REAP Rede de Economia Aplicada

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Luis Araujo
Vladimir Ponczek

Março, 2012
Working Paper 029

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Luis Araujo
Vladimir Ponczek

Luis Araujo
Department of Economics
Michigan State University
486 W. Circle Drive
110 Marshall-Adams Hall, East Lansing, MI 48824-1038
United States

Escola de Economia de São Paulo
Fundação Getúlio Vargas (EESP/FGV)

Vladimir Ponczek
Escola de Economia de São Paulo
Fundação Getúlio Vargas (EESP/FGV)
Rua Itapeva, nº 474, 12º andar
01332-000 - São Paulo, SP - Brasil
vladimir.ponczek@fgv.br

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Luis Araujo[*]

Michigan State University and São Paulo School of Economics - FGV

Vladimir Ponczek[†]

São Paulo School of Economics - FGV

January 19, 2011

Abstract

In most developing countries, job regulations and the justice branch interfere on several aspects of labor contracts. Inspired by this fact, we build a model that explores the role of labor courts in the determination of the difference between formal and informal wages. We show that the presence of active labor courts in an environment where labor relations are subject to asymmetries of information reproduces features documented by the empirical literature. The main implications of our model are tested using Brazilian data.

JEL codes: J31, J33, J42.

Keywords: wage gap; informal labor markets; labor courts.

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[*]E-mail: araujolu@msu.edu

[†]E-mail: vladimir.ponczek@fgv.br (corresponding author)

1 Introduction

Informal jobs are broadly defined as employment relationships not subject to labor regulations. We construct a model that explores the role played by labor courts in the determination of the difference between wages in formal and informal jobs. The motivation for our approach comes from the fact that, in most developing economies, labor courts and regulations impose severe constraints on the relation between employers and workers. In particular, job regulations require the payment of benefits also for workers hired under informal contracts, and labor courts usually rule that employers are liable to pay fines over unpaid compensations (Heckman and Pagés, 2000, 2004).[1] In fact, justice branches in many countries (e.g. Argentine, Brazil, Chile, Dominican Republic) have special courts specialized in labor disputes which generally rule in favor of the plaintiff, especially if the worker is informally hired.

A vast number of empirical regularities on the relation between formal and informal jobs have been documented by the literature. This paper contributes towards the objective of developing a theory that consistently explains some empirical regularities that have not yet being fully understood from a theoretical point of view. It turns out that the presence of active labor courts is key in the development of such theory. Precisely, our model explains in detail two empirical features.

The first feature is that informal jobs pay on average less than formal jobs. This regularity has been documented in the literature[2] and at least two alternative theories have been proposed as possible explanations. According to Fields, 1975; Chandra and Khan, 1993; Loayza, 1994, 1997, formal jobs pay more because there exists barriers to entry in the formal sector and, as a result, even though firms and workers would prefer to participate in the formal sector, for some of them the informal sector is the only option. Alternatively, Rosenzweig, 1988; Maloney, 1998, 1999, 2004; Tybout, 2000 argue that firms and workers can choose between formal and informal contracts, and that some of them actually prefer informal contracts in order to escape labor regulations. The choice between a formal and an informal relation is thus explained by differences in workers and firms characteristics. For instance, workers may have distinct preferences over the fringe benefits provided by

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[1] For example, the Brazilian labor code stipulates a 50% fine; the Philippine code stipulates a fixed P100,000.00 penalty (around US$2,000.00) .

[2] Roberts, 1989; Magnac, 2001; Pradhan and von Soest, 1995; Funkhouser, 1996, 1997; Gong and Van Soest, 2002; Frank McInteyre, 2004; Badaoui et. al, 2007.

the formal sector, and firms may have distinct costs associated with maintaining a formal status. In what follows, we construct a model along the lines of the latter explanation.

The second feature is that there exists a negative relation between the wage gap, that is, the difference between the formal and the informal wage, and the productivity of the worker. This regularity has been documented by more recent empirical work. Botelho and Ponczek (2011) show that for workers in the higher quintile of the wage distribution, informal contracts pay a higher wage than formal contracts in Brazil.[3] Bargain and Kwenda (2010) find that in Brazil, Mexico and South Africa the wage gap is positive at the lower end of the earnings distribution and negative at the higher end. Lehman and Pignatti (2007) study the Ukrainian labor market and show that informal jobs in the upper tail of the wage distribution pay equal or more than formal ones, but there is a wage premium in favor of formal jobs in lower parts of the wage distribution. To the best of our knowledge, there has been no model that explains this regularity.

In a few lines, our model works as follows. The labor market is subject to asymmetries of information that cause both an adverse selection and a moral hazard problem. Adverse selection occurs because workers have private information about their productivity and moral hazard occurs because firms cannot directly observe the record of actions of the workers in their previous jobs. Thus, if a firm wants to obtain information about the productivity and the record of her current worker she has to incur a cost. It is under these informational constraints that a firm chooses between a formal and an informal contract. In an informal contract, the firm does not pay benefits to the worker. However, the worker may choose to sue the firm and, in this case, benefits have to be paid and a penalty is incurred. We demonstrate that a firm only has an incentive to incur the cost of observing the productivity and the record of actions of her current worker if she is matched with a skilled worker. Intuitively, unskilled workers have similar productivity, thus obtaining information on them is beneficial only to the extent that this information is useful in anticipating whether the worker will sue the firm over unpaid benefits. In contrast, skilled workers are more heterogeneous, thus information on them not only reveals their past behavior but also their specific skills. This implies that the equilibrium wage of an unskilled worker in the informal sector is relatively low because it incorporates the employer's expectation

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[3]Tanuri – Pianto and Pianto (2003), using Brazilian cross-sectional data, also show that the earnings gaps between formal and informal workers are wider at low income quantiles than at high ones.

that the worker will sue the firm at the end of the contracting period. It also implies that the equilibrium wage of a skilled worker in the informal sector is relatively high because it incorporates the employer's expectation that the worker will not sue the firm at the end of the period.

A key assumption in our model is that the variance of the worker's productivity increases with his skills. We check whether this assumption is consistent with the empirical evidence on the Brazilian labor market. Precisely, exploring data from the Monthly Employment Survey (PME), we show that the productivity distribution is more disperse and that the year-to-year wage variation is higher as the worker becomes more educated and more experienced. The data provided by the Monthly Employment Survey also confirms two key implications of our model. First, it reveals the existence of wage differentials between formal and informal jobs on average. Moreover, it shows a higher degree of segmentation between formal and informal jobs among less educated and less experienced workers. The Brazilian National Household Survey (PNAD) of 1988 has information on whether the worker has ever filled a labor lawsuit against his employer. This allows us to check some additional features of our set up. In fact, consistent with our model, we obtain a negative correlation between the probability of filling a labor lawsuit and the education of the worker. We also find a negative correlation between wages and a record with labor lawsuits.

