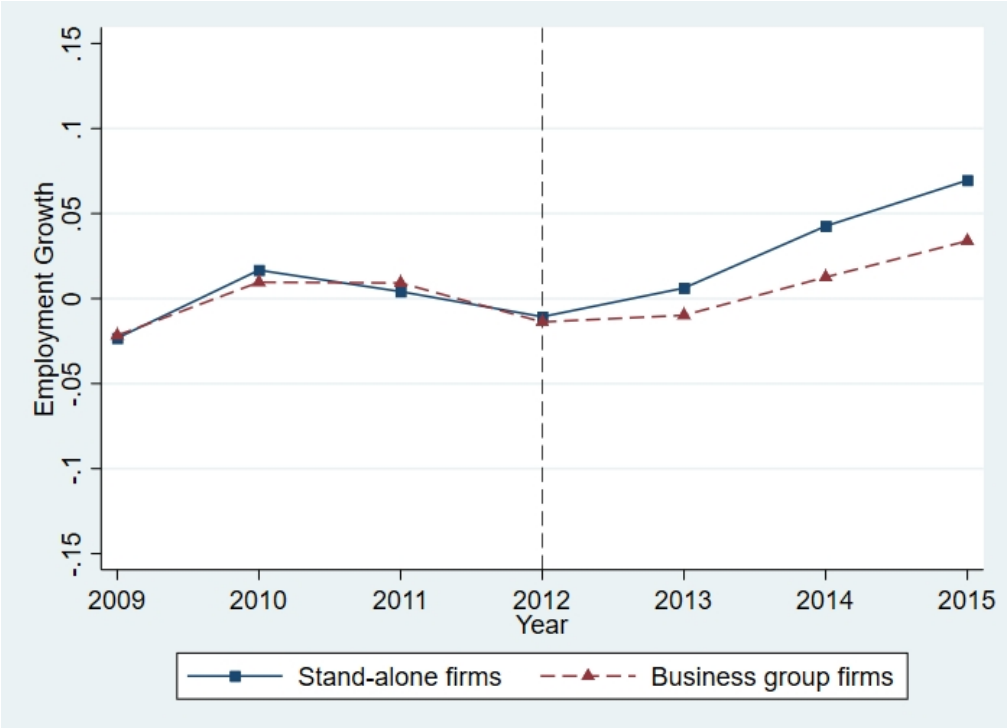
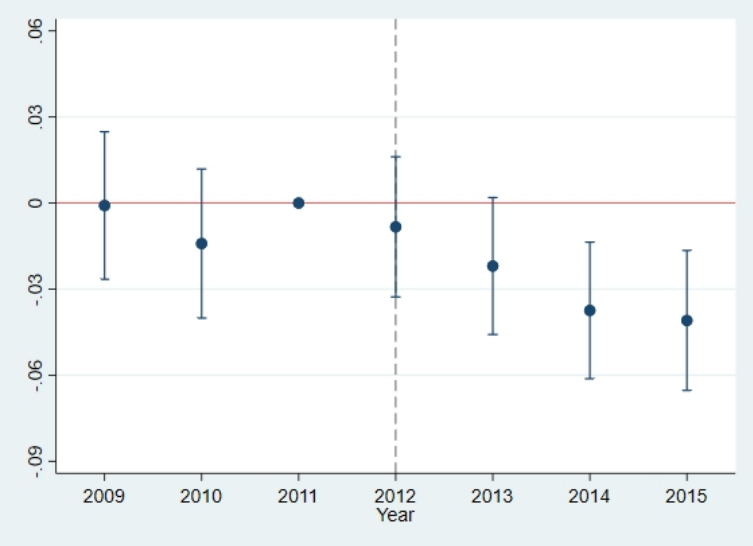


Figure 3: Employment Dynamics around the 2012 Labor Reform for Business Group and Stand-Alone Firms

The figures show coefficient estimates for a regression of employment growth on business group dummies interacted with year dummies, as in Equation 2. Panel (a) shows business groups coefficient estimates, while Panel (b) shows estimates for a regression that also includes stand-alone dummies interacted with year dummies. Specifications include firm fixed effects. The confidence intervals in both figures are at 90% level. Data are from Amadeus (Bureau van Dijk).

(a) Dynamic effects by event year



(b) Dynamic effects by event year for business group and stand-alone firms

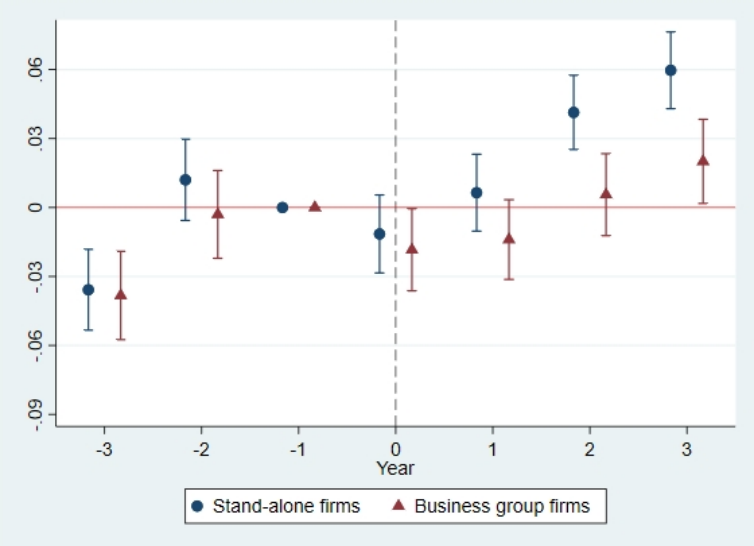


Figure 4: Employment Growth for Firms in Spain and France

The figure shows the yearly rescaled average employment growth in the 7-year window around the 2012 labor reform for business group and stand-alone firms in neighbouring Spanish and French regions. Data are from Amadeus (Bureau van Dijk).

