

Do Good Job Conditions Matter for Wages and Productivity? Theory and Evidence from Latin America

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Received: 10 August 2015 / Accepted: 6 March 2016 / Published online: 13 October 2016

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Abstract Based on Akerlof and Kranton (2005) in *Journal of Economic Perspectives*, 19(1), 9–32, who argue that group identity and social norms influence individual preferences towards work effort, a model is developed to understand why firms create good job conditions, taking into account the cost of implementing them and their impact on wages and productivity. Then, using individual-level data from the Gallup World Poll for 18 Latin American countries, the main predictions of the model are tested using propensity score matching. We find a positive link between good job conditions and wages when there are several simultaneous signals of a good work environment. We conclude that there is a positive payoff of investing in good job conditions for both workers and firms.

Keywords Job conditions · Human resources management · Labor productivity · Identity economics · Propensity score matching · Latin America

We thank Daniel Shek (Editor in Chief) and two anonymous referees for suggestions that helped improve this paper substantially. We are grateful to Paulo Bastos, Marc Bellemare, Matias Busso, Elizabeth Davis, Ed Diener, Johanna Fajardo-Gonzalez, Carol Graham, James Harter, Daniel Lederman, Aine McCarthy, Colleen Manchester, Andrew Oswald, Sergio Prada, Joseph Ritter, Mariano Rojas and Aaron Sojourner for their comments and suggestions. We received valuable feedback from participants at the 18th LACEA Meeting (Mexico City) and the 11th Midwest International Development Conference (Minneapolis). Editorial revision by John Dunn Smith, Myriam Escobar-Genes and Maria Clara Gutierrez Duvaltier is acknowledged. All mistakes are our own.

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JEL Classification J24 · J64 · M12 · M54 · O54

Introduction

Human resource management (HRM) has become a major field in labor economics (Bloom and Van Reenen 2011b). HRM applies standard economic tools to explain management labor practices and their influence on firms' outcomes (Lazear and Shaw 2007). Central topics in HRM are what incentives are selected by the firm to motivate its workers, and how they affect productivity and other key economic outcomes. In particular, we are interested in the role of good job conditions such as coaching and encouraging workers, adapting tasks and allocating responsibilities to fit their strengths, and other actions that foster among workers a sense of identity with their work and the firm (Akerlof and Kranton 2005). These aspects of HRM, which are central to other academic disciplines such as organizational behavior psychology (Luthans and Youssef 2007), are gaining ground in the economic profession (Kahneman and Krueger 2006).

This paper aims at understanding why individual workers seem to be exposed to different job conditions depending on their personal characteristics. Extending the original model in Akerlof and Kranton (2005), we develop a model that explains how firms choose job conditions by type of worker in order to maximize their profits, taking into consideration that better job conditions raise productivity but are costly to implement and may cause wage increases, depending on the bargaining power of each type of worker. The main predictions of the model are tested empirically using individual level data of the Gallup World Poll of 2007 for Latin American countries, which included a set of questions on perceived working conditions which arguably measure the degree to which workers are identified and satisfied with their jobs.

By theoretically and empirically exploring the relation between good job conditions and wages, we attempt to contribute to two different branches of the literature. The first is positive organizational behavior (Keyes and Haidt 2002; Luthans 2002; Bakker and Schaufeli 2008), which focuses on the determinants and consequences of constructive attitudes between employees and management, as opposed to the more traditional counterproductive work behavior literature (Penney and Spector 2005). The second branch is the role of management practices and working conditions in developing countries (Robertson et al. 2009; Bloom et al. 2010, 2011a; Bruhn et al. 2010; Fields 2012). This literature has found a large variation, both within and between developing countries, in the quality of management practices and working conditions.

Although the cross-sectional nature of our dataset and the empirical strategy implemented do not allow us to strictly claim any causal effects from the results, we deal with the selection problem in the data by deploying a battery of propensity score matching techniques, where each worker treated with a given job condition is matched with one or more workers that share similar individual characteristics and psychological traits but is not exposed to the same working conditions. The results give strong support to the hypothesis that good job conditions in Latin America have a significant and economically important relation with wages.

The rest of the paper proceeds as follows. “Literature Review” section provides a short survey of the most relevant literature on the influence on productivity of the quality of human resource management, as measured by objective indicators and as

perceived by workers. “**Conceptual Framework**” section presents the theoretical model and its predictions. “**Data**” section is devoted to the dataset and the calculation of labor income. The econometric techniques and the empirical findings are presented in “**Results**” section. A final section summarizes the results and discusses their implications.

Literature Review

There is a substantial body of evidence of persistent heterogeneity in firm productivity (and other measures of firm-level performance) in narrowly-defined sectors in many countries, both in the developed and the developing world (Bartelsman and Doms 2000; Bloom et al. 2010). Some of that heterogeneity is due to differences in the quality of the resources used by firms of different size or location, and some is due to misuse or misallocation of the resources as a result of inefficient scale of production or poor technology choice (Pagés 2010). Still, much of that heterogeneity remains unexplained and may at least in part be the result of different managerial practices, especially HRM practices.

