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“Dead-End Jobs or Career Opportunities? Advancement
opportunities in call centers”

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*Dead-End Jobs or Career Opportunities?
Advancement opportunities in call centers*

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Dead-End Jobs or Career Opportunities?

Advancement opportunities in call centers

Abstract: Employment in call centers has grown significantly throughout the world over the past 15 years. In debates about the quality of these new jobs, there are few studies that specifically address promotion opportunities. Using a survey of over 2400 call centers in 16 countries, this paper documents levels and analyzes factors shaping promotions in call centers, and discusses implications for promotions in the service sector generally. On average, less than 10% of call center agents are promoted in any year--5.7% promoted internally to the call center, and 4% promoted elsewhere in the business. Firms that have more complex labor processes and require agents to have higher levels of firm-specific knowledge tend to also have greater promotion opportunities, which might be expected. There are also unexpected findings, including that increased autonomy in the workplace often provides a 'substitute' to advancement opportunities, and that unionization is associated with fewer advancement opportunities within call centers, though more advancement opportunities to other parts of the business.

Key works: promotions, service industries, call centers

Introduction

Employment in call centers—sites where agents use telecommunications links to conduct sales, service and technical support to customers who are located in remote locations, whether in the same country or across the globe—has grown significantly throughout the world over the past 15 years. This growth, however, has been controversial. Most observers argue that call centers provide low pay, with few advancement opportunities and often stressful working conditions. Other observers, however, particularly in developing nations or disadvantaged regions in the developed world, have encouraged growth in call centers, seeing it as a valuable source of jobs that often pays better than other alternatives. Furthermore, there is clearly a range of call center work, with some requiring quite complex customer interactions, and as a result some agents in particularly skilled technical support or business service centers enjoy better pay and working conditions than the ‘cyber-sweatshops’ of the common imagination.

In the now extensive literature on call center job quality, most of the focus has been on wages, skill requirements, and levels of surveillance or autonomy in the labor process. There is a surprising gap in studies that specifically address promotion opportunities in call centers. Agents in call centers can gain significant skills—including computer skills, customer service skills, and detailed industry and company knowledge—that are highly transferable to more complex customer interactions or to other parts of the business. Furthermore, companies may use call centers as a screening device, helping to identify those good performers who not only accumulate firm- and product-specific skills, but also show their capacity to work in challenging circumstances. If significant numbers of call center agents are able to move from call centers to other types of work, then the low-pay and poor working conditions in many call centers might be mitigated by providing an entry-point to better employment.

What is the extent of advancement opportunities in call centers? What are the characteristics of call centers that are associated with greater advancement opportunities? What types of human relations practices and strategies are associated with greater promotion opportunities in call centers?

In this paper, we address these questions, using a detailed survey of over 2400 call centers in 16 countries. Overall, our data shows that in an average call center, less than 10% of call center agents are promoted in any year. In examining promotion patterns, however, it is important to distinguish between those that occur internal to the call center, and promotions that occur to elsewhere in the firm. Thus, for example, in an average call center, 5.7% of call center agents are promoted internally to the call center while 4% are promoted elsewhere in the business. There are a variety of factors that are associated with these advancement opportunities both within call centers themselves and to other parts of the firm. Promotion opportunities vary by industry, with financial services firms offering the highest level of promotions, and public sector call centers offering the lowest. They also vary by type of organization, with out-sourced call centers providing more advancement opportunities internal to the call center, but in-house call centers providing more opportunities for advancement elsewhere in the business.

Overall, as might be expected, we find that firms that have more complex labor processes and require agents to have higher levels of firm-specific knowledge tend to also have greater promotion opportunities. But we also find some unexpected patterns. Perhaps the most surprising is that call centers in which workers have the most discretion over their work routines are also likely to have fewer advancement opportunities—in essence, autonomy in the workplace provides a ‘substitute’ to advancement opportunities as a motivator for call center agents. Another surprising results is that unionization is associated with fewer advancement

opportunities within call centers, though more advancement opportunities to other parts of the business.

This paper continues with a review of other research on factors shaping advancement opportunities and the quality of employment in call centers. We then provide a brief discussion of our data, methods, and hypotheses. We then provide a picture of the variation in promotion opportunities in our sample, based on descriptive data. We then run a regression analysis, examining promotion opportunities in relationship to a variety of factors we hypothesize as being significant in explaining variation in promotion. We then conclude with an overall analysis of factors shaping promotion and some implications for future research.

Putting into context: Promotions and the call center industry

There is an extensive theoretical and empirical literature that has analyzed the determinants and consequences of promotions (Sørensen 1994.; Gibbons and Waldman 1999; Waldman 2008). The most common framework for analyzing promotion opportunities in a firm is the theory of internal labor markets, in which points of entry to the firm tend to lie at lower levels, and promotion is governed by internal firm administrative practices, rather than simply supply and demand dynamics on an open market (Doeringer and Piore 1971; Kerr 1954). Employers have tended to develop internal labor markets for essentially two broad sets of reasons. The first has to do with the labor process itself. In contexts where there are high-levels of firm specific knowledge required of employees, firms develop internal labor markets as a way of ensuring they capture the benefits of investments in training and on-the-job learning (Becker 1964; Mincer 1994). The second broad category of reasons relates to organizational

characteristics and management practices. Large, hierarchically organized firms tend to develop internal labor markets, often as a way of reducing costs of external hiring processes, and as a way of providing motivation for employees (Pfeffer and Cohen 1984). Historically, internal labor markets have also formed as part of complex struggles between workers and employers over the employment relationships, particularly in the context of union demands and processes of labor market segmentation (Noyelle 1987; Gordon, Edwards, and Reich 1982).

Though there have been few studies specifically of promotions in call centers (though see: (Gorjup, Valverde, and Ryan 2008; Sieben and de Grip 2004)), similar factors related to both the labor process, and to organizational characteristics and management strategies, have been shown to be related to job quality in call centers.

The labor process factors relate to the specific activities workers conduct on the job, and the skills and knowledge required to perform that work. Call centers are workplaces consisting of dedicated phone-agent positions in which employees integrate telephonic and computer technologies while interacting directly with customers. Call centers exist in hundreds of industries, most prominently in financial services, telecommunications, the travel industry and information technology. Thus the specific skill requirements involved in the call center labor process vary tremendously, and wages and working conditions tend to follow this variation in skills requirements. Some of the variation exists by industry, with for instance help desks in the information technology field requiring relatively high levels of skills, compared to simply reservation systems in the travel industry. But more frequently, variation in skill levels or labor processes is related to customer segment, such as the difference between mass market or large business customers (Batt and Moynihan 2002).

