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ABSTRACT

Not in My Community: Social Pressure and the Geography of Dismissals*

We investigate the role of local social pressure in shaping the geographical pattern of firms' firing decisions. Using French linked employer-employee data, we show that social pressure exerted by the local communities where firms' headquarters are located induces CEOs to refrain from dismissing at short distance from their headquarters. More specifically, we find that, within firms, secondary establishments located further away from headquarters have higher dismissal rates than those located closer, taking into account the possible endogeneity of plant location. We also find that the positive effect of distance on dismissals increases with the visibility of the firm in the local community of its headquarters. These effects are stronger the greater the degree of selfishness of the community in which the headquarters are located. This suggests that local social pressure at headquarters is a key determinant of the positive relationship between distance to headquarters and dismissals. We show that our results cannot be entirely accounted for by alternative explanations of the distance-dismissal relationship that are put forward in the literature – e.g. monitoring costs or asymmetric information.

JEL Classification: J23, J63, M51, R12

Keywords: social pressure, layoffs, adjustment costs, selfishness, firm visibility, distance to headquarters

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Introduction

There is growing evidence in the literature that firms are sensitive to social pressure and that this affects their decisions. Good examples of this can be found in the area of corporate social responsibility – see e.g. Schmitz and Schrader (2013). It has been shown that firms accommodate social pressure in order to maximize their market value since socially-responsible actions increase customers' propensity to buy their goods and services – see Baron (2011), Luo and Bhattacharya (2006). Moreover, some scholars argue that, if firm's stakeholders are philanthropic, they may ask firms to do good on their behalf. More specifically, if stakeholders want firms to behave as good corporate citizens, "delegated philanthropy" may induce firms to refrain from polluting, engage in fair-trade activities, etc. In this case, social pressure affects firms' decisions even if it has no direct impact on their profits – see Benabou and Tirole (2010).

Social pressure also arises at the local level when communities try to protect themselves from projects that would generate a disproportionate cost for them. One example is the resistance of local communities against the implantation of polluting infrastructure in their district – the so-called NIMBY (Not in My Backyard) syndrome (e.g. Frey, Oberholzer-Gee and Eichenberger, 1996). Beyond polluting projects, any action that may generate damages to the local community is likely to give rise to social pressure opposing it.

Massive dismissals have long been considered as a major threat to local communities, as shown by their prominence in popular media – see, for example, Michael Moore's film *Roger and Me* (1989) focusing almost entirely on the consequences of the massive downsizing carried out by General Motors in Flint, Michigan. More generally, avoiding the social cost of dismissals is typically acknowledged as one of the key reasons justifying firing regulations (e.g. Cahuc and Zylberberg, 2008; Jung and Kuester, 2015). This suggests that local communities are likely to put firms under strong pressure in order to limit the number of dismissals in their surroundings as much as possible. There is evidence in the literature that CEOs and top executives are particularly sensitive to the social pressure arising from individuals with whom they have the most frequent interactions (e.g. Cronqvist et al., 2009). Hence, CEOs should be more sensitive to the social pressure in the community where they work every day – and maybe live – than to that arising in communities located further away.[1] If this is the case, they should refrain from dismissing workers in areas located closer to headquarters as compared to areas located further away.

In this paper, we provide evidence that dismissal rates increase with the distance of the plant to the firm's headquarters and that local social pressure at headquarters is a key factor explaining this relation. Although our contribution is essentially empirical, we present a simple theoretical model with employment adjustment costs in which social pressure is perceived by the CEO as an additional dismissal cost. Since CEOs are more sensitive to social pressure arising from their own community and communities oppose more strongly local dismissals, perceived adjustment costs are higher for plants located closer to the headquarters. As standard in models with adjustment costs, dismissals are decreasing with adjustment costs and hence increasing with the distance of the plant to the headquarters.

Our empirical analysis is based on French data. Looking at France to study the geographical dispersion of dismissals is interesting because the threshold number of dismissals beyond which (more expensive) collective dismissal procedures apply is defined at the *firm* level. This implies that, since dismissals in a plant affect the cost of dismissals in other plants of the same firm, the decision to dismiss has to be handled at the firm level. By contrast, in many other countries (e.g. the United States, Switzerland, etc…), the collective-dismissal threshold is set at the establishment level, so that individual plants may take dismissal decisions in a more independent way. We match two large plant-level administrative datasets, which also contain information on workers: i) the *Déclarations Annuelles des Données Sociales* (DADS), which contains complete social security records, including the geographical location of the plant and firm's headquarters, and covers all plants and firms in the non-agricultural business sector; and ii) the *Déclarations des Mouvements de Main d'Oeuvre* (DMMO-EMMO), which contains quarterly worker flows for all plants with more than 50 workers and a 25% random sample of those between 10 and 50 workers. By matching these datasets, we obtain information on the geographical dispersion of worker flows for over 5,000 multi-establishment firms and over 29,000 plants for the period 2003-2007.

Using these data, we investigate the relationship between distance to headquarters and dismissals, and the potential role of social pressure in shaping it. We first show that, within the same firm, secondary establishments located further away from the headquarters have

[1] In fact, D'Aurizio and Romano (2013) provide evidence that, during the Great Recession, Italian family firms have faced increasing social pressure to act as social buffers: confronted with a large negative aggregate shock, they have expanded employment in the region of their headquarters, while reducing it in other regions.

higher dismissal rates than establishments located closer to them. When conducting our analysis, we take into account the potential endogeneity of distance to headquarters. More specifically, we instrument actual distance with potential distance, defined as the distance at which the establishment would have been from the headquarters had its location been chosen only to maximize the market potential of the firm (measuring the capacity of the firm to serve large final markets while minimizing transport costs). We discuss in detail why potential distance is likely to be a valid instrument in the current setup. As a second step, we provide evidence that the distance-dismissal relationship is, at least partly, due to social pressure in the local community where the firms' headquarters are located. We first show that the positive effect of distance on dismissals increases with the firm's visibility at headquarters. More precisely, the larger the weight of the firm in the total employment of its headquarters' local labor market, the stronger the positive effect of distance on dismissals. We then show that the effect of distance is greater the more selfish the local community where the headquarters are located. We measure selfishness as the inverse of local generosity and capture the latter with the share of charitable giving in local GDP and, as a robustness check, as the difference in turnout rates between national and local elections. We interpret these results as providing evidence that managerial decisions regarding dismissals are affected by social pressure exerted by the local community of the headquarters. In particular, our finding on visibility is consistent with the idea that the incentive that a firm has to engage in a behavior demanded by stakeholders increases with the firm's visibility with respect to these stakeholders (Benabou and Tirole, 2010). In addition, our result on generosity is consistent with the idea that when "public spirit" is lower, communities care essentially about themselves and are more prone to shift the burden of painful adjustments onto others (Frey et al., 1996).

We are aware of only four other papers pointing to a relationship between distance to headquarters and employment downsizing in secondary plants (Landier, Nair and Wulf, 2009, Giroud, 2013, Kalnins and Lafontaine, 2013, Yonker, 2013), all using US data. These papers suggest that the positive relation between distance and dismissals could be due to information asymmetries, monitoring costs or managerial concern for employees. Other possible common-sense explanations have to do either with the sorting of workers and managers or with altruistic attitudes of socially-concerned top executives. Even though we do not exclude that these explanations play a role in explaining the relationship between distance and dismissals in our data, we show that they cannot account for the significant interactions between distance and visibility on the one hand and distance and generosity on the other. We conclude that local social pressure at headquarters is the only possible explanation that can account for all our empirical findings, thereby showing that it is a key factor shaping the geography of dismissals.

Our paper also relates to the literature on weak corporate governance and entrenchment. As shown in the literature – e.g. Bertrand and Mullainathan (2003), Giroud and Mueller (2010), and Bach and Serrano-Velarde (2015) – entrenched managers look for a "quiet life" and therefore tend to buy peace with their workers by paying them higher than profit-maximizing wages and/or offering them greater job security. Cronqvist et al. (2009) show that this effect is stronger for workers who are closer to the CEO, either within the organizational hierarchy or because they work in the same municipality. This suggests that CEOs are sensitive to the social pressure arising from within the firm. Our paper shows that they are also sensitive to local social pressure arising from outside the firm.

Our paper also speaks to the literature on image-motivated altruism and social pressure. Research in this area shows that individuals want to be liked and respected by others and that they seek to gain social approval of their behavior (see e.g. Andreoni and Bernheim, 2009). Of course, the value of image depends on visibility. It has been shown that individuals are much more altruistic when their actions are made public than when they remain private information, and that their degree of altruism increases with their visibility (Freeman, 1997, Andreoni and Petrie, 2004, Ariely, Bracha and Meier, 2009, Soetevent, 2011, Della Vigna, List and Malmendier, 2012, Filiz-Ozbay and Ozbay, 2014). This suggests that altruism is, at least partly, image-motivated and that individuals are sensitive to the social pressure arising from their immediate social environment. When visibility is very high, this may even lead them to make decisions that breach professional ethics. Garicano, Palacios-Huerta and Prendergast (2005) indeed show that soccer referees internalize the preferences of the crowd attending the matches in their decisions, by systematically favoring the home team.[2] In this paper, we show that social pressure arising from the community also impacts human resource management practices when the firm is highly visible in its community.

The layout of the rest of the paper is as follows. Section 1 presents a simple model of social pressure and dismissals. Section 2 describes the data and presents summary statistics. In Section 3, we explain our empirical strategy. Section 4 reports the empirical results. Alternative explanations are discussed in Section 5. Section 6 concludes.

[2] Social pressure has also been shown to play a role in reducing absenteeism of public sector employees (De Paola, Scoppa and Pupo, 2014)

1. A Simple Model of Social Pressure and Dismissals

In this section we sketch a highly-stylized model of employment decisions under social pressure and derive three testable predictions that we use to empirically disentangle the impact of social pressure from that of other potential mechanisms explaining the relationship between distance to headquarters and dismissals.

We assume a continuum of identical firms between 0 and 1. Each firm is composed of two production plants and the headquarters. Near each plant and the headquarters lives a community. No production occurs at the headquarters. We index by 1 the plant which is the closest to the headquarters and by 2 the plant which is further away.[3] Employment decisions are taken by the CEO,[4] who works in the municipality where the headquarters are located. The CEO maximizes the present discounted value of her utility, which is affected positively by profits and negatively by social pressure.[5] The instantaneous utility *U* of the CEO of firm *F* at time *t* is given by:

$$U_{Ft} = \pi_{Ft} - SP_{Ft}$$

where π stands for profits and *SP* for social pressure. Social pressure is exerted by local communities who care about dismissals and hence put pressure on CEOs in order to avoid them. In principle, CEOs could be sensitive to the pressure exerted by any community, both at plant or at headquarters. However, it is quite likely that they are more sensitive to that arising from the community where they work and most often live.[6] For the sake of simplicity, we assume that CEOs are only sensitive to the social pressure exerted in their own community, i.e. at headquarters, so that their utility is not affected by social pressure at plants. When presenting the results, we will provide evidence that this is actually the case in our data – see Section 4.2.

Modelling social pressure as a linear function of dismissals, the CEO's utility may be rewritten as:

[3] We do not model here why a firm has more than one plant, and why plants are located at different distances from headquarters.
[4] Our assumption is that employment decisions are taken centrally at headquarters. For the sake of simplicity, we represent these decisions as taken by the CEO even if, in practice, they may also be taken by other top executives.
[5] In this framework, social pressure is assumed to have a direct impact on the CEO's utility. Our results would be unchanged if, alternatively, we assumed that the CEO only cares about profits and social pressure were modelled as raising the firm's employment adjustment costs, thereby reducing its profits.
[6] Data from the European Labour Force Survey indicate that, in France, 95% of the CEOs work and live in the same region.

$$U_{Ft} = \pi_{Ft} - b_1 D_{1Ft} - b_2 D_{2Ft} \quad (1.1)$$

where D denotes dismissals and $b_i > 0$. We assume that the local community particularly dislikes dismissals when they take place at short distance, since this increases the risk that local people be affected. In addition, the more selfish the local community is, the less it cares about dismissals affecting other communities. This implies that $b_1 > b_2$ and that the gap between b_1 and b_2 is larger the greater the degree of selfishness of the local community where the firm's headquarters are located.

