Enforcement and the Effective Regulation of Labor

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Abstract[*]

This paper provides new measures of labor law enforcement across the world. The constructed dataset shows that countries with more stringent de jure regulation tend to enforce less. While civil law countries tend to have more stringent de jure labor codes as predicted by legal origin theory, they enforce them less, suggesting a more nuanced version of legal origin theory. The paper further hypothesizes that in territories where Europeans pursued an extractive strategy, they created economies characterized by monopolies and exploitation of workers, which ultimately led to stringent labor laws in an attempt to buy social peace. Those laws, however, applied de facto only in firms and sectors with high rents and workers capable of mobilizing. Finally, it is shown that territories with higher European settler mortality presently have more stringent de jure labor regulations, lower overall labor inspection, and larger differences in effective regulation of bigger firms.

1. Introduction

The causes and consequences of labor regulation have received substantial attention from economists and social scientists. Theoretical work stresses that the relevant concept to study is *effective* labor regulation, that is, the combination of both de jure regulations and state enforcement efforts. For example, political power theories argue that regulations are designed to benefit those in power (Esping-Andersen, 1990; Marx, 1872; Olson, 1993). Because workers care about their actual working conditions, not about the letter of the law, political power theory predicts that, in a democratic system, when labor-based parties are in power they introduce protective measures and enforce them to benefit their political constituencies. Another example is the theory of the firm. The firm's decision on employment levels not only depends on de jure regulations but also on the probability of being caught and the expected fine in case of noncompliance (Ashenfelter and Smith, 1979; Becker, 1968).

Botero et al. (2004) and La Porta, López-de-Silanes and Shleifer (2008) propose an alternative and interesting theory (i.e., legal origin theory) to explain differences in current labor regulation across countries. Legal origin theory stresses that, through conquest and colonization, the British transplanted a common law legal tradition to their former territories, while the other European powers transplanted a civil law tradition, and that despite much legal evolution the fundamental strategies still survive today. A key difference between both legal traditions, as pointed out by La Porta, López-de-Silanes and Shleifer (2008: 286), is that "common law stands for the strategy of social control that seeks to support private market outcomes, whereas civil law seeks to replace such outcomes with state-desired allocations." As in the case of the previously described theories, legal origin also stresses that the key concept is *effective* labor regulation. In countries with a civil law legal tradition, because of a greater aversion to the outcomes that result from an unregulated labor market, legal origin predicts both more stringent labor laws and more enforcement compared to common law countries.

Yet, despite the consensus across theories about the importance of *effective* regulation, empirical work has largely focuses on *de jure* regulations. Ignoring enforcement, however, could bring serious concerns to testing these theories, particularly if the components of effective regulation are negatively correlated. What if governments that introduce protective labor laws also turn a blind eye to enforcement to satisfy different constituencies? How could we credibly measure the effects of labor regulation if we only consider the letter of the law, ignoring the

possibility that enforcement is lower in those places where the law is more stringent? These are not purely hypothetical questions. Noncompliance with labor regulations is pervasive around the world. Furthermore, noncompliance is particularly high in developing countries, and at the same time, those countries tend to have the most stringent regulations. Is it correct to assume that state intervention in the labor market is more stringent in Venezuela or Angola, where labor laws are quite protective but enforcement and compliance are very low, than in Canada or New Zealand, where the opposite occurs? The existing cross-country empirical research, however, usually makes such an unrealistic assumption.

Lack of data on enforcement is presumably the main reason explaining the existing gap between the theoretical emphasis on effective labor regulation and the empirical focus on the letter of the law. A recent and growing literature empirically analyzes the causes and consequences of effective labor regulations, but it tends to focus on a single country and hence cannot answer a fundamental question: why do countries regulate their labor markets differently?[1]

This paper provides new measures of enforcement of labor law across almost every country in the world. The constructed variables are: i) the number of labor inspectors, ii) the number of inspections conducted per year and iii) the de jure penalties that employers face in case of noncompliance. These measures, by covering inspection resources, activities and penalties, attempt to proxy for the employer's probability of being caught in case of noncompliance and the expected fine. Although they have several limitations, as discussed below, I consider that they bring substantial value-added.

Using these cross-country measures I empirically test the legal origin theory. The results show that, contrary to the predictions of that theory, inspection resources, activities and penalties tend to be lower in countries with a civil law legal tradition compared to common law countries, and the results hold across different specifications and samples. I then proceed to present a stylized fact that, to the best of my knowledge, has remained relatively overlooked: countries with more stringent labor regulations enforce less. In particular, a large number of countries, both common and civil law, have quite stringent de jure regulations and very low levels of enforcement. The majority of these countries are located in Sub-Saharan African (such as

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[1] Studies that analyze the consequences of enforcement include Almeida and Carneiro (2012), Bhorat et al. (2012), Pires (2008), and Ronconi (2010); and studies that analyze its determinants include Amengual (2010), Piore and Schrank (2008), Murillo et al. (2009), and Ronconi (2012).