Sometimes assessing the complexity of the skill required is complex, as the interactive element of the work brings in a wide range of cultural, linguistic, quality, communicative and learning process factors (Kugelmass 1995). This is especially challenging for call centers in the global South that serve customers in the north, where inter-cultural communication can be particularly challenging. Firms have implemented cultural and linguistic training programs, and encourage agents to adopt American and British identities on the phone, but such extremes of identity modification can create significant emotional challenges for agents, who must manage different personalities at work and away from work (Poster 2007; Mirchandani 2004). There have also been a number of highly publicized cases of companies who have tried outsourcing work to India who subsequently returned the work back to the U.S. due to concerns about quality and cultural preferences of high-value customers, further underscoring the challenges firms face in assessing quality in interactive communication (Thurm 2004; Ante 2004; Porter 2004).

In addition to the labor process issues are a whole range of organizational characteristics, particularly as they relate to management practices, that shape call center work quality. Management in call centers faces a wide range of choices in their operations managements, with significantly different impacts on job quality, as in most service sector industries (Appelbaum et al. 2005; Appelbaum, Bernhardt, and Murnane 2003). Some of these choices have to do with use of technology, such as demand modulation (e.g. redirecting customers to alternate channels of communication, or less busy times), multi-site routing and pooling, multi-skill call centers, and blending of inbound calls with other types of workflow, such as outbound calls and email. Another set of choices relate to performance measurements, which typically focus primarily on service call times and abandonment rates. But some firms are finding that more complex measurements, such as first-call resolution, the ability to cross-sell other services, and complex

measures of customer satisfaction are also becoming important metrics. Firms also have choices in the extent to which they increase employee involvement in work processes or implement autonomous work teams. Call centers can also be outsourced, and the ways that service level agreements between the client and the outsourcer are structured also affect the quality of work and the way the labor process is structured (Aksin, Armony, and Mehrotra 2007; Workman and Bommer 2004).

Human resource practices, including incentive systems, are also important. These practices typically aim at resolving a set of tensions and trade-offs, such as between cost and quality, flexibility and standardization, constraining and enabling job design (Houlihan 2002; Holman 2005). Tayloristic practices are characteristic of call centers with highly controlled work systems (Taylor 1999; Taylor and Bain 2005). Control processes operate at all levels of the operation—even recruitment processes that include role-playing exercises have been shown to play a role in controlling the workforce, even prior to formal employment (Brannan and Hawkins 2007). But there is also evidence that high involvement practices like selective hiring and extensive training, job designs that include individual discretion and allow for ongoing learning, and incentives such as training, security, high pay levels, trust building performance measurement systems, are possible in at least some market segments (Batt and Moynihan 2002; Houlihan 2002)

There are a variety of factors which help shape employer choices in these areas. One factor is the presence of unions, though call centers have also been highly successful in pursuing a variety of strategies to keep unions at bay. Unions tend to be prevalent in cases where the union contract pre-dated the creation of an internal call center, and call center employees are covered as part of that contract. Examples of new organizing in call centers are few and far

between, and anti-union efforts in outsourced call center firms have been particularly successful, again contributing to low-wage levels (Todd et al. 2003; Noranha and D'Cruz 2006). Other factors shaping employer choices include the size of their operation, the quality of information available to managers, regional labor market institutions, labor market regulation, and the tightness of labor markets, among other factors.

Our study was designed to flesh out these labor market and organizational factors that have been identified as being important in job quality, and to see how they affect promotion opportunities.

Method

Sample

The data used in this article comes from the Global Call Center Project¹, a collaborative network of over 40 academic researchers from 20 different countries. The focus of the project is to assess the development of the call center industry in each country, and to compare management strategies and employment systems and outcomes of these enterprises both within and across countries. A central component of the project was a survey of HR practices, technology use and call center performance. Consistency in the process of designing the instrument and carrying out the field work was stressed and monitored. The questionnaire was originally written in English and each national team took responsibility for translating it, after a process of discussing the content and specific meaning of some questions with the project leaders. The unit of analysis of the survey was the call center establishment and each survey was completed by a senior call center manager or senior HR manager. The questionnaire focuses on “core employees” that is, the largest group of employees serving as call center agents.

While every effort was made to take a consistent approach to sampling and survey administration, there was some variation across countries (Batt, Holman, and Holtgrewe Forthcoming)². Most countries don't have reliable datasets with the population of call centers. In addition, many call centers are part of larger organizations making it difficult to detect them. Variations in the strength of each country's statistical and institutional system inevitably led to some country variation in comprehensiveness of the final database. Surveys were conducted mainly by telephone with some site visits included. However, for the recently industrialized countries the surveys were conducted primarily via interviews on site because survey research is relatively undeveloped and mail and telephone surveys yield particularly low response rates. The weighted response rate was 72 percent; the unweighted country average was 54 percent.

The final dataset used in this paper is composed of 2359 call centers from 16 countries. We must consider the data set as fairly representative of the call center industry in the group of countries considered. However, there is some bias towards larger, more established centers, with more formalized human resource practices and higher wage levels.

Dependent variables

The definition of what constitutes a promotion is not exempt from controversy (McCue 1996; Pergamit and Veum 1999). This is mainly because there is strong evidence that the determinants of and the payoff to promotion depend on the definition of promotion being considered (Cobb-Clark 2001). In our data set, we can create two variables measuring promotion:

Internal Promotion: This is respondents' answer to the question: "In the previous year, what percentage of your core permanent employees were promoted to other jobs in your call center?"

Outside promotion: This is respondents answer to the question: "In the previous year, what percentage of your core permanent employees were promoted outside the call center or transferred to other parts of the business?"

Our definitions of promotion allow us to deal with two problems detected in the literature, though admittedly not in a perfect way. Firstly, because of the nature of the question, and because it was asked of managers, not individuals, we can be reasonably confident we are capturing job changes to a higher job level (vertical mobility) not just a job change (horizontal mobility). Individuals tend to confound both types of mobility. For instance, Pergamit and Veum (1999: 585-6) report that 30% of workers reporting that they had received a promotion essentially performed the same duties as before, and another 26% remained in the same position but simply received a position "upgrade" (Pergamit and Veum 1999). Managers tend to attach to the concept the idea of upward mobility. In addition, the fact that all respondents belong to the same industry and are reporting promotion rates for the same type of employee, helps to be confident in the concept of promotion we are using. Secondly, our measures allow us to, at least, have two different types of promotion (internal and external to the call center) and be able to test whether their determinants are similar or not.

Measures

We include in our models a series of variables that measure the importance of the different organizational and labor process factors argued to be important as determinants of the call center promotion policy. These factors are further divided into a total of five sub-categories. Table 1 shows the specific variables (and expected direction of correlation) we have included in our analysis, divided into organizational and labor process factors, further divided into a total of five sub-categories. The variables are described in more detail below.