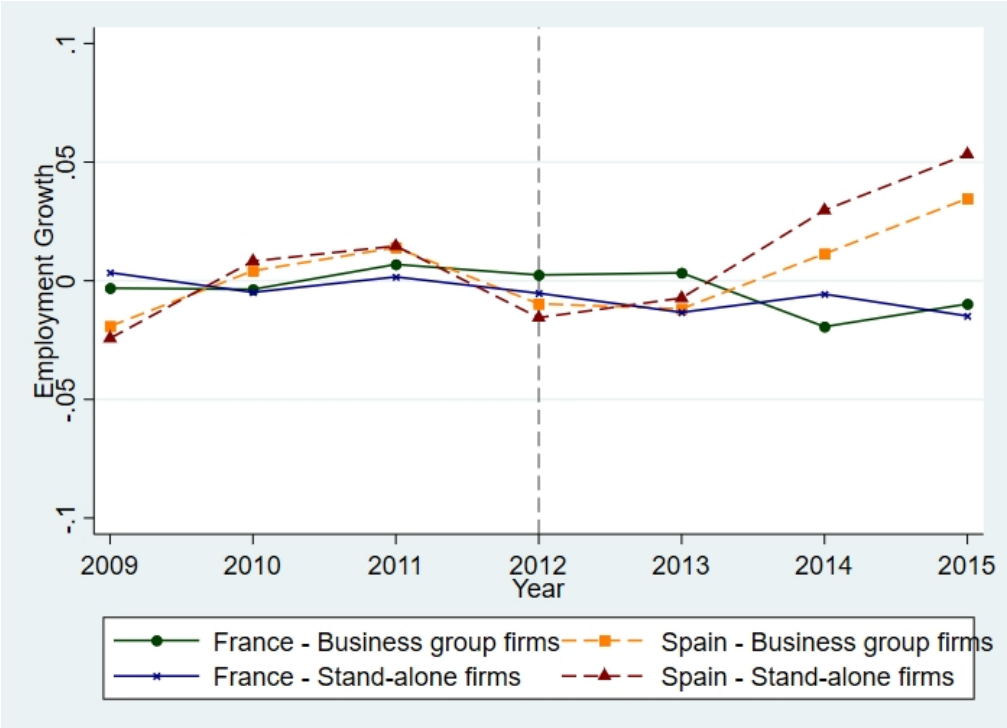


Table 1. Summary Statistics

The table shows summary statistics for the firms and business groups in our sample. The sample period is from 2009 to 2015. Panel A provides summary statistics at the firm level. *Employment growth* is the change in employment between years *t* and *t-1*. *BG* is a dummy that equals one if the firm is affiliated with a two-firm business group, and zero otherwise. *Employment* is the logarithm of the number of employees plus one. *Total assets* is total assets in millions of euros. *Size* is the logarithm of book value of assets plus one. *Tangibility* is fixed assets over assets. *Leverage* is book value of debt over assets. *Cash* is cash holdings over assets. *Cash flow* is net income plus depreciation over assets. *ROA* is net income over assets. *Sales growth* is the growth in sales between years *t* and *t-1*. *Industry labor intensity* is the average of the firm-level ratio of employment relative to fixed assets, computed at the two-digit SIC code using U.S. data (Belenzon and Tsolmon, 2015; Levine et al., 2020). *Industry labor turnover* is the average of firm-level labor turnover rate, computed at the two-digit SIC code using U.S. data (Belenzon and Tsolmon, 2015; Levine et al., 2020). *Industry financial and equity dependence* are measures of external financial dependence, computed at the two-digit SIC code using U.S. data (Rajan and Zingales, 1998). Panel B shows summary statistics for two-firm BG and stand-alone firms and tests whether they are different. Panel C shows summary statistics for our sample of two-firm business groups. *BG (same city)* is a dummy that equals one for firms affiliated with two-firm business group where member firms are located in the same city, and zero otherwise. *BG (diff city)* is a dummy that equals one if affiliated firms are located in different cities, and zero otherwise. *BG (same sic2)* is a dummy that equals one for firms affiliated with two-firm business group where member firms have the same two-digit SIC industry code, and zero otherwise. *BG (diff sic2)* is a dummy that equals one if affiliated firms have different two-digit SIC industry codes, and zero otherwise. *BG (diff sic2#high HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where both of the following criteria are met: (i) the two units have different two-digit SIC industry codes, and (ii) these industries exhibit high HCR (i.e., above the sample median). *BG (same city#diff sic2#high HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where all the following criteria are met: (i) both units are located in the same city, (ii) the two units have different two-digit SIC industry codes, and (iii) these industries exhibit high HCR (i.e., above the sample median).

Panel A: Summary statistics

VarName	Obs	Mean	SD	Median
Employment growth	22,311	-0.03	0.296	0.00
Employment	23,191	1.96	0.952	1.79
BG dummy	24,241	0.50	0.500	0.00
Total assets (millions)	24,241	2.72	5.217	1.02
Size	24,241	13.81	1.424	13.83
Leverage	24,240	0.50	0.280	0.52
Tangibility	24,241	0.41	0.303	0.36
Cash	23,258	0.13	0.164	0.06
Cash flow	23,800	0.04	0.086	0.03
ROA	24,148	1.47	7.982	1.07
Sales growth	22,195	0.00	0.364	-0.02
Industry labor intensity	23,868	0.04	0.026	0.03
Industry labor turnover	23,868	0.17	0.039	0.17
Industry external fin. dep.	23,868	3.21	26.201	1.24

Industry external equity dep.	23,868	9.82	27.177	5.73

Panel B: Summary statistics for BG and SA firms

VarName	BG		SA		
	N	Mean	N	Mean	Mean difference
Employment growth	11,043	-0.03	11268	-0.04	0.01
Employment	11,504	1.96	11687	1.95	0.01
Size (log)	12,105	13.82	12136	13.80	0.02
Leverage	12,105	0.51	12135	0.49	0.02***
Tangibility	12,105	0.42	12136	0.40	0.02***
Cash holding	11,633	0.12	11625	0.13	-0.01***
Cash flow	11,872	0.04	11928	0.04	0.00
ROA	12,055	1.54	12093	1.40	0.14
Sales growth	11,050	0.00	11145	-0.01	0.01***