The influence of HRM practices on firm productivity (and other firm-level outcomes, such as profits or sales) has been studied from two complementary angles. One focuses on objective measures of HRM, which includes payment methods, hiring and firing practices and work organization. The other makes use of employee perceptions on job conditions, such as whether the employee feels that she has the opportunity to do what she does best, whether her supervisor, or someone at work, encourages her development, and whether or not her opinions seem to count. Although the current paper falls directly into this second strand, an overview of both strands is convenient in order to highlight their complementarities.

In the objective strand, the implicit assumption is that HRM practices are better when employees are hired, rewarded, promoted and fired, if warranted, on the basis of their ability, efforts and results. These practices are strongly correlated with firm performance indicators, such as total factor productivity and profitability (Bloom and Van Reenen 2007).

Incentive pay is considered a central dimension of HRM. In general, incentive pay, be it individual- or group-based, has positive effects on productivity (two surveys on the topic are Prendergast 1999; and Bloom and Van Reenen 2011b). However, this conclusion must be qualified in various ways. First, incentives matter, and matter a lot, but not necessarily in favor of better firm outcomes. Contracts to reward employees on the basis of some measurable aspects of their work cause them to focus too much on those aspects to the detriment of those excluded (Holmstrom and Milgrom 1991). Since most jobs are complex and hard to contract over, explicit contracts are seldom used. Subjective performance evaluations, where supervisors evaluate workers in a more holistic way, and which can be used to complement incentive pay, are a more common practice (Baker et al. 1994). However, subjective performance evaluations are often tainted by supervisor biases (evaluations are too lenient or fail to distinguish between good and bad performers) or workers currying favor from them. Second, incentives matter in ways difficult to explain by standard economic theory. Profit sharing schemes often produce large group performance improvements, where the benefits of increased

effort by each worker are shared with hundreds, or even thousands, of other workers. Why do individual workers exert effort if they gain a minuscule fraction of the benefits? The lack of proportion between effort and incentive is also apparent in the effect on sales or other outcomes of giving workers small bonuses or gifts. Third, incentive pay is generally more effective when complemented with other HRM practices (Lazear and Shaw 2007).

In a nutshell, the main conclusion of this literature is that, while incentive pay may be useful, no organization can rely solely on monetary incentives to make workers perform well. How employees perceive their work environment and respond to it may be just as important as payment methods used by the firm. Akerlof and Kranton (2010) see identity with the organization as the key subjective dimension of the work environment. Supported by a growing body of research, they summarize their position as follows: “We argue that identity is central to what makes organizations work. Workers should be placed in jobs with which they identify, and firms should foster such attachments” (p. 41). Identity with the organization makes employees “insiders”, who gain utility from putting high effort in their work. Insiders do not need a large (direct) monetary reward to work hard, but firms must invest in changing workers’ identity through training, sign-on bonuses, and other benefits (pp. 41–43). Insiders do not require strict supervision to exert effort. On the contrary, they may resent the close oversight and adopt outsider identities (p. 52).

A related literature has emphasized the importance of engagement for job satisfaction and productivity (Buckingham and Coffman 1999; Harter et al. 2002; Ritter and Anker 2002; Sirgy et al. 2008). According with this strand, engagement and job satisfaction can be measured with a small number of dimensions of the quality of the work environment as perceived by employees.¹ To our knowledge, no study has explored the consequences of perceived job conditions using samples representative at the national level for one or more developing countries. This is the gap in the empirical literature that we attempt to fill.

Conceptual Framework

A theoretical framework to understand the relation between job conditions, effort, wages and productivity can be built on the basis of the model proposed by Akerlof and Kranton (2005), who argue that group identity and social norms have a central role in the determination of individual preferences. Under this approach, the purpose of good job conditions is to configure the work environment in such way that workers are willing to put forth more effort in the workplace. Implicit in this simplified version of the Akerlof-Kranton model is the hypothesis that job conditions that foster the identity of workers with their jobs have a positive effect on both labor productivity and wages.

¹ According to Buckingham and Coffman (1999), six of the 12 questions regularly used by the Gallup Organization to assess the work environment have “the *strongest* links to the *most* business outcomes” (p. 33, emphasis in the original). They are: “(1) Do I know what is expected for me at work? (2) Do I have the materials and equipment I need to do my work right? (3) Do I have the opportunity to do what I do best every day? (4) In the last 7 days, have I received recognition or praise for good work? (5) Does my supervisor, or someone at work, seem to care about me as a person? (6) Is there someone at who encourages my development?” (pp. 33–34).

However, if creating good job conditions is costly for firms, they will choose the optimal work environment for each type of worker following a profit-maximization principle, depending on the marginal productivity of workers' effort and the bargaining power of each type of worker.

An intuitive explanation of the conceptual framework is the following: individual effort is one of the main drivers of labor productivity. Making use of her own knowledge and skills, a worker will exert effort in response to her incentives and motivation, which partly depend on the behavior of her peers. The firm values additional effort from its workers and is responsible for the job conditions they face, but creating good job conditions is costly. Therefore, workers and firms can engage in a mutually beneficial trade: the firm improves the job conditions of its workforce, getting in return additional effort. This mechanism resembles the pioneer gift exchange idea proposed by Akerlof (1982). A more detailed explanation follows.