<insert Table 1 about here>

Organizational Factors

Possibilities to set up layers: We include a number of variables related to broad characteristics of the call center that affect the ability to set up layers of positions. It has long been argued that firm size may lead to increases in upward mobility rates through its relationship with the adoption of internal labor markets (Baron 1984). It also may be important in terms of larger number of positions to be covered and a higher number of candidates to choose from (Pfeffer and Cohen 1984). To control for this we include a measure of the call center size (total number of core employees). To complement the “pure” size control we also included age of the call center (as of 2005) and its square term. A more mature organization may have been able to develop the mechanisms to make feasible an internal labor market. Furthermore, firms tend to establish routines over time in their operations which calls for more hierarchical organizations. We then expect a positive sign on the age variable. The square term in the age variable tests whether the age effect vanishes over time because the firm attain its most efficient organizational structure (and hence unless there is a high level of turnover there will be less opportunities for promotion).

We also introduce in our analysis a variable with the percentage of managers and team leaders over the total workforce. The more the call center relies on high and middle level managers as a strategy to control and mobilize core employees, the higher would be the probability to get promoted.

Two important call center specific variables are whether the call center is in-house or a sub-contractor and if it is part of a larger organization or is an independent company. Both are introduced as dichotomous variables. Batt, Doellgast and Kwon (2006) carefully discuss why outsourced call centers are more likely to compete on costs through lower wages, more standardized work processes and higher level of performance monitoring (Batt, Doellgast, and Kwon 2006). This type of strategy does not rely on promotions. Consequently, we expect a positive impact of being an in-house call center on promotion rates. Belonging to a larger organization has a clear cut positive effect on the probability of outside promotion. It is not that clear with respect to the call center internal promotion. One could argue that if larger organizations tend to develop more internal labor markets, there should be some kind of “cultural transfer” to how the call center is operated. Therefore, we also predict a positive effect on internal promotions.

We also include a variable with the percentage of core employees who are women. There is a very extensive literature on the gender differences in promotion rates with somewhat contradictory results (see for example (Blau and Devaro 2007)). In any case, this is an important variable to be included as a very large number of core employees are women.

Management practices designed to generate information on agent performance: These are indicators of management gathering information on agent performance that could be used for the purposes of identifying agents worthy of promotion. This includes how often core

employees' calls are listened to by a supervisor (measured in a 1 to 5 scale with 5 meaning very often) and an additional variable measuring how often employees are given statistics on their own performance (measured in a 1 to 5 scale with 5 meaning very often).

Mechanisms to 'substitute' for promotion as an incentive device: To test the impact of promotions on employee's effort we would need a direct measure of their effort and then correlate it with the existence of a promotion policy. In absence of this information we follow Bayo-Moriones and Ortin-Angel (2006) and test the effect of alternative mechanisms. The idea is that promotions are one among a range of incentives used by firms to motivate their employees. We include three different variables we consider represent alternatives to promotions. The first variable is the extent to which employees are organized in self-managed/semi-autonomous teams (measured as a percentage of the total number of core employees). We expect a negative sign because organizing work on the basis of teams makes it more difficult to gather the necessary individual assessment of performance if a promotion has to be awarded. To a large extent, it is contradictory to try to make employees to work together with the "tournament" concept usually attached to a promotion.

The second variable in this group is a measure of working conditions. Using factor analysis we created an index with the following five questions: discretion over daily work; over tools, methods and procedures; over pace/speed of work; over what to say to customers; and over lunch/break schedule. The Cronbach's Alpha for the index is 0.73. Our hypothesis is that in order to attract and incent workers in absence of promotions the call center can offer better working conditions. Certainly, call centers can be a very tough workplace implying that workers will be sensitive to improvements in this area.

Finally, we include a dummy variable for the presence of a union in the call center. Unions may affect the promotion rate by pressuring management to use internal promotion as a way for insiders to gain access to better jobs (Abraham and Medoff 1985). However, if unions impose a promotion policy based on seniority rules, it may discourage management to use promotions because it would eliminate managerial control over who performs certain jobs. This problem could be exacerbated in a situation of upgrading in the skill content of jobs, as older workers might find more difficult to acquire the new skills (or less willing to). We include in the model a dummy variable with value 1 if the call center recognizes one or more Trade Unions for collective bargaining for core employees.

Labor Process Factors

Complexity of the production process: we included four variables that provide proxies of the complexity of the job that call center agents develop. Two of them are related to the technological position of the call center: technological complexity (an additive index of up to five different technologies that agents use) and intensity of capital use (the ratio between the number of seats in the call center and the number of agents). We expect a positive impact on promotions of a more complex technological environment, but a negative impact on the intensity of use. This is because using capital more intensively is very often related to a “taylorization” of the production process through increasing shift utilization or by disaggregating the value chain and reengineering processes.

We also include two additional variables directly related to the tasks agents develop which obviously depend on the characteristics of the calls. First, highly complex calls are proxied by the variable that measures the extent to which customer interactions with agents involved building relationships (measured in a 1 to 5 scale with 5 meaning very often). We

expect a positive impact on promotions as, apart from technical knowledge, social skills needed to generate a trustful communication with a client are the most appreciated in a call center. We proxied a more basic type of call by the variable how often agents have repeated interactions with customers (also measured in a 1 to 5 scale with 5 meaning very often).

Finally, we include a series of dummy variable for segment and sector served. In terms of segment service, Batt and Moynihan (2002) show that HR strategies in call centers are contingent on the product market served (around the matrix large/small business – high/mass market). There is also some evidence (Shire, Holtgrewe, and Kerst 2002) on the influence of the specific sector in which the call center operates (telecommunications, banking, insurance, manufacturing, and so on).

Firm-specific knowledge: These are factors that we believe are indicators of the level of knowledge being used in the call center that is specific to the firm itself. The more firm-specific knowledge is used, the greater we would expect the level of internal promotions. We include two measures of human capital, education level (most usual education level of core employees) and experience (percentage of core employees with tenure less than 1 year). Note that experience is measured as a low level of experience (low levels of firm-specific knowledge) and we expect a negative sign on this variable. In addition to these variables, we also test the impact of two measures of the importance of training. The first training variable (a dummy variable with value 1 if the call center provide more days of *initial* training than the mean for the country) is related to the process of incorporating new employees, and to a large extent reflects how complex is the job developed in the call center. The second training variable (a dummy variable with value 1 if the call center provides more days of formal training to experienced core employees than the mean for the country) reflects the call center commitment to *update and upgrade* agents' skills.