Panel C: Group characteristics

VarName	Obs	Mean	SD	Median
BG (same city)	6,530	0.73	0.443	1.00
BG (diff city)	6,530	0.27	0.443	0.00
BG (same sic2)	6,530	0.38	0.486	0.00
BG (diff sic2)	6,530	0.62	0.486	1.00
BG (diff sic2#high HCR)	6,530	0.30	0.460	0.00
BG (same city#diff sic2#high HCR)	6,530	0.22	0.411	0.00

Table 2. Impact of the 2012 Reform on Business Group and Stand-Alone Firms

The table shows the results of OLS regressions for *Employment Growth*, defined as the change in employment between years *t* and *t-1*. The sample includes two-firm business group affiliated firms and stand-alone firms from Spain for the years 2009 to 2015. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with *BG*, a dummy that equals one if the firm is affiliated with a two-firm business group. Control variables include *Size, Leverage, Tangibility, Cash holdings, Cash flow,* and *ROA* as defined in Table 1. In column (6), we further pair group-affiliated firms with stand-alone firms based on an exact match in terms of employment count in 2011. We include firm, year, industry-year, and region-year fixed effects as indicated in the table. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

	Employment Growth					
	(1)	(2)	(3)	(4)	(5)	(6)
BG × Post	-0.028***	-0.028***	-0.027***	-0.026***	-0.026***	-0.020**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Post	0.042***					
	(0.00)					
Size			-0.057***	-0.052***	-0.052***	-0.054***
			(0.01)	(0.01)	(0.01)	(0.01)
Leverage			-0.032	-0.034	-0.038	-0.015
			(0.02)	(0.02)	(0.02)	(0.03)
Tangibility			0.018	0.011	0.012	0.018
			(0.03)	(0.03)	(0.03)	(0.04)
Cash holdings			0.012	0.014	0.014	0.048
			(0.03)	(0.03)	(0.03)	(0.04)
Cash flow			-0.221*	-0.193	-0.204	-0.218
			(0.12)	(0.13)	(0.13)	(0.14)
ROA			0.005***	0.005***	0.005***	0.006***
			(0.00)	(0.00)	(0.00)	(0.00)
Controls	No	No	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	No	No
Industry × Year	No	No	No	Yes	Yes	Yes
Region × Year	No	No	No	No	Yes	Yes
N	22,291	22,291	21,332	21,332	21,319	14,773
r2	0.140	0.143	0.153	0.153	0.173	0.178

Table 3. Impact of the Reform along Business Groups' Internal Labor Markets

The table shows the results of OLS regressions where the dependent variable is *Employment Growth*. The sample includes two-firm business group affiliated firms and stand-alone firms from Spain for the years 2009 to 2015. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with several dummies that capture business groups access to internal labor markets: *BG (same city)* is a dummy that equals one if the firm is affiliated with a two-firm business group where both firms are located in the same city. *BG (diff city)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates are located in different cities. *BG (same sic2)* is a dummy that equals one if the firm is affiliated with a two-firm business group where both affiliates operate in the same two-digit SIC industry. *BG (diff sic2)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates operate in different two-digit SIC industries. *BG (diff sic2#low HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates operate in different two-digit SIC industries that exhibit low HCR. *BG (diff sic2#high HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates operate in different two-digit SIC industries that exhibit high HCR. *BG (same city#same sic2)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates are located in the same city and operate in the same two-digit SIC industry. *BG (same city#diff SIC2#low HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates are located in the same city and operate in different two-digit SIC industries that exhibit low HCR. *BG (same city#diff SIC2#high HCR)* is a dummy that equals one if the firm is affiliated with a two-firm business group where the affiliates are located in the same city and operate in different two-digit SIC industries that exhibit high HCR. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

	Employment Growth			
	(1)	(2)	(3)	(4)
BG(diff city) × Post	-0.009			-0.009
	(0.02)			(0.02)
BG(same city) × Post	-0.029***			
	(0.01)			
BG(same sic2) × Post		-0.010	-0.014	
		(0.01)	(0.01)	
BG(diff sic2) × Post		-0.033***		
		(0.01)		
BG(diff sic2#low HCR) × Post			-0.014	
			(0.02)	
BG(diff sic2#high HCR) × Post			-0.046***	
			(0.01)	
BG(same city#same sic2) × Post				-0.015
				(0.01)
BG(same city#diff sic2#low HCR) × Post				-0.030*
				(0.02)
BG(same city#diff sic2#high HCR) × Post				-0.050***
				(0.02)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	11,570	11,570	11,570	11,570
r2	0.150	0.150	0.150	0.150

Table 4. Impact of the Reform along Industries' Labor Intensity

The table shows the results of OLS regressions where the dependent variable is *Employment Growth*. The sample includes two-firm business group affiliated firms and stand-alone firms from Spain for the years 2009 to 2015. We reestimate Equation 2 by adding the interaction term of *BG* × *High labor intensity (turnover)* × *Post*. In columns (1) - (2), the indicator variable *High labor intensity* takes the value of one if the industry level labor intensity is above the sample median, and zero otherwise. In columns (3) - (4), the indicator variable *High labor turnover* takes the value of one if the industry level labor turnover is above the sample median, and zero otherwise. All specifications include controls as in Table 2, along with firm and year fixed effects. The sample period is from 2009 to 2015. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

	Employment Growth			
	(1)	(2)	(3)	(4)
BG × Post	0.006	0.001	-0.005	-0.008
	(0.01)	(0.01)	(0.01)	(0.01)
High labor intensity × Post	0.021*	0.021*		
	(0.01)	(0.01)		
BG × High labor intensity × Post	-0.043***	-0.036**		
	(0.02)	(0.02)		
High labor turnover × Post			0.018*	0.016
			(0.01)	(0.01)
BG × High labor turnover × Post			-0.032**	-0.028*
			(0.02)	(0.02)
Controls	No	Yes	No	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	21,927	20,995	21,927	20,995
r2	0.144	0.154	0.144	0.154