Our paper relates to the broader literature on the relationship between legal traditions and economic outcomes (for a survey, see La Porta et. al. (2008)). This literature emphasizes that the legal tradition of a country, i.e., whether the country has embraced common law or civil law, matters for a number of economic outcomes. In particular, Botero et. al. (2004) find that common law countries experience less rigid labor regulation than civil law countries. They also find that regulation tends to increase informality in the economy. Since the analysis in our paper rests on the presence of active labor courts, a natural implication is that our results are better suited to explain the wage gap in civil law countries. Indeed, Brazil is an example of a civil law country with a heavily regulated labor market, and where informal contracts between private parties are subject to various social constraints. A contribution of our paper is to show that, besides its impact on the extensive margin of contracts (as shown by Botero et. al. (2004))[4], civil law and the labor regulation it

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[4] For a detailed survey of the literature on the effects of job regulations on labor outcomes for developing countries, see Djankov and Ramalho (2008). See also Feldman (2009).

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ensues also impacts the intensive margin of contracts, i.e., the difference between formal and informal wages.

The paper proceeds as follows. In the next section, we present the model. In section 3 we discuss the empirical evidence. The last section concludes.

2   Model

In what follows, we first lay out the environment. We then describe the strategies of workers and firms, and prove our main result.

2.1   Environment

Consider an economy with one good, a unit continuum of infinitely lived workers and a unit continuum of infinitely lived firms. Workers and firms discount the future by a factor $\delta \in (0,1)$. Each worker is either unskilled (u) or skilled (s). An unskilled worker has ability $a_w = 0$ while a skilled worker has ability $a_w \in \{1,2\}$. Skills are observable but abilities are private information. The fraction of workers with ability a_w is $m_{a_w} \in (0,1)$. In every period, firms and workers meet randomly and in pairs. In a match, total production is equal to $y_{a_w a_f}$, where $a_w \in \{0,1,2\}$ is the ability of the worker and $a_f \in \{0,1,2\}$ is an action with cost c_{a_f} taken by the firm. We think of the action as an investment decision, e.g. the purchase of an equipment that is going to be operated by the worker. We assume that $y_{a_w a_f}$ is strictly increasing in a_w and a_f, c_{a_f} is strictly increasing in a_f, and that the ability of the worker and the action of the firm are complements in the production of the good.

In every period, after matches are formed, each firm can incur a cost $c_R > 0$ that allows her to observe the record of her current worker. The record of the worker includes the information about his ability and a summary of his behavior in all his previous matches. After this choice is made, each firm then chooses an action a_f and also chooses between a formal contract (F) and an informal contract (I). In a formal contract, the worker earns a wage w and receives a benefit $c_B w$, where $c_B > 0$. In an informal contract, there is no benefit and the worker only earns the wage. We assume that firms are heterogeneous in terms of the costs and the benefits of being formal. For instance, a formal firm may have an easier access to the credit market and to subsidies offered by the government. However, she

may face transaction costs associated with maintaining a formal status. We do not dwell here on the reasons underlying this heterogeneity. We simply denote the net cost of being formal by $c_F \in \mathbb{R}$. This cost is privately observed by the firm and comes at the beginning of period 1 as a random draw from a cdf $G(c_F)$.

At the end of every period, all matches exogenously break down. However, before this break occurs, each worker may choose to sue the firm if he is under an informal contract. In this case, the worker wins the lawsuit. The firm then faces a penalty c_P and pays benefit $c_B w$, where $c_B > 0$ and w is the wage received by the worker.

In every match, the wage w comes as a result of a bargaining between the worker and the firm. This bargaining occurs after the firm's decisions but before the worker's decision on whether to sue the firm. We solve the bargaining problem by applying the generalized Nash solution, where the bargaining power of the firm is equal to $\theta \in (0,1)$. This implies that the worker's compensation under a formal contract satisfies $w + c_B w = (1 - \theta) y$. In words, his compensation is equal to a fraction θ of the total product y, which is distributed as wages and benefits. In turn, the worker's compensation under an informal contract satisfies $w + \phi c_B w = (1 - \theta)(y - \phi c_P)$, where ϕ is the probability that the worker sues the firm. Intuitively, if the worker sues, the total surplus is reduced by the penalty c_P, and his compensation includes wages and benefits. If the worker does not sue, there is no penalty and his compensation includes his salary only.[5]
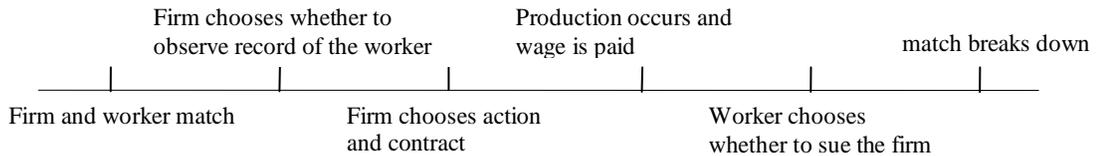
Figure 1 summarizes the sequence of events in a period.

Figure 1: Sequence of Events in a Period

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[5]Note that, as long as $\phi > 0$, the worker strictly prefers a formal contract. However, the choice of contract is made by the firm.

2.2 Strategies and Equilibrium

In every period, the set of possible records for a worker is given by

$$R = \left\{(a_w, A) : a_w \in \{0, 1, 2\} \text{ and } A \in \{\overline{S}, S\}\right\},$$

where the first entry of the vector (a_w, A) corresponds to the ability of the worker, and the second entry is a summary of the worker's past behavior. The summary A is equal to $\overline{S}$ if the worker never sued a firm in the past, and is equal to S otherwise. In general, the benefit of observing the worker's record is twofold. In one direction, the firm can condition her choice of contract on the past behavior of the worker. For instance, the firm may decide to choose a formal contract if she observes that the worker sued another firm in the past, and an informal contract otherwise. In another direction, the firm can condition her choice of action on the ability of the worker. Throughout our analysis, we assume that $a_w = \arg \max_{a_f \in \{0,1,2\}} \left(\theta y_{a_w a_f} - c_{a_f}\right)$. Consistent with the requirement that the ability of the worker and the action of the firm are complements, this condition ensures that the firm chooses $a_f = a_w$ if she knows the ability a_w of the worker.

In what follows, we restrict attention to symmetric and stationary strategies. Consider then a generic match between a firm and a worker. The history of the worker includes his past behavior and the past behavior of firms in all matches in which he participated. In turn, the history of the firm includes her past behavior, the past behavior of workers in all matches in which she participated and the records of workers with whom she matched in the past and sustained the cost c_R.