We included two additional variables to measure the importance of knowledge. The percentage of permanent part time agents as a proxy for an organization where knowledge is not that important and the extent that core employees have discretion handling ‘knowledge’ related problems. It is based on a two-item measure related to core employees’ discretion over handling unexpected problems and additional request or customer complaints on their own. Finally, using information from so many different countries we had to include a set of country dummies to proxy for differences in labor market conditions, institutions and regulations.

Data analysis

Promotions-Descriptive Statistics

One important factor in understanding promotion opportunities in call centers in our sample is that a large proportion of call centers reported that no one had received a promotion in the previous year. As shown in Table 2, 22% of firms in our sample reported that no one had been promoted in the previous year, either within the call center, or to a different part of the business. On the other hand, 38% of firms promoted at least some employees *both* within the call center *and* to other parts of the business. Unsurprisingly, more call centers are likely to have some promotions within the call center (67%), than promotions to other parts of the business (49%) (see Table 2).

<insert Table 2 about here>

The incidence and scale of promotion opportunities varies substantially via both country and the industry sector that the call center serves, as shown in Table 3. The proportion of call

centers in any country that reported some level of internal promotions ranged from a high of 89.4% in India to a low of 42.4% in Spain. For promotions elsewhere in the firm, at the highest end both South Africa and the United Kingdom had 69% of call centers reporting some level of promotion outside the call center, with India having the lowest level of promotions outside the call center, with only 18% of firms reporting such promotions in the previous year.

<insert table 3 about here>

Perhaps a more relevant figure than percentage of call centers with promotions is the percentage of all employees who were promoted in the previous year. Overall, on average, call centers reported that 5.7% of their employees were promoted within the call center in the previous year, and another 4.0% of employees were promoted elsewhere in the business. This means that on average, close to 10% of employees received some kind of promotion in the previous year. For internal promotions, India, Poland and the U.S. have relatively high levels of promotion, while Austria, Spain and Sweden have relatively low levels. For promotions elsewhere in the firm, Ireland is the highest (8.8%), with Poland also high (8.1%), while India is the lowest, with less than 1% of all core employees receiving promotion outside the call center to somewhere else in the business in the previous year.

These country differences are intriguing, and form the basis of another paper we are writing. In the current paper, however, we are particularly interested in exploring the organizational and labor process factors that relate to promotion opportunities. Table 4 shows promotion levels by industry sector, while Table 5 shows promotion levels by a variety of

organizational factors, including call volume, primary market served, organizational structure and trade union perspective.

<Insert tables 4 & 5 about here>

There are a few things to note in these tables. In relation to industry sector, first, there is a particularly low level of internal promotions in call centers in the public sector compared to other sectors, with only 50.3% of call centers reporting any promotions in the previous year, and an average promotion level of only 2.7% of the workforce. Second, in all call center industries, the level of promotions internal to the call center is higher than promotion elsewhere in the business, but this differential is particularly pronounced in the business services and information technology sector. Here, while 63% of firms offered internal promotions (with an average of 5.5% of the workforce promoted in the previous year), only 28% of firms provided promotions elsewhere in the business (though these numbers should be treated with some caution, due to a small sample size). The highest level of promotions, both internal to the call center and elsewhere in the business, was in the financial services industry. Here, 71.1% of firms reported internal promotions, with an average of 6.6% of the workforce promoted in the previous year, and 59.2% of firms reported promotions elsewhere in the firm, with an average of 6.3% of the workforce promoted.

In relation to the other factors presented in Table 5, for promotion within the call center itself, the following patterns emerge: firms that serve primarily an international market have higher promotion rates than those serving a domestic market; call centers that are part of a larger organization have higher promotion than stand alone call centers, and, perhaps surprisingly, sub-

contracted call centers have more promotions than in-house call centers. For promotions to other parts of the business, those call centers with substantially higher promotion include: in-bound call centers compared to outbound call centers (54.3% reporting any promotions and 4.5% of the workforce promoted, compared to 34.8% & 2.3%); in-house call centers compared to sub-contracted (55.9% of firms and 5.0% of the workforce, versus 38% of firms and 2.1% of the workforce); and nationally serving call centers compared to international call centers (52% of firms and 4.2% of the workforce, versus 43.9% of firms and 2.9% of the workforce).

Trade unions seems to have an interesting affect on promotions, with the presence of a trade union seemingly associated with fewer firms providing promotions internal to the call center, but also associated with higher levels of promotion to other parts of the business, when compared with firms in which a trade union is not present.

Promotions--Regression Results and Analysis

In order to gain a more robust understanding of factors affecting promotion rates, we developed a detailed regression analysis. Since the dependent variable is truncated on the left end of the distribution at zero, the ordinary least squares (OLS) estimator would be biased and inconsistent (Greene 2000; Long 1997). Hence, the parameters of the empirical model are estimated using tobit regressions. Specification of the tobit models is as follow:

$$Internal\ Promotion_{is} = \beta_0 + \sum_{i=1}^k \beta_i Layers_{is} + \sum_{i=1}^k \beta_i Information_{is} + \sum_{i=1}^k \beta_i Substitute_{is} + \sum_{i=1}^k \beta_i Complexity_{is} + \sum_{i=1}^k \beta_i Specific_{is} + \beta Country_s + \mu_{is}$$

$$\begin{aligned}
External\ Promotion_{is} = & \beta_0 + \sum_{i=1}^k \beta_j Layers_{is} + \sum_{i=1}^k \beta_j Information_{is} + \sum_{i=1}^k \beta_j Substitute_{is} + \\
& \sum_{i=1}^k \beta_j Complexity_{is} + \sum_{i=1}^k \beta_j Specific_{is} + \beta Country_s + \mu_{is}
\end{aligned}$$

where *Internal Promotion*_{is} in firm *i* and country *s* (external) is the percentage of core employees internally (externally) promoted in the previous year; the vectors of indicators are the variables described above related to: employment *layers*; *information* for promotions; mechanisms to *substitute* for promotions; *complexity* of the labor process; and indicators of firm *specific* knowledge. μ is a classical i.i.d. error term. Tobit is sensitive to heteroskedasticity. We address this potential problem by correcting standard errors with the Huber-White “sandwich” estimator clustering at the country level. We also used a square root transformation of the dependent variables to correct for the non-normal distribution of the variables.

We used a missing mean substitution for some variables that even though they had a low number of missing observations (usually around 3 to 5% of the whole sample), those missing variables were concentrated in some countries. Not doing the substitution would imply losing the country in the analysis. Specifically we applied the substitution in 5 variables: capital intensity use, education level, tenure, and both training variables. Unrealistic cases in terms of call center size were dropped from the sample³.