Angola, Benin, Burundi, Congo, Sierra Leone, and Tanzania), but there are also many examples in Latin America (e.g., Bolivia, Honduras, Paraguay, Peru, and Venezuela) and Asia as well (e.g., Iraq, Sri Lanka, Syria). In these countries, state intervention in the labor market is a puzzle. Why do they choose that combination? If there is an aversion to private market outcomes, then, they should not only have stringent de jure laws but also enforce them.

The final section of the paper provides a first attempt at explaining this apparent paradox. The proposed explanation rests on two main premises. First, the colonization strategies of the Europeans had long-lasting effects (Acemoglu, Johnson and Robinson, 2001). In those territories where the Europeans pursued an extractive strategy, compared to those territories where they settled in, they created an economy characterized by monopolies where the rent was not shared with workers. Second, inequality, rents and the exploitation of labor led to social unrest, and ultimately to the introduction of stringent labor laws in an attempt to buy social peace. But because the rent was concentrated in a few privileged firms and sectors, and because those who had the capacity to mobilize also worked there, the labor laws only applied in those sectors. In a small number of countries, such as India and Pakistan, this differential effective regulation was explicitly recognized in the labor code since de jure regulations only apply to large firms. In the great majority of countries, however, the differential regulation was achieved de facto via focusing enforcement efforts on large firms and turning a blind eye to noncompliance with the labor code in small production units. The available data, their limitations notwithstanding, is consistent with the proposed hypothesis. I show that territories with higher European settler mortality have nowadays more stringent de jure labor regulations, lower overall labor inspection, and larger differences in effective regulation against bigger firms.

2. Measuring Enforcement of Labor Law

This section presents new proxies for state enforcement of labor law across countries. Conceptually, the objective is to measure state actions to achieve compliance with labor regulations. State actions can be categorized into two groups: first activities that affect the probability of finding employers who violate the law, and second, actions that determine the expected penalty. Public campaigns that provide workers with information about their rights, access to the judiciary, and government inspections are in the first group. The penalties set in the

code and their effective implementation by labor inspectors and judges are in the second group. This paper covers some of the above actions.

2.1 Inspection

One of the main policy instruments to enforce labor regulations is government inspection. Labor inspectorates present substantial institutional heterogeneity across countries. In some countries there is a single inspection agency in charge of enforcing all types of labor standards, such as in France; in other countries there are two agencies, one enforcing safety and health and the other covering employment standards; and in a few countries, such as the United States or the United Kingdom, there are three or more agencies, each focusing on a relatively small number of provisions. Piore and Schrank (2008) describe them as the Latin "generalist" approach to labor inspection and the Anglo-American "diffuse" approach.

Regrettably, there is no single source of information to measure labor inspection agencies' resources and activities across countries. The relatively new ILOSTAT database, for example, only provides information about labor inspection for 53 countries. Therefore, I compiled data and statistics from governments' websites, from reports produced by the International Labor organization (ILO), the U.S. Department of Labor, and the U.S. State Department.

The first variable I construct is *Inspector$_i$*, which is simply the number of labor inspectors in country *i*. To count the number of inspectors I follow the definition suggested in ILOSTAT, according to which a labor inspector is a public official responsible for securing enforcement of the legal provisions relating to wages, safety and health, hours, the employment of children, and other connected matters. The second variable I construct is *Inspections*, defined as the number of labor inspections conducted per year. To make the values comparable across countries, I divide both variables by the labor force in each country.

The figures cover the period from 2000 to 2012, but for the majority of countries the collected data only cover the last years. In case of conflicting information across sources, I take the average. The constructed variables cover 197 countries and territories in the case of *Inspectors* and 131 in the case of *Inspections*.

The simple average across countries is 8.24 inspectors per 100,000 workers and 76.61 inspections per year per million workers. The averages, however, are substantially lower when

countries and territories with a population below 1 million in 2011 are excluded from the sample. In this case, the simple averages are 5.46 inspectors and 62.70 inspections. Table 1 presents the figures by region. Countries in Europe, the Middle East and North Africa present the highest values and Sub-Saharan Africa, and Central and South Asia the lowest.