In principle, workers and firms may condition their behavior on every element of their history. It turns out that in any equilibrium only a subset of events matter for their decisions. In the appendix A we make a detailed discussion of the reasons underlying this result. We obtain that the strategy of the worker is fully described by a function

$$\sigma : \{0, 1, 2\} \times \{\overline{S}, S\} \times \{0, 1, 2\} \rightarrow \{\text{sue}, \text{does not sue}\},$$

while the strategy of the firm is fully described by a pair of functions $\sigma = (\sigma_1, \sigma_2)$, where

$$\sigma_1 : \mathbb{R} \times \{u, s\} \rightarrow \{\text{yes}, \text{no}\},$$

and

$$\sigma_2 : \mathbb{R} \times \{u, s\} \times \left([\{\overline{S}, S\} \times \{0, 1, 2\}] \cup \varnothing\right) \rightarrow \{\text{I}, \text{F}\} \times \{0, 1, 2\}.$$

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In words, the decision of the worker on whether or not to sue depends non-trivially only on his record (a_w, A), where $a_w \in \{0, 1, 2\}$ and $A \in \{\overline{S}, S\}$, and on the action $a_f \in \{0, 1, 2\}$ of the firm he is currently matched with. In turn, the function σ_1 describes the choice of the firm with cost $c_F \in \mathbb{R}$ on whether to incur the cost c_R ("yes") upon meeting a skilled (s) or an unskilled (u) worker, while the function σ_2 describes the choice of contract and the choice of action of the firm with cost $c_F \in \mathbb{R}$, conditional on the observed characteristics and the observed record of the worker. This record is an element of the set $\{\overline{S}, S\} \times \{0, 1, 2\}$ if the firm incurs the cost c_R, and is equal to the empty set $(\varnothing)$ if the firm does not incur the cost c_R.

Lemma 1 partially characterizes the behavior of firms and workers in any perfect Bayesian equilibrium (PBE).[6]

Lemma 1 *In any PBE, firms do not pay the cost c_R in meetings with unskilled workers.*

Proof. Assume that there is a PBE in which some firm incurs the cost c_R in a meeting with an unskilled worker. The only benefit a firm obtains in accessing the record of an unskilled worker occurs when there is a positive measure of unskilled workers with record S and a positive measure of unskilled workers with record $\overline{S}$. Moreover, it must be the case that workers condition their behavior on their record. Otherwise, regardless of the record, unskilled workers would choose the same action and the firm would be able to infer their behavior without observing the record. Clearly, an unskilled worker with record S strictly prefers to sue because his current action has no impact on his record. This implies that unskilled workers with record $\overline{S}$ do not sue. Now if an unskilled worker with record $\overline{S}$ does not sue, it must be because the associated benefit is larger than the benefit of suing. However, this implies that there would be no unskilled worker with record S, a contradiction. ∎

One may argue that another benefit that comes from accessing the record of an unskilled worker is the monitoring of his behavior so as to prevent lawsuits. However, it is easy to see that, as long as $c_R > 0$, monitoring cannot arise in equilibrium. The argument runs as follows. Assume that there is an equilibrium in which workers never sue. If they do so, it is because they fear the punishment in case they hold a record $\overline{S}$. Now, this fear can only be effective as a deterrent of opportunistic behavior if a positive measure of firms is willing

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to face the cost c_R and monitor the behavior of unskilled workers. The problem is that, if a positive measure of firms is effectively preventing a misbehavior by unskilled workers, an isolated firm has no incentive to incur this cost. First, there is no need to learn the ability of the worker because all unskilled workers have the same ability. Second, she can free-ride on the monitoring that other firms are offering.

Consider the following strategy profile: (i) Worker: an unskilled worker always sues, irrespective of his record. A skilled worker sues if he has a record of action S and does not sue if he has a record of action $\overline{S}$; (ii) Firm: a firm pays the cost c_R only if she is matched with a skilled worker. If the firm knows the ability a_w of the worker, she chooses $a_f = a_w$. Otherwise, she chooses $a_f = 1$. The firm chooses a formal contract if $c_F \leq 0$ and an informal contract if $c_F > \theta c_P$. If $c_F \in (0, \theta c_P]$ and the worker is unskilled, the firm chooses a formal contract. If $c_F \in (0, \theta c_P]$ the worker is skilled and the firm knows the record of the worker, she chooses a formal contract if the worker has record of action S and an informal contract if the worker has record of action $\overline{S}$. Finally, if $c_F \in (0, \theta c_P]$ the worker is skilled but the firm does not know the record of the worker, she chooses an informal contract.

In what follows, we characterize the conditions under which this strategy profile is part of a PBE.[7] Henceforth, we assume that workers are sufficiently patient and that the cost c_R of accessing their record is not too large. Precisely, we let

$$\delta \geq \frac{c_B y_{22}}{c_B y_{22} + [1 - G(\theta c_P)] c_P}, \tag{1}$$

and

$$c_R \leq \frac{m_2}{m_1 + m_2} \left[(y_{22} - c_2) - (y_{21} - c_1) \right]. \tag{2}$$

Intuitively, if the worker is impatient or if the cost of accessing the record of the worker is large, he always sues as he has no incentive to maintain a "good" record.

We further assume that, whenever the firm does not observe the ability of a skilled worker, she chooses $a_f = 1$. This is true as long as the fraction of skilled workers with

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[7]To characterize the PBE, we also need to compute the beliefs. Given the candidate strategy profile, beliefs are trivial. First, note that the only information that is unobserved by the worker and matters for a firm's decision is her cost of being formal c_F. Since meetings are random, the worker's belief about c_F is $G(c_F)$. In turn, the only information that is not necessarily observed by the firm and matters for the worker's decision is his record. If the firm incurs the cost c_R and observes the record (a_w, A), the belief is degenerate. If, instead, the firm does not observe the record, her belief depends on wether the worker is unskilled or not. If the worker is unskilled, his ability is known and the belief that $A = \overline{S}$ is given by the probability that he never worked under an informal contract. If he is skilled, the firm believes that $a_w = 1$ with probability $\frac{m_1}{m_1 + m_2}$ and that $A = \overline{S}$ with probability one.

ability 1, namely, $\frac{m_1}{m_1+m_2}$, is sufficiently large. Precisely, we need[8]

$$\frac{m_1}{m_1 + m_2} > \max\left\{\frac{(\theta y_{22} - c_2) - (\theta y_{21} - c_1)}{\theta(y_{22} - y_{12}) - \theta(y_{21} - y_{11})}, \frac{(\theta y_{20} - c_0) - (\theta y_{21} - c_1)}{\theta(y_{20} - y_{10}) - \theta(y_{21} - y_{11})}\right\}. \quad (3)$$