Both plants produce final output. For simplicity, their production functions are assumed to be identical and independent from one another.[7] They can be written as $f(\theta_{it}, N_{it})$, where $i = 1,2$ indexes plants, N denotes employment[8] and θ is a productivity shock – with f increasing in θ – taking the form of a Poisson process with two states: good (G) and bad (B), so that $\theta_G > \theta_B$. Shocks are identically distributed across plants and firms. They are also independent across firms, although they may be correlated across plants of the same firm. Let the instantaneous probability of transition between G and B be denoted by λ_G, and the probability of transition between B and G be denoted by λ_B. We also assume that f is continuous and three times differentiable, with $f_N > 0$, $f_{NN} < 0$ and $f_{NNN} \geq 0$, where f_N, f_{NN} and f_{NNN} denote the first, second and third derivatives with respect to N, respectively.

Plants are wage-takers and firms are price-takers, with the price of output normalized to 1. Therefore, wages and prices do not vary according to whether plants are in a good or bad state. Employment increases with hirings and decreases with dismissals. Dismissals occur in the presence of negative shocks – productivity shifts from the good to the bad state – and hirings take place with positive shocks – or shifts from the bad to the good state. We rule out voluntary quits and churning for the sake of simplicity. Therefore, dismissals are equal to the absolute value of employment changes when the latter are negative, and zero otherwise, and hirings are equal to the absolute value of employment changes when positive, and zero otherwise. Both hirings and dismissals are costly. Adjustment costs are assumed to be linear in employment changes and identical across plants. In particular, hiring costs are given by $HC_i = c_h H_i$ – with H standing for hirings – and dismissal costs are given by $DC_i = c_d D_i$.

[7] Giroud and Mueller (2015) show that idiosyncratic shocks affecting one plant have, on average, no impact on the level of employment of other plants in the same firm, except if the latter is financially constrained. This suggests that our assumption of separability is not inconsistent with empirical evidence. In the case of firm-level shocks, it can be easily shown that our results also hold in the absence of separability – proof available from the authors upon request.

[8] Index F is omitted hereafter to simplify notations.

Following Cahuc and Zylberberg (2004), we restrict our attention to stationary employment levels. On the basis of these assumptions, we can rewrite equation (1.1) as follows:

$$U_t = \sum_{i=1}^{2} f(\theta_{it}, N_{it}) - \sum_{i=1}^{2} w_t N_{it} - \sum_{i=1}^{2} c_h H_{it} - \sum_{i=1}^{2} (c_d + b_i) D_{it}$$

where w_t denotes the wage rate. By construction, this utility function is separable across plants. Therefore, the CEO's inter-temporal maximization problem comes down to maximizing separately the contribution of each plant to the present discounted value of her utility. This corresponds, for each plant, to a standard model with adjustment costs, the solution of which is well-known (see for example Cahuc and Zylberberg, 2004): optimal employment fluctuates between two values depending on whether the plant is in a good or bad state:

$$f_N\left(\theta_G, N_i^G\right) = w + \lambda_G (c_d + b_i) + (r + \lambda_G) c_h \quad if\ \theta_{it} = \theta_G \tag{1.2}$$

$$f_N\left(\theta_B, N_i^B\right) = w - \lambda_B c_h - (r + \lambda_B)(c_d + b_i) \quad if\ \theta_{it} = \theta_B \tag{1.3}$$

where r is the discount rate of the CEO and the values N^G and N^B correspond to the levels of labor demand in good and bad states, respectively, under the assumption that the difference between θ_G and θ_B is sufficiently large so that $N^G > N^B$.[9]

Defining optimal dismissals as $D_i^*(b_i) = N_i^G - N_i^B$, exploiting the properties of the derivative of inverse functions and taking into account that $f_{NN} < 0$, we have:

$$\frac{\partial D_i^*}{\partial b_i} = \frac{\partial N_i^G}{\partial b_i} - \frac{\partial N_i^B}{\partial b_i} = \frac{\lambda_G}{f_{NN}(\theta_G, N_i^G)} + \frac{r + \lambda_B}{f_{NN}(\theta_B, N_i^B)} < 0 \tag{1.4}$$

Therefore, $b_1 > b_2$ implies that the plant that is further away from the headquarters dismisses more workers when hit by a negative shock than does the plant that is closer, that is $D_1^*(b_1) < D_2^*(b_2)$. This is shown graphically in Figure 1. Adjustment costs generate a positive (resp. negative) wedge between labor productivity and the market wage in the good (resp. bad) state – see equations (1.2) and (1.3). Since this wedge is greater in plants that are closer to headquarters, employment adjustments are smaller there.

Assuming that the economy is in a stationary equilibrium with a proportion ρ of plants in good state, having a continuum of identical firms that are subject to i.i.d. shocks implies that at each point in time there are $\rho\lambda_G$ plants of both types (1 and 2) whose state shifts from good

[9] If this assumption does not hold, employment never changes so that hirings and dismissals are always equal to 0.

to bad thereby giving rise to dismissals. Aggregating across firms and using the law of large numbers, we obtain for each type of plant:

$$E(D_{iFt}) = \int D_{iFt} dF = \rho \lambda_G D_i^*(b_i).$$

where E is the expectation operator. In other words, at any point in time, aggregate dismissals in plants of type i are proportional to D_i^* and therefore lower in plants located closer to headquarters than in plants located further away.

This model may be easily generalized to an arbitrary number of plants generating an inverse relation between distance to headquarters and dismissals, by assuming that b_i decreases with the distance of plant i to the firm's headquarters. This assumption captures the fact that the local community of the headquarters is likely to care more about communities located closer – and with which it has frequent interactions[10] – than about communities located further away.

Benabou and Tirole (2010) argue that the incentive for a firm to engage in a behavior demanded by stakeholders increases with its visibility with respect to them. We therefore expect social pressure to be greater or more effective, the greater the visibility of the firm in the community of its headquarters. This implies that b_i can be re-written as:

$$b_i = \alpha \gamma_i$$

with α increasing in firm visibility at headquarters and γ_i representing the effect of social pressure for a given level of visibility. Our above-mentioned assumption that local communities particularly dislike dismissals when they take place at short distance translates into $\gamma_1 > \gamma_2$, with the gap between γ_1 and γ_2 being larger the greater the degree of selfishness of the local community where the headquarters are located. Let us therefore write $\gamma_2 = \gamma_1/\beta$, where $\beta > 1$ is a measure of the degree of selfishness of the local community of the headquarters and γ_1 measures social pressure at, or close to, headquarters.

We show in Appendix A1 that, if the degree of selfishness is high enough, $\partial(D_2^* - D_1^*)/\partial\alpha > 0$. In other words, in the presence of social pressure at headquarters, if the community of the headquarters is sufficiently selfish, the more visible the firm is the stronger the effect of

[10] The *Contact entre les personnes* ("Contact between people") Survey carried out by the French Statistical Institute (INSEE) in 1983, provides evidence that the intensity of social relations decreases with the distance between individuals. Using these data, one can compute the frequency of encounters of an individual with her parents, in-laws, children and friends. The dataset also provides information on the distance at which these relatives and friends live. When using the frequency of encounters as a proxy of the intensity of social relations, the latter turns out to be negatively correlated with the geographical distance between individuals: for distances higher than 5 km, involving 17,797 couples of individuals, we find that the coefficient of correlation between distance and the frequency of encounters is -0.05 – significant at the 1% level.

distance on dismissals. It also follows from equation (1.4) that $\partial(D_2^* - D_1^*)/\partial\beta > 0$, that is, an increase in the degree of selfishness at headquarters also increases the effect of distance on dismissals. Finally, as shown in Appendix A2, if the degree of selfishness is large enough, $\partial^2(D_2^* - D_1^*)/\partial\alpha\partial\beta > 0$ for any given level of social pressure at headquarters. In other words, if the community where the headquarters are located is sufficiently selfish, the effect of visibility on the steepness of the relationship between distance and dismissals increases with the degree of selfishness.

To sum up, our model shows that local social pressure may generate a positive relationship between distance to headquarters and dismissals. It also provides three additional testable predictions. For a sufficiently high degree of selfishness, the effect of distance on dismissals i) increases with the firm's visibility in the community of its headquarters; ii) increases with the degree of selfishness of this community; and iii) is magnified wherever high visibility combines with a strong degree of selfishness in the community of the headquarters. In the remainder of the paper, we test these predictions and use them to disentangle the role of local social pressure at headquarters from that of other explanations provided in the literature in accounting for the geography of dismissals.

2. The Data

Since we need to combine information on dismissals, distance of secondary establishments to headquarters, local generosity and a number of establishments' as well as local areas' characteristics, our data come from different sources

The first data source we use contains social security records – the DADS, *Déclarations Annuelles de Données Sociales*. They cover the universe of establishments and firms in all sectors except agriculture, part of the food-processing industry and rural financial institutions (e.g. Crédit Agricole). The DADS are available since 1997 for, on average, 1,350,739 firms and 1,594,361 establishments with non-zero employment per year,[11] and contain information on the municipality where each establishment is located. However, in 2008, a new form of separation was introduced in France for workers on permanent contracts: the so-called "*rupture conventionelle*" (conventional separation), which reduced the possibility of filing complaints in courts in case of mutually voluntary separations, while simultaneously granting access to unemployment benefits to separating workers. There is evidence that in some cases

[11] These figures show that a wide majority of French firms are mono-establishment and hence outside the scope of our analysis.

ruptures conventionelles replaced dismissals while in some others – for older workers for example – they replaced quits – see Minni (2013). Because of this, the number of dismissals – and quits – is hardly comparable before and after 2008. To avoid this problem, we restrict our sample to the years prior to 2008. The location provided by the DADS is unique for each establishment with a given identifier because identifiers change when establishments move. As a consequence, the location of any establishment – identified by a given identifier – is time-invariant. The DADS also contain information on the establishment's age and industry and the number of employees excluding apprentices and trainees, as well as, since 2002, the gender and occupational structure of the workforce. Since this information refers to December 31st of each year and we wish to avoid having controls that are post-dated with respect to dismissals, our estimates focus on the period 2003-2007.

For each firm in our sample, the DADS provide information on the identifier of its headquarters and the municipality where they are located. A small proportion of firms in our sample (8.7%) report changes in headquarters involving changes in municipalities over time. However, some of these changes are clearly implausible. For example, some firms change headquarters several times between 2003 and 2007, going back and forth between two municipalities. To overcome this problem, we select as the unique headquarters over the sample period the establishment that is most frequently reported to be so.[12] Finally, the DADS also have information both on the legal category of the firm (commercial company, public administration, charity etc.) and on firm age.

The second source that we use is the DMMO/EMMO database. The DMMO (*Déclarations sur les Mouvements de Main-d'Oeuvre*) has exhaustive quarterly data on gross worker flows (hirings and separations, excluding temporary help workers) for establishments with 50 employees or more. The data on separations are broken down by type of flow (dismissals, quits, end-of-trial period, end of fixed-term contracts and retirement). The EMMO (*Enquête sur les Mouvements de Main-d'Oeuvre*) has identical information on a representative sample containing 25% of the establishments with 10 to 49 employees.[13] We compute hiring and separation rates by type of flow (including dismissal rates) for each quarter during the period 2003-2007. The hiring rate is defined as the ratio of all hires during a given quarter to the

[12] Our results are robust to excluding all firms whose headquarters change municipality over time.
[13] We do not have any information on worker flows for establishments with less than 10 employees.

average employment level in that quarter[14] and, for each type of flow, the separation rate is defined as the sum of all separations of that type divided by average employment.

Information on the latitude and longitude of municipalities is provided by the *Répertoire Géographique des Communes.*[15] Great-circle distances between establishments are computed assuming that each establishment is placed at the barycenter of the municipality to which it belongs. This is, of course, a simplifying assumption but given that there are more than 36,000 municipalities in France and that 99% of them have a surface smaller than 70.8 square kilometers,[16] the error we are making on the actual location is very small.[17] A consequence of this assumption is that two establishments located in the same municipality are at zero distance from each other by definition. We also have information on the 94 mainland French *départements* and the 21 mainland administrative regions to which each municipality belongs. Furthermore, the *Base Communale des Zones d'Emploi*[18] provides information on the "employment areas" where municipalities are located. These are travel-to-work zones defined on the basis of daily commuting patterns as observed at the beginning of the 1990s. Most employment areas, which correspond to local labor markets, include a city and its catchment area. There are 341 such areas in mainland France with an average size of 1,420 km^2, which represents a relatively fine partition of the French territory.