Table 1. Number of Labor Inspectors and Inspections per Worker by Region (>1 million)

Region	Inspectors		Inspections	
	Average	No. countries	Average	No. countries
Europe	9.30	37	90.75	33
Middle East & North Africa	7.77	18	98.00	13
East Asia & Pacific	6.18	19	61.90	13
North America	4.72	2	62.91	2
Latin America & Caribbean	4.13	22	52.64	22
Central & South Asia	2.70	14	14.62	13
Sub-Saharan Africa	2.35	41	31.61	17
World	5.46	153	62.70	113

Notes: This table presents the simple average across countries of the number of labor inspectors per 100,000 workers, and the number of labor inspections conducted per year per million workers. Countries with a population below one million in 2011 are excluded. Figures are for the period 2000-2012.

2.2 Penalties

I construct a measure of de jure penalties in case of noncompliance with the minimum wage with assuming the following: i) the employer is a first-time offender, ii) the offense committed is paying one employee during one month a salary 20 percent below the legal minimum, iii) the employer does not obstruct the work of the inspector, iv) the employer corrects the problem after receiving a notice from the enforcement authority, and v) the employer does not retaliate against the employee. In countries with no minimum wage, I take the penalty that applies to violations of wage provisions.[2] The information is from the ILO TRAVAIL legal database and country legislation. It covers 187 countries and their relevant penalties in 2011.

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[2] Some countries set sectorial minimum wages through collective bargaining. In this case, I take the penalty that applies to violations of the minimum wage set in the collective agreement.

Penalties typically take the form of financial fines, either set as a monetary amount or as a proportion of the minimum wage. Some countries set a single fine, while others set a minimum and a maximum, and others only set a maximum. But penalties can also include criminal fines. In almost one out of four countries around the world, the applicable legislation stipulates imprisonment. Finally, in some countries the legislation explicitly requires inspectors to notify the employer before issuing any penalty; fines can only be applied to employers who did not correct the violation.

I construct measures of de jure penalties for three alternative scenarios: low, medium and high penalties, and convert criminal penalties into money assuming that the cost for an employer of serving one year in prison equals 10 times GDP per worker. The *Low total penalty* scenario assumes a 10 percent probability of receiving the minimum financial fine and a 5 percent probability of receiving the minimum term in prison.[3] The *Medium total penalty* scenario assumes a 50 percent probability of receiving a medium financial fine and a 25 percent probability of receiving the medium term in prison.[4] Finally, the *High total penalty* scenario assumes a 100 percent probability of receiving the maximum financial fine and a 50 percent probability of serving 50 percent of the maximum term in prison.

Table 2 presents these measures by region. The simple average across countries for the medium financial fine equals U$ 1,171 and for the medium prison term equals 0.19 years. Financial fines tend to be higher in more developed regions, and imprisonment varies substantially from basically zero in Europe to more than four months in Sub-Saharan Africa, East Asia and the Pacific.

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[3] The minimum financial fine in countries that do not establish a minimum is assumed to be 50 percent of the maximum, and the minimum term in prison is 25 percent of the maximum.

[4] The medium financial fine is the average between the minimum and the maximum fine, and the medium term in prison is the average between the minimum and maximum terms.

Table 2. De Jure Penalties in Case of Minimum Wage Violation by Region

Region	Medium Financial Fine (2011 U$)	Medium Imprisonment (years)	No. of countries
Europe	1,546	0.01	41
Middle East & North Africa	426	0.05	20
East Asia & Pacific	2,095	0.45	28
North America	9,225	0.21	3
Latin America & Caribbean	1,442	0.08	35
Central & South Asia	205	0.10	13
Sub-Saharan Africa	163	0.36	47
World	1,171	0.19	187

Notes: The table presents the simple average across countries of de jure penalties in case of violation of the minimum wage in 2011. The medium financial fine is defined as the average between the minimum and the maximum fine and converted to US$ using the official exchange rate. The medium term in prison is the average between the minimum and the maximum terms and it is expressed in years.

The measures presented above have several shortcomings. First, the penalties only refer to violations of the minimum wage. Second, there are a number of state actions aimed at enforcing the law that are not covered, such as providing information to workers about their labor rights and ensuring access to the judiciary. Presumably the most important limitation, however, is lack of data about the actual implementation of penalties. I return to this issue below.

3. Legal Origin Theory and Enforcement of Labor Law

Legal origin theory stress that there is a fundamental difference in the strategy of social control of business between common and civil law countries. "Common law [seeks a balance between private disorder and public abuse of power] by shoring up markets, civil law by restricting them or even replacing them with state commands" (La Porta, Lópe-de-Silanes and Shleifer, 2008: 307). This theory, when applied to the regulation of labor, predicts, first, that civil law countries have more protective formal legal rules; and second, it predicts that those formal rules are enforced in both legal traditions but particularly so in civil law countries because of the greater aversion to unregulated market outcomes. Furthermore, because civil law countries regulate more aspects of the employment relationship, differences in the nature of the enforcement task suggest more inspection resources and activities in civil law countries compared to common law.