Proposition 1 *There exists a PBE in which workers and firms behave as in the strategy profile above. This equilibrium is efficient in the sense that it achieves the highest surplus in the class of all Perfect Bayesian equilibria.*

Proof. We start with the decisions of a worker. First, Lemma 1 implies that, in any PBE, an unskilled worker maximizes his current payoff by suing the firm in every opportunity. Indeed, because he expects that no firm will ever observe his record, he has no incentive to maintain the record $\overline{S}$. Consider now the behavior of a skilled worker. Clearly, if he has a record S, he sues if given the opportunity to do so because it increases his current payoff and does not affect his continuation payoff. Now, if he has a record $\overline{S}$, he does not sue if given the opportunity if and only if

$$\frac{\delta(1-\theta)}{1-\delta}y_{a_w a_f} \geq c_B(1-\theta)y_{a_w a_f} + \frac{\delta(1-\theta)}{1-\delta}\left\{G(\theta c_P)y_{a_w a_f} + [1 - G(\theta c_P)](y_{a_w a_w} - c_P)\right\}.$$

where $a_w \in \{1, 2\}$ is the ability of the worker $a_f \in \{0, 1, 2\}$ is the action of the firm. Intuitively, the left-hand side gives the continuation payoff if the worker does not sue and thus maintain the record $\overline{S}$. The first term on the right-hand side gives the net current payoff the worker obtains if he sues, while the second term gives the continuation payoff of a worker with a record S. In every period, this payoff is equal to $y_{a_w a_w}$ if he meets a firm that chooses a formal contract ($c_F \leq \theta c_P$), and is equal to $y_{a_w a_w} - c_P$ otherwise. Clearly, it suffices to show that the above inequality holds when $a_w = a_f = 2$. In this case, we can rewrite the expression and obtain that it is equivalent to (1).

We now move to the decisions of a firm with a cost $c_F \in \mathbb{R}$. In a meeting with an unskilled worker, since the firm knows that $a_w = 0$, she chooses $a_f = 0$, given the assumption that $a_w = \arg\max\limits_{a_f \in \{H,L\}}\left(\theta y_{a_w a_f} - c_{a_f}\right)$. For the same reason, in a meeting with a skilled worker, the firm chooses $a_f = a_w$ whenever she observes the ability of the worker. If, instead, the firm does not observe a_w, her decision depends on the expected output of the match and on

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[8]Note that, on the path of play induced by the strategy profile, a firm always knows a_w. Thus, this condition is only necessary to pin down the behavior of firms off the equilibrium path, and plays no role in any of the main results of the paper.

the cost of the action. Since her belief that $a_w = 1$ is $\frac{m_1}{m_1+m_2}$, irrespective of the contract, the firm chooses a_f that solves

$$\max_{a_f \in \{0,1,2\}} \left\{ \theta \left[\frac{m_1}{m_1 + m_2} y_{1a_f} + \frac{m_2}{m_1 + m_2} y_{2a_f} \right] - c_{a_f} \right\}.$$

Condition (3) implies that it is optimal to choose $a_f = 1$.

We also need to consider the firm's choice of whether to incur the cost c_R. In meetings with unskilled workers, Lemma 1 implies that the firm does not incur such cost. Instead, in meetings with skilled workers, condition (3) implies that the firm chooses to incur the cost c_R as long as

$$\frac{m_1}{m_1 + m_2} (\theta y_{11} - c_1) + \frac{m_2}{m_1 + m_2} (\theta y_{22} - c_2) - c_R \geq \theta \left[\frac{m_1}{m_1 + m_2} y_{11} + \frac{m_2}{m_1 + m_2} y_{21} \right] - c_1.$$

This condition is equivalent to (2).

It remains to characterize the firm's choice of contract. Since the firm anticipates that unskilled workers always sue, she chooses a formal contract if and only if $\theta y_{a_w a_f} - c_F - c_{a_f} \geq \theta \left(y_{a_w a_f} - c_P \right) - c_{a_f}$, that is, $c_F \leq \theta c_P$. The same is true if the firm is matched with a skilled worker with a record $\overline{S}$. Now, consider either a match with a skilled worker with a record S or a match where the firm does not know the record of the worker. In this case the firm anticipates that the worker does not sue, and chooses a formal contract if and only if $\theta y_{a_w a_f} - c_F - c_{a_f} \geq \theta y_{a_w a_f} - c_{a_f}$, that is, $c_F \leq 0$.

Finally, it is straightforward that this equilibrium achieves the highest surplus in the class of all perfect Bayesian equilibria. In fact, on the equilibrium path, in every match between a firm and a skilled worker, the worker never sues and the surplus is not reduced by the penalty c_P. Moreover, the firm chooses a formal contract if and only if $c_F \leq 0$. As for matches between a firm and an unskilled worker, Lemma 1 implies that in any PBE, since the firm does not incur the cost c_R, the worker always sues and the firm only chooses a formal contract if $c_F \leq \theta c_P$. To conclude, in all matches, the firm always chooses the action that is complementary with the ability of the worker. ∎

Proposition 1 implies that the wage of a worker under a formal contract is

$$w_F(a_w, a_w) = \frac{(1 - \theta) y_{a_w a_w}}{1 + c_B}.$$

It also implies that, under an informal contract, the wage of an unskilled worker is

$$w_I(0, 0) = \frac{(1 - \theta) (y_{00} - c_P)}{1 + c_B},$$

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while the wage of a skilled worker is (where $a_w \in \{1, 2\}$)

$$w_I(a_w, a_w) = (1 - \theta) \, y_{a_w a_w}.$$

Thus, the difference in wages between a formal contract and an informal contract for an unskilled worker is

$$w_F(0, 0) - w_I(0, 0) = \frac{(1 - \theta) \, c_P}{1 + c_B} > 0,$$

while the corresponding difference in wages for a skilled worker is

$$w_F(a_w, a_w) - w_I(a_w, a_w) = -\frac{c_B \, (1 - \theta) \, y \, (a_w, a_w)}{1 + c_B} < 0.$$

Summarizing, the difference between wages under formal contracts and wages under informal contracts is decreasing in skills. Moreover, the average wage of a worker in the formal sector is higher than the average wage in the informal sector as long as the proportion of unskilled workers (m_0) is high enough, that is, as long as

$$\frac{m_0}{1 - m_0} > \frac{c_B}{c_P} \frac{m_1 y_{11} + m_2 y_{22}}{m_1 + m_2}.$$

Thus, our model reproduces the two key empirical regularities discussed in the introduction. First, on average the wage premium favors formal workers. Second, there exists heterogeneous segmentation conditional on the workers' skills.

2.3 Comments

Our model contains a number of assumptions that deserve some attention.