We match these data sources (DADS, DMMO-EMMO and geographical databases), and keep all commercial companies registered in France in the non-agricultural, non-mining business sector.[19] We only consider multi-establishment firms and drop establishments for which dismissal rates or some of our establishment-level controls are missing. Since we wish to compare dismissal rates across the secondary establishments of firms, we only retain companies with at least two secondary establishments in our dataset. Our final sample contains 29,508 secondary establishments belonging to 5,019 different firms.

Descriptive statistics for this sample are presented in Appendix Table A1. Quarterly dismissal rates are on average slightly less than 1% (0.97%) and mean distance to headquarters is about 248 km. Blue-collars account for one third of establishment-level employment, while clerks

[14] The average employment level in a quarter is defined as half of the sum of the employment levels at the beginning and the end of the quarter (see e.g. Davis, Faberman and Haltiwanger, 2006).
[15] This database is produced by the French *Institut National de l'Information Géographique et Forestière* (IGN).
[16] Only 2 municipalities in France have a surface larger than 250 km^2.
[17] Most municipalities are no larger than a rectangle of 7x10 kilometers. Therefore, assuming that establishments are located at the barycenter implies that the maximum possible error for 99% of French municipalities is about 6 kilometers.
[18] This database is provided by the French Statistical Institute (INSEE).
[19] This corresponds to sectors 15 to 74 in the NACE-Rev1 classification.

and technicians/supervisors are respectively 27% and 25%, and managers 15%. Women represent 37% of the workforce and 67% of the establishments belong to the service sector while 21% are in the manufacturing industry. Average firm and establishment size – measured as the number of employees per firm - are 907 and 136 respectively. Finally, most establishments are at least 5 years old (63%)[20] and average firm age is 29 years.

The visibility of a firm in the employment area of its headquarters is assumed to be an increasing function of its share of local employment. We measure this share as of December 31st, 2002, in order for it to be pre-dated with respect to our sample. As shown in Appendix Table A2, the distribution of the firm's share of local employment is quite skewed. Therefore, in our empirical analysis we capture high visibility with a dummy variable equal to 1 if the firm belongs to the upper 25% of the distribution and 0 otherwise. Symmetrically, we capture low visibility with a dummy equal to 1 if the firm belongs to the bottom 75% of the distribution and 0 otherwise.[21]

Information on generosity in the area where the firm's headquarters are located is obtained from the 1890 *Annuaire Statistique de la France*, which provides information on local total charitable giving at the *département* level as measured in 1887. We standardize these donations by *département*-level GDP.[22] The advantage of measuring generosity using data from more than one century ago is that there is no doubt that this measure is exogenous with respect to dismissals in 2003-2007.[23] Descriptive statistics for this variable are provided in Appendix Table A2 and its geographical distribution is shown in Appendix Figure A1. As for visibility, we consider that headquarters are located in high-generosity *départements* when they belong to the upper 25% of the donation-to-GDP distribution. Symmetrically, headquarters are considered to be located in low-generosity *départements* when they belong to the bottom 75% of the distribution.

[20] Establishment age is often missing in the DADS. To preserve sample size, we construct an age variable using the presence of the establishment in previous waves of the DADS. Since these are available only from 1997 onward, our age variable is truncated at 5 years and most establishments are in the oldest age category. However, in our regressions, the coefficient of the dummy variable "5 years or more" is never significantly different from that of the dummy variable "4 years old". This is consistent with the results of Haltiwanger, Jarmin and Miranda (2013) who show that most job flows occur in the earliest years of establishments' life.

[21] A similar measure of firm visibility is used by D'Aurizio and Romano (2013).

[22] *Département*-level GDP is provided by Fontvieille (1982). It is measured as of 1864, which is the year closest to 1887 for which such information is available.

[23] At the same time, this measure of generosity is correlated with current generosity as measured by the 2003-2010 average ratio of charity donations to taxable income (computed at the level of *départements*). The estimated correlation coefficient is 0.22, statistically significant at the 5% level of confidence. The source of charity donations and taxable income is the French Ministry of Finance.

3. The Econometric Model

3.1 Dismissals and distance to headquarters

As a first step, we estimate the following relation between dismissal rates in secondary establishments and their distance to the firm's headquarters:

$$DR_{iFt} = \beta_0 + \beta_1 Dist_i + X_{iFt}\beta_2 + D_t + D_F + \varepsilon_{iFt} \qquad (3.1)$$

where DR_{iFt} denotes the dismissal rate in establishment i of firm F at time t, $Dist_i$ is the distance of establishment i to the firm's headquarters[24] and X_{iFt} is a vector of establishment-level controls. D_t and D_F are year and firm dummies respectively.[25] In estimating this relationship, we consider only secondary establishments and hence exclude headquarters from our sample since the latter are functionally different from the former and may then have lower levels of dismissals for this reason.

Distance to headquarters, however, is most likely to be endogenous. Since plants are plausibly not randomly allocated to locations, the observed correlation between dismissals and distance could be driven, at least partially, by the correlation between distance and unobserved plant characteristics. Formally, the error term in equation (3.1) would then write: $\varepsilon_{iFt} = \mu_i + u_{iFt}$ where μ_i is a plant-specific disturbance potentially correlated with $Dist_i$ and u_{iFt} is an error term uncorrelated with the regressors in equation (3.1). For example, as underlined by Kalnins and Lafontaine (2013), locating an establishment far away from the firm's headquarters induces various types of costs, in particular information asymmetries and monitoring costs. Rational firms locate establishments in order to minimize costs. So, they open and maintain them far away from headquarters only if the new locations offer advantages which are likely to compensate for the costs – e.g. reducing the cost of serving local demand, getting closer to inputs, positive agglomeration externalities, or amenities reducing the cost of labor. If these advantages also affect dismissals, OLS estimates of (3.1) are likely to be biased. To address

[24] We use time-varying dismissal rates although the distance of our establishments to their firm's headquarters is constant over time. We do so because few of our establishments are present in our sample for all quarters over 2003-2007. The quality of the information that we have for an establishment increases with the number of quarters over which it is observed. Therefore, collapsing the data at the establishment level would require weighing establishments by the number of quarters for which each of them is observed, in order to give more weight to those for which we have better information. This would be essentially equivalent to what we do, since we cluster standard errors at the establishment level. As a matter of fact, all our results are robust to collapsing the data at the establishment level.

[25] We consider linear rather than log distance since 6% of our secondary establishments are located in the same municipality as the headquarters and have therefore 0 distance to headquarters by construction since our measure of distance is defined across municipalities. However, we check below that our relationship between distance to headquarters and dismissals still holds when we use a log specification.

the potential endogeneity of distance, we need to turn to an instrumental variable (IV) strategy.

This strategy is based on two building blocks: before introducing our instrument, we define the market potential of a firm *F* and the contribution of plant *i* to this market potential. In economic geography, a standard measure of the relative advantage of a location in terms of access to demand is Harris' market potential (Harris, 1954). This is defined as the sum of the purchasing capacities of surrounding local markets weighted by the inverse of their distance – which typically proxies transportation costs to customers. By analogy, we define the market potential of a multi-establishment firm *F* as:

$$MPF_F = \sum_k \frac{PC_k}{\min\limits_{i \in F}\{Dist_{ki}\}}$$

where PC stands for the purchasing capacity of local market *k* and *i* indexes the establishments of the firm, including the headquarters. In other words, the market potential of firm *F* is the sum of the purchasing capacities of each local market weighted by the inverse of the distance of these markets to the closest establishment of the firm. As is classical in economic geography, we capture purchasing capacity by population[26] and local markets by employment areas.[27] Assuming, for simplicity, that two establishments are not at the same distance from a given local market, market potential *MPF* can be rewritten as:

$$MPF_F = \sum_{i \in F} \left(\sum_{k \in \left\{ Dist_{ki} < \min\limits_{j \in F \setminus \{i\}} \left(Dist_{kj} \right) \right\}} \frac{POP_k}{Dist_{ki}} \right)$$

where *POP* denotes population and $F \setminus \{i\}$ stands for the set of establishments of *F*, excluding i.

The term in parentheses can be interpreted as the contribution of establishment *i* to the market potential of firm *F* (*CMPF*), that is:

$$CMPF_i = \sum_{k \in \left\{ Dist_{ki} < \min\limits_{j \in F \setminus \{i\}} \left(Dist_{kj} \right) \right\}} \frac{POP_k}{Dist_{ki}}$$

[26] In the economic geography literature, purchasing capacity is proxied either by income-based measures (see e.g. Combes, Mayer and Thisse, 2008) or by population-based measures (see e.g. Bottazzi and Peri, 2003; Ioannides and Overman, 2004 and Briant, Combes and Lafourcade, 2010). We use a population-based measure insofar as information on aggregate income is not available at the level of employment areas.

[27] We exclude foreign markets for which we have no data.

This contribution can be seen as a proxy of the relative size of the local demand served by each establishment.

Once defined the contribution to the firm's market potential, we can present our IV strategy. We use as an instrument the *potential distance*, defined as the distance to headquarters at which an establishment would have been, had its location (called the *potential location*) been chosen by the firm *only* in order to maximize its contribution to market potential – i.e. disregarding any distance-related costs other than transportation costs to customers – taking the position of the other establishments of the firm as given.

In practice, for each firm in our sample, we pick up one of its secondary establishments and remove it. We then consider each employment area in France and consider what would be the contribution to the firm market potential if an additional plant were located there. We take the employment area that maximizes this contribution and measure the distance between its barycenter and the headquarters. We call this potential distance. To qualify as a valid instrument, this variable must be uncorrelated with any unobserved plant-specific characteristics that can affect dismissals beyond the effect going through distance.

To show that this is the case, we need to be more specific on how we construct potential distance. Formally, potential location (PL) is defined as:

$$PL_i = \underset{h}{\text{argmax}}\{CMPF_h\}$$

and potential distance is the distance from PL to the firm's headquarters. Defined in this way, potential distance is, by construction, unrelated to any determinant of the plant-specific disturbance μ_i that is not correlated to the $CMPF$, except if local population and dismissals are correlated – for example if people tend to migrate away from depressed areas. To overcome this problem, scholars in economic geography have used local terrain ruggedness as an exogenous predictor of population – see Combes et al (2010) and Nunn and Puga (2012). The idea is that it is more difficult to settle in more rugged locations. Taking the maximum value of ruggedness in our data minus the effective ruggedness of the area as an exogenous proxy of population,[28] PL can be written as:

[28] Following Combes et al (2010), local terrain ruggedness is defined here as the mode of maximum altitudes across all pixels in an employment area minus the mode of minimum altitudes, using pixels of 1km by 1km. The correlation between ruggedness and population across employment areas is significant at the 1% level in our data.

$$PL_i = \underset{h}{\operatorname{argmax}} \left\{ \sum_{k \in \left\{ Dist_{kh} < \min\limits_{j \in F \setminus \{i\}} \left(Dist_{kj} \right) \right\}} \frac{RUG_{max} - RUG_k}{Dist_{kh}} \right\} \tag{3.2}$$

where RUG_k denotes ruggedness of the employment area k and RUG_{max} is the maximum ruggedness over all employment areas.

When potential location is given by equation (3.2), there is no reason that potential distance affects dismissals except through actual distance – which is one of the conditions for it to be a valid instrument – or because it could be correlated with local demand as measured by the $CMPF$. This would be a problem if the *CMPF* simultaneously affected actual distance and dismissals. However, we show below that potential distance and $CMPF_i$ are uncorrelated. We conclude from this that our exclusion restriction is likely to hold.