Botero et al. (2004) collected an impressive amount of information and show that the first prediction holds. Common law countries—compared to their civil law counterparts—have less stringent employment, collective relations and social security laws. Their sample only covers 85 countries (including former colonizers). But, thanks to their influential work and the World Bank Doing Business (WBDB) initiative, it is now possible to easily access measures of employment regulations in 189 countries.

I replicate their work using the WBDB database for the year 2011. First, I follow a similar methodology and create the *de jure Employment Index* (see Appendix).[5] Second, I run a similar cross-country regression model. As shown in panel A in Table 3, their finding holds using this broader sample: common law counties have less protective de jure labor regulations, as predicted by legal origin theory.

Panel A in Table 3 presents the cross-country OLS regression of *de jure Employment Index* on legal origin. *Common law* is an indicator equal to 1 if the country has a common law legal tradition and zero otherwise.[6] The model in column 1 includes all countries for which the dependent variable is observed; in column 2 the sample is restricted to countries with available data on de jure regulations, inspectors and penalties; I further reduce the sample by excluding former colonizers (column 3), and countries with less than one million people in 2011 (column 4). All models include as controls income per capita, total population, country size (in square kilometers), and the urbanization rate, all in 2011.[7]

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[5] There are two main differences. First, I include the ratio of the minimum wage to the average value added of workers (also obtained from WBDB) as a component of the employment law index while Botero et al. (2004) do not. Second, Botero et al. (2004) computed not only an index of employment law, but also an index of collective relations law and an index of social security law.

[6] Countries are categorized as in La Porta, López-de-Silanes and Shleifer (2008).

[7] Botero et al. (2004) only control for income per capita. I include the additional controls because they affect the nature of the enforcement task, but excluding them does not affect the results in any substantive matter.

Table 3. Legal Origin and de Jure Regulation of Labor

	(1)	(2)	(3)	(4)
Panel A	De Jure Employment	De Jure Employment	De Jure Employment	De Jure Employment
Common Law	-0.13***	-0.12***	-0.11***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.02)
N	188	172	161	131
R2	0.29	0.28	0.29	0.23
Panel B	ILO Inspection Convention	ILO Inspection Convention	ILO Inspection Convention	ILO Inspection Convention
Common Law	-0.84***	-0.86***	-0.76***	-0.68***
	(0.17)	(0.18)	(0.18)	(0.20)
N	205	172	161	131
R2	0.15	0.21	0.19	0.17
Sample	All	Sample A	Sample A less colonizers (B)	Sample B less countries pop < 1 million (C)

Notes: OLS cross-country regressions. The dependent variables are de jure employment index in Panel A, and signature of ILO inspection conventions No. 81 and 129 in Panel B. Common Law is an indicator equal to one if the country has a common law legal tradition and 0 otherwise. Robust standard errors are in parentheses. Column 1 includes all countries; Column 2 only includes countries with data for de jure employment index, labor inspectors and fines (hereafter Sample A); Column 3 excludes from sample A colonizers (hereafter sample B); and Column 4 excludes from sample B countries with less than one million people in 2011 (hereafter sample C). All models control for log GDP per capita, urbanization rate, country size and population in 2011.
*** Statistically significant at the 0.01 level.

We now turn to analyze differences in enforcement between both legal traditions. I first consider the signature of ILO conventions regarding labor inspection. This is, of course, a declaration of intention, not a measure of actual enforcement efforts. However, for illustrative purposes it is worth analyzing. The variable *ILO Inspection Convention* takes a value from 0 to three. It is equal to three if the country signed convention No. 129 (i.e., labor inspection in agriculture) and both parts of convention No. 81 (i.e., labor inspection in the industrial and service sector). The results are in Panel B of Table 3. Consistent with the legal origin theory, civil law countries signed, on average, almost one inspection convention more than common law countries. This variable, however, is a declaration of intention. As we see below, it tells very little about actual enforcement.

Panel A and B in Table 4 presents the results using the measures of actual inspection resources and activities. In columns 1 and 2 the dependent variable is the number of inspectors and inspections per worker. Column 1 includes all countries and column 2 excludes countries with a population below one million people. Although the results are imprecise, they suggest that, contrary to the legal origin theory, civil law countries tend to enforce less, not more. Common law countries have about five inspectors more per 100,000 workers, but the difference becomes close to zero when the smallest countries are excluded from the analysis. Common law countries also conduct more inspections per worker, but in this case the difference is higher when the sample is restricted to larger countries.