Table 5. Alternative Explanation: Recovery from the Financial Crisis

The table shows the results of OLS regressions where the dependent variable is *Debt Issuance* in Panel A and *Employment Growth* in Panel B. The sample includes two-firm business group affiliated firms and stand-alone firms from Spain for years 2009 to 2015. In Panel A, the dependent variable is *debt issue* in columns (1) - (2), and *log(debt)* in columns (3) - (4). *Debt issue* equals one if their yearly change relative to lagged assets is greater than 5%, and zero otherwise. In Panel B, we reestimate Equation 2 by adding the interaction term of *BG × Fast post-2012 recovery (High pre-crisis GDP/Assets)*. Regional economy is measured using GDP and fixed capital investment in columns (1) - (2) and columns (3) - (4), respectively. The indicator variable *Fast post-2012 recovery* takes the value of one if the firm is located in a region where GDP growth (or fixed assets) from 2013 to 2015 is above the sample median, and zero otherwise. The indicator variable *High pre-crisis GDP/Assets* takes the value of one if the firm is located in a region where the level of GDP (or fixed assets) in 2007 is above the sample median, and zero otherwise. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Debt Issuance

	Debt Issue		Log (debt)	
	(1)	(2)	(3)	(4)
BG × Post	0.000	-0.002	0.212**	0.155
	(0.01)	(0.01)	(0.10)	(0.10)
Controls	No	Yes	No	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	23,336	22,301	24,025	22,421
r2	0.237	0.262	0.802	0.820

Panel B: Heterogeneity by Regional Recovery and Development

	Employment Growth			
	GDP		Fixed Assets	
	(1)	(2)	(3)	(4)
BG × post	-0.031**	-0.043**	-0.028**	-0.043**
	(0.01)	(0.02)	(0.01)	(0.02)
Fast post-2012 recovery × post	-0.003		0.003	
	(0.01)		(0.01)	
BG × Fast post-2012 recovery × post	0.005		0.002	
	(0.02)		(0.02)	
High pre-crisis GDP/Assets × post		-0.017		-0.017
		(0.01)		(0.01)
BG × High pre-crisis GDP/Assets × post		0.018		0.018
		(0.02)		(0.02)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	21,325	21,325	21,325	21,325
r2	0.153	0.153	0.153	0.153

Table 6. Alternative Explanation: More Tests on the Internal Capital Market Channel

The table shows the results of OLS regressions where the dependent variable is *Employment Growth*. The sample includes two-firm business group affiliated firms and stand-alone firms from Spain for years 2009 to 2015. In Panel A, we interact *Post*, a dummy that takes the value of one after the 2012 reform, with several dummies that capture business groups access to internal capital markets: *BG (High partner cash)* is a dummy that takes the value of one for firms affiliated with a business group that includes a partner with cash holdings above the sample median. *BG (Low partner cash)* is a dummy that takes the value of one for firms affiliated with a business group that includes a partner with cash holdings below the sample median. *BG (High partner tangibility)* is a dummy that takes the value of one for firms affiliated with a business group that includes a partner with a tangibility ratio above the sample median. *BG (Low partner tangibility)* is a dummy that takes the value of one for firms affiliated with a business group that includes a partner with a tangibility ratio below the sample median. In Panel B, we reestimate Equation 2 by adding the interaction term of *BG* × *High financial (equity) dependence* × *Post*. The indicator variable *High financial (equity) dependence* takes the value of one if the industry level financial (equity) dependence is above the sample median, and zero otherwise. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

Panel A: Cash and Tangibility

	Employment Growth	
	(1)	(2)
BG(High partner cash) × Post	-0.029**	
	(0.01)	
BG(Low partner cash) × Post	-0.035***	
	(0.01)	
BG(High partner tangibility) × Post		-0.023*
		(0.01)
BG(Low partner tangibility) × Post		-0.040***
		(0.01)
Controls	Yes	Yes
Firm FE	Yes	Yes
Year FE	Yes	Yes
N	10,876	10,876
r2	0.152	0.152

Panel B: External Dependence

	Employment Growth	
	(1)	(2)
BG × Post	-0.032***	-0.031***
	(0.01)	(0.01)
High financial dependence × Post	0.013	
	(0.01)	
BG × High financial dependence × Post	0.007	
	(0.02)	
High equity dependence × Post		-0.001
		(0.01)
BG × High equity dependence × Post		0.006
		(0.02)
Controls	Yes	Yes
Firm FE	Yes	Yes
Year FE	Yes	Yes
N	20,995	20,995
r2	0.154	0.153

Table 7. Impact of the Reform on All Business Group Affiliated Firms

The table shows the results of OLS regressions where the dependent variable is *Employment Growth*. The sample consists of all firms that are affiliated with a business group in 2011 in Spain. The sample period is from 2009 to 2015. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with several variables that capture business groups access to internal labor markets: *Group size* is the number of firms within the group. *ILM access (same city#diff sic2)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city as the focal firm but operate in a different two-digit SIC industry. *ILM access (same city#diff sic2#high HCR)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city, operate in a different two-digit SIC industry, and whose industry exhibits high HCR to that of the focal firm. *High HCR* is a dummy that takes the value of one if the human capital relatedness between two industries is above the sample median, and zero otherwise. *Partner cash* is the cash holdings of other firms within the same business group. *Partner tangibility* is the tangibility ratio of other firms within the same business group. All these variables are built using data for 2011, the year before the reform. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

	Employment Growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Group size × Post	-0.001***			-0.001***		
	(0.00)			(0.00)		
ILM access (same city#diff sic2) × Post		-0.027**			-0.029***	
		(0.01)			(0.01)	
ILM access (same city#diff sic2#high HCR) × Post			-0.065**			-0.067**
			(0.03)			(0.03)
Partner Tangibility × Post				-0.009	-0.011	-0.011
				(0.01)	(0.01)	(0.01)
Partner Cash × Post				-0.024	-0.022	-0.022
				(0.02)	(0.02)	(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	94,205	94,205	94,205	89,225	89,225	89,225
r2	0.189	0.189	0.189	0.186	0.186	0.186