We compute the contribution of establishment *i* to the market potential of firm *F* assuming that all other establishments of *F* are located at the barycenter of their region. This simplifying assumption allows us to save substantial computational time, since some of our firms have a few thousand establishments.[29] The first row in Table 1 shows that the correlation between potential distance and $CMPF$ is virtually zero, independently of whether we use the population in 1999 or in 2009 to compute $CMPF$.[30]

One potential problem with our computation of $CMPF$ is that it is heavily underestimated for the establishments located close to the sea or to a foreign country. For these, local demand should indeed include nearby areas in border and/or overseas countries for which, unfortunately, we do not have any information. Failure to account for these areas generates measurement error, which biases the correlation between the *CMPF* and potential distance towards zero. To solve this problem, we compute this correlation on the subsample of establishments located in *départements* which have no border with the sea or any foreign country, using the fact that the contribution of each employment area to $CMPF$ is weighted by the inverse of distance – see equation (3.2) – so that the measurement error due to the omission of foreign markets decreases quickly when moving away from the sea and borders.

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[29] The largest firm in our sample has 3,216 establishments, most of them with fewer than 10 employees. We do not have worker flows for plants smaller than 10 employees (see Section 2). Therefore, plants of this size are not included in our regression analysis. However, we take their location into account to compute the contribution to the firm's market potential of the plants in our sample.

[30] Errors are clustered at the region-by-firm level in Table 1 because, given the procedure we use to compute potential distance, for any firm with many establishments in a given region potential distance is virtually the same for all establishments of that firm in that region.

When using this restricted sample, we find very similar results: whatever the population used to compute $CMPF$ (as of 1999 or as of 2009), the coefficients of correlation with potential distance are lower than 0.02 and statistically insignificant at conventional levels.[31]

One may still worry that potential distance could be a weak instrument. As shown in Figure 2, this is not the case. For some firms in our sample, all establishments have the same potential location so that potential distance in deviation from the firm mean is 0 and hence uncorrelated with actual distance. However, these turn out to be a limited number, so that the overall correlation between potential and actual distances is quite strong.

3.2 The role of social pressure

Once established that distance to headquarters has a positive impact on dismissals in secondary establishments, we investigate the role of local social pressure at headquarters in generating this relation. As suggested by the simple model proposed in Section 1, if social pressure is a key determinant of the distance-dismissal relationship, we expect the latter to be stronger the greater the firm visibility at headquarters and the lower the generosity of the local community.

As a first step, we test whether the impact of distance on dismissals varies according to firm visibility at headquarters. In order to do so, we estimate the following equation:

$$DR_{iFt} = \beta_{LV} Dist_i * LV_F + \beta_{HV} Dist_i * HV_F + X_{iFt}\gamma + D_t + D_F + \varepsilon_{iFt} \qquad (3.3)$$

where LV_F and HV_F denote low and high visibility of the firm at headquarters, respectively. If more visible firms are more sensitive to social pressure, we expect β_{HV} to be larger than β_{LV}.[32]

As a second step, we focus on the impact of generosity. We investigate whether the positive relationship between dismissals and distance to headquarters is stronger when firms' headquarters are located in areas where the local community is more selfish (less generous). We estimate:

[31] In contrast, the *actual* distance to headquarters turns out to be positively correlated with *CMPF*: whatever the population used to compute the latter, we find a coefficient of correlation as high as 0.17 and highly significant at conventional levels – see Appendix Table A4. This suggests that establishments located far away from their headquarters are selected on their contribution to market potential. As hypothesized by Kalnins and Lafontaine (2013), this may be due to the fact that they incur higher costs – e.g. monitoring costs – which have to be compensated by a greater contribution to the firm's market potential.

[32] Strictly speaking, our model predicts that $\beta_{HV} > \beta_{LV}$ only for values of generosity that are sufficiently low. For higher values of the generosity parameter, the model yields ambiguous predictions as to the relative values of β_{HV} and β_{LV}.

$$DR_{iFt} = \beta_{LG} Dist_i * LG_F + \beta_{HG} Dist_i * HG_F + X_{iFt}\gamma + D_t + D_F + \varepsilon_{iFt} \tag{3.4}$$

where LG_F and HG_F respectively denote low and high generosity of the community in which the firm's headquarters are located, and where we expect that $\beta_{LG} > \beta_{HG}$.

We also check whether the impact of firm visibility on the positive relationship between distance to headquarters and dismissals increases as the local community of the firm's headquarters gets less generous. More specifically, we estimate:

$$DR_{iFt} = \beta_{LG\_LV} Dist_i * LG_F * LV_F + \beta_{LG\_HV} Dist_i * LG_F * HV_F + \beta_{HG\_LV} Dist_i * HG_F * LV_F$$

$$+\beta_{HG\_HV} Dist_i * HG_F * HV_F + X_{iFt}\gamma + D_t + D_F + \varepsilon_{iFt} \tag{3.5}$$

and expect β_{LG_HV} to be positive and larger than any other β coefficient and, in particular, than β_{LG_LV}.

4. Results

4.1 Dismissals and distance to headquarters

The impact of distance to headquarters on dismissals – see equation (3.1) – is first estimated by OLS, using a "selection on observables" approach, which tries to capture plant-specific effects with a vector of observables. Our baseline specification includes time and firm dummies and the following establishment characteristics: industry and employment-area dummies, establishment size and age dummies, gender and occupational structure of the workforce, firm size in the establishment's local labor market (i.e. the employment area where the establishment is located) and time-varying unemployment rates in the employment area. We control for employment-area dummies since, together with firm dummies, they capture the relative attractiveness of the establishment's location. Establishment size is important because large establishments may be located closer to headquarters and because it may be easier for them to reallocate workers internally and hence avoid dismissals. Moreover, transfers across plants within the same local labor market are probably not resisted by workers so that relocating unnecessary workers is easier for the firm if it is of large size in the area where the establishment is located. This is why we also control for firm size in the establishment's employment area. Controlling for establishment age is motivated by the fact that, as shown by Neumark, Zhang and Ciccarella (2008) in the case of Wal-Mart, establishments located further away from headquarters are likely to be younger and have a more volatile activity, [33] which generates more dismissals. We control for workforce characteristics because the frequency of dismissals may differ across gender and/or occupation. Local unemployment rates capture the fact that, beyond fixed local labor market characteristics, establishments located further away from headquarters may be affected by negative temporary shocks and hence dismiss more workers.

The OLS estimates obtained with this specification are presented in Table 2 – col (1). We find that distance to headquarters has a positive and significant effect on dismissals: when the former increases by 100 km, dismissals increase by 0.03 percentage points – that is, by 3.33% as measured at the sample average.[34] Note that if we add headquarters to our sample and include a dummy variable for them in the baseline specification, our results are virtually unchanged – see Table 2 – col (2).

A problem with "selection on observables" – the approach taken in the first two columns of Table 2 – is that the omission of plant-specific effects that are correlated both with distance and with dismissals may produce biased estimates of the true correlation between distance and dismissals. We deal with this problem using the IV strategy described in section 3.1, where the *actual distance* to headquarters is instrumented by the *potential distance* at which the establishment would have been located had its location been chosen by the firm *only* to maximize its contribution to market potential.

This instrument, however, is likely to be affected by substantial measurement error for plants located in *départements* that are on the seaside or have borders with foreign countries. As discussed in Section 3.2, this is due to the fact that in these locations the contribution to the firm market potential (*CMPF*) is heavily underestimated, because local demand depends to a larger extent than in other locations on border and/or overseas countries for which we have no information.[35] When we regress actual on potential distance in the sub-sample of locations on

[33] On the relationship between age and volatility, see also Haltiwanger et al. (2013).

[34] Note that this relation does not disappear at long distances: when we re-estimate our baseline equation using a spline with a kink at 250 km from headquarters (which is the mean distance in our sample), the slopes of the dismissal-distance relationship before and after the kink are not significantly different (p-value 0.18). This is consistent with the pattern of social relations uncovered when using the *Contact entre les personnes* survey (see footnote 10): the intensity of social relations decreases with distance between individuals and the negative correlation gets, if anything, stronger as distance increases, with a minimum of -0.22 (significant at the 1% level) for individuals who are more than 800 km apart. This suggests that individuals have fewer contacts with relatives and friends located further away and that this holds at long as well as at short distances.

[35] It is useful to illustrate this point further with an example. Assume that a firm has its headquarters in Paris and two plants, one in the very center of France – say, Clermont-Ferrand – and the other close to the Belgian border, – say, in Lille. If we were to correctly compute the potential location associated with the second plant, we should consider as relevant local markets not only the French but also the Belgian employment areas bordering the French territory. By omitting these densely-populated Belgian areas, for which we have no data, we may identify a location in the South of France as the potential location, whereas if we had been able to include these areas in

the seaside or with borders with foreign countries, we find that the estimated relation is non-monotonic,[36] which violates the monotonicity assumption required by the LATE theorem– see e.g. Angrist and Pischke (2009). In contrast, there is no evidence of any non-monotonicity in the sub-sample which excludes the plants in these locations.[37] Therefore, we restrict our IV estimation to this reduced sample.

We first check that this sample restriction does not modify our baseline OLS results. As shown in column (3) of Table 2, the impact of distance to headquarters on dismissals is still positive and significant at the 1% level. The first stage of our IV estimate is provided in column (4): the effect of potential distance on actual distance is positive and statistically significant at the 1% level of confidence. Turning to the second stage – col (5) – we find that the estimated coefficient of distance is very close to the coefficient estimated by OLS (0.064 versus 0.062) and statistically significant at the 10% level. The finding that in our just-identified model the IV point estimate is almost identical to the OLS estimate suggests that selection on observables as implemented in columns (1)-(3) of the table does a reasonably good job in capturing the causal effect of distance on dismissals. This is not surprising, because including very detailed employment-area and firm dummies enables us to control for most sources of locational advantage. Using this key result, in the rest of the paper we rely on our baseline OLS specification and on the broader sample of all *départements*, including those with borders either with foreign countries or with the sea.

Next, we present a number of robustness checks of the baseline specification. So far, we have used the linear distance to headquarters as key variable of interest, rather than its log. We have done so for the following reasons: first, because about 6% of the establishments in our sample are located in the same municipality as their headquarters (and hence have zero distance to headquarters) – see footnote 25; and second, because we want to capture the fact that increasing distance from 150 to 300 km from headquarters is likely to have a larger impact on dismissals as compared to increasing it from 1.5 to 3 km, as would be implied by a log specification. Last but not least, linear distance is more consistent with the pattern of social relations observed in France, i.e. the fact that the negative correlation between the

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our computation, the potential location would have been close to Lille. In the case of Clermont-Ferrand, instead, the choice of the potential location is much less likely to be affected by the omission of border Belgian areas.

[36] When regressing actual on potential distance and its square in the sample of plants located in border and sea *départements* and using the same controls as in Table 2, we find that the point estimates for potential distance and potential distance squared are -0.278 (with standard error 0.075) and 0.000884 (with standard error 0.000125) respectively, suggesting that the relationship between potential and actual distance changes sign at 157km.

[37] When regressing actual distance on any polynomial in potential distance up to the 5th order, none of the terms of order higher than 1 is ever significant at conventional levels.

intensity of social relations and the distance between individuals does not decrease as distance increases (see footnotes 10 and 34). It turns out that using the log rather than linear distance does not affect qualitatively our results, as shown in Appendix Table A5 – col (1).

A potential concern is that our results could be driven by the large proportion of zero dismissal rates in our sample and the fact that equation (3.1) does not account for the censoring of the distribution of dismissal rates at 0. We address this problem by estimating a Tobit model, using the Mundlak transformation to control for firm fixed effects. Results, however, are qualitatively similar to the baseline– see Table A5 – col (2). The positive effect of distance on dismissals is also robust to removing the Paris region (Ile-de-France), where a large proportion (37.5%) of the headquarters are concentrated – see col (3) of the table. All the results presented in the next subsection (4.2) are also robust to the specifications used in Appendix Table A5, i.e. using log instead of linear distance, estimating a tobit model or removing the Ile-de-France region.

The relatively low level of dismissals at short distances from headquarters could be compensated by other types of separations. We examine the effects of distance on quits, retirement, trial-period and fixed-term-contract terminations, but find very few significant results – see Appendix Table A6. On the one hand, end of trial period, fixed-term-contract terminations and retirement do not vary with the distance to the headquarters. On the other hand, quits tend to increase with distance but the effect is weakly significant, despite the large size of our sample, and very small (the point estimate is one third of that of dismissals whereas the average rate of quits is almost twice as large as that of dismissals – see Appendix Table A3).