Table 4. Legal Origin and Labor Inspection Resources and Activities

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Inspector per worker	Inspector per worker	Inspector per worker-regulation	Inspector per worker-regulation	Inspector per worker-regulation	Inspector per worker-regulation
Common Law	5.88***	0.68	5.75***	5.85***	6.04***	2.13*
	2.18	1.06	1.97	2.04	2.13	1.18
N	196	152	182	172	161	131
R2	0.19	0.41	0.15	0.15	0.16	0.25
Panel B	Inspections per worker	Inspections per worker	Inspections per worker-regulation	Inspections per worker-regulation	Inspections per worker-regulation	Inspections per worker-regulation
Common Law	8.07	37.88*	33.42**	35.78**	36.1**	46.22**
	23.2	20.7	16	16.7	17.2	19.55
N	130	112	127	119	110	95
R2	0.14	0.26	0.23	0.24	0.26	0.32
Sample	All	Pop > 1 million	All	Sample A	Sample B	Sample C

Notes: OLS cross-country regressions. The dependent variables are: inspector (inspections) per worker in columns 1-2 panel A (B); and inspector (inspections) per worker-regulation in columns 3-6 panel A (B). Common Law is an indicator equal to one if the country has a common law legal tradition and 0 otherwise. All models control for log GDP per capita, urbanization rate, country size and population in 2011. Sample A only includes countries with data for de jure employment index, labor inspectors and fines; sample B excludes colonizers; and sample C excludes countries with less than one million people in 2011. Robust standard errors are in parentheses.
* Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level.

These results, however, underestimate the positive correlation between common law and inspections because they do not take into account differences across countries in the nature of the task. As discussed before, in a number of common law countries (i.e., Bangladesh, India, Malaysia, Nepal and Pakistan) the labor code explicitly excludes smaller firms. Labor inspectors therefore only have to cover the portion of the workforce employed in large firms, which in some of these countries is quite small. Second, common law countries tend to regulate fewer aspects of the employment relationship, and therefore labor inspectors have a lighter workload. Again, ignoring differences in the nature of the enforcement task across countries tends to underestimate enforcement efforts in common law countries. Therefore, a more adequate measure to test whether civil law countries enforce more would be the number of inspectors per legally covered worker (or firm) and per regulation. I attempt to approximate this concept using the total labor force times the number of employment regulations as the denominator, and construct the variables *Inspectors per worker-regulation* and *Inspections per worker-regulation*.[8] Columns 3 to 6 present the results using Inspector and Inspection per worker-regulation as the dependent variable, which only correct for the latter problem. The positive correlation between common law and labor inspection, as expected, becomes stronger.

Table 5 presents the results for de jure penalties in case of a minimum wage violation. Each column represents a different dependent variable (i.e., financial fine, prison term, and total penalty under the three alternative scenarios), and Table 6 presents the results using the medium total penalty as dependent variable for the different samples of countries. The results indicate that common law countries set higher penalties, both financial and criminal.

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[8] The *Number of Regulations* is obtained from WBDB. The variable can take values from 0 to 10 and it is the sum of the following ten regulations: Is there a minimum wage? (yes=1, no=0); are fixed-term contracts prohibited? (yes=1, no=0); is there a limit to the cumulative duration of fixed-term contracts? (yes=1, no=0); can the workweek for a single worker extend to 50 hours per week? (yes=0, no=1); are there restrictions on night work? (yes=1, no=0); are there restrictions on "weekly holiday" work? (yes=1, no=0); is it legal for the employer to terminate the employment contract on the basis of redundancy? (yes=0, no=1); does the employer need the approval of a third party in order to dismiss one redundant worker? (yes=1, no=0); is severance pay for redundancy dismissal after one year of continuous employment compulsory? (yes=1, no=0); is paid annual leave compulsory (yes=1, no=0). Notice that this variable does not include variation in the stringency of each regulation and so it differs from the de *jure Employment Index*. For example, severance pay is compulsory in both the Central African Republic and South Africa, and so both countries add one point to the *Number of Regulations* variable, although in the former country severance equals 17 monthly salaries for a worker with one year of tenure compared to one monthly salary in the latter.