For ease of comparison, we present unadjusted coefficients measuring the impact of a change in a given independent variable on the expected value of the latent variable. However, the interpretation of this coefficient is somewhat misleading as it refers to a latent variable that can not actually be observed. Tobit coefficients reflect both the effect on the values of the dependent variable for cases with a non-zero value, and the effect on the probability of having a nonzero value for cases with zero values of the dependent variable. Following McDonald & Moffitt

(McDonald and Moffitt 1980) and Roncek (Roncek 1992), tobit coefficients were decomposed into changes in the probability of observing an outcome above the left limit and changes in outcomes above the left limit. The latter represents the impact of the independent variable in the outcome conditional of a positive value for the dependent variable. The interpretation is equivalent to OLS estimates for this range of outcomes⁴. In the internal and external promotion models Tobit coefficients are, respectively, 0.53 and 0.38 of the OLS coefficients.

Promotions internal to the call center

Table 6 shows the results of our Tobit models of factors shaping promotions within the call centers themselves. Specifications (1) and (2) show, respectively, results for the models with just variables related to organizational and labor process factors separately. Results for the full model are presented in column (3).

As a first general comment, our model seems to perform reasonably well with a pseudo- R^2 of .21 for the full model and a large number of variables statistically significant. We can not conclude that either labor process nor organizational factors are more important in explaining levels of promotion, but they complement each other to explain internal promotion rates.

Getting to more detailed comments and focusing on the full model in column (3), results confirm some of our hypotheses, and raise some questions about others.

Focusing first on the possibility to set up layers variables, we observe that size has a positive effect on the probability to promote internally in line with previous papers⁵ (Idson 1989; Pfeffer and Cohen 1984; Bayo-Moriones and Ortin-Angel 2006). Age is also positively related to internal promotion but the square term comes out negative and significant. Thus, it suggests that when the call center is growing and becoming a more mature organization they tend to use

internal promotions to staff their increasing need of supervisors and managers but at some point the opportunities vanished and the rate of promotions goes down.

On the contrary, being an in-house call center is negatively correlated with promoting internally. The effect is rather big as being in-house decreases your promotion rate by 0.19 percentage points (-0.353×0.53) . Our expected sign was the opposite because in-house call centers are frequently identified as having better job quality (Taylor et al. 2002). Yet it appears that perhaps outsourced call centers have developed more regular layers for providing advancement opportunities, perhaps due to their greater level of specialization in call center operations. As we will see below, in terms of promotion external to the call center, in-house call centers are much more likely to have a higher percentage of promotion.

An interesting result is the negative and significant coefficient on the variable measuring the percentage of women among core employees. We must be cautious as this coefficient could be biased because of endogeneity (call centers that don't want to promote hire more women), but the negative sign is in line with the latest empirical research. Individual characteristics are clearly loosely controlled for (especially skills) and hence we can not determine if this negative effect corresponds to a discrimination process or it reflects, for instance, a lower endowment of human capital.

Turning our attention to the variables included under the group of "Generate information to be used for promotion" our hypothesis is clearly supported by the data. Both "how often core employees given stats on performance" and "how often core employees' calls listened by supervisor" showed up positive, with large coefficients and highly significant. Firms that promote more have more sophisticated and intense systems of monitoring their workers. Clearly,

they need to collect more information and of better quality to reduce the risk of allocating the less productive employee to a higher hierarchical position (Gibbons and Waldman, 1999).

In terms of what type of incentives introduce the firm to elicit effort from their workers, the team variable come out very small and insignificant. This is consistent with Bayo-Ortin (2006). On the contrary, the variable on the extent core employees have discretion over work routines has a big and negative effect on the firm internal promotion rate (a one standard deviation in the index decreases the promotion rate by 0.16 percentage points). Call centers that don't offer promotion opportunities tend to provide better working conditions (less stressful) to make up for a less attractive job. There is evidence that relates stress to turnover in call centers (Tuten and Neidermeyer 2004). This way, it should be expected that, *ceteris paribus*, a less stressful call center would boost promotions as the pool of agents to choose from increases. Hence, the negative effect suggests that the hypothesis of substitutability is strongly supported.

Finally, the result on the union variable shows a negative big effect but not statistically significant.

Except for the average level of education, all of the variables we included in our model related to labor process factors ended up being significant at least at the .10 level. Our results clearly show how promotion is positively related to a more sophisticated technological environment. The more technologies agents use the bigger is the rate of promotion. They also indicate that call centers with a higher ratio seats/agents significantly have lower promotion rates. We calculated the mean number of seats and agents by terciles of the intensity variable. Surprisingly, the mean number of seats barely changes across the three groups (call centers in the lower tercile have a mean of 159 seats and call centers in the higher 156) but there are huge differences in the number of agents (a mean of 268 agents versus 83 in the highest). This

difference can be explained in part because low intensity call centers operate longer hours during the day with more shifts of workers. This could create more opportunities for promotions (more supervisor and managers positions to be filled) or, alternatively, could be related to a higher turnover at the manager level. However, it could also be a signal of changes (redesigning) in the process of operating where promotions would be part of the human resource strategy.

The extent to which customer interactions involve building relationships has a positive impact on internal promotions, indicating the importance of providing more advancement opportunities in those call centers where the labor process are more complex and requires greater firm-specific knowledge. Instead, the variable related to how often core employees have repeated interactions with customers present a high negative coefficient, indicating that call centers in which agents have the skills required to resolve customers needs in a single call, also have higher levels of promotions.

With respect to the variables related to the importance of specific knowledge our results show that where they are important the promotion rate is higher. The largest coefficients are on whether the largest volume of calls are inbound, strong emphasis on initial training and discretion handling knowledge problems. All three have, as it was expected, a positive impact on the rate of internal promotions. The percentage of part time workers has a negative sign, again as it was our hypothesis. Unexpectedly the variable on the typical educational level of core employees is not significant, although it has a positive sign. Finally, the variable on the percent of core employees who have tenure less than 1 year ended up being significant in our model, but with a sign that is opposite of what we expected. On reflection, we expect this is because this variable is not simply a reflection of the level of firm-specific knowledge required in the labor process. It could also be an indicator of firms with high levels of turnover, in which a higher

level of promotions is an indication not so much of firms wanting to retain firm specific knowledge, but trying to stem these high levels of turnover.

Finally, we should just mention that the dummies on the segment and sector served have small and insignificant effects.

Transfers or promotions elsewhere in the firm

Table 7 shows the results of our regression analysis in relationship to promotions or transfers outside of the call center to somewhere else in the business. Once again, our model seems to perform reasonable well with a pseudo R^2 of 0.23. It is noticeable, however, that the effects of the individual variables are substantially different from the model predicting internal promotion, therefore pointing to the hypothesis that internal and external promotion respond to different logics (management strategies). Interestingly, most of the variables related to labor process factors become insignificant, while more variables related to organizational factors remain significant.