Our model predicts that the effect of social pressure on dismissals should also be reflected in the hiring behavior of firms. We find evidence that hiring on permanent contracts increase with the distance to headquarters. When re-estimating equation (3.1) with hirings as a dependent variable, the point estimate on distance to headquarters is 0.055 with a standard error of 0.016. This implies that an increase in distance by 100 km is associated with a 1.9 % increase in the hiring rate.

4.2 Social pressure and dismissals

We have established above that plants located further away from their headquarters have higher dismissal rates. In this sub-section we investigate the role of social pressure at headquarters in generating the observed geographical pattern of dismissals.

As shown by our model – at least conditional on a sufficient degree of selfishness – if the positive impact of distance on dismissal rates results from social pressure, it should be stronger wherever the firm represents a larger share of employment in the local labor market (i.e. the employment area) where its headquarters are located. In that case, the firm is indeed more visible in the community of its headquarters, which increases the CEO's incentive to avoid painful adjustments in closely-located establishments. We test this prediction by estimating equation (3.3). As shown in Table 3 – col (1), the impact of distance to headquarters on dismissals is significantly larger for high-visibility than for low-visibility firms.[38] When we test whether the estimated coefficients are statistically different, we cannot reject the null, suggesting that whenever firms are more visible in the area where their headquarters are located, they are more reluctant to fire workers close to headquarters.

One source of concern, however, is that our results might be driven by the fact that firms which are highly visible at headquarters are simply large firms in the local area of their headquarters (or in France as a whole). If unions are more powerful where firms are larger, the stronger relationship between distance and dismissals for high-visibility firms could be due to the ability of unions to avoid local dismissals rather than to the visibility of the firm and local social pressure arising from outside the firm. Table 3 shows that this alternative interpretation is not supported by our data, as the impact of distance on dismissals remains much larger for firms with high visibility at headquarters than for firms with low visibility even when controlling for the interaction between distance to headquarters and total (absolute) firm size in the employment area of the headquarters – see column (2) – or, alternatively, for the interaction between distance to HQ and total firm size in France as a whole – see column (3).

Another concern could arise if highly visible firms are also more concentrated at headquarters. If CEOs dispose of better-quality information wherever firms' activities are more concentrated, they may be more able to use internal reallocations rather than dismissals to adjust employment at short distances, which may induce a spurious correlation between visibility and the slope of the distance-dismissal relationship. As evidenced in Table 3 – col (4), this potential adjustment mechanism does not explain our results, since the distance-dismissal relationship remains stronger when firms are highly visible at headquarters, even after controlling for the interaction between distance and firm concentration in the

[38] The number of observations is lower in Table 3 than in Table 2 because, for some firms, the information on their size at headquarters is missing for 2002.

employment area of the headquarters – with concentration defined as the ratio of firm employment in the local labor market of its headquarters to total firm employment in France.

Our hypothesis is that what matters for dismissal decisions is the social pressure borne by the CEO at headquarters, i.e. in her local environment. In our model, we have even assumed that the CEO's utility is not affected by social pressure arising from local communities of secondary establishments. If this is true, only firm visibility *at headquarters* should matter, and dismissals should be essentially unaffected by firm visibility in the area of the plant. We test this assumption in two different ways. First, we re-estimate equation (3.3) including a dummy variable indicating high firm visibility in the employment area of the plant and an interaction between distance to headquarters and this dummy variable. If social pressure in the local community of the plant mattered, we would expect it to counterbalance the impact of social pressure at headquarters. In this case, the interaction between distance to headquarters and high visibility at the plant should have a negative and significant impact on dismissals. This is not what we find when estimating our model: the point estimate on the distance*high-visibility-at-plant interaction turns out to be almost 0 – 0.003 with standard error 0.013. Moreover, controlling for this interaction does not modify the estimated impact of visibility at headquarters on the distance-dismissal relationship.[39] This suggests that, when taking dismissal decisions, CEOs are influenced by social pressure, but only when exerted in their local environment and not when arising from more remote communities.

We provide additional evidence on this by implementing a placebo test. We define as placebo headquarter the largest establishment located in the employment area where the firm is the most visible (excluding that of the true headquarters).[40] We then estimate equation (3.3) using these placebo headquarters (and excluding the true ones). We find no significant impact on dismissals of either distance to the placebo headquarters – see Appendix Table A7, col (1) – or of distance interacted with firm visibility at the placebo headquarters – col (2). Results do not vary if we define as placebo headquarters a secondary establishment randomly drawn from all the establishments of the firm located outside the employment area of the true headquarters – see Table A7, cols (3) and (4). These estimates suggest that firm visibility in

[39] Point estimates comparable to those provided in Table 3 – col (1) are obtained by defining, in this specification, the interaction between distance to headquarters and high visibility at plant in deviation from sample mean. The point estimate on the interaction between distance to headquarters and low (resp. high) firm visibility at headquarters is then 0.026 (resp. 0.068) with standard errors 0.018 (resp. 0.014), hence very similar to those obtained in Table 3 – col (1).

[40] For 56% of our firms, the employment area where the firm is the most visible is not that of the headquarters.

the local labor market of secondary establishments does not affect dismissals whereas visibility at headquarters does.

These results are supportive of the idea formalized in our stylized model that establishments located further away from headquarters experience higher dismissal rates because CEOs find it more costly to fire workers at short distances from headquarters due to the social pressure in their local environment. One mechanism likely to account for this effect is that people living in the area of the headquarters put pressure on CEOs so as to avoid that they dismiss people living close to this area, considering that this would have negative social consequences in their neighborhood. If this is the case, the relationship between distance and dismissals hinges on the fact that people living close to headquarters are selfish so that they value dismissals at short distance more negatively than dismissals far away, because the former are more likely to affect them. To test this assumption, we estimate equation (3.4) using the 1887 ratio of *département*-level charity donations to GDP as an indicator of generosity. We find that the positive impact of distance on dismissals is statistically significant for firms with headquarters located both in low and high-generosity *départements,* but that the effect is significantly larger for low-generosity than for high-generosity *départements*[41] – see Table 4, col (1).[42]

It has been shown in the literature on charity that the total amount of charitable giving is greater in communities with a larger number of high-income individuals (Card, Hallock and Moretti, 2010). One potential concern is that our measure of generosity might simply capture average income, and therefore the relative level of economic development of the *départements*, which might be persistent over time. To the extent that economic development might correlate with dismissals, this could bias our results. In order to dispel this doubt, we include in our specification the interaction between distance and taxable income per capita as measured in 2004 in the *département* where the headquarters are located[43] – see Table 4, col (2). Our results are virtually unchanged, which suggests that the ratio of charity donations to GDP does capture local generosity rather than economic development.

Given that our generosity variable is not as skewed as visibility, it may be less legitimate to dichotomize it into high and low-generosity on the basis of a cut-off point at the third quartile

[41] These results are obtained by clustering standard errors at the establishment level. However, given that our generosity variable only varies at the *département* level, one may consider that clustering at that level is more appropriate. When doing so, standard errors are virtually unchanged: 0.032 for the interaction between distance and low generosity and 0.009 for that between distance and high generosity.

[42] The number of observations is lower in Table 4 than in Table 3 because three *départements* were not part of France in 1887 and for another two the data on GDP are missing.

[43] Source: French Ministry of Finance.

of the distribution. So, we may want to re-estimate equation (3.4) using generosity as a continuous variable. When we do so, the results are qualitatively similar to those displayed in Table 4 – col (2).[44]

These results are consistent with an interpretation of the effect of distance as reflecting local social pressure at headquarters: in areas where the local community is selfish, people care about dismissals to the extent that they take place close by and threaten them directly. As a consequence, they put pressure on CEOs to shift dismissals away from local areas near the headquarters. In more altruistic communities, this effect is significantly smaller. To make sure that what matters is generosity at *headquarters* rather than in the community where the plant is located, we run the same type of test as for visibility. We re-estimate equation (3.4) including an interaction between distance to headquarters and a dummy variable indicating low generosity in the *département* of the plant. If social pressure in the local community of the plant mattered, it should counterbalance the impact of social pressure at headquarters, so that the interaction between distance to headquarters and low generosity at plant should have a negative and significant impact on dismissals. Here again, the point estimate on the distance*low-generosity-at-plant interaction turns out to be insignificant at conventional levels and carries the wrong sign – 0.023 with standard error 0.019. Moreover, controlling for this interaction does not modify the estimated impact of generosity at headquarters on the distance-dismissal relationship.[45] These results confirm that CEOs are influenced by social pressure in their local environment when deciding about dismissals, whereas they do not seem to be affected by social pressure arising from more remote local communities.

Such evidence is confirmed when running a placebo test similar to that used for visibility. We first define as placebo headquarters the largest establishments of the firm located in the least generous *département* where the firm is present (excluding the *département* of the true headquarters). When estimating equation (3.4) using these placebo headquarters, we find no significant impact on dismissals of either distance to the placebo headquarters – see Appendix Table A8, col (1) – or of distance interacted with generosity at the placebo headquarters – col (2). Results are identical if we choose as placebo headquarters a secondary establishment

[44] Estimating our most complete specification including income per capita as a control, yields a point estimate of -11.13 on the interaction term between distance to headquarters and generosity with standard errors 5.56, significant at the 5% level. This suggests that the distance-dismissal relationship gets stronger when generosity at headquarters is lower.

[45] Point estimates comparable to those provided in Table 4 – col (2) are obtained by defining the interaction between distance to headquarters and low generosity at plant in deviation from sample mean. The point estimate on the interaction between distance to headquarters and low (resp. high) generosity at headquarters is 0.093 (resp. 0.037) with standard errors 0.033 (resp. 0.011).

randomly drawn from all the establishments of the firm, excluding those located in the *département* of the true headquarters – see Table A8, cols (3) and (4). As in the case of visibility, these findings suggest that what matters for dismissals is indeed generosity at headquarters rather than in other *départements*.

One could worry that charity giving might capture not only generosity but also some dimension of social capital. To address this problem, we consider an alternative measure of generosity based on the differential turnout rates at the national versus local elections. More specifically, we proxy generosity by the difference between the *département*-level turnout rates (in % of registered voters) at the first round of the 2002 presidential election and the first round of the 2001 municipal elections – excluding towns with population below 9,000 inhabitants.[46] The idea underlying this measure is that less selfish (more generous) individuals will be relatively more concerned by national stakes as compared to only local ones, so that their relative participation into national elections (as compared to local ones) will be higher.

Here again, in the empirical analysis, we consider that headquarters are located in high-generosity *départements* when the latter belong to the upper 25% of the distribution of differences in turnout rates at presidential and municipal elections. Symmetrically, headquarters are considered to be located in low-generosity *départements* when the latter belong to the bottom 75% of the distribution. Let us underline that this measure of generosity is unlikely to capture social capital since it is based on the difference between two indicators (namely, turnout rates) that are likely to be influenced in similar ways by individuals' involvement in collective issues. When regressing dismissal rates on distance to headquarters interacted with this new measure of high and low generosity at headquarters – along with all our standard controls – our findings are similar to those obtained with charity – see Table A9 – cols (1) and (2). The positive impact of distance on dismissals is positive and significant only for firms whose headquarters are located in a local labor market characterized by low generosity. For firms with headquarters located in areas with a high turnout rate at presidential (as compared to municipal) elections, the impact of distance on dismissals is even negative, although statistically insignificant at conventional levels.[47] These results confirm that social pressure is indeed a key factor in accounting for the distance-dismissal relationship: wherever

[46] The data on turnout rates are provided by the French Ministry of Interior, which does not publish, however, turnout rates for smaller municipalities.

[47] These results are unchanged if generosity is defined as a continuous variable, i.e. as the raw difference between turnout rates at the presidential and municipal elections. If re-estimating e.g. the specification of Table A9 – col (2), the point estimate on the interaction between distance to headquarters and generosity at headquarters is -0.007 with standard error 0.004.

people are less generous, they put more pressure on CEOs to fire people far away rather than closer to headquarters, whereas when local communities are more altruistic this effect is much smaller.