Table 8. Impact of the Reform on Firm Performance

The table shows the results of OLS regressions on Spanish firms' operating performance: *return on assets (ROA)* in columns (1) - (2), and *Sales Growth* in columns (3) - (4). The sample period is from 2009 to 2015. In Panel A, the sample consists of firms affiliated with two-firm business groups and stand-alone firms as in Table 2. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with *BG*, a dummy that equals one if the firm is affiliated with a two-firm business group. In Panel B, the sample consists of all firms that are group-affiliated in 2011 as in Table 7. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with several variables that capture business groups access to internal labor markets: *ILM access (same city#diff sic2)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city as the focal firm but operate in a different two-digit SIC industry. *ILM access (same city#diff sic2#high HCR)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city, operate in a different two-digit SIC industry, and whose industry exhibits high HCR to that of the focal firm. *High HCR* is a dummy that takes the value of one if the human capital relatedness between two industries is above the sample median, and zero otherwise. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%.

Panel A. BG firms and SA firms

	ROA		Sales Growth	
	(1)	(2)	(3)	(4)
BG × Post	-0.178	-0.171	-0.017*	-0.016*
	(0.20)	(0.20)	(0.01)	(0.01)
Post	0.824***		0.055***	
	(0.14)		(0.01)	
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
N	22,586	22,586	21,177	21,177
r2	0.447	0.454	0.199	0.213

Panel B. BG firms and BG firms

	ROA		Sales Growth	
	(1)	(2)	(3)	(4)
ILM access(same city#diff sic2) × Post	-0.749*		-0.092***	
	(0.45)		(0.03)	
ILM access(same city#diff sic2#high HCR) × Post		-2.874**		-0.178**
		(1.15)		(0.08)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	92,640	92,640	87,843	87,843
r2	0.507	0.507	0.208	0.208

Table 9. Impact of the Reform on Business Group Affiliation

The table shows difference-in-differences regressions for business group affiliation on the 2012 reform for a sample of Spanish and French firms. The sample period is from 2009 to 2015. *Treat* is a dummy that takes the value of one for Spanish firms, and zero otherwise. *Post* is a dummy that takes the value of one after the 2012 reform. In Panel A, we study the effects of the reform on firm incorporation (firms with 1 to 3 years since incorporation), where the dependent variable is *BG*, a dummy that equals one if the firm is affiliated with a business group. In Panel B, we conduct a group-level analysis and study the effects of the reform on the number of firms within a group, where the dependent variable is *Group Size*. All specifications include controls as in Table 2, along with industry, group, and year fixed effects, as indicated in the table. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level in Panel A, and at the group level in Panel B. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

Panel A. Firm level: new firm creation

	BG			
	Age (1-3)		Age (1)	
	(1)	(2)	(3)	(4)
Treat × Post	-0.126***	-0.060***	-0.128***	-0.078**
	(0.01)	(0.01)	(0.04)	(0.04)
Treat	-0.063***	-0.031***	-0.116***	-0.073***
	(0.01)	(0.01)	(0.02)	(0.02)
Controls	No	Yes	No	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	26,317	22,197	3,834	3,264
r2	0.128	0.192	0.156	0.247

Panel B. Group level: group size

	Group Size	
	(1)	(2)
Treat × Post	-0.104***	-0.078***
	(0.02)	(0.02)
Controls	No	Yes
Group FE	Yes	Yes
Year FE	Yes	Yes
N	142,632	132,853
r2	0.813	0.836

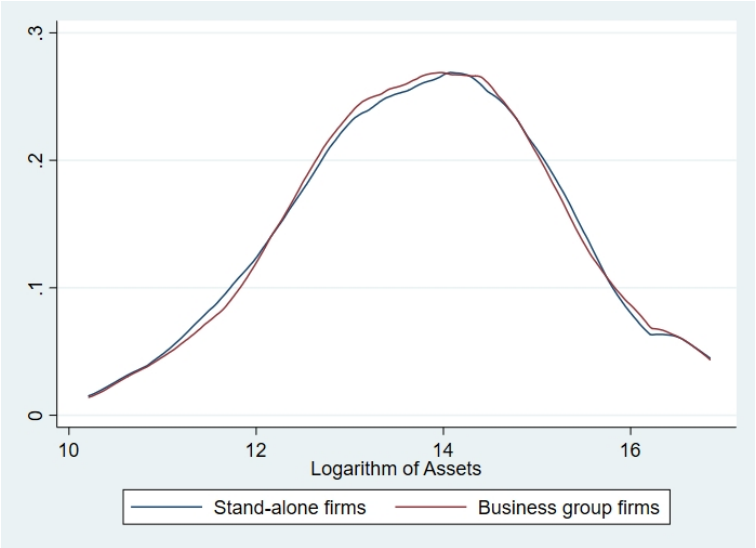
Internet Appendix

Appendix A Ancillary Results

Figure A.1: Size and Employment Densities of Business Group and Stand-Alone firms

Notes: This figure shows the kernel distribution of size (Panel a) and employment (Panel b) in 2011 for two sets of firms: firms that belong to a two-firm business group and stand-alone firms. Data are from Amadeus (Bureau van Dijk).