First, we assumed that the dispersion of productivity increases with the skills of the workers. This assumption is appealing because, as argued in the Introduction, it is consistent with the empirical observation that the dispersion of productivity increases with education and age (proxies for skills). There may be though alternative reasons as to why firms end up more informed about workers with higher skills. For instance, if the productivity of skilled workers is more persistent than the productivity of unskilled workers, employers may have more incentive to observe the former's history because it reveals more information about his current productivity. The important aspect to note is that, as long as there is a positive correlation between the skills of the worker and the ability or willingness of the firm to obtain information about his history, the results in Proposition 1 still hold.

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Second, we assumed the existence of a technology that allows the firm to observe the ability and the past history of the worker. This technology represents, for instance, the possibility of communication between firms. Intuitively, one firm may at some cost contact another firm who had previously hired her current worker and obtain information about his past history.

Third, we considered a particular market structure where firms and workers meet randomly and in pairs, wage is set through Nash bargaining, and matches exogenously break down at the end of the period. This structure captures the idea that in a market where interactions between firms and workers are decentralized and short-lived, imperfect information by firms about the abilities and the past histories of the workers is a prevailing feature. As long as this idea is preserved, our results are robust to alternative specifications. For instance, one may argue that a direct search framework in which firms compete for workers by posting wage offers that condition on skills is more realistic than a random search framework with ex-post Nash bargaining. We conjecture that this alternative specification generates similar results. In fact, if a firm posts a wage that attracts skilled workers and chooses an informal contract, she will have two benefits: the higher productivity, and the absence of the lawsuit penalization for not paying the benefit. This is so because a skilled worker does not sue even when hired under an informal contract, as he anticipates that his record will be observed by firms in his future matches. In contrast, if she posts a wage that attracts skilled workers but chooses a formal contract, she will benefit from the higher productivity of the worker but she will have to pay the benefits. This implies that in equilibrium, there must exist a wage premium in favor of the skilled workers hired under an informal contract.

Fourth, we restricted attention to a setting where skills and abilities are uncorrelated with the cost of being formal. This implies that, in equilibrium, since unskilled (skilled) workers always (never) sue, the fraction of unskilled workers under informal contracts is lower than the fraction of skilled workers under informal contracts. In principle, one can extend our model and allow for some correlation between skills and the cost of being formal. For instance, it may be that firms with a higher cost of being formal are managed by less able entrepreneurs (see de Paula and Scheinkman (2010)) and there may exist a complementarity between the skills of the entrepreneur and the skills of the worker. If these two conditions are present, firms with a strong preference for informal (formal) contracts will only sign

contracts with unskilled (skilled) workers. As a result, we will observe a larger measure of skilled workers under formal contracts and a higher measure of unskilled workers under informal contracts. In the next section, we present empirical evidence that supports this last observation. We decided not to pursue this route because our focus is on the relation between the existence of active labor courts and the intensive margin of contracts (the determination of wages across contracts and skills), not on their extensive margin (the distribution of contracts in terms of skills). It is intuitive that, in a modified environment along the lines laid out above, it would still be the case that a firm has an incentive to observe the record of a skilled worker but not the record of an unskilled worker. Thus, it would still be the case that, conditional on employing an unskilled (skilled) worker, the wage under an informal contract is lower (higher) than the wage under a formal contract.

Fifth, we assumed that a worker's decision to sue a firm is costless, which implies that all unskilled workers hired under an informal contract sue their firms. This assumption seems contrived as workers may incur a number of direct costs (e.g., lawyer fees) and indirect costs (e.g., time) when filing a lawsuit. Moreover, these costs may vary across workers. It is straightforward to extend our model along this dimension. We only need to add that each worker incurs a cost $c_w \in \mathbb{R}^+$ if he sues the firm, and that c_w comes at the end of every match as a random draw from a cdf $F(c_w)$. In fact, if one wants to capture the empirical evidence on the relative number of workers who filed lawsuits (see next section), it would be desirable to extend our model this way. We decided not to do so because it delivers no additional insights into the relation between the existence of active labor courts and the intensive margin of contracts, which is the focus of our paper.

Finally, we assumed that in a formal contract, the worker does not sue. It is possible to generalize the model along this dimension, and allow workers to sue under a formal contract. However, the main qualitatively conclusions would hold as long the worker's benefit of suing and the penalty that the employer has to pay is lower under a formal than under an informal contract. In this case, it would also be true that in equilibrium skilled workers would never sue independently of the contract type and that unskilled workers would always sue. The only difference would be of a quantitative order. Precisely, we would observe a reduction on the wage differential between formal and informal contracts of unskilled workers, and a reduction on the range of firms that hire under formal contracts.

3   Empirical Evidence

In this section, we provide evidence that support the main assumptions and implications of the model. Our aim is to verify whether qualitatively the data sides with the model. We explore two databases on the Brazilian labor market. We use the Monthly Employment Survey (PME) to verify the assumption that more qualified workers have more disperse productivities. We also take advantage of the PME data to check two of the model's implications: (i) a positive average wage differential in favor of formal workers, and (ii) a negative wage differential for high-skilled workers. Moreover, we assess two features of the model using The Brazilian National Household Survey (PNAD). First, we check whether unskilled workers are more likely than skilled ones to have record S, that is, the record with labor lawsuits in the past . Second, we check whether informal workers with record S face wage penalties.[9]

There are multiple reasons why we use Brazil as a study case to check the model's adherence to the data. Brazil has a large population and consequently a sizeable labor market. Informal labor relations are very common and present all over the country. The Brazilian legal system follows the Civil law principles such that all labor regulations are coded. In Brazil, labor regulations are extensive and leave little room for private bilateral contracts, therefore full compliance with the labor law is expensive and cumbersome. The judiciary system has a special branch responsible only for labor related disputes.[10]   In addition, the specialized labor justice in Brazil is generally biased toward workers.[11] Finally, Brazilian datasets match information on the worker's lawsuit record with information on his socio-economic and demographic characteristics.

We start with evidence on the assumption that the variance of productivity increases with the skills of the worker. We analyze the wage distribution and the year-to-year wage variation for Brazilian workers with different levels of schooling and experience, using data from the 2007-2008 PME.

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[9]Note that this last feature is not a direct implication of the model but is related to the fact that the strategy of the firm involves punishing a worker with a record S.

[10]See the appendix B for more details about the Brazilian Labor Code and the branch of the Brazilian Justice that adjudicates labor disputes.

[11]Lamounier, Sadek, and Pinheiro (2000) found evidence of the bias of the judiciary from a survey given to a large number of firms to assess their opinion on the performance of the judiciary. Alston and Mueller (2005) based on the same survey data argue that 3 out of 4 cases that end up in court are ruled in favor of the worker.