In relation to labor process factors, the variable related to in-bound call centers becomes even more significant for promotions elsewhere in the firm than it does for promotions within the call center, becoming significant at the .01 level. The size of the effect is certainly big: being an in-bound call center is associated with an increase of 0.39 percentage points in the rate of external promotion. Outbound call centers typically are related to sales and telemarketing, and it is clear that there are far fewer opportunities for promotion from the call center to elsewhere in the business in such types of operations than in call centers that primarily deal with inbound calls, typically customer service and technical assistance. There are just two additional

significant variables: the technology complexity index and the emphasis on formal training for experienced employees.

In relation to organizational factors, the two variables that stand out as being particularly important for promotions or transfer opportunities outside the call center are whether the call center is part of a larger organization, and whether the call center is operated in-house. To some extent sub-contracted call centers clearly have much smaller levels of promotion outside the call center almost by definition. However, recall that the sign of being in-house was negative in the internal promotion model and the variable belonging to a larger organization didn't have a statistically significant impact. These differences can be interpreted in a way that locates call centers as a port of entry to other parts of the company. Call centers may provide employees quickly and cheaply with some firm specific valuable skills. It could also represent a mechanism to sort potential candidates for other departments. Those who excel in, quite often, difficult environments, could be high productivity workers elsewhere. In fact, the significant and positive coefficient on the variable how often employees listened by supervisors and the negative and significant sign of the work discretion index would be consistent with this hypothesis.

Interestingly, the percent of core employees who are women remains highly significant in relationship to promotions outside of the call center. Call center work is disproportionately filled by women, and these figures indicate a continued segregation of women into this type of work, with fewer opportunities for women to move to other positions in the firm.

It is interesting to observe that the variable on the union presence is now positive and significant (it was negative and insignificant in the internal promotion model).

Finally, it is worth commenting that segment and sector served become an important part of the explanatory power of the model.

Conclusions

With these specific results in mind, let's now return to the hypotheses we intended to test in our regression analysis.

Possibility to set up layers

Our findings do not provide strong evidence for the hypothesis that call centers with more complicated organizational hierarchies are more likely to have more promotion opportunities, except in relation to whether call centers are operated in-house or whether they are part of a larger organization, which are *highly* significant and important variable in explaining promotions outside the call center to elsewhere in the business. In relation to internal promotions within the call center, most of our variables are insignificant, or where they are significant, the coefficients are small, and with somewhat contradictory impacts.

Generate information to be used for promotion

Here, our evidence strongly supports the hypothesis that call centers that are more interested in promoting from within are more likely to have well developed mechanisms for gathering information on the performance of individuals. The extent to which employees are given state on performance, and have their calls listened to by supervisors were both highly significant and strongly related to the levels of promotions internal to the call center, with the latter also highly significant in relation to promotions elsewhere in the firm. This seems to clearly indicate that firms that are spending time listening to employees are also able to use this information to identify people to promote.

Mechanisms to 'substitute' for promotion

Our model provides some evidence in support of the hypothesis that call centers that are less likely to promote from within will have other mechanisms to motivate performance. This is evident in that the extent to which core employees have discretion over their work routines is negatively correlated, with a large coefficient, to the levels of promotions. To put it another way, in call centers with more constrained work routines, there is also a greater chance for promotions. However, this was the only variable in this category of variables that was consistently significantly correlated to promotions. One important point to note is that the presence of trade unions seems to be negatively associated with the level of promotions within call centers, though positively associated to promotions elsewhere in the firm. The coefficients are very large but the levels of significance are just on the verge of being significant.

Complexity of the labor process and firm specific knowledge

Our model provides strong evidence in support of the hypotheses that call centers that have more complicated work processes, and that require more firm specific knowledge are more likely to promote from within. However, this relationship only seems to hold true for promotions within the call center. For promotions external to the call center, there seems to be no strong or consistent relationship with these labor process factors, with the important exception that in-bound call centers do have significantly higher proportion of their workforce who are promoted to elsewhere in the business. This is an indicator that firm-specific knowledge (which we think would be more important in in-bound call centers, than out-bound) is valuable

elsewhere in the firm, not simply within the call center. Other indicators of complexity and specific knowledge, however, seem to be only significant in relationship to internal promotions.

Limitations and future research

One of the greatest limitations of this study is that it is based on data reported by managers. Thus, we have no demographic information on employees themselves, so are unable to examine a variety of personal factors that might shape advancement opportunities. It would be ideal to have a longitudinal record of individuals to truly measure advancement. It would be also ideal to be able to track individuals who leave one firm to move to other firms. There is anecdotal and survey evidence that employees are building career ladders across multiple call centers, moving from lower-paid to higher-paid and more complex positions over-time.⁶ More research along these lines might help explore the extent to which the skills learned in a call center environment are indeed transferable, and the factors that allow call center workers to build cross-firm advancement opportunities.

The other major factor missing from this study is specific local labor market conditions, institutions and regulations. We will explore broad country differences in a future paper, using this data set, though this will be limited to country-level differences. Future research, particularly on cross-firm advancement opportunities, could productively focus on local labor markets as well.

Tables

Table 1: Variables in our Model with Expected Sign

| Sign | Variable Categories and Names |
|---|---|
| Organizational Factors | |
| <i>Possibility to set up layers</i> | |
| + | Age of call centre in 2005 (years) |
| - | Age of call centre squared |
| + | Total number of core employees |
| + | Percent all employees who are managers + team leaders |
| + | Call centre is inhouse |
| + | Call centre part of a larger organization |
| - | Percent core employees who are women |
| <i>Generate information to be used for promotion</i> | |
| + | How often core employees' given stats on performance (1 – 5 scale, with 5) |
| + | How often core employees' calls listened by supervisor (1 – 5 scale) |
| <i>Mechanisms to "substitute" or "complement" promotion as incentive device</i> | |
| - | Composite on extent core employees have discretion over work routines |
| - | Percent core employees working in quality circles |
| - | Recognise 1 or more Trade Unions for collective bargaining for core employees |
| Labor Process Factors | |
| <i>Complexity of the production process</i> | |
| + | Additive index of number of technologies |
| - | Intensity of capital use (number of seats/number of agents) |
| + | Customer interactions involve building relationship (scale 1-5) |
| - | How often core employees have repeated interactions with customers (scale 1-5) |
| <i>Specific knowledge</i> | |
| - | Percent permanent part time agents |
| + | Typical educational level of core employees |
| - | Percent core employees with tenure less than 1yr |
| + | call center provides more days of initial training than country mean |
| + | call center provides more days of formal training for experienced employees than country mean |
| + | Largest volume of calls inbound |
| + | Composite on extent core employees have discretion handling "knowledge" problems |