Finally, we interact firm visibility close to headquarters with the generosity of the local community. If social pressure is an important determinant of dismissals, the positive impact of distance should be the highest for firms which represent a large proportion of employment in the local labor market of their headquarters *and* whose headquarters are located in a more selfish community – see equation (3.5). As shown in Table 4, cols (3) and (4), this implication is borne out by our estimates: we find that, when high visibility combines with low generosity, the effect of increasing distance by 100 km on dismissals is largest (0.16 percentage points) and significantly higher than for any other combination of visibility and generosity. We interpret these results as indicating that social pressure arising from the local community is a key factor explaining why dismissals are fewer at shorter distance from a firm's headquarters.

5. Discussion of alternative explanations

Aside from local social pressure at headquarters, there are other candidate explanations of the positive relationship between distance and dismissals. We discuss them in turn and show that none of them can account for all our findings.

5.1 Public subsidies

One reason for lower dismissal rates in establishments located closer to headquarters could be the availability of public subsidies. In France, most local subsidies to economic activity are granted by regional authorities to firms rather than establishments – which are not profit centers. Subsidies may be granted under local social pressure which would be consistent with our explanation. However, they can also be induced by some form of corruption if politicians exchange these subsidies for financial support from firms for their electoral campaigns. If subsidies reduce the probability of firm downsizing, this could account for our findings. To disentangle local social pressure from the effect of public subsidies, we re-estimate our empirical models using only the sub-sample of establishments located outside the region of the headquarters.[48] By so doing, we exclude the main catchment areas of local politicians. The results presented in Appendix Table A10 confirm on this subsample that the positive effect of

[48] Each French region encompasses several employment areas – see Section 3.

distance on dismissals is much larger for firms with a high visibility in the local labor market of their headquarters than for firms with low visibility – see column (1). Similarly, the effect of distance is stronger for firms with headquarters located in low-generosity areas – see column (2). We also confirm that the effect of distance on dismissals is much larger for firms with high visibility and headquarters located in low-generosity areas than for any other type of firms and local communities – see column (3). Since our key effects do not disappear outside the region of the headquarters, we conclude that the political use of public subsidies cannot be the only mechanism at play.

5.2 Monitoring costs and asymmetric information

If establishments located far away from headquarters have higher monitoring costs or suffer from asymmetric information, this may negatively affect their performance and therefore increase dismissals. Yet, none of these distance-related costs can explain why the impact of distance to headquarters on dismissals is found to increase with the visibility of the firm in the local community of its headquarters, except if highly visible firms are more concentrated close to headquarters and monitoring costs decrease with concentration. However, the impact of distance on dismissals increases with visibility even after controlling for the interaction between distance and firm concentration in the employment area of the headquarters. In addition, asymmetric information and monitoring costs cannot explain why the dismissal-distance relationship is steeper whenever the local community at headquarters is more selfish. We therefore rule out that monitoring costs and/or asymmetric information are the only driving factor behind the relationship we have uncovered between distance and dismissals.

5.3 Managerial entrenchment

Fewer dismissals at short distances could also be due to within-firm social pressure if entrenched managers refrain from firing people with whom they interact on a regular basis and if interactions are more frequent at short distances. In this case, however, the distance effect should not vary with the firm's visibility at headquarters, except if entrenchment increases with firm size, given that the latter is correlated with visibility. However, as shown in Table 3 – col (3) – the finding that the impact of distance on dismissals is stronger when firms are highly visible at headquarters is robust to controlling for the interaction between distance to headquarters and overall firm size in France.

5.4 Sorting of workers and/or managers

Good workers may self-select into establishments close to headquarters because career prospects are better. For the same reason, good managers may wish to locate close to headquarters while bad ones may be forced to stay further away. If good workers are less likely to be dismissed and/or good managers are better at making their establishments successful – thereby making dismissals unnecessary –, this could account for the distance-dismissal relationship. In addition, this effect is likely to vary with firm visibility at headquarters if within-firm career prospects are better when firms are larger. However, this cannot be the only determinant since we show that our results are robust to conditioning on firm size in the employment area of the headquarters interacted with distance.

Good workers and managers may also self-select where the firm is more visible if they expect to have better external job opportunities when coming from a firm that is one of the main actors in its local environment. If this were a key explanation, however, workers should self-select not only in establishments close to headquarters, but also in all establishments located in any other area where the firm is highly visible. This would, in turn, generate a positive relationship between dismissals and the distance to any location where the firm is highly visible. The results of our placebo tests indicate that this is not the case: what matters for dismissals is visibility at headquarters, while visibility in other employment areas turns out to have no significant effect. Moreover, none of these sorting mechanisms can explain why the effect of distance varies with the degree of generosity of the local community where the headquarters are located.

5.5 Place attachment

The literature in environmental psychology suggests that individuals are attached to their place of origin. Building on this argument, Yonker (2013) suggests that dismissals may be less numerous close to the CEO's place of origin. Moreover, Yonker (2012) provides evidence that, even in the USA, CEOs tend to be hired locally. If this is the case, dismissals should be less frequent close to headquarters where CEOs live and may come from. However, this effect should not vary with firm visibility. If anything, it should go in the opposite direction: smaller firms are indeed more likely to have CEOs with local origin so that the relationship between distance and dismissals should be stronger where firms are less visible.

5.6 Altruistic attitudes of CEOs independent of social pressure

Socially-concerned CEOs are aware that the negative social consequences of high dismissal rates are likely to be stronger wherever their firm represents a larger share of local employment. This concern may explain why they refrain from firing workers in the employment area of the headquarters when their company is highly visible. CEOs' attitudes and concerns do not explain, however, why the relationship between distance and dismissals varies according to the generosity of the local community of the headquarters. Moreover, dismissals should be lower wherever the firm accounts for a large proportion of local employment, not just at headquarters, which is not supported by the results of our placebo test.

5.7 All the above explanations taken together

We have shown that, taken separately, the alternative mechanisms considered in this section cannot account for the different facets of the relationship between distance and dismissals uncovered by our empirical analysis. Can they do so jointly? The answer to this question turns out to be negative since none of these explanations can account for the fact that, even outside the region of the headquarters, the relationship between distance and dismissals is stronger for high-visibility firms whose headquarters are located in areas with more selfish local communities.

6. Conclusion

In this paper, we have shown that firms are sensitive to social pressure in the local environment where their headquarters are located, which induces them to refrain from dismissing at short distance from headquarters.

Using French linked employer-employee data, we have shown that dismissal rates increase with the distance of secondary establishments from headquarters. This result holds even after controlling for the endogeneity of the distance to headquarters. We have also found that the positive effect of distance on dismissals increases with the firm's share of total employment in the local labor market of its headquarters. This suggests that wherever firms are more visible at headquarters, they are more reluctant to fire closely-located workers, consistently with the idea that CEOs are under local social pressure in their community to reduce as much as possible dismissals in their area. The estimated effect of distance on dismissals is also stronger the greater the degree of selfishness of the local community at headquarters, suggesting that local social pressure at the headquarters is a key determinant of the positive relationship between distance to headquarters and dismissals. We have shown that these results cannot be entirely accounted for by alternative explanations of the positive relationship between distance and dismissals proposed in the literature.

Our findings suggest that social pressure exerted by the community of their headquarters has an important impact on the way firms accommodate negative shocks, and in particular on their dismissal policy. The natural question to ask is then: who exactly is affected by social pressure? Is it the owner of the firm or the CEO? If it is the CEO, and the CEO is not one of the main shareholders of the firm, her decisions may not be profit maximizing. In this case, the relationship between distance and dismissals is likely to be stronger the weaker the firm's governance. Whilst our data do not contain information on firm governance, we believe that understanding how governance affects employment decisions when the CEO is exposed to local social pressure is a challenging avenue for further research.

By focusing on firms registered in France, our paper has nothing to say on the effects of social pressure on the employment adjustment of multinational companies. Do multinational firms also react to local social pressure in their home country? Do they tend to shift the burden of painful employment adjustments onto subsidiaries located in foreign countries? This question is of particular relevance given the increasing level of globalization of advanced economies. Investigating these effects on an international scale would require getting access to appropriate plant-level data for several countries. While we are unaware of the existence of such data, we believe that investigating this issue would be of major importance to understand how the presence of multinational companies may affect the resilience of countries to negative economic shocks.

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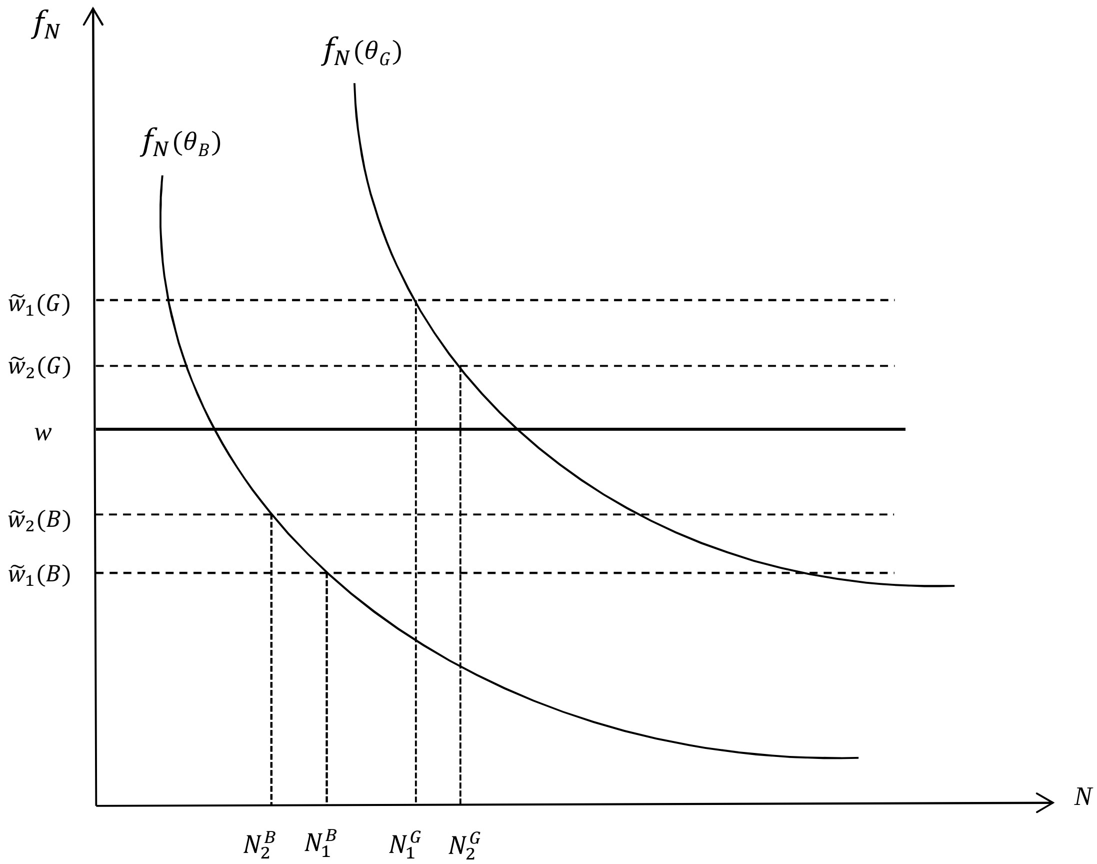
Figure 1