The PME is a monthly rotating panel of residents in six major metropolitan areas of Brazil (São Paulo, Rio de Janeiro, Belo Horizonte, Salvador, Porto Alegre and Recife), encompassing approximately 30% of the population. The survey investigates schooling, labor-force, demographic, and earnings characteristics of each member of the household aged 10 and over for every interviewed household. Approximately 100,000 individuals in 35,000 households are interviewed every month.[12] For the purpose of our study we rely on questions concerning earnings (net of taxes), hours worked in the month of reference, legal sector (formal or informal), and some variables such as age, gender and schooling. We deflated the nominal wages by the Brazilian CPI. Table 1 shows descriptive statistics of the PME sample. Approximately one fifth of the workers in our sample is unregistered, excluding the self-employed. We use as indicator of informality the presence of the "signed" work booklet, an identification card issued by the Ministry of Labor. The terms of the contract between the employee and the employer are supposed to be registered in this booklet, and by making the registration the employer automatically agrees to comply with the Brazilian Labor Code.

Table 2 corroborates the assumption that the variability of earnings (a proxy for productivity) increases with the skills of the worker. The first column in the top panel presents the standard deviation of the log wages by different schooling level and age groups (proxy of experience). The wage variance raises as the worker becomes more educated or more experienced. We also take advantage of the longitudinal format of the data and calculate the wage variation of each worker from 2007 and 2008. The second column of the top panel shows the average variation by schooling and age groups. Again, it depicts a higher year-to-year variation for the more schooled and older workers.[13] In the first column of the bottom panel, we show an OLS regression of log wages on dummy variables for age groups, schooling levels, gender and race. To analyze the productivity dispersion among different age and schooling groups, we compute the residuals of the regression in the first column and run a second regression of the squared residuals on the same controls (age, schooling, gender and race). Corroborating our assumption, the results in column 2 show that the

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[12] Precisely, households are interviewed once per month for four consecutive months, then there is an eight-month window when they are rotated out; after this period, the household is interviewed for another four-month period.

[13] We acknowledge that these figures may be capturing a relative increase in the demand of skilled compared to unskilled workers in Brazil. Nevertheless, we are not able to rule out the possibility of differences in the workers' productivity dispersion by the level of skills.

more educated and older individuals have more disperse productivity. We trimmed the sample to employed individuals aged between 18 and 65 years old. Our sample has 31,484 individuals and 147,119 observations.

Our model delivers two main implications on the wage difference between formal and informal workers. First, as long as the number of unskilled workers is sufficiently large, the difference between formal and informal wages is positive. Second, this wage gap decreases with the skills. In order to assess these implications, we explore the panel-data structure of the PME. The longitudinal data allows keeping track of the same individual over different periods of time. This feature is important to control for unobservable characteristics that are fixed overtime. Therefore, even in the presence of fixed individual attributes that jointly determine wages and sectorial choice, we would be able to consistently estimate the wage differential. Since the Brazilian labor market is characterized by significant labor-force turnover, we observe several formal to informal sectorial transitions and vice versa, which allow to calculate the wage variation during a switch from one sector to the other, for the same individual.[14] The first column of table 3 shows the results of the random-effect estimator after regressing log wages on the formal job indicator variable. The coefficient associated with the formal job indicator gives the wage differential between formal and informal job in percentage terms. We find a wage gap of 9.2% favoring formal jobs. The second column depicts a fixed-effect estimator which is robust to unobservable individual characteristics as long as they are fixed overtime. It shows a significant 6.6% wage gap favoring formal jobs. To avoid seasonality issues, we narrow the sample only to observations exactly one year apart, i.e., each individual appears only with two observations (the first and fifth interviews). The third column of table 3 shows the fixed-effect estimator of the narrowed sample, which also indicates a positive and significant wage gap (10.2%). We further restrict the sample by eliminating individuals who changed their levels of schooling. The fourth column shows the results of the fixed-effect estimator for that sample (wage gap of 9.0%). The regression depicted in the fifth column uses the same sample as in column four but includes firm size as a control variable measured by the number of workers in the firm. The wage gap diminishes to 6.8%, but remains positive and significant. The last three columns present the regressions that test the heterogeneous segmentation implication.

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[14]Attrition is a problem often found in longitudinal surveys, and the PME is no exception. However, Botelho and Ponczek (2010) show that in the PME attrition is orthogonal to the job legal status and wages, therefore sample-selection bias is probably not biasing the estimates.

Column 6, 7 and 8 show that the segmentation decreases with schooling level; age (proxy for experience); and productivity (as measured by the quartile of the worker's net wage at the first interview).[15] The results confirm that skilled workers are faced with relatively better informal contracts than unskilled ones.

The PNAD of 1988 has information on access to justice services at the individual level. Among several questions, it asks whether the individual had ever filled a labor lawsuit. This can be used as a proxy for what in the model is defined as a record of action S or $\overline{S}$. The PNAD also contains extensive data on personal and household information. It includes information on age, education, labor participation, and formalization. PNAD is an annual household survey with a sample size equal to approximately 100,000 households. It covers all urban and almost all rural areas, except the Amazon region. This survey has been conducted on a regular basis since 1981 by the IBGE, but only the 1988 survey has information on justice services.

We use the PNAD data to check whether the following features of the model are refuted by empirical evidence. First, the model predicts that high-skilled workers faced with an informal contract would choose to not sue the employer to maintain a clean record. It also predicts that a worker that has previously sued an employer is less likely to find an employer that will hire him under an informal contract; besides, those who find a employer that does so face a lower wage.

Table 4 shows some descriptive statistics of the PNAD sample. We also trimmed the sample to economically active individuals (working or searching for a job) aged between 16 and 65 years old. We end up with 109,068 individuals in the sample. It can be noticed that the number of informal workers (41.7 %) is much greater than in the PME sample. This is so for two reasons: first PNAD covers the entire country including rural areas; second, the number of formal workers has significantly increased during the last decades in Brazil. We also notice that 3.42% have filled a lawsuit related to a labor dispute. Labor disputes are the main causes for lawsuits in Brazil. Only 2.9% of the individuals have ever filled a lawsuit that is not related to a labor dispute. Therefore, 54.1% of all lawsuits are labor related in Brazil. Although the number of labor relations that end up disputed in courts might be considered not as large as predicted by the model, there are labor disputes

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[15]The first quartile of the net wage is R\$2.57 (1.42 USD); the median is R\$3.79 (2.11 USD) and the third quartile is R\$6.24 (3.47 USD)

that are settled in the shadow of the courts (Alston and Mueller, 2005). In this case, the same qualitative results predicted by the model would hold. The only difference is that the penalty c_P would be shared between the parties. The important aspect to keep in mind is that it is the presence of active labor courts that induce such agreements.