Table 2: Firms with any internal or external promotions in previous year

| | | | Transfers or promotions to a different part of the business (external)? | | Total |
|---|-------------------|---|---|------|-------|
| | | | No | Yes | |
| Promotions within call center (internal)? | NO | Count | 442 | 225 | 667 |
| | | % Internal Promotion Category | 66% | 34% | 100% |
| | | % of External Promotion Category | 44% | 23% | 33% |
| | | % of Total Sample | 22% | 11% | 33% |
| | YES | Count | 568 | 759 | 1327 |
| | | % Internal Promotion Category | 43% | 57% | 100% |
| % of External Promotion Category | | 56% | 77% | 67% | |
| | % of Total Sample | 29% | 38% | 67% | |
| Total | | Count | 1010 | 984 | 1994 |
| | | % Internal Promotion Category | 50% | 50% | 100% |
| | | % of External Transfer/Promotion Category | 100% | 100% | 100% |
| | | % of Total Sample | 51% | 49% | 100% |

Table 3: Promotions in the previous year, by country

| | % of call centers with any promotions (N) | | Average % of employees promoted in previous year (all firms) | |
|--------------|--|-----------------|---|----------|
| | Internal | External | Internal | External |
| Austria | 43.1% (28) | 53.2% (33) | 2.0% | 1.7% |
| Brazil | 78.2% (86) | 62.7% (69) | 4.7% | 4.0% |
| Canada | 77.3% (280) | 50.7% (184) | 6.2% | 3.6% |
| Denmark | 50.0% (48) | 42.0% (42) | 3.4% | 3.1% |
| France | 53.9% (103) | 44.6% (87) | 4.0% | 5.3% |
| Germany | 46.1% (59) | 33.6% (43) | 4.4% | 3.0% |
| India | 89.4% (42) | 18.2% (8) | 13.9% | 0.9% |
| Ireland | 69.2% (27) | 64.1% (25) | 5.8% | 8.8% |
| Israel | 76.4% (55) | 57.7% (41) | 7.5% | 5.5% |
| Korea | 67.2% (43) | 43.5% (27) | 5.1% | 5.9% |
| Poland | 54.2% (32) | 48.2% (27) | 9.9% | 8.1% |
| South Africa | 63.8% (37) | 69.0% (40) | 5.2% | 5.8% |
| Spain | 42.4% (28) | 25.8% (17) | 2.6% | 2.9% |
| Sweden | 48.7% (57) | 44.8% (52) | 2.4% | 3.2% |
| UK | 73.3% (107) | 69.2% (99) | 4.5% | 5.5% |
| US | 80.5% (346) | 52.7% (227) | 7.8% | 3.3% |
| Total | 67.2% (1378) | 49.9% (1021) | 5.7% | 4.0% |

Table 4: Promotions in the previous year, by sector

| | % of call centers with any promotions (N) | | Average % of employees promoted in previous year (all firms) | |
|------------------------------|--|-----------------|---|----------|
| | Internal | External | Internal | External |
| Missing Sector Information | 36.1% (4) | 45.8% (5) | 1.2% | 2.3% |
| Financial services | 71.1% (320) | 59.2% (270) | 6.6% | 6.3% |
| Telecom & utilities | 68.7% (425) | 49.5% (303) | 5.9% | 3.2% |
| Public & non-profit | 50.3% (69) | 49.6% (67) | 2.7% | 3.7% |
| Manufacturing & construction | 50.0% (4) | 62.5% (5) | 5.7% | 5.3% |
| Retail & distribution | 66.9% (130) | 41.3% (78) | 5.5% | 2.6% |
| Travel and leisure | 65.3% (83) | 48.5% (64) | 4.6% | 3.0% |
| Media & publishing | 69.7% (83) | 43.3% (52) | 5.4% | 4.3% |
| Health | 65.4% (53) | 43.0% (34) | 6.9% | 2.7% |
| Business & IT | 63.1% (29) | 27.6% (13) | 5.5% | 3.3% |
| Other | 69.5% (127) | 51.6% (95) | 5.6% | 4.3% |
| Multiple sectors | 70.8% (51) | 48.6% (35) | 5.8% | 3.5% |
| Total | 67.2% (1378) | 50.0% (1021) | 5.7% | 4.0% |

Table 5: Promotions in the previous year, by call volume, primary market, organisational structure, and trade union presence

| | % of call centers with any promotions (N) | | Average % of employees promoted in previous year (all firms) | |
|--|---|----------|--|----------|
| | Internal | External | Internal | External |
| Largest volume of calls - inbound calls or outbound calls | | | | |
| Outbound | 69.1% | 34.8% | 5.4% | 2.3% |
| | (295) | (145) | | |
| Inbound | 66.9% | 54.3% | 5.7% | 4.5% |
| | (1102) | (897) | | |
| Primary market served by call centre | | | | |
| Local | 58.0% | 51.5% | 4.2% | 5.9% |
| | (116) | (103) | | |
| Regional | 63.2% | 48.4% | 5.4% | 3.8% |
| | (299) | (227) | | |
| National | 66.9% | 52.0% | 5.4% | 4.2% |
| | (744) | (576) | | |
| International | 80.8% | 43.9% | 7.6% | 2.9% |
| | (227) | (123) | | |
| Is call centre part of a larger organisation? | | | | |
| No | 61.1% | 32.0% | 5.3% | 2.1% |
| | (234) | (122) | | |
| Yes | 68.3% | 54.3% | 5.6% | 4.5% |
| | (1125) | (892) | | |
| Call Centre as In-house centre or as a sub-contractor | | | | |
| Sub-contract | 74.3% | 38.0% | 6.1% | 2.1% |
| | (505) | (253) | | |
| In-house | 64.1% | 55.9% | 5.5% | 5.0% |
| | (910) | (797) | | |
| Recognise 1 or more TUs for collective bargaining for c | | | | |
| No | 72.6% | 49.1% | 6.6% | 3.9% |
| | (918) | (618) | | |
| Yes | 59.7% | 56.5% | 3.7% | 4.3% |
| | (406) | (385) | | |