Consider a principal-agent environment, where the firm is the principal and the worker is the agent. Worker's output is jointly determined by individual effort and her own human capital. The worker's wage will correspond to a solution from a Nash bargaining game between both parties. The profit-maximizing firm can influence the worker's effort choice by investing in good job conditions. If the firm decides to do so, then the worker will internalize the behavior that is expected from her as a member of the firm. In line with the Akerlof-Kranton model,² suppose the worker faces the following utility maximization problem,

$$\max_e U(w, e, t) = w - e - \frac{t}{2}(e^{Ref} - e)^2 \quad (1)$$

$$\text{s.t. } w = \beta y + (1 - \beta)c \quad (2)$$

$$y = F(\theta, e) \quad (3)$$

where w is the wage, e is worker's effort, e^{Ref} is the reference level of effort for the firm, and t measures the quality of job conditions. The worker dislikes providing effort in general, but if the firm creates good working conditions ($t > 0$), then the worker will suffer additional psychological costs if her effort is below the reference level for the firm. Effort should be understood as in the context of Shapiro and Stiglitz (1984). Effort encompasses all tasks carried out by the worker which are hard to supervise by any third party, but at the same time are critical for productivity and firm performance. Effort should not be confused with work hours, since work time can be partially monitored. Other hard-to-measure dimensions of work activities, like mental focus or positive organizational behaviors, can be considered as part of the effort choice (Kahneman 1973; Bakker and Schaufeli 2008).

² The objective function is based on Akerlof and Kranton (2005), p. 14, first equation. The wage equation (Eq. 2) is based on equation 1.20 in Pissarides (2000, p. 17).

The reference level of effort, e^{Ref} , corresponds to the effort expected by the firm to be exerted by the worker under excellent job conditions. e^{Ref} is similar to the ideal effort level for insiders in the original Akerlof-Kranton model. Two relevant concepts embedded in Akerlof and Kranton’s discussion of identity economics are *social categories* and *ideals*:

“Associated with social categories are particular norms for behavior. Sociologists often describe this behavior by referring to *ideals*, who are real or imagined characters who personify how someone in a given social category should behave. A person who identifies with being a member of a respective social category then loses utility insofar as her behavior differs from that of the *ideal*.” (Akerlof and Kranton 2005, p. 13)

Therefore, e^{Ref} can also be understood as a very high level of effort put forth by an *ideal* worker who belongs to the *social category* of workers exposed to excellent job conditions.

We assume the wage Nash bargaining process occurs at the same time as the principal-agent model unfolds. Therefore, it becomes a constraint for both the worker and the firm. Equation 2 is the solution to this bargaining problem, where the wage offered will be a weighted average between labor productivity (y) and the worker’s opportunity cost (c), which is a typical result from the labor search literature (Pissarides 2000). β , which is strictly between 0 and 1, measures the worker’s bargaining power (Osborne and Rubinstein 1994), so the worker’s wage will be below but close to her productivity, as long as her bargaining power is close enough to 1.

Finally, Eq. 3 describes the technology. We assume that labor productivity is a function of worker’s human capital (θ) and effort (e). As usual, it is assumed that labor productivity is an increasing function of both variables ($F_\theta > 0, F_e > 0$).³ Additionally, human capital is assumed to have a positive effect on the marginal productivity of effort ($F_{e,\theta} > 0$), and returns to effort are assumed to be concave ($F_{e,e} < 0$).

The first order condition from the worker’s problem that characterizes optimal effort (e^*) is the following,

$$\beta F_e(\theta, e^*) + t(e^{Ref} - e^*) = 1 \tag{4}$$

There are two forces that motivate the worker to provide effort. The first one is the incentive provided by additional labor income, in particular for workers with strong bargaining power (βF_e). The second one is the lower psychological cost of deviating from the firm’s effort reference level, which the worker will take into account to the extent that the firm invests in good job conditions ($t(e^{Ref} - e^*)$).

Equation 4 implies the following optimal effort function,

$$e^* = e(\beta, \theta, t, e^{Ref}) \tag{5}$$

³ For notation, we will use $F_x = \frac{\partial F}{\partial x}$ to denote the first order derivative of F with respect to x . Also, $F_{x,y} = \frac{\partial^2 F}{\partial x \partial y}$ will be used to denote second order derivatives.

In the [Appendix](#) we show that (i) optimal effort is an increasing function of the worker’s bargaining power ($\frac{\partial e^*}{\partial \beta} > 0$); (ii) human capital also has a positive effect on the optimal level of effort ($\frac{\partial e^*}{\partial \theta} > 0$); and (iii) optimal effort will increase with the quality of job conditions, as long as $e^{Ref} > e^*$. In particular,

$$\frac{\partial e^*}{\partial t} = \frac{[e^{Ref} - e^*]}{[t - \beta F_{e,e}(\theta, e^*)]} > 0 \tag{6}$$

We focus on the case in which the worker is not willing to exert effort equal to or above e^{Ref} without any incentive. After all, e^{Ref} is an ideal but very large level of effort desired by the firm.⁴

Now consider the profit maximization problem of the firm. The firm chooses how much to invest in good job conditions directed toward a specific type of worker. When doing so, it has to take into account how the worker is going to react to its decisions (the incentive compatibility constraint) and the relation between the wage offer and labor productivity (the Nash bargaining solution as a participation constraint). Thus, the firm faces the following problem,

$$\begin{aligned} \underset{t}{Max} \quad & \Pi(y, w, t) = y - w - H(\theta, t) \\ \text{s.t.} \quad & e = e^*(\beta, \theta, t, e^{Ref}) \quad (\text{Incentive compatibility constraint}) \\ & w = \beta y + (1 - \beta)c \quad (\text{Participation constraint}) \\ & y = F(\theta, e) \end{aligned}$$

where $H(\theta, t)$ measures the cost of creating job conditions of quality t for a worker that has θ of human capital.