The OLS regressions shown in table 5 test whether the model predictions are incongruent with the empirical evidence. Differently from PME, PNAD does not follow the individual overtime. Since we cannot control for fixed individual characteristics, we include indicators of gender, race, urban metropolitan areas, and mother's schooling as additional regressors to control for some observables that could be jointly related to the decision of filing a lawsuit and other variables of interest. The first column depicts the regression of the indicator variable "if the individual has ever sued a previous employer" on education and age. The results show that individuals with some college education (top of the schooling distribution) have a significant lower probability of having filed a lawsuit. In the second column, we regress the indicator variable "if the individual is currently employed in the formal sector" on the indicator variable "if he has ever filed a labor lawsuit". The result confirms the implication that once the worker has a record S, his chances of getting an informal job diminishes since only firms with a high cost of being formal ($c > \theta P$) will offer him an informal contract. The coefficients associated with filing a lawsuit shows a statistically significant increase of 9.2% on becoming formal if the worker has sued in the past. Column 3a depicts a regression of the log wages on the "sued" variable. The model predicts that workers with record S who receive an informal contract should also receive a lower wage since the expected lawsuit cost reduces the surplus of the match. The empirical evidence also confirms the theoretical implication, since filing a lawsuit is associated with a 12.1% wage reduction. The column 3b reproduces the previous regression to currently formal workers.

The model predicts that formal contracts should not be affected by the worker's record. The empirical evidence contradicts this implication since workers with record S also face a wage reduction (11.6%) when hired under a formal contract. Although the wage reduction of formal workers is numerically smaller than the one faced by informal workers, the difference is not statistically significant. The reason for the disparity between the theory and the data lies on the assumption that the outside option of the worker in the bargaining process does not depend on his record. If, instead, workers choose to stay unemployed and wait for

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better offers, the workers' reservation wage would take into account the outside option of receiving a better offer. In this case, a record S would diminish a worker's reservation wage irrespective of whether he is under a formal or an informal contract.

Note that our model assumes that the process of suing a firm is costless. However, it is possible that a costly access to justice may influence the type of workers who file a lawsuit. Although we are controlling for observable characteristics it is possible that unobservable characteristics associate with schooling may determine the worker's decision to sue the firm. For instance, it is possible that a worker with college education has more knowledge about the Brazilian labor code. Nevertheless, if that is the case, we should expect a positive correlation between education and lawsuits, which runs against the results of the model.

Finally, the 1988 PNAD has also information on whether the individual has filed a lawsuit related to non-labor disputes such as criminal, divorce, real state, alimony, inherence financial debt disputes. We use this information to check whether the results shown in table 5 are not capturing unobserved characteristics of the individuals who have accessed the justice system that could also be related to the labor outcomes. We ran the same regressions as before but changing the indicator variable "if the individual has ever filed a labor lawsuit" to one that indicates "if he has ever filed any non-labor lawsuit". Table 6 depicts the results. Differently from the labor lawsuits regressions, individuals who filed non-labor lawsuits do not have higher probability of being formal or face a wage reduction (columns 2, 3a and 3b).

4   Conclusion

We built a model addressing empirical features related to informal labor markets in developing economies. The central tenet of our model is the idea that asymmetric information about the productivity and the past history of workers can have an impact on wages and on the choice of labor contract. This impact is particularly relevant in an environment where workers are able to resort to the legal system and successfully punish a firm who chooses an informal contract and does not pay labor benefits mandated by law. In fact, we construct an efficient equilibrium that displays a negative relation between the wage gap (difference between the wage under a formal contract and the wage under an informal contract) and the productivity of the worker. We also investigate whether some model predictions could

be refuted by empirical evidences. Using Brazilian data, we find that several features of the model are consistent with labor market empirical regularities.

Our results shed some light on non-trivial effects of the interference of the legal system on labor relations. In fact, it is usually claimed that socially conditioned contracts are desirable in order to correct for inefficiencies caused by the excess of asymmetric information between workers and firms. However, our model suggests that this argument might not be true. This is so because in equilibrium firms react to the interference of the legal system and the surplus is reduced whenever labor contracts are disputed. This effect is particularly damaging for unskilled workers.

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5 Tables

Table 1 - Descriptive Statistics - PME 2007-2008

Variable	Mean	Std. Dev	Min	Max
Net hourly wages (in 2007 R$)	5.25	6.45	0.00	348.53
Age	35.00	10.88	18.00	65.00
% in Formal jobs	82.85	37.69	-	-
% working in firms with 5 workers or less	10.44	30.57	-	-
% working in firms with 6 - 10 workers	6.88	25.31	-	-
% working in firms with 11 workers or more	82.68	37.84	-	-
% with 11 years of schooling or more (18 or older)	57.58	49.42	-	-
% with 8-10 years of schooling or more (18 or older)	18.56	38.88	-	-
% with less than 8 years of schooling (18 or older)	23.85	42.62	-	-

source: Brazilian Monthly Employment Survey - PME 2007-2008

Table 2: Dispersion of wages by age and schooling

Top Panel	Standard deviation of log wages	% Year-to-year wage variation
By age		
18 to 29 years old	0.55	8.8
30 to 44 years old	0.61	9.0
45 to 65 years old	0.74	9.1
By schooling		
8 or less years of schooling	0.45	6.6
8 to 10 years of schooling	0.48	8.9
11 or more years of schooling	0.72	9.7

Bottom Panel	Dependent Variable	
	Log net wages	Squared Residuals
Age in [30, 44]	0.297	0.120
	(0.003)	(0.003)
Age in [45, 65]	0.464	0.206
	(0.004)	(0.004)
8 to 10 years of schooling	0.159	0.042
	(0.005)	(0.005)
11 or more years of schooling	0.587	0.264
	(0.004)	(0.004)
Male	0.272	0.094
	(0.003)	(0.003)
White	0.205	0.041
	(0.003)	(0.003)

source: Brazilian Monthly Employment Survey - PME 2007-2008

standard errors in parentheses

Table 3 - Wage Differentials

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formal	0.092***	0.066***	0.102***	0.090***	0.068***		0.113***	
	(0.003)	(0.004)	(0.007)	(0.008)	(0.008)		(0.025)	
Formal x Schooling 1						0.064***		
						(0.019)		
Formal x Schooling 2						0.056***		
						(0.021)		
Formal x Schooling 3						0.015		
						(0.024)		
Formal x Age							-0.002**	
							(0.001)	
Formal x Wage $\in Q_1$								0.171***
								(0.014)
Formal x Wage $\in Q_2$								0.057***
								(0.017)
Formal x Wage $\in Q_3$								0.037**
								(0.018)
Formal x Wage $\in Q_4$								-0.065***
								(0.019)
Fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observ. one year apart	No	No	Yes	Yes	Yes	Yes	Yes	Yes
No school. change	No	No	No	Yes	Yes	Yes	Yes	Yes
Firm size	No	No	No	No	Yes	Yes	Yes	Yes
Number of observations	147,119	147,119	61,341	48,263	48,263	48,263	48,263	48,263

note: *** p<0.01, ** p<0.05, * p<0.1

Sample: PME 2007- 2008 - Employed individuals aged between 16 and 65 years old

Dependent Variable: Log of net wages

Formal: Indicator variable if individual is formally hired

Schooling 1= less than 8 years of schooling; Schooling 2 = 8 to 10 years of schooling;