TABLE 6- DETERMINANTS OF PROMOTION WITHIN CALL CENTER

| | (1) | (2) | (3) |
|---|------------------------|----------------------|-----------------------|
| Possibility to set up layers | | | |
| Establishment age | 0.024 (0.013)* | | 0.023 (0.012)* |
| Establishment age squared | -0.0006 (0.0002)*** | | -0.0005 (0.0002)** |
| % managers and team leaders | 0.0006 (0.007) | | 0.002 (0.007) |
| Size of call center | 0.00036 (0.0001)** | | 0.0002 (0.0001)* |
| Call center is in-house | -0.323 (0.190)* | | -0.353 (0.186)** |
| Call center part of a larger organization | 0.338 (0.190)* | | 0.175 (0.182) |
| Workforce: percent female | -0.011 (0.003)*** | | -0.009 (0.002)*** |
| Generate information to be used for promotion | | | |
| How often core employees' given stats on performance | 0.072 (0.025)*** | | 0.064 (0.026)*** |
| How often core employees' calls listened by supervisor | 0.115 (0.024)*** | | 0.108 (0.024)*** |
| Mechanisms to "substitute" or "complement" promotion as incentive device | | | |
| Work discretion index | -0.271 (0.068)*** | | -0.287 (0.087)*** |
| Percent in quality circles | -0.001 (0.002) | | -0.001 (0.001) |
| Union presence | -0.311 (0.211) | | -0.238 (0.193) |
| Complexity of the production process | | | |
| Technology complexity index | | 0.115 (0.041)*** | 0.073 (0.045)* |
| Intensity of capital use | | -0.058 (0.013)*** | -0.062 (0.016)*** |
| customer interactions involve building relationship | | 0.046 (0.038) | 0.067 (0.032)** |
| how often core employees have repeated interactions with customers | | -0.187 (0.052)*** | -0.087 (0.048)* |
| Specific knowledge | | | |
| % permanent part time agents | | -0.002 (0.001) | -0.002 (0.001) |
| typical educational level of core employees | | 0.097 (0.089) | 0.066 (0.047) |
| % core employees with tenure less than 1yr | | 0.012 (0.004)*** | 0.007 (0.003)** |

| | | | |
|---|------------|---------------------|---------------------|
| Emphasis on initial training | | 0.147 (0.074)** | 0.138 (0.071)** |
| Emphasis on formal training experienced employees | | 0.160 (0.058)*** | 0.148 (0.056)*** |
| largest volume of calls inbound | | 0.055 (0.134) | 0.247 (0.138)* |
| Discretion handling "knowledge" problems index | | -0.043 (0.093) | 0.131 (0.099) |
| Constant | 1.57*** | 1.31*** | 1.10*** |
| Sample size | 1800 | 1899 | 1737 |
| Chi Square Likelihood Ratio | 310.895*** | 302.232*** | 368.341*** |
| McKelvey & Zavoina's R-squared | 0.172 | 0.161 | 0.207 |

Source: Sample is all call centers. Controls included: segment served (4 dummies), Sector Served (11 dummies) for specifications (2) and (3). Country dummies included in all specifications. Numbers in parenthesis below the coefficient are Huber-White standard errors that correct for clustering by country. significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7- DETERMINANTS OF MOBILITY ELSEWHERE IN FIRM

| | (1) | (2) | (3) |
|---|-----------------------|--------------------|----------------------|
| Possibility to set up layers | | | |
| Establishment age | 0.027 (0.016)* | | 0.024 (0.015)+ |
| Establishment age squared | -0.0006 (0.0003)** | | -0.0005 (0.0003)* |
| % managers and team leaders | -0.015 (0.004)*** | | -0.017 (0.005)*** |
| Size of call center | 0.0001 (0.0001) | | -0.0001 (0.0001) |
| Call center is in-house | 1.108 (0.172)*** | | 0.889 (0.155)*** |
| Call center part of a larger organization | 1.068 (0.215)*** | | 0.830 (0.212)*** |
| Workforce: percent female | -0.009 (0.003)*** | | -0.009 (0.004)** |
| Generate information to be used for promotion | | | |
| How often core employees' given stats on performance | 0.010 (0.019) | | 0.005 (0.022) |
| How often core employees' calls listened by supervisor | 0.083 (0.049)* | | 0.109 (0.048)** |
| Mechanisms to "substitute" or "complement" promotion as incentive device | | | |
| Work discretion index | -0.193 (0.067)*** | | -0.250 (0.085)*** |
| Percent in quality circles | 0.004 (0.001)*** | | 0.003 (0.002)* |
| Union presence | 0.251 (0.200) | | 0.301 (0.185)* |
| Complexity of the production process | | | |
| Technology complexity index | | 0.110 (0.059)* | 0.119 (0.057)** |
| Intensity of capital use | | -0.025 (0.033) | 0.015 (0.026) |
| customer interactions involve building relationship | | -0.004 (0.070) | -0.033 (0.082) |
| how often core employees have repeated interactions with customers | | -0.071 (0.075) | -0.023 (0.076) |
| Specific knowledge | | | |
| % permanent part time agents | | -0.003 (0.001)* | -0.003 (0.002) |
| typical educational level of core employees | | 0.182 (0.183) | 0.035 (0.193) |
| % core employees with tenure less than 1yr | | 0.0003 (0.003) | 0.003 (0.003) |

| | | | |
|---|------------|---------------------|---------------------|
| Emphasis on initial training | | 0.080 (0.163) | 0.040 (0.158) |
| Emphasis on formal training experienced employees | | 0.287 (0.104)*** | 0.250 (0.101)*** |
| largest volume of calls inbound | | 1.194 (0.204)*** | 1.054 (0.184)*** |
| Discretion handling "knowledge" problems index | | 0.174 (0.113)+ | 0.156 (0.105)+ |
| Constant | -0.282 | -0.271 | -0.983** |
| Sample size | 1796 | 1892 | 1732 |
| Chi Square Likelihood Ratio | 226.972*** | 218.824*** | 321.723*** |
| McKelvey & Zavoina's R-squared | 0.152 | 0.137 | 0.226 |

Source: Sample is all call centers. Controls included: segment served (4 dummies), Sector Served (11 dummies) for specifications (2) and (3). Country dummies included in all specifications. Numbers in parenthesis below the coefficient are Huber-White standard errors that correct for clustering by country. significant at 10%; ** significant at 5%; *** significant at 1%

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¹ <http://www.ilr.cornell.edu/globalcallcenter/>

² For detailed comments on the process of sampling and collecting data see each country report available at <http://www.ilr.cornell.edu/globalcallcenter/>

³ Seven cases were deleted. We estimated all the models with and without these observations. Results hold with the shorter sample and significance levels when a little bit up for some variables.

⁴ The decomposition is calculated by multiplying the Tobit coefficients by $[1 - z * f(z) / F(z) - f(z)^2 / F(z)^2]$, where $F(z)$ is the cumulative normal distribution function associated with the probability of cases being above the left limit, $f(z)$, the first derivative of $F(z)$, is the unit normal density associated with this probability, and z is the corresponding z -score for this probability

⁵ We estimated models with the square term in it. Even though the coefficient was not significant, its sign was negative showing a saturation point related to the increasing difficulties in promoting large number of employees.

⁶ See for example Al James and Bhaskar Vira (2007) "Labour Mobility Geographies & their intermediation in India's Call Centre Industry" Presentation, 2nd International Economic Geography Conference, Beijing China, June 2007.