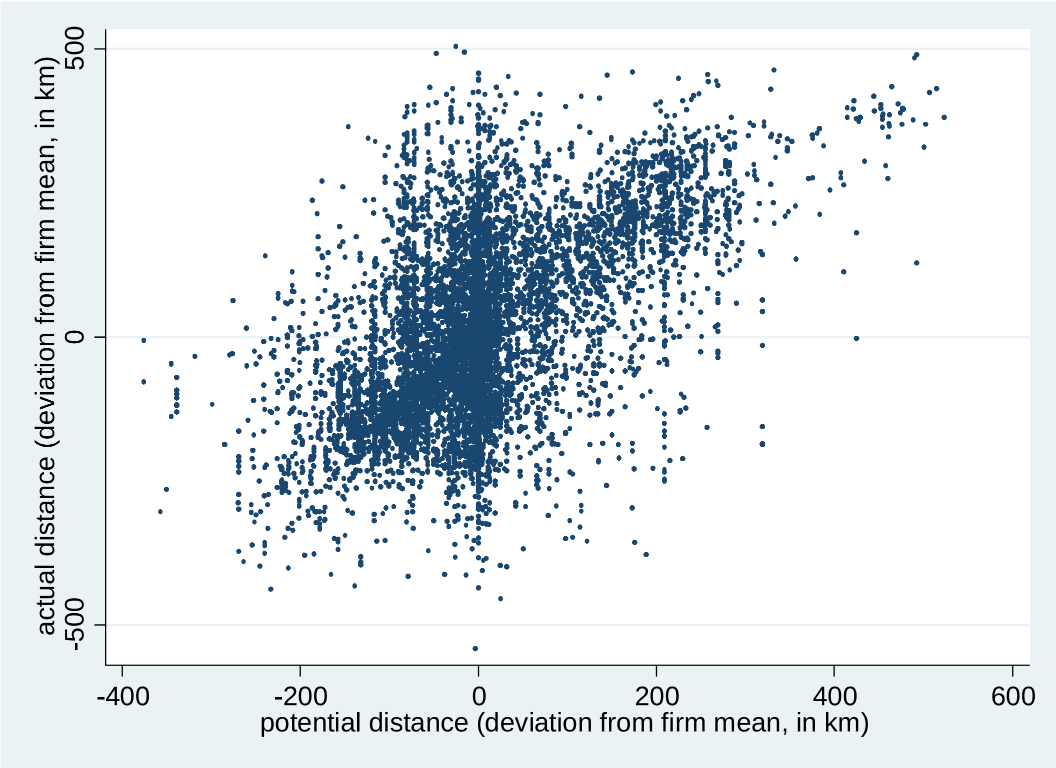


where:

$$\widetilde{w}_i(G) = w + \lambda_G b_i + (r + \lambda_G)c_h$$

$$\widetilde{w}_i(B) = w - \lambda_B c_h - (r + \lambda_B)b_i$$

Figure 2
Potential and Actual Distances to Headquarters
(in deviation from firm-specific means)



Tables

Table 1 - Correlation between potential distance to headquarters and contribution to market potential *CMPF*.

	(1) Population 1999	(2) Population 2009
Full sample	- 0.010 (0.759)	- 0.006 (0.855)
Excluding sea & border *départements*	0.014 (0.729)	0.018 (0.661)

Notes: CMPF is based on 1999 and 2009 population data in Columns 1 and 2, respectively. Variables in deviation from the firm average. p-values in parentheses. Significance obtained adjusting for clustering at the region*firm level.

Table 2 Distance to headquarters (HQ) and dismissals in secondary establishments 2003-2007

	(1)	(2)	(3)	(4)	(5)
Method	OLS	OLS	OLS	IV-1st stage	IV-2nd stage
Sample	Full	Full + HQs	No sea & border	No sea & border	No sea & border
Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Distance to HQ	Dismissal rate
Distance to headquarters	0.0326***	0.0374***	0.0617***		0.0639*
	(0.0112)	(0.0093)	(0.0171)		(0.0377)
Potential distance to HQ				0.522***	
				(0.0421)	
Headquarters dummy		-24.95***			
		(3.26)			
Observations	272,021	410,484	145,306	145,306	145,306
R-squared	0.114	0.132	0.186	0.811	0.008
F-test on instrument				157.5	
Control variables	yes	yes	yes	yes	yes

Notes: In all columns except col. 4, the dependent variable is the quarterly dismissal rate in percentage multiplied by 100. Control variables include: firm, industry, time and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies, and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. IV models are estimated with 2SLS estimators. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Interactions between distance to headquarters and firm visibility in the employment area of the headquarters 2003-2007

Specification	(1) Baseline	(2) Baseline + Distance * total firm size in HQ's area	(3) Baseline + Distance * overall firm size in France	(4) Baseline + Distance * firm concentration in HQ's area
Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Dismissal rate
Distance*Low visibility	0.029***	0.048*	0.078**	0.028**
	(0.011)	(0.026)	(0.037)	(0.011)
Distance*High visibility	0.073***	0.127***	0.139***	0.072***
	(0.013)	(0.033)	(0.047)	(0.013)
Observations	238,605	238,605	238,605	238,605
R-squared	0.110	0.111	0.111	0.110
Dist*High visibility – Dist*Low visibility (F-stat)	12.87***	13.13***	8.80***	12.90***
Control variables	yes	yes	yes	yes

Notes: Dismissal rates are expressed in percentage multiplied by 100. Total firm size in the employment area of the headquarters is divided in 6 classes, each of them corresponding to a dummy variable in our specification. Overall firm size in France is divided in 5 classes. Visibility is measured as the share of the firm in the headquarters' employment area expressed as a percentage of total employment in the area. High visibility is captured by a dummy variable equal to 1 when the firm's share of local employment belongs to the upper 25% of the visibility distribution and 0 otherwise. Low visibility is equal to 1 if the firm belongs to the lower 75% of the distribution and 0 otherwise. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Interactions between distance to headquarters and the level of generosity in the *département* of the headquarters 2003-2007

Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Dismissal rate
Distance*Low generosity	0.092***	0.095***		
	(0.031)	(0.031)		
Distance*High generosity	0.035***	0.035***		
	(0.010)	(0.010)		
Distance*Low generosity*High visibility			0.155***	0.159***
			(0.053)	(0.052)
Distance*Low generosity*Low visibility			0.039	0.043
			(0.036)	(0.036)
Distance*High generosity*High visibility			0.056***	0.056***
			(0.011)	(0.011)
Distance*High generosity*Low visibility			0.026**	0.026**
			(0.011)	(0.011)
p-value (High generosity - Low generosity)	0.072	0.056		
p-value (LowGen*HighVis - LowGen*LowVis)			0.068	0.068
p-value (LowGen *HighVis - HighGen*HighVis)			0.070	0.058
p-value (LowGen *HighVis - HighGen*LowVis)			0.018	0.014
Observations	231,310	231,310	231,310	231,310
R-squared	0.111	0.111	0.111	0.111
Control variables	yes	yes	yes	yes
Distance*income per capita in HQ's *département*	no	yes	no	yes

Notes: Dismissal rates are expressed in percentage multiplied by 100. Generosity is proxied by the ratio of total charity donations in 1887 to *département*-level GDP. In our regressions, high-generosity is captured by a dummy variable equal to 1 if the *département* of the headquarters belongs to the upper 25% of the charity distribution and 0 otherwise. Symmetrically, headquarters are considered to be located in low-generosity *départements* if the latter belong to the bottom 75% of the distribution. Visibility is measured as the share of the firm in the headquarters' employment area expressed as a percentage of total employment in the area. High visibility is captured by a dummy variable equal to 1 when the firm's share of local employment belongs to the upper 25% of the visibility distribution and 0 otherwise. Low visibility is equal to 1 if the firm belongs to the lower 75% of the distribution and 0 otherwise. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies; dummies for firm size in the employment area of the establishment, and taxable income per capita as of 2004. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix

A1. Derivation of the impact of visibility on the effect of distance to headquarters on dismissals

The derivative of D_i^* with respect to α yields:

$$\frac{\partial D_i^*}{\partial \alpha} = \left(\frac{\lambda_G}{f_{NN}(\theta_G, N_i^G)} + \frac{r+\lambda_B}{f_{NN}(\theta_B, N_i^B)}\right)\gamma_i \qquad \text{(A1)}$$

The effect of visibility on the relationship between distance and dismissals is given by the sign of the following expression:

$$\frac{\partial (D_2^* - D_1^*)}{\partial \alpha} = \left(\frac{\lambda_G}{f_{NN}(\theta_G, N_2^G)} + \frac{r+\lambda_B}{f_{NN}(\theta_B, N_2^B)}\right)\gamma_2 - \left(\frac{\lambda_G}{f_{NN}(\theta_G, N_1^G)} + \frac{r+\lambda_B}{f_{NN}(\theta_B, N_1^B)}\right)\gamma_1 \qquad \text{(A2)}$$

Taking into account that $f_{NN} < 0$, the right-hand side of (A2) is positive, if and only if

$$\beta > \frac{\frac{\lambda_G}{\left|f_{NN}(\theta_G, N_2^G)\right|} + \frac{r+\lambda_B}{\left|f_{NN}(\theta_B, N_2^B)\right|}}{\frac{\lambda_G}{\left|f_{NN}(\theta_G, N_1^G)\right|} + \frac{r+\lambda_B}{\left|f_{NN}(\theta_B, N_1^B)\right|}} \qquad \text{(A3)}$$

where $\beta = \gamma_1/\gamma_2$ is the degree of selfishness and $|x|$ denotes the absolute value of x. Since $N_2^B < N_1^B$ and $f_{NNN} \geq 0$, $|f_{NN}(\theta_B, N_2^B)| \geq |f_{NN}(\theta_B, N_1^B)|$, the above inequality holds if:

$$\beta > \frac{\frac{\lambda_G}{\left|f_{NN}(\theta_G, N_2^G)\right|} + \frac{r+\lambda_B}{\left|f_{NN}(\theta_B, N_2^B)\right|}}{\frac{r+\lambda_B}{\left|f_{NN}(\theta_B, N_2^B)\right|}} = 1 + \frac{\frac{\lambda_G}{\left|f_{NN}(\theta_G, N_2^G)\right|}}{\frac{r+\lambda_B}{\left|f_{NN}(\theta_B, N_2^B)\right|}} \qquad \text{(A4)}$$

The fact that $f_{NNN} \geq 0$ implies that $|f_{NN}(\theta_B, N_2^B)| \leq |f_{NN}(\theta_B, N_0^B)|$, where N_0^B is the value obtained by solving equation (1.3) for $b_i = 0$. Similarly, $|f_{NN}(\theta_G, N_2^G)| \geq |f_{NN}(\theta_G, N_0^G)|$, where N_0^G is the value obtained by solving equation (1.2) for $b_i = 0$. Therefore a sufficient condition for (A4) to hold is that:

$$\beta > 1 + \frac{\frac{\lambda_G}{f_{NN}(\theta_G, N_0^G)}}{\frac{r+\lambda_B}{f_{NN}(\theta_B, N_0^B)}} \qquad \text{(A5)}$$

This implies that a sufficient condition for (A2) to be positive is that the degree of selfishness $\beta = \gamma_1/\gamma_2$ be large enough.

A2. Derivation of the effect of selfishness on the impact of visibility on the distance-dismissal relationship

Since, conditional on γ_1, β does not affect D_1^*, it is straightforward that:

$$\frac{\partial(D_2^* - D_1^*)}{\partial\beta} = \frac{\partial D_2^*}{\partial\beta}$$

This implies that $\partial^2(D_2^* - D_1^*)/\partial\alpha\partial\beta = \partial^2 D_2^*/\partial\alpha\partial\beta$. Taking the first derivative of the right-hand side of equation (A1) with respect to β for $i = 2$ and taking into account that $\gamma_2 = \gamma_1/\beta$ yields:

$$\frac{\partial^2 D_2^*}{\partial\beta\partial\alpha} = -\frac{\gamma_1}{\beta^2}\left(\frac{\lambda_G}{f_{NN}(\theta_G, N_2^G)} + \frac{r+\lambda_B}{f_{NN}(\theta_B, N_2^B)}\right) + \frac{\gamma_1}{\beta}\left(\frac{\lambda_G f_{NNN}(\theta_G, N_2^G)}{[f_{NN}(\theta_G, N_2^G)]^2}\frac{\partial N_2^G}{\partial\beta} + \frac{(r+\lambda_B) f_{NNN}(\theta_B, N_2^B)}{[f_{NN}(\theta_B, N_2^B)]^2}\frac{\partial N_2^B}{\partial\beta}\right)$$