(a) Kernel distribution of size



(b) Kernel distribution of employment

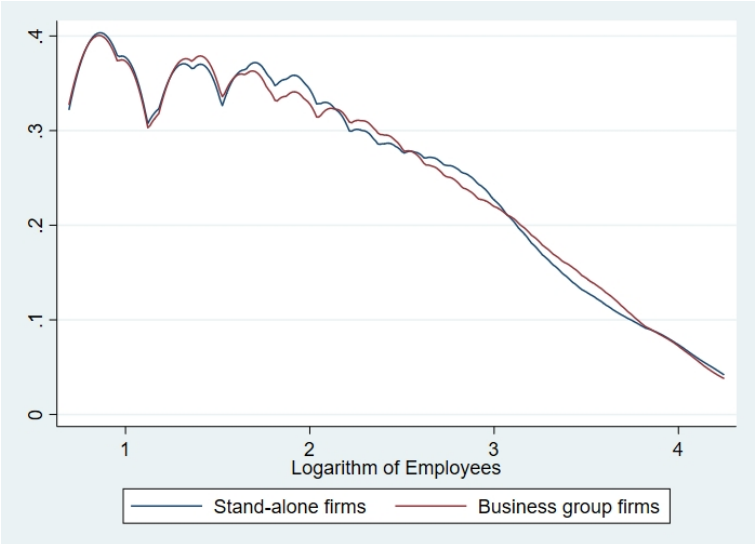


Table A.1. Alternative Empirical Strategy: Impact of the Reform on Business Group and Stand-Alone Firms

This table shows difference-in-differences regressions for a sample of Spanish and French firms, where the dependent variable is *Employment Growth*. The sample period is from 2009 to 2015. *Treat* is a dummy that takes the value of one for Spanish firms, and zero otherwise. *Post* is a dummy that takes the value of one after the 2012 reform. In column (1), the sample consists of only stand-alone firms. In column (2), the sample consists of only firms affiliated with a business group. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%, respectively.

	Employment Growth	
	Stand-alone firms	BG firms
	(1)	(2)
Treat × Post	0.037***	0.016***
	(0.00)	(0.00)
Controls	Yes	Yes
Firm FE	Yes	Yes
Year FE	Yes	Yes
N	232,241	66,554
r2	0.176	0.210

Table A.2. Summary Statistics (BG firms only)

This table shows summary statistics for the sample consisting of all firms that are affiliated with a business group in 2011 in Spain, as in Table 7. *Employment growth* is the change in employment between years *t* and *t-1*. The sample period is from 2009 to 2015. *Employment* is the logarithm of the number of employees plus one. *Total assets* is total assets in millions of euros. *Size* is the logarithm of book value of assets plus one. *Tangibility* is fixed assets over assets. *Leverage* is book value of debt over assets. *Cash* is cash holdings over assets. *Cash flow* is net income plus depreciation over assets. *ROA* is EBITDA over assets. *Sales growth* is the growth in sales between years *t* and *t-1*. *Group size* is the number of firms within the group. *ILM access (same city#diff sic2)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city as the focal firm but operate in a different two-digit SIC industry. *ILM access (same city#diff sic2#high HCR)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city, operate in a different two-digit SIC industry, and whose industry exhibits high HCR to that of the focal firm. *High HCR* is a dummy that takes the value of one if the human capital relatedness between two industries is above the sample median, and zero otherwise.

VarName	Obs	Mean	SD	Min	Median	Max
Employment growth	99,086	-0.03	0.300	-1.16	0.00	1.10
Employment	108,363	2.33	1.137	0.69	2.30	4.60
Total assets (millions)	135,207	11.19	30.800	0.02	2.39	235.28
Size	135,207	14.65	1.822	10.00	14.69	19.28
Leverage	135,193	0.57	0.451	0.00	0.53	2.92
Tangibility	135,207	0.48	0.339	0.00	0.46	1.00
Cash holding	129,557	0.09	0.149	0.00	0.03	0.81
Cash flow	131,827	0.03	0.135	-0.66	0.03	0.46
ROA	131,881	0.04	0.140	-0.62	0.04	0.51
Sales growth	111,484	0.12	0.961	-0.93	-0.01	7.41
Group size	135,207	4.99	6.316	2.00	3.00	42.00
ILM access (same city#diff sic2)	135,207	0.06	0.208	0.00	0.00	1.65
ILM access (same city#diff sic2#high HCR)	135,207	0.02	0.090	0.00	0.00	0.71

Table A.3. Impact of the Reform on Other Firm Outcomes

The table shows the results of OLS regressions on Spanish firms' characteristics: *Leverage* in columns (1) - (2); *Asset Growth* in columns (3) - (4), and *Cash* in columns (5) - (6). The sample period is from 2009 to 2015. In Panel A, the sample consists of firms affiliated with two-firm business groups and stand-alone firms as in Table 2. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with *BG*, a dummy that equals one if the firm is affiliated with a two-firm business group. In Panel B, the sample consists of all firms that are group-affiliated in 2011 as in Table 7. We interact *Post*, a dummy that takes the value of one after the 2012 reform, with several variables that capture business groups access to internal labor markets: *ILM access (same city#diff sic2)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city as the focal firm but operate in a different two-digit SIC industry. *ILM access (same city#diff sic2#high HCR)* is the sum of employment (in thousands) of all other group-affiliated firms that are located in the same city, operate in a different two-digit SIC industry, and whose industry exhibits high HCR to that of the focal firm. *High HCR* is a dummy that takes the value of one if the human capital relatedness between two industries is above the sample median, and zero otherwise. All specifications include controls as in Table 2, along with firm and year fixed effects. Variable definitions are provided in Table 1. Data are from Amadeus (Bureau van Dijk). Standard errors are robust and clustered at the firm level. *, ** and *** stand for statistical significance at the 10%, 5%, and 1%.

Panel A. BG firms and SA firms

	Leverage		Asset Growth		Cash	
	(1)	(2)	(3)	(4)	(5)	(6)
BG × Post	-0.002	0.002	0.005	0.005	-0.001	-0.001
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Post	-0.041***		-0.008**		0.006***	
	(0.00)		(0.00)		(0.00)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	Yes	Yes
N	22,611	22,611	22,611	22,611	22,636	22,636
r2	0.895	0.898	0.365	0.369	0.770	0.771

Panel B. BG firms and BG firms

	Leverage		Asset Growth		Cash	
	(1)	(2)	(3)	(4)	(5)	(6)
ILM access(same city#diff sic2) × Post	0.011		-0.013		0.002	
	(0.01)		(0.01)		(0.00)	
ILM access(same city#diff sic2#high HCR) × Post		0.016		-0.015		0.008
		(0.02)		(0.03)		(0.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	92,794	92,794	92,794	92,794	92,790	92,790
r2	0.867	0.867	0.342	0.342	0.745	0.745

Appendix B Model

In this section, we formally derive solutions to the model presented in Section 2.