Table 5. Legal Origin and de Jure Penalties

Panel A	(1) Min Financial Fine	(2) Max Financial Fine	(3) Medium Financial Fine	(4) Max Imprisonment	(5) Min Total Penalty	(6) Max Total Penalty
Common Law	257***	2,908*	1,371**	0.57***	1,763**	63,624**
	(96)	(1,555)	(616)	(0.18)	(745)	(28,846)
N	187	187	187	187	187	187
R2	0.17	0.22	0.21	0.09	0.10	0.09
Sample	All	All	All	All	All	All

Notes: OLS cross-country regressions. The dependent variables are measures of de jure penalties in case of violation of the minimum wage. All variables refer to 2011 and are in measured in US$ using the official exchange rate (except for maximum imprisonment, which is measured in years). Common Law is an indicator equal to one if the country has a common law legal tradition and 0 otherwise. All models control for log GDP per capita, urbanization rate, country size and population in 2011. Robust standard errors are in parentheses.
* Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level.

Table 6. Legal Origin and de Jure Medium Total Penalty

	(1) Medium Total Penalty	(2) Medium Total Penalty	(3) Medium Total Penalty	(4) Medium Total Penalty
Common Law	20,312**	25,805**	25,158**	28,059**
	(9,066)	(10,966)	(11,169)	(13,866)
N	187	172	161	131
R2	0.09	0.12	0.13	0.14
Sample	All	Sample A	Sample B	Sample C

Notes: OLS cross-country regressions. The dependent variable is the medium total penalty in case of violation of the minimum wage. It refers to 2011 and is measured in U$ using the official exchange rate. Common Law is an indicator equal to one if the country has a common law legal tradition and 0 otherwise. All models control for log GDP per capita, urbanization rate, country size and population in 2011. Sample A only includes countries with data for de jure employment index, labor inspectors and fines; sample B excludes colonizers; and sample C excludes countries with less than one million people in 2011. Robust standard errors are in parentheses.
** Statistically significant at the 0.05 level.

As mentioned above, however, there is a lack of data about the actual implementation of penalties, which raises the following concern: what if countries with a civil law legal tradition are more likely to effectively penalize labor violations and collect fines from non-compliers compared to common law countries? In that case, the results could even reverse. Although there

is very little research on this matter, Piore and Schrank (2008: 4) suggest the contrary. Labor inspectors in the former colonies of France, Portugal or Spain "hope to coach, coax and, only occasionally, coerce firms into compliance with the letter and the spirit of the law." In what the authors call the "Latin model" of labor inspection, the approach is more pedagogical, less punitive than in the Anglo-American model.

Finally, I combine the inspection and penalties measures and construct four variants of an *Enforcement Index*. The first is defined as the average of the normalized variables *Medium total penalty* and *Inspector per worker*, the second index uses instead *Inspector per worker-regulation*, the third *Inspections per worker*, and the fourth *Inspections per worker-regulation*. The results in Table 7 (Panel A for the first two indexes and Panel B for the other two) clearly reject the legal origin theory: civil law countries enforce their labor codes less, not more.

Table 7. Legal Origin and Enforcement of Labor

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Enforcement Index 1	Enforcement Index 1	Enforcement Index 1	Enforcement Index 2	Enforcement Index 2	Enforcement Index 2
Common Law	0.058***	0.058***	0.037**	0.070***	0.071***	0.048**
	(0.017)	(0.018)	(0.016)	(0.018)	(0.019)	(0.018)
N	172	161	131	172	161	131
R2	0.27	0.28	0.32	0.24	0.25	0.26
Panel B	Enforcement Index 3	Enforcement Index 3	Enforcement Index 3	Enforcement Index 4	Enforcement Index 4	Enforcement Index 4
Common Law	0.045*	0.043*	0.060**	0.095**	0.094**	0.115**
	(0.023)	(0.024)	(0.027)	(0.039)	(0.040)	(0.046)
N	118	109	94	118	109	94
R2	0.20	0.22	0.26	0.26	0.28	0.32
Sample	Sample A	Sample B	Sample C	Sample A	Sample B	Sample C

Notes: OLS cross-country regressions. The four measures of the dependent variable (*Enforcement Index*) are (1) the average of the normalized variables Medium Total Penalty and Inspector per worker, the average using Inspector per worker-regulation, (3) using Inspections per worker, and (4) using Inspections per worker-regulation. Common Law is an indicator equal to one if the country has a common law legal tradition and 0 otherwise. All models control for log GDP per capita, urbanization rate, country size and population in 2011. Sample A only includes countries with data for de jure employment index, labor inspectors and fines; sample B excludes colonizers; and sample C excludes countries with less than one million people in 2011. Robust standard errors are in parentheses.
* Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level.

Overall, the evidence indicates that the relationship between legal tradition and effective labor regulation is mixed. On the one hand, former colonies of France, Spain, and the other continental Europe colonizers presently have more stringent de jure labor regulations than former British colonies, as the legal origin theory predicts. On the other hand, they enforce less. These results suggest, at least, a more nuanced version of the legal origin theory.