The first order condition for the firm, which will characterize the optimal investment in job conditions (t^*), is given by Eq. 7:

$$[1 - \beta] F_e(\theta, e^*) \frac{\partial e^*}{\partial t} = H_t(\theta, t^*) \tag{7}$$

The left hand side of Eq. 7 represents the marginal output that is captured by the firm due to additional effort exerted by the worker, in response to better working conditions, whereas the right hand side is the firm’s marginal cost of increasing the quality of job conditions.

We now have all the necessary elements to analyze the equilibrium response of wages and labor productivity to changes in the quality of job conditions. From the constraints in the worker’s problem (Eqs. 2 and 3) and the analysis of optimal effort (Eq. 6), the following relations should hold,

$$\frac{\partial w}{\partial t} = \beta \frac{\partial y}{\partial t} = \beta F_e \frac{\partial e^*}{\partial t} > 0 \tag{8}$$

⁴ The two necessary conditions for $\frac{\partial e^*}{\partial t}$ to be greater than zero are: 1) $t - \beta F_{e,e}(\theta, e^*) > 0$, which is implied by the second order condition of the worker’s utility maximization problem (equation A1 in the appendix); and 2) $e^{Ref} - e^* > 0$, which is an assumption regarding the size of the exogenous parameter e^{Ref} .

As a consequence, a positive relation between job conditions and wages should be observed in the data. This will be the main hypothesis tested in the empirical section. The magnitude of this link will depend on the worker's bargaining power, the marginal productivity of effort and the effect of job conditions on effort. These additional hypotheses will not be tested, as our dataset has no information on the latter two variables.

Data

The data source is the 2007 wave of the Gallup World Poll, which provides the most extensive coverage of perceived conditions of quality of life for 134 countries. The samples are representative of the population aged 15 or over in each country. The polls were taken by telephone in countries with fixed telephone coverage of over 80 % of the population, and face-to-face in other countries. Respondents were selected at random from household members, with the objective of preventing representation biases resulting from interviewing the first member of the household available. The face-to-face interviews lasted approximately 1 h and telephone interviews approximately 30 min.

Identical questionnaires were used in all countries for a set of basic questions, but some important variables, such as education or income brackets, were either not included or defined in non-comparable ways in some countries. For this reason, we restrict the sample to 18 Latin American and Caribbean countries where the required data are available.⁵ Since our unit of observation is the individual working in a firm, the sample is further restricted to the sub-sample of 3,360 individuals in jobs with direct supervisors and non-missing labor income data. Summary statistics for the sub-sample are presented in Table 1.

The list of “yes or no” questions on personal job conditions available in the database are as follows (in their order of appearance in the questionnaire):

- Do you currently have a job or work (either paid or unpaid work)? (“work” from here onward);
- Are you satisfied or dissatisfied with your job or the work you do? (“job satisfaction”);
- In your work, do you have an opportunity to do your best every day, or not? (“do your best”);
- Is there someone at work who encourages your development, or not? (“encouragement”);
- Do you have a supervisor, someone at work who you report to? (“has supervisor”);
- At work, do your opinions seem to count, or not? (“opinions count”);
- Do you think you could lose your job in the next 6 months? (“fear to lose job”).

⁵ The 18 countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

Table 1 Summary statistics from the Gallup World Poll of 2007

	All LAC	Sub-sample
Male = 1	0.45	0.61
Age (years)	39.1	35.6
Marital status: married	0.51	0.56
Urban = 1	0.60	0.69
Complete primary = 1	0.40	0.30
Complete secondary = 1	0.34	0.40
Complete college = 1	0.11	0.22
Currently employed = 1	0.42	1
Log of monthly labor income, US\$ PPP of 2007	6.37	6.68
Number of Observations	22,187	3,360

“All LAC” column corresponds to all observations from 18 countries in Latin America and the Caribbean ($N=22,187$). “Sub-sample” column corresponds to employed individuals who work for a firm under a supervisor and have non-missing labor income data ($N=3,360$). All data come from the Gallup World Poll of 2007

For more information on how the Gallup organization has designed and used these questions, see Buckingham and Coffman (1999).⁶ It must be kept in mind that identity is not observed and that all the information collected by Gallup is self-reported and subjective. Although the survey does not have a specific question on the degree of identification of workers with their jobs, we presume that identification is stronger when job conditions as perceived by the worker are better. Specifically, we posit that workers who do their best, feel encouraged, think their opinions count, and do not fear to lose their jobs are workers who have excellent job conditions and fully identify themselves with their firms. Previous papers which have explored the empirical content of identity economics and the consequences of job insecurity also rely on self-reported measures of the work environment (Russo 2012; Becchetti et al. 2013; Bassi et al. 2013).