B.1 Stand-alone firms' hiring decisions

At $t = 1$ the stand-alone company observes the state of demand; if demand is positive, for given initial stock of employees Ł$_{sa}$, it chooses to hire $\ell_{sa} \geq 0$ workers:

$$g'(L_{sa} + \ell_{sa}) \leq w + h\ell^*_{sa}. \tag{B.1}$$

At $t = 0$ the firm chooses to hire $L_{sa} \geq 0$ workers so as to satisfy first order condition:

$$g'(L_{sa} + \ell_{sa}) \leq w + \frac{1-x}{x}F. \tag{B.2}$$

It can be easily seen that a hiring policy where $\ell_{sa} = 0$ and $L_{sa} > 0$ is never optimal, as condition (B.1) would write as $g'(L_{sa}) \leq w$, which is incompatible with the equation $g'(L_{sa}) = w + F(1-x)/x$. In the presence of firing cost $F > 0$, it is always optimal to postpone some hiring until uncertainty is resolved.

In the other corner solution, the firm postpones all hiring to $t = 1$: $L_{sa} = 0$, $\ell_{sa} = \overline{\ell}(h)$ where $\overline{\ell}(h)$ is implicitly defined by $g'(\ell_{sa}) = w + h\ell_{sa}$. This solution can also be ruled out if it violates equation (B.2), i.e. if

$$g'(\overline{\ell}(h)) \equiv w + h\overline{\ell}(h) > w + \frac{1-x}{x}F, \tag{B.3}$$

that is:

$$h\overline{\ell}(h) > \frac{1-x}{x}F \tag{B.4}$$

which holds if h is large enough relatively to F. In the rest of the analysis we will assume that (B.4) holds and focus on the case where the stand-alone firm hires in both periods.

We define as $L^*_{sa} > 0$, $\ell^*_{sa} > 0$ the interior solution requiring that (B.1) and (B.2) hold as equalities, which implies that late hiring costs and firing costs must be equalized at the

margin:

$$h\ell^*_{sa} = \frac{1-x}{x}F. \tag{B.5}$$

Replacing ℓ^*_{sa} in first order condition (B.2), one obtains

$$g'\left(L_{sa} + \frac{1-x}{x}\frac{F}{h}\right) = w + \frac{1-x}{x}F \tag{B.6}$$

which implicitly defines labor demand at $t = 0$, $L^*_{sa} = L_{sa}(F)$. Differentiating with respect to L_{sa} and F and rearranging, one obtains:

$$\frac{\partial L^*_{sa}}{\partial F} = \frac{(1-x)}{x}\frac{(h-g'')}{hg''} < 0, \tag{B.7}$$

i.e. hiring falls when employment protection is more stringent (see e.g. (Bentolila and Bertola, 1990)).

B.2 BG firms' hiring decisions

B.2.1 Labor adjustment at $t = 1$

Let us focus on BG subsidiary j. At date 1, its firing decisions and internal/external hiring decisions depend on whether the affiliated firm k is productive or in distress. There are four cases.

- Both firm j and k are profitable (probability $x\lambda$): firm j expands its workforce by hiring ℓ^E_j workers on the external labor market, where ℓ^E_j solves:

$$\max_{l_j} g(L_j + \ell_j) - w\ell_j - \frac{h}{2}(\ell_j)^2. \tag{B.8}$$

  As both firms are profitable, firm j cannot rely on the ILM at $t = 1$ and its hiring problem is identical to the stand-alone firm's problem. Differentiating the first order condition of (B.8) with respect to ℓ^E_j and L_j, one can show that $\partial\ell^E_j/\partial L_j = g''/(h-g'') \in (-1, 0)$: because of hiring costs ($h > 0$), late hiring only partly makes up for a reduction in early hiring.

- Firm j is profitable while firm k is not (probability $x(1-\lambda)$): j expands its workforce by ℓ_j^I workers, where ℓ_j^I solves:

$$\max_{l_j} g(L_j + \ell_j) - w\ell_j - \frac{h}{2}(\ell_j - \mu L_k)^2 \tag{B.9}$$

  which accounts for the fact that $\mu L_k < \ell_j^I$ workers are absorbed from the ILM at no hiring cost, and only $\ell_j^I - \mu L_k$ workers are hired on the external labor market. The first order conditions of (B.8) and (B.9) imply that $\ell_j^I = \ell_j^E + \mu L_k$. Also, due to the convexity of hiring costs, $\partial \ell_j^I / \partial L_k > 0$: when BG unit k has a larger pool of workers, j does more labor adjustment at $t = 1$. Using the first order condition of problem (B.9) one can show that $\partial \ell_j^I / \partial L_k = \mu h/(h - g'') \in (0, 1)$. In a similar way, one can show that $\partial \ell_j^I / \partial L_j = g''/(h - g'') \in (-1, 0)$.

- Firm j is in distress while firm k is profitable (probability $(1-x)(1-\nu)$): firm j fires $(1-\mu)L_j$ workers at cost F per worker and transfers μL_j workers to firm k at no cost (as $\ell_k^I > \mu L_j$, all redeployable workers are optimally transferred from j to k via the ILM).

- Both firm j and k are in distress (probability $(1-x)\nu$): firm j fires L_j workers at cost F per worker.