4. The Paradox of Effective Labor Regulation

This section empirically explores the relationship between de jure labor regulation and labor enforcement across countries. Two key stylized facts emerge from the analysis. First, countries with more stringent de jure regulations tend to enforce less. As Table 8 shows, there is a negative correlation between the *de Jure Employment Index* and the *Enforcement Index* that holds across different specifications, samples and the inclusion of controls (i.e., income per capita), although it is imprecise.

### Table 8. The Relationship between de Jure Regulations and Enforcement of Labor

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Enforcement Index 1	Enforcement Index 1	Enforcement Index 1	Enforcement Index 2	Enforcement Index 2	Enforcement Index 2
De jure Employment Index	-0.129***	-0.120**	-0.065	-0.185***	-0.179***	-0.106**
	(0.045)	(0.047)	(0.044)	(0.049)	(0.052)	(0.048)
N	172	161	131	172	161	131
R2	0.19	0.20	0.26	0.16	0.16	0.18
Panel B	Enforcement Index 3	Enforcement Index 3	Enforcement Index 3	Enforcement Index 4	Enforcement Index 4	Enforcement Index 4
De jure Employment Index	-0.056	-0.042	-0.113	-0.219**	-0.200*	-0.266**
	(0.071)	(0.078)	(0.070)	(0.104)	(0.110)	(0.120)
N	118	109	94	118	109	94
R2	0.14	0.16	0.17	0.17	0.18	0.20
Sample	Sample A	Sample B	Sample C	Sample A	Sample B	Sample C

Notes: The four measures of the dependent variable (*Enforcement Index*) are (1) the average of the normalized variables Medium Total Penalty and Inspector per worker, the average using Inspector per worker-regulation, (3) using Inspections per worker, and (4) using Inspections per worker-regulation. All models control for log GDP per capita in 2011. Sample A only includes countries with data for de jure employment index, labor inspectors and fines; sample B excludes colonizers; and sample C excludes countries with less than one million people in 2011. Robust standard errors are in parentheses.
* Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level.

Figure 1 is a scatter plot that illustrates the negative correlation using rankings based on the above measures of de jure regulation and enforcement. Countries with more stringent labor codes (i.e., with higher ranking positions based on the de *Jure Employment Index*) tend to enforce less (i.e., lower ranking position based on the *Enforcement Index*).

Figure 1. The Negative Correlation across Countries between Enforcement and Labor Law
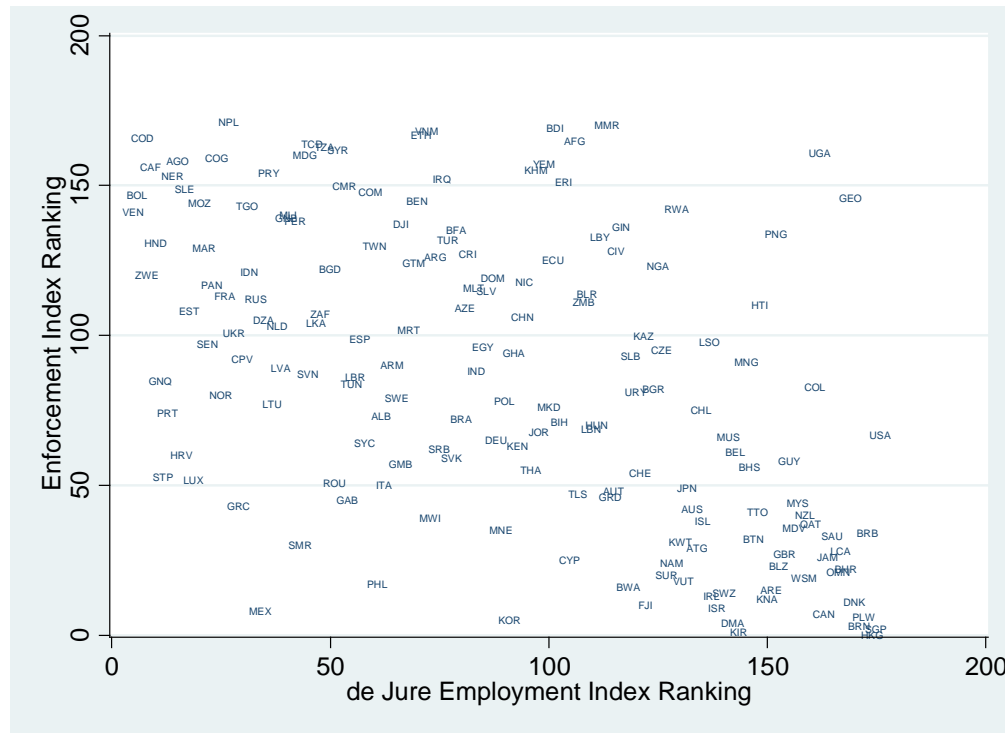
Notes: The horizontal axis is a ranking based on the de jure employment index wherein countries with more protective regulations have a higher ranking. The vertical axis is a ranking based on the enforcement index wherein countries with higher enforcement (labor inspectors and fines) have a higher ranking. The linear model between these variables equals *Ranking Enforcement Index = 130.7 – 0.53*Ranking de Jure Employment Index.*