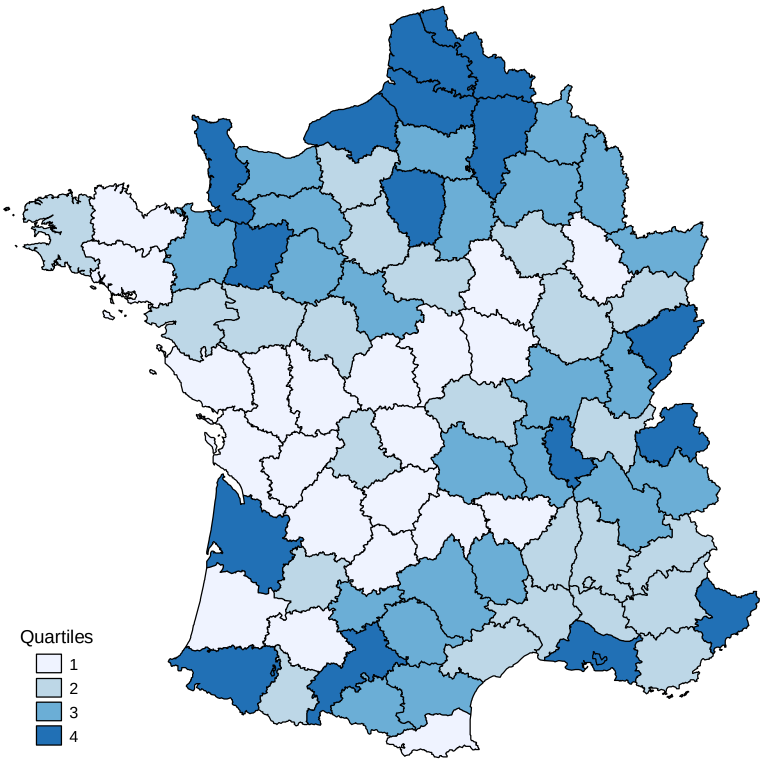
Using $\frac{\partial N_2^G}{\partial\beta} = -\frac{\lambda_G\alpha\gamma_1}{\beta^2}$ and $\frac{\partial N_2^B}{\partial\beta} = \frac{(r+\lambda_B)\alpha\gamma_1}{\beta^2}$ we have

$$\frac{\partial^2 D_2^*}{\partial\beta\partial\alpha} = -\frac{\gamma_1\lambda_G}{\beta^2 f_{NN}(\theta_G, N_2^G)}\left(1 - \frac{\lambda_G\alpha\gamma_1 f_{NNN}(\theta_G, N_2^G)}{\beta[f_{NN}(\theta_G, N_2^G)]^2}\right) - \frac{\gamma_1(r+\lambda_B)}{\beta^2 f_{NN}(\theta_B, N_2^B)}\left(1 + \frac{(r+\lambda_B)\alpha\gamma_1 f_{NNN}(\theta_B, N_2^B)}{\beta[f_{NN}(\theta_B, N_2^B)]^2}\right)$$

Given that $f_{NN} < 0$, $f_{NNN} \geq 0$, and the last term in parentheses is positive, this expression is positive if β is sufficiently large so that $\lambda_G\alpha\gamma_1 f_{NNN}(\theta_G, N_2^G)/\beta[f_{NN}(\theta_G, N_2^G)]^2 \leq 1$. Obviously, this represents only a sufficient condition.

A3. Appendix Figure and Tables

Figure A1. Distribution of the ratio of charity giving to GDP, by quartile in mainland France.



Notes: *département*-level charity giving is measured in 1887; *département*-level GDP is measured in 1864. Quartiles are ordered from the lowest to the highest. *Départements* with missing data are not shown on the map.

Table A1 Descriptive statistics (main sample)

Variables	Mean	S.D.	*Variables*	Mean	S.D.
Quarterly dismissal rate (%)	.97	4.59	Establishment size	136.43	299.13
Distance to HQ (km)	247.98	216.31	Establishment age (by class)		
Local unemployment rate (%)	8.41	1.96	2 years	.10	.30
Managers (%)	14.78	20.27	3 years	.10	.30
Technicians and supervisors (%)	24.81	21.41	4 years	.10	.30
Clerks (%)	27.09	31.15	5 years or more	.63	.48
Blue collars (%)	33.16	32.72			
Board members (%)	0.15	1.14			
Women (%)	37.48	25.73	Firm size	906.8	4288.12
Manufacturing	.21	.41	Firm age (years)	28.87	24.74
Services	.67	.47			

Table A2 Visibility and Generosity at headquarters

Variables	
Firm share of total employment in HQ's employment area (%)	
1st quartile	0.026
2nd quartile	0.090
3rd quartile	0.299
Maximum	3.199
Ratio of total charity donations to GDP (%) in HQ's *département*	
Minimum	0.012
1st quartile	0.092
2nd quartile	0.128
3rd quartile	0.181
Maximum	0.658

Table A3 Separations (except dismissals)
(% of employment)

Variables	Mean	S.D.
Total separations	11.51	64.67
End of fixed-term contract	5.73	52.55
End-of-trial period	.55	2.55
Retirement	.33	2.41
Quits	1.78	4.19

Table A4 - Correlation between actual distance to headquarters and contribution to market potential.

(1) Population 1999	(2) Population 2009
0.173***	0.178***

Notes: CMPF is based on 1999 and 2009 population data in Columns 1 and 2, respectively. Sample excluding sea and border *départements*. Variables in deviation from the firm average; p-values in parentheses. Significance obtained adjusting for clustering at the region*firm level.

Table A5: Distance to headquarters (HQ) and dismissals 2003-2007: robustness checks

	(1)	(2)	(3)
Method	OLS	Tobit	OLS
Sample	Full sample	Full sample	Removing Ile-de-France
Measure of distance	Log distance	Linear Distance	Linear Distance
Distance to HQ		0.0796***	0.0303**
		(0.0194)	(0.0139)
Log(distance to HQ)	3.980***		
	(1.120)		
Observations	257,747	272,021	120,205
R-squared	0.119	0.020	0.123
Control variables	yes	yes	yes

Notes: The dependent variable is the quarterly dismissal rate in percentage multiplied by 100. Control variables include: industry, time and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies and dummies for firm size in the employment area of the establishment. Firm dummies are included everywhere except in column (2) where they are replaced by firm averages of all covariates. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Distance to headquarters (HQ) and other types of worker separations 2003-2007

	(1)	(2)	(3)	(4)
Dependent variable	Quits	End of trial period	Retirement	End of fixed-term contracts
Distance to HQ	0.0137*	0.0103	0.00194	-0.0472
	(0.00798)	(0.00801)	(0.00438)	(0.0372)
Observations	272,020	272,024	272,024	271,802
R-squared	0.308	0.341	0.076	0.467
Control variables	yes	yes	yes	yes

Notes: Rates are expressed in percentage multiplied by 100. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Placebo tests - Visibility

	(1)	(2)	(3)	(4)
	Placebo HQ = Largest plant in the area where the firm is most visible		Placebo HQ = randomly drawn	
Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Dismissal rate
Distance to headquarters	0.009		-0.002	
	(0.008)		(0.007)	
Distance*Low visibility		0.004		-0.005
		(0.012)		(0.008)
Distance*High visibility		0.013		0.011
		(0.009)		(0.014)
Observations	228,405	228,405	228,405	228,405
R-squared	0.106	0.106	0.106	0.106
Control variables	yes	yes	yes	yes

Notes: Plants in the same employment area as the HQ are excluded from the set where placebo HQ are drawn from. Dismissal rates are expressed in percentage multiplied by 100. Visibility is measured as the share of the firm in the headquarters' employment area expressed as a percentage of total employment in the area. High visibility is captured by a dummy variable equal to 1 when the firm's share of local employment belongs to the upper 25% of the visibility distribution and 0 otherwise. Low visibility is equal to 1 if the firm belongs to the lower 75% of the distribution and 0 otherwise. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A8: Placebo tests - Generosity

	(1)	(2)	(3)	(4)
	Placebo HQ = Largest plant in the least generous *département*		Placebo HQ = randomly drawn	
Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Dismissal rate
Distance to headquarters	0.012		0.009	
	(0.012)		(0.006)	
Distance*Low generosity		0.014		0.014
		(0.013)		(0.011)
Distance*High generosity		-0.0012		0.006
		(0.020)		(0.007)
Observations	201,004	201,004	223,960	223,960
R-squared	0.101	0.101	0.098	0.098
Control variables	yes	yes	yes	yes

Notes: Plants in the same employment area as the HQ are excluded from the set where placebo HQ are drawn from. Dismissal rates are expressed in percentage multiplied by 100. Generosity is proxied by the ratio of total charity donations in 1887 to *département*-level GDP. In our regressions, high-generosity is captured by a dummy variable equal to 1 if the *département* of the headquarters belongs to the upper 25% of the charity distribution and 0 otherwise. Symmetrically, headquarters are considered to be located in low-generosity *départements* if the latter belong to the bottom 75% of the distribution. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Interactions between distance to headquarters and the level of generosity (based on turnout rates at local vs national elections) in the *département* of the headquarters 2003-2007

Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate	Dismissal rate
Distance*Low generosity	0.068***	0.068***		
	(0.014)	(0.014)		
Distance*High generosity	-0.008	-0.008		
	(0.021)	(0.021)		
Distance*Low generosity*High visibility			0.093***	0.093***
			(0.016)	(0.016)
Distance*Low generosity*Low visibility			0.054***	0.054***
			(0.015)	(0.015)
Distance*High generosity*High visibility			0.025	0.025
			(0.041)	(0.041)
Distance*High generosity*Low visibility			-0.018	-0.019
			(0.024)	(0.024)
p-value (High generosity - Low generosity)	0.006	0.007		
p-value (LowGen*HighVis - LowGen*LowVis)			0.002	0.002
p-value (LowGen *HighVis - HighGen*HighVis)			0.139	0.140
p-value (LowGen *HighVis - HighGen*LowVis)			0.018	0.018
Observations	238,243	238,243	238,243	238,243
R-squared	0.111	0.111	0.111	0.111
Control variables	yes	yes	yes	yes
Distance*income per capita in HQ's *département*	no	yes	no	yes

Notes: Dismissal rates are expressed in percentage multiplied by 100. Generosity is proxied by the difference between the *département*-level turnout rates (in % of registered voters) at the first round of the 2002 presidential election and the first round of the 2001 municipal elections – excluding towns with population below 9,000 inhabitants. In our regressions, high-generosity is captured by a dummy variable equal to 1 if the *département* of the headquarters belongs to the upper 25% of this generosity distribution and 0 otherwise. Symmetrically, headquarters are considered to be located in low-generosity *départements* if the latter belong to the bottom 75% of the distribution. Visibility is measured as the share of the firm in the headquarters' employment area expressed as a percentage of total employment in the area. High visibility is captured by a dummy variable equal to 1 when the firm's share of local employment belongs to the upper 25% of the visibility distribution and 0 otherwise. Low visibility is equal to 1 if the firm belongs to the lower 75% of the distribution and 0 otherwise. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies; dummies for firm size in the employment area of the establishment, and taxable income per capita as of 2004. Robust standard errors clustered at the establishment level in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A10: Excluding establishments in the same region as headquarters

	(1) Visibility	(2) Generosity	(3) Generosity & Visibility
Dependent variable	Dismissal rate	Dismissal rate	Dismissal rate
Dist.*Low (visibility or generosity)	0.023	0.098**	
	(0.018)	(0.042)	
Dist*High (visibility or generosity)	0.065***	0.029*	
	(0.019)	(0.015)	
Dist*Low generosity*High visibility			0.209***
			(0.074)
Dist.*Low generosity*Low visibility			0.027
			(0.050)
Dist*High generosity*High visibility			0.041**
			(0.017)
Dist.*High generosity*Low visibility			0.022
			(0.017)
Observations	158,600	154,054	154,054
R-squared	0.129	0.129	0.129
Control variables	yes	yes	yes

Notes: Dismissal rates are expressed in percentage multiplied by 100. Generosity is proxied by the ratio of total charity donations in 1887 to *département*-level GDP. In our regressions, high-generosity is captured by a dummy variable equal to 1 if the *département* of the headquarters belongs to the upper 25% of the charity distribution and 0 otherwise. Symmetrically, headquarters are considered to be located in low-generosity *départements* if the latter belong to the bottom 75% of the distribution. Visibility is measured as the share of the firm in the headquarters' employment area expressed as a percentage of total employment in the area. High visibility is captured by a dummy variable equal to 1 when the firm's share of local employment belongs to the upper 25% of the visibility distribution and 0 otherwise. Low visibility is equal to 1 if the firm belongs to the lower 75% of the distribution and 0 otherwise. Control variables include: industry, time, firm and employment-area dummies; the unemployment rate in the employment area of the establishment; the occupational and gender structure of the workforce; establishment age and size dummies; and dummies for firm size in the employment area of the establishment. Robust standard errors clustered at the establishment level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.