Unfortunately, the Gallup World Poll does not include information about the firms. In particular, firm-level outcome measures would be useful to correct possible biases in our estimates. For example, a worker could fear losing her job either because the firm is underperforming or because she feels management has tough firing practices. Given our data, we cannot distinguish between both possibilities. However, Harter and Creglow (1999) report that workers’ perception of management practices, measured through the Gallup questions, correlate strongly with business unit outcome measures.

For Latin American countries, the Gallup data has information on monthly labor income in national currency, using country-specific income brackets. It has been transformed (by Gasparini et al. 2008) into a continuous variable using uniform probability distributions, so that each individual is assigned a random income level inside the income bracket he selected as an answer. In order to have comparable units,

⁶ Except for the last question, which was included at the request of the Inter-American Development Bank in the Latin American countries questionnaires for the 2007 wave.

income levels are transformed from national currencies into international US\$ at purchasing power parity values (US\$ PPP).⁷

Results

The main testable hypothesis from the theoretical framework is that good job conditions lead to higher wages. We use a battery of propensity score matching (PSM) techniques to test this hypothesis. Given our data, we consider that the best empirical strategy is to estimate the Average Treatment effect on the Treated (ATT) using more than one propensity score matching estimator (Blundell and Costa-Dias 2009). We follow Becker and Ichino (2002) as an empirical guide for implementing PSM with our data.

As mentioned, the Gallup database has information on four job conditions that presumably enhance identification with the firm (opportunities to do your best, encouragement, opinions count, and fear to lose job). Each one of these variables could be considered as a treatment. Workers in the sample are often exposed to at least one of the good job conditions. As shown in Table 2, 86 % of workers feel that they can do their best effort at work every day; 82 % consider that their opinions are taken into account by their supervisor, 75 % think that there is someone in their workplace that encourages their development and 25 % think that they could lose their jobs in the following 6 months. Considering the four conditions together, 52 % of the sample has fully favorable opinions of their work environment: they do their best, their opinions count, they are encouraged and do *not* fear losing their job.

As a first exploration of the data, Table 2 also presents labor income summary statistics both for treated and non-treated workers, and the results of a difference-in-means t-test. In all cases, workers exposed to better job conditions have, on average, a higher labor income. All these differences are statistically significant. The gap is around 17 % for workers that do their best effort every day, 22 % for encouraged workers and 36 % for workers whose opinions are considered. Furthermore, workers that fear to lose their jobs earn 23 % less than their counterparts. There is also an income gap of approximately 21 % for workers in excellent working environments, as measured jointly by all four indicators (do your best, encouragement, opinions count, and job stability).

Logit Models for the Propensity Scores

The first step to perform PSM is to estimate logit models in which the dependent variables are treatment dummies. The models are then used to estimate the propensity score of being treated, given a vector of individual observable characteristics. Table 3

⁷ We require a continuous outcome variable for the statistical analyses discussed in the results section. The imputation process was carried out by the Center for Distributional, Labor and Social Studies (CEDLAS) at Universidad de la Plata in Argentina. Gasparini et al. (2008) report all the details of the procedure and how it was based on income distributions derived from household surveys for each Latin American country. We do not have the household data necessary to replicate CEDLAS's procedure. Fortunately, Gasparini et al. (2013) report in a follow-up paper a robustness of their main results to alternative random assignments of income and alternative PPP conversions of the Gallup data (p. 199).

Table 2 Differences in means between treated and non-treated workers, labor income

Labor income, monthly US\$ PPP, logs	In your work, do you have an opportunity to do what you do best every day, or not? (Do your best)	Is there someone at work who encourages your development, or not? (Encouragement)	At work, do your opinions seem to count, or not? (Opinions count)	Do you think you could lose your job in the next six months? (No job stability)	Do your best, encouragement, opinions count and job stability.
Treated workers (answered "Yes")	6.72	6.74	6.75	6.53	6.82
Average labor income					
Standard deviation	0.86	0.84	0.85	0.85	0.85
Number of workers	2,967	2,570	2,821	719	1,495
Non-treated workers (answered "No")	6.56	6.54	6.44	6.78	6.63
Average labor income					
Standard deviation	0.85	0.88	0.87	0.85	0.86
Number of workers	465	845	640	2,215	1,394
Difference-in-means	0.16	0.20	0.31	-0.26	0.19
t statistic	-3.71	-5.86	-8.27	7.05	-6.01
p value	0.00	0.00	0.00	0.00	0.00
Proportion of workers exposed to treatment(s)	86 %	75 %	82 %	25 %	52 %