Schooling 3= more than 10 years of schooling

Q_i is th i-th quartile

Table 4 - Descriptive Statistics - PNAD 1988

Variable	Mean	Std. Dev	Min	Max
% in Formal jobs	41.27	49.23	-	-
% Filled a Labor Lawsuit	3.42	13.69	-	-
% Filled a Nonlabor Lawsuit	2.88	16.73	-	-
% Some College Education (>11 years of schooling)	9.62	29.48	-	-
% Elementary Education (4 to 11 years of schooling)	27.62	44.71	-	-

source: PNAD 1988

Table 5 - Labor Lawsuits

	(1)	(2)	(3a)	(3b)
Elementary school	-0.000	0.155***	0.202***	0.263***
	(0.001)	(0.004)	(0.015)	(0.011)
Some college education (at least)	-0.004***	-0.012**	0.661***	0.745***
	(0.001)	(0.006)	(0.018)	(0.012)
Age	-0.000***	-0.005***	0.016***	0.015***
	(0.000)	(0.000)	(0.000)	(0.000)
Sued		0.092***	-0.121**	-0.116***
		(0.016)	(0.050)	(0.031)
Number of observations	109,068	109,068	54,276	44,736

note: *** p<0.01, ** p<0.05, * p<0.1

Control variables: Gender; Race; Urban and Metroplitan areas; and Mother schooling

Sample: PNAD 1988 - Individuals aged between 16 and 65 years old

(1) - Depend. Variable: dummy if individuals has ever filed a nonlabor lawsuit

(2) - Sample: Employed individuals / Dep. Var.: dummy if worker employed in formal job

(3a) - Sample: Informally Employed individuals / Depend. Variable: Log wages

(3b) - Sample: Formally Employed individuals / Depend. Variable: Log wages

Table 6 - Nonlabor Lawsuits

	(1)	(2)	(3a)	(3b)
Elementary school	-0.001	0.155***	0.202***	0.263***
	(0.001)	(0.004)	(0.015)	(0.011)
Some college education (at least)	-0.004***	-0.012**	0.662***	0.746***
	(0.001)	(0.006)	(0.018)	(0.012)
Age	-0.000***	-0.004***	0.016***	0.015***
	(0.000)	(0.000)	(0.000)	(0.000)
Sued		0.009	-0.042	-0.037
		(0.013)	(0.036)	(0.029)
Number of observations	109,068	109,068	54,276	44,736

note: *** p<0.01, ** p<0.05, * p<0.1

Control variables: Gender; Race; Urban and Metroplitan areas; and Mother schooling

Sample: PNAD 1988 - Individuals aged between 16 and 65 years old

(1) - Depend. Variable: dummy if individuals has ever filed a nonlabor lawsuit

(2) - Sample: Employed individuals / Dep. Var.: dummy if worker employed in formal job

(3a) - Sample: Informally Employed individuals / Depend. Variable: Log wages

(3b) - Sample: Formally Employed individuals / Depend. Variable: Log wages

A   Appendix - Strategies of Workers and Firms

Consider first the worker's strategy. Note that there is no loss in generality if we assume that the worker does not condition his behavior on the behavior of firms in past matches, and if we assume that the worker with a summary of past behavior S does not condition his behavior on the particular sequence of past choices that underlies the summary S. The reason is that, in an environment with a continuum of agents and random meetings, this information is private to the worker and is independent of the strategies of his current and future firms. This is so irrespective of whether the firm incus the cost c_R and observes the record of the worker. Note also that the worker does not condition his behavior on the current choice of contract by the firm because he is called upon to make a decision only if the firm chose an informal contract. Finally, the worker does not condition his behavior on whether the firm is able or not to observe his record. In fact, his decision to sue the firm is made after the firm's decisions, and future firms cannot observe the actions of the worker's current firm. All in all, this implies that the strategy of the worker is fully described by a function

$$\sigma : \{0,1,2\} \times \{\overline{S}, S\} \times \{0,1,2\} \rightarrow \{\text{sue,does not.sue}\}$$

Consider now the firm's strategy. For the same reason as above (i.e., the fact that our environment involves a continuum of agents and random meetings), there is no loss in generality if we assume that the firm does not condition her behavior on the behavior and record of workers in all her past matches. This implies that the strategy of the firm is fully described by a pair of functions $\sigma = (\sigma_1, \sigma_2)$, where

$$\sigma_1 : \mathbb{R} \times \{u, s\} \rightarrow \{\text{yes}, \text{no}\} \,,$$

and

$$\sigma_2 : \mathbb{R} \times \{u, s\} \times \left[\{\overline{S}, S\} \times \{0,1,2\} \right] \cup \varnothing \rightarrow \{\text{I}, \text{F}\} \times \{0,1,2\} \,.$$

B   Appendix - Labor Regulations in Brazil

The Brazilian Labor Code was written in 1943 and slightly modified since then. The statute defines the benefits which workers are entitled. We highlight the thirteenth salary to be paid sometime between November and December, a one-month paid vacation, severance payment

for unjustified dismissal, a work week of forty-four hours, at least fifty percent premium for overtime work, food and commuting subsidy, and a four-month paid pregnancy leave of absence for women. In addition, wages must be at least as high as the minimum wage.[16] There is also a statute of limitations that allows workers to sue their former employers for violations up to five years after the contract termination. Labor disputes are adjudicated in Brazil by a special branch of the judiciary. Contracts that do not satisfy all the provisions of the Brazilian labor regulations are considered void, and workers may sue their employers for breach of law. Employers carry the legal burden of proof and must provide evidence that the terms of the labor code were fulfilled. If a worker can prove that the labor relationship ever existed—and the standard of proof is low, being sufficient to provide one eyewitness—the firm must prove that the requirements imposed by the legislation were fulfilled. Otherwise, the employers may be subject to a fine and payment of compensation to the worker. In this case, employers are liable for labor law violations, even if the parties had reached previous agreements in advance. The labor branch of the judiciary has been very active. For instance, it adjudicated about 3.4 millions cases in 2009.

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[16]See Amadeo, Gill, and Nero (2000) for a complete description of the Brazilian labor legislation.