B.2.2 BG firms' hiring decisions at t=0

With the above in mind, BG-firm j's hiring problem at $t = 0$ can be written as:

$$\begin{aligned}\max_{L_j} \lambda[g(L_j + \ell_j^E) - w\ell_i^E - h\frac{(\ell_j^E)^2}{2}] + (1-\lambda)[g(L_j + \ell_j^I) - w\ell_i^I - h\frac{(\ell_j^I - \mu L_k)^2}{2}] \\ - wL_j + \frac{(1-x)}{x}C - \frac{(1-x)}{x}[1 - (1-\nu)\mu]FL_j\end{aligned}$$

subject to:

$$g'(L_j + \ell_j^E) = w + h\ell_j^E$$

and

$$g'(L_j + \ell_j^I) = w + h(\ell_j^E - L_k).$$

The first order condition to this problem

$$\lambda g'(L_j + \ell_j^E) + (1-\lambda) g'(L_j + \ell_j^I(L_k)) = w + \frac{1-x}{x}[1-(1-\nu)\mu]F \tag{B.10}$$

defines the optimal level of early hiring L_j^* given firm k's hiring L_k. Differentiating w.r.t. L_j and L_k, one can show that optimal hiring levels of same-group subsidiaries are strategic substitutes ($\partial L_j^*/\partial L_k < 0$) and that $|\partial L_j^*/\partial L_k| < 1$.

Lemma 1. *There exists a unique symmetric Nash-Cournot equilibrium where both BG units hire at $t = 0$: $L_j^* = L_k^* > 0$. Optimal hiring for each BG unit is decreasing in the firing cost F: $\partial L_j^*/\partial F = \partial L_k^*/\partial F < 0$.*

Proof. As BG firms i and k choose their hiring non-cooperatively, the equilibrium levels of L_j and L_k are defined by the intersection of reaction functions $L_j^*(L_k)$ and $L_k^*(L_j)$, which are implicitly defined by equation (B.10) and the analogous equation for firm k. To find the symmetric Nash-Cournot equilibrium, it suffices to set $L_j = L_k$ in the best reply equation (B.10), which then implicitly defines $L_j^*(F)$. Applying the Implicit Function Theorem, one obtains

$$\frac{\partial L_j^*}{\partial F} = \frac{1-x}{x}[1-(1-\nu)\mu]\frac{1}{A} < 0 \tag{B.11}$$

where $A < 0$ is defined as:

$$A = \lambda g''(L_j + \ell_j^E)\left(1 + \frac{\partial \ell_j^E}{\partial L_j}\right) + (1-\lambda) g''(L_j + \ell_j^I)\left(1 + \frac{\partial \ell_j^I}{\partial L_j} + \frac{\partial \ell_j^I}{\partial L_k}\right)$$

$$= \lambda g''(L_j + \ell_j^E)\left(1 + \frac{g''(L_j + \ell_j^E)}{h - g''(L_j + \ell_j^E)}\right) + (1-\lambda) g''(L_j + \ell_j^I)\left(1 + \frac{g''(L_j + \ell_j^I)}{h - g''(L_j + \ell_j^I)} + \frac{h\mu}{h - g''(L_j + \ell_j^I)}\right)$$

$$= \lambda g''(L_j + \ell_j^E)\left(\frac{h}{h - g''(L_j + \ell_j^E)}\right) + (1-\lambda) g''(L_j + \ell_j^I)\left(\frac{h(1+\mu)}{h - g''(L_j + \ell_j^I)}\right) < 0. \tag{B.12}$$

■

From (B.11) and (B.12), one can see that when $\lambda = 1$ and $\nu = 1$ (perfectly correlated shocks), it is $\partial L_j^*/\partial F = \partial L_{sa}^*/\partial F$, where $\partial L_{sa}^*/\partial F$ is defined by (B.7). This is because in a business group where units have perfectly correlated shocks the ILM is not active, therefore each BG unit is as exposed to external labor market frictions as a stand-alone firm.

The next Proposition compares the sensitivity to firing cost F in a BG unit versus a stand-alone firm, when $\lambda < 1$ and $\nu < 1$, i.e. when the group is diversified and therefore there is room to operate an ILM.

Proposition 1. *The sensitivity of $t = 0$ hiring to firing costs is larger in the stand-alone firm than in the BG-affiliated firm: $|\frac{\partial L_{sa}^*}{\partial F}| \geq |\frac{\partial L_j^*}{\partial F}|$, with a strict inequality if $\lambda < 1$ and $\nu < 1$.*

Proof. Assume $\nu < 1$: this implies that when unit j is in distress, with probability $1 - \nu$ it can bypass firing costs F for a fraction μ of its redundant workers. Inspection of equations (B.11) and (B.12) allows to show two facts. First, when $\lambda \in [0, 1)$, $|\partial L_j^*/\partial F|$ is increasing in λ. Second, when $\lambda = 1$, it is: $\partial L_j^*/\partial F = \frac{(1-x)}{x}\frac{(h-g'')}{hg''}[1 - (1-\nu)\mu]$, hence $|\partial L_j^*/\partial F| < |\partial L_{sa}^*/\partial F|$ $\forall \nu < 1$. It follows that $|\partial L_j^*/\partial F| < |\partial L_{sa}^*/\partial F|$ $\forall \lambda \leq 1$ as long as $\nu < 1$. ■

The intuition for this result is simple. The optimal hiring policy for a BG-affiliated firm takes into account the fact that ILM reallocation across units *may* be feasible at $t = 1$. In particular, when firm j is in distress and firm k is healthy (which happens with probability $(1 - x)(1 - \nu)$), firm j can bypass firing costs by redeploying a fraction μ of its workers to k. Thus, access to the ILM partly shields BG firms from the impact of firing costs. This effect should be more pronounced the larger is $(1 - \nu)$ and the larger is μ. In line with this intuition, inspection of (B.11) also leads to the following result.

Proposition 2. *The sensitivity of $t = 0$ hiring to firing costs for a BG-firm is: (i) higher in absolute value, the higher the correlation of shocks across group subsidiaries: $\frac{\partial^2 L_j}{\partial F \partial \nu} < 0$; (ii) lower in absolute value, the more redeployable are its workers via the Internal Labor Market: $\frac{\partial^2 L_j}{\partial F \partial \mu} > 0$.*

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