Table 3 Logit models for propensity scores

	(1) Dependent variable: Do your best	(2) Dependent variable: Encouragement	(3) Dependent variable: Opinions count	(4) Dependent variable: No job stability	(5) Dependent variable: All together
Male	0.109 (0.122)	-0.104 (0.0997)	-0.0383 (0.113)	0.141 (0.109)	-0.140 (0.0930)
Age (years)	-0.0177 (0.0313)	-0.0231 (0.0230)	0.0207 (0.0252)	-0.0123 (0.0257)	0.0207 (0.0219)
Marital status: married	-0.0452 (0.147)	0.241** (0.119)	0.0951 (0.134)	-0.0512 (0.126)	0.175 (0.109)
Marital status: divorced	-0.347 (0.233)	-0.119 (0.190)	0.197 (0.231)	0.0776 (0.220)	-0.107 (0.188)
Marital status: widowed	-0.260 (0.445)	-0.119 (0.336)	-0.161 (0.377)	0.0777 (0.430)	0.0416 (0.360)
Has one child	0.145 (0.159)	-0.0840 (0.125)	-0.108 (0.144)	0.0477 (0.135)	-0.0172 (0.116)
Has two or more children	0.102 (0.148)	0.0510 (0.121)	-0.0594 (0.137)	-0.0294 (0.129)	0.0674 (0.111)
Lives in urban area	0.0143 (0.132)	0.120 (0.104)	0.223* (0.117)	-0.221** (0.110)	0.158 (0.0965)
Complete primary education	0.189 (0.248)	0.0826 (0.198)	0.0892 (0.210)	-0.218 (0.208)	0.184 (0.195)
Complete secondary education	0.468* (0.250)	0.202 (0.199)	0.330 (0.214)	-0.502** (0.210)	0.446** (0.195)
Complete college education	0.618** (0.281)	0.546** (0.225)	0.955*** (0.256)	-0.929*** (0.241)	0.690*** (0.215)
Has basic computer skills	-0.101 (0.135)	0.201* (0.109)	0.244* (0.127)	0.118 (0.118)	0.149 (0.100)
Donated money	-0.0390 (0.138)	0.108 (0.111)	0.0613 (0.129)	-0.0849 (0.118)	0.170* (0.100)
Volunteered time	0.179 (0.156)	-0.131 (0.120)	0.0676 (0.144)	0.130 (0.128)	-0.206* (0.110)
Helped a stranger	0.0953 (0.125)	0.174* (0.101)	0.196* (0.114)	-0.130 (0.108)	0.0364 (0.0935)
Voiced a public official	0.207 (0.141)	0.303*** (0.112)	0.417*** (0.133)	-0.222* (0.119)	0.252** (0.0996)
Life satisfaction, 5 years ago	0.0258 (0.0239)	-0.00308 (0.0194)	0.0173 (0.0219)	-0.0405* (0.0208)	0.0135 (0.0181)
Constant	0.591	0.343	-0.00125	0.237	-1.701***

Table 3 (continued)

	(1)	(2)	(3)	(4)	(5)
	Dependent variable: Do your best	Dependent variable: Encouragement	Dependent variable: Opinions count	Dependent variable: No job stability	Dependent variable: All together
	(0.641)	(0.500)	(0.548)	(0.540)	(0.477)
Observations	2767	2748	2784	2369	2335
Country dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R Squared	0.0440	0.0475	0.0626	0.0393	0.0376
Log-likelihood	-1032	-1439	-1182	-1237	-1550

Standard errors in parentheses

Age squared included but not reported. Do your best: "In your work, do you have an opportunity to do your best every day?" / Encouragement: "Is there someone at work who encourages your development?" / Opinions count: "At work, do your opinions seem to count?" / Lacks job stability: "Do you think you could lose your job in the next 6 months?" / All together: Do your best = yes, Encouragement = yes, Opinions count = yes, Has job stability = yes. "Donated money", "Volunteered time", "Helped a stranger" and "Voiced a public official" correspond to the answers to the following questions: "Have you donated money to a charity in the past month?" / "Have you volunteered your time to an organization in the last month?" / "Have you helped a stranger or someone you didn't know who needed help in the last month?" / "Have you voiced your opinion to a public official in the last month?". For the saturated logistic models (not reported), all variables were interacted with country dummy variables. The excluded marital status category is "single". The excluded education category is "incomplete primary education". All regressions include country fixed effects. The countries are Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The excluded country category is Argentina. All data from the Gallup World Poll of 2007

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

presents the logit models for the job conditions analyzed, before saturation. All the models control for demographic and economic characteristics, household characteristics, computer skills, life satisfaction 5 years ago and life attitudes. All these are individual level variables from the Gallup World Poll.

The most relevant result from the logit models is the positive gradient for education. Note that workers who completed a college degree are more likely to have better job conditions: they feel they can do their best every day as well as encouraged, their opinions are taken into account and they have more job stability. Furthermore, recall that we are measuring the exposure to job conditions through the direct opinion of workers, and not using a direct measure from inside the workplace. We must control for personality traits that may influence attitudes and opinions. As explained by Diener et al. (1999), "work satisfaction ratings are undoubtedly influenced by third variables that also influence life satisfaction." (p. 293). Judge and Watanabe (1993) found a non-symmetrical relationship between life and job satisfaction across time: current job satisfaction is predicted by life satisfaction 5 years ago, but current life satisfaction is not predicted by past job satisfaction. Therefore, we include life satisfaction 5 years ago as an additional control in all the logit models to account for individual personality traits.

These basic logit models have an average adjusted R^2 between 4 and 6 %. In order to increase their fit, we followed a saturation process by including interaction terms between each variable and country dummies (coefficients not reported). This saturation process increases the fitness of the models, so the variation in treatment across countries is explained in a better way. After including all the interactions terms, the average adjusted R^2 goes up from 4 to 23 %. Another criteria used in determining the final correlates for the logit models is the Balancing Hypothesis, according to which there should be no statistical difference between treated and non-treated individuals, with similar propensity scores, on the mean of all the correlates used in the model. If the Balancing Hypothesis is assured, then treated and control observations used in the matching process are very close to one another, at least in the set of observable characteristics used to predict the propensity score. We follow the steps described by Becker and Ichino (2002), pp. 360, to test the Balancing Hypothesis of each model.

PSM Results

Since there are many ways to match treated and non-treated observations using PSM, we follow the suggestion by Becker and Ichino (2002) of performing more than one matching technique and comparing the consistency of results across all techniques. Recall that we have four possible treatments (do your best, encouragement, opinions count and fear of losing job). For analyzing the effect of each treatment on labor income, we built four PSM estimations. The first one is *nearest - neighbor matching*, where each treated worker is matched with the non-treated worker with the closest propensity score. Then, we perform *radius matching*, where each treated observation is compared with the average outcome of all the non-treated observations with a propensity score within a predetermined circumference. The larger the radius, the more observations are included in each average. In this case, the radius is 0.001. The third PSM estimation is a *kernell matching*, where the counterfactual for each treated worker is a weighted average of the outcome for all non-treated workers in the sample. In this case, the weights are inversely proportional to the propensity score distance. The fourth and final PSM is a *local linear regression matching* (Heckman et al. 1998), which is similar to *kernell matching*, but is stricter in choosing the non-treated individuals used to calculate each counterfactual. Tables 4, 5, 6, 7, 8 and 9 present all the PSM results.

Table 4 PSM results. Treatment: “In your work, do you have an opportunity to do what you do best every day, or not?” (Do your best)

Outcome: labor income, monthly US\$ PPP, logs	Nearest-neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local linear regression matching, bootstrapped errors, 100 iter.
Control obs	186	183	235	186
Treated obs.	1,348	647	1,348	1,348
ATT effect	0.13	0.09	0.10	0.16
std. error	0.19	0.09	0.08	0.07
t statistic	0.68	0.98	1.30	2.43

Table 5 PSM results. Treatment: “Is there someone at work who encourages your development, or not?” (Encouragement)

Outcome: labor income, monthly US\$ PPP, logs	Nearest-neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local linear regression matching, bootstrapped errors, 100 iter.
Control obs.	286	318	400	286
Treated obs.	1,214	818	1,214	1,214
ATT effect	0.15	0.17	0.12	0.11
std. error	0.08	0.07	0.06	0.07
t statistic	1.78	2.45	2.03	1.63

For more information on the details of these techniques, see Leuven and Sianesi (2003) and Becker and Ichino (2002).

Tables 4 through 7 present the PSM results for the effect of each treatment on labor income. For each PSM technique, we report the number of workers treated and non-treated included in the sample, the estimated ATT effect, its standard error and corresponding t-statistic. We first analyze the effects of the four job conditions taken separately. According to the *local linear regression matching*, of the four job conditions, two have a significant effect: a worker that is able to do his best effort every day earns 18 % more than a similar worker that is not offered such opportunity (Table 4); and the gap between workers who fear losing their job in the next 6 months and those who don't is close to 17 % (Table 7). In every case, the effect measured using PSM is less than the biased difference-in-means t-test between treated and non-treated individuals discussed in Table 2. For example, the biased difference-in-means suggests that the labor income gap between workers whose opinions are taken into account and those who are ignored is somewhere around 36 %, whereas the *local linear regression matching* indicates that such a gap is actually statistically non-significant (Table 6). This suggests that the PSM techniques used are correcting the bias that would result from the direct comparison between treated and non-treated workers.

Up until this point, we have explored each job condition as a different treatment, although identity effects could result from the combination of all of them. According to Buckingham and Coffman (1999), some job conditions may behave as complementary

Table 6 PSM results. Treatment: “At work, do your opinions seem to count, or not?” (Opinions count)

Outcome: labor income, monthly US\$ PPP, logs	Nearest-neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local linear regression matching, bootstrapped errors, 100 iter.
Control obs.	207	217	298	207
Treated obs.	1,284	648	1,284	1,284
ATT effect	0.14	0.11	0.19	0.16
std. error	0.16	0.08	0.07	0.12
t statistic	0.89	1.26	2.54	1.31

Table 7 PSM results. Treatment: “Do you think you could lose your job in the next six months?” (No job stability)

Outcome: labor income, monthly US\$ PPP, logs	Nearest-Neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local Linear Regression matching, bootstrapped errors, 100 iter.
Control obs.	228	534	1,021	228
Treated obs.	349	257	349	349
ATT effect	-0.24	-0.20	-0.19	-0.19
std. error	0.07	0.07	0.06	0.07
t statistic	-3.16	-2.83	-3.28	-2.76

practices, and thus their positive effect on firm performance and labor productivity will not arise if they are not simultaneously present in the workplace. We explore this possibility by defining two combined treatments. The first one is when the first three good job conditions (do your best, encouragement and opinions count) occur at the same time (Table 8). The other one is when, on top of these three conditions, the worker has no fear of losing her job (Table 9).

We find strong effects on labor income. Notice that the combined three good job conditions have positive and significant effects, not only using *local linear regression matching*, but also under the other three PSM techniques (Table 8). The result holds when job stability is added but, interestingly, the coefficients remain almost unchanged, suggesting that there is a cap on the cumulative effects of good job conditions (Table 9). When a worker has a working environment where she is able to do her best effort every day, is encouraged in the workplace and her supervisor takes her opinions into account, her labor income is approximately 16 % higher than when none of these good job conditions are present.

Discussion and Conclusions

This paper has explored the relationship between job conditions, wages and productivity through the lens of identity economics (Akerlof and Kranton 2005). We posit that good job conditions enhance productivity and wages through their effect on motivation and effort. However an alternative mechanism could be driven by unobserved

Table 8 PSM results. Combined treatment: Do your best, encouragement and opinions taken into account

Outcome: labor income, monthly US\$ PPP, logs	Nearest-neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local linear regression matching, bootstrapped errors, 100 iter.
Control obs.	345	468	597	345
Treated obs.	1,017	750	1,017	1,017
ATT effect	0.15	0.15	0.15	0.16
std. error	0.07	0.06	0.05	0.05
t statistic	2.28	2.73	2.92	3.19

Table 9 PSM results. Combined treatment: Do your best, encouragement, opinions count and job stability

Outcome: labor income, monthly US\$ PPP, logs	Nearest-neighbor matching	Radius matching ($r = 0.001$)	Kernel matching, normal distribution	Local linear regression matching, bootstrapped errors, 100 iter.
Control obs.	302	450	653	302
Treated obs.	696	497	696	696
ATT effect	0.15	0.08	0.15	0.16
std. error	0.08	0.06	0.05	0.06
t statistic	1.97	1.36	2.71	2.82

heterogeneity in individual productive capacity (Gibbons and Katz 1992). Therefore, further research is needed to disentangle the causality mechanisms.

Irrespective of the mechanism, our empirical results give support to the hypothesis that good job conditions are associated to higher wages across Latin America. The econometric results suggest that none of the four job conditions assessed is more important than the others: it is the combination of them which produces the strongest and most robust results. This may be due to the fact that individual workers have different psychological needs and therefore respond to different stimuli and incentives.

The role of job conditions in workers' productivity is a fertile area for future research, especially in developing countries. To our knowledge, this is the first study that addresses the issue using individual-level data representative at the national level for a set of countries. Although we have applied a methodology in an attempt to tackle the selection issue present in the data, we do not claim to have given a definite answer to the question of whether, and to what extent, job conditions that arguably enhance workers' attachment to their jobs are good for the firms.

In order to further test the effect of job conditions on labor productivity, controlled experiments should be conducted inside firms, hopefully in those industries where labor productivity can be measured in a better way. Direct measures of workers' productivity are fundamental to test the additional hypotheses derived in the conceptual framework, which we could not evaluate due to the limitations of the Gallup World Poll data. Bandiera et al. (2011) offer a practical guide of how to conduct field experiments with firms. In particular, a random group of workers would be submitted to a style of management under different job conditions and their performance and productivity results compared with a control group. Since experiments of this type occur almost daily within firms when new managers are appointed, this type of research is eminently doable and may be immensely profitable not just for academia but for the workers and firms that support it.

Appendix – Second order condition for the worker's problem and properties of the optimal effort function

The second order condition for the worker's problem, using Eq. 4 as a starting point, is the following:

$$\beta F_{e,e}(\theta, e^*) - t < 0 \quad \Leftrightarrow \quad 0 < t - \beta F_{e,e}(\theta, e^*) \quad (\text{A1})$$

which will hold given our assumptions about the worker's bargaining power and the diminishing marginal productivity of effort.

Comparative statics of the optimal effort function (e^*) are obtained by taking the corresponding derivatives from the worker's first order condition (Eq. 4).

- Worker's bargaining power, β : $F_e(\theta, e^*) + \beta F_{e,e}(\theta, e^*) \frac{\partial e^*}{\partial \beta} - t \frac{\partial e^*}{\partial \beta} = 0$

$$\Rightarrow \frac{\partial e^*}{\partial \beta} = \frac{F_e(\theta, e^*)}{[t - \beta F_{e,e}(\theta, e^*)]} > 0$$

- Worker's human capital, θ : $\beta [F_{e,\theta}(\theta, e^*) + F_{e,e}(\theta, e^*) \frac{\partial e^*}{\partial \theta}] - t \frac{\partial e^*}{\partial \theta} = 0$

$$\Rightarrow \frac{\partial e^*}{\partial \theta} = \frac{\beta F_{e,\theta}(\theta, e^*)}{[t - \beta F_{e,e}(\theta, e^*)]} > 0$$

- Quality of job conditions, t : $\beta F_{e,e}(\theta, e^*) \frac{\partial e^*}{\partial t} + e^{Ref} - e^* - t \frac{\partial e^*}{\partial t} = 0$

$$\Rightarrow \frac{\partial e^*}{\partial t} = \frac{[e^{Ref} - e^*]}{[t - \beta F_{e,e}(\theta, e^*)]}$$

Therefore, $\frac{\partial e^*}{\partial t} > 0$ as long as $e^{Ref} > e^*$.

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