The second stylized fact is that in a substantial number of countries—mostly located in Sub-Saharan Africa—we observe both stringent labor laws and at the same time very weak enforcement. This combination of extensive de jure legislation and low enforcement constitutes a "labor policy paradox." If a certain government has a dislike for private market outcomes, then, it is reasonable to expect a stringent regulation but also efforts to enforce it. Why a country would opt for a stringent code and little enforcement is a puzzle that remains unexplained.

These two facts have been generally unnoticed, but their implications are potentially important. First, cross-country studies that attempt either to explain the causes of regulation or

estimate its effects relying only on the letter of the law are likely to be biased. Above we have already proved that legal origin theory fails to account for variation in enforcement across countries. It is reasonable to suspect that estimates of the labor market effects of regulation based on variation in labor codes are also problematic.[9] Second, an adequate theory of effective labor regulation should be able to account for the negative correlation between the letter of the law and enforcement and explain the apparent paradox described above. I confront this challenge in the next section.

5. Colonial Origin and Differential Effective Labor Regulation

This section presents a first draft of an alternative theory of effective labor regulation. It rests on two premises and heavily draws from Acemoglu, Johnson and Robinson (2001):

1. Europeans pursued different colonization strategies, from the creation of extractive states to settler colonies. There is little controversy among economic historians about this point, although there is more debate regarding the underlying factors explaining the adoption of different colonization strategies. Acemoglu, Johnson and Robinson (2001) stress that it was the feasibility of settlements for Europeans that affected their colonization strategies. In regions where Europeans experienced high mortality rates (such as Africa) they pursued an extractive strategy, while in regions where mortality was lower (North America and Oceania) they settled in larger numbers and life was modeled after the home country. Factor endowments, such as soil, climate and demography, and particularly the types of crops that could be grown productively, have been emphasized by Engerman and Sokoloff (2002) as the reasons explaining variation in colonization strategies.

2. The colonial extractive strategy, by its very own design, created noncompetitive markets where the rent was not shared with workers. This situation produced social tensions and ultimately led to the introduction of redistributive policies in the form of stringent pro-worker labor legislation. Those rents, however, were concentrated in a few firms and sectors, and hence the stringent labor legislation was intended to apply only to them. In the settler colonies, on the other hand, more competitive markets led to fewer imbalances between capital and labor, and hence, there was less social unrest

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[9] For cross-country studies see, for example, Botero et al. (2004), Djankov and Ramalho (2009), Galli and Kucera (2004), and Feldmann (2009). Botero et al. (2004) use the average years of schooling of the population as a proxy for labor enforcement.

and demand for state intervention in the labor market. Furthermore, more competitive markets produced more pressure on governments towards ensuring high levels of compliance across all firms to avoid unfair competition. That is, different colonization strategies ultimately led to different forms of state intervention in the labor market: stringent labor codes and focalized enforcement in the case of former extractive colonies and more flexible labor codes with comprehensive enforcement in the case of former settler colonies.

The main claim, therefore, is that the strategies pursued by European colonizers play a fundamental role to understand actual effective labor regulation in the former colonies. As emphasized by Acemoglu, Johnson and Robinson (2001), European powers pursued different colonization strategies. In some places, mainly in Sub Saharan Africa, the Europeans created "extractive states," while in other places, such as Australia, New Zealand, Canada and the United States, many Europeans migrated and settled. Acemoglu, Johnson and Robinson (2001: 1370) show that these different colonization strategies were influenced by the feasibility of settlements: "In places where the disease environment was not favorable to Europeans settlement, the cards were stacked against the creation of Neo-Europes, and the formation of extractive states was more likely."

A key feature of those extractive states is that by design they created monopolies to exploit natural and human resources, forming highly unequal societies (Engerman and Sokoloff, 2002). Elites were able to maintain labor under control relying on the use of force, but only for some time. Economic and political inequality, rents and the exploitation of labor produced social tensions and uprisings, which ultimately led to the introduction of redistributive policies in the form of stringent pro-worker labor legislation. In Latin America, those reforms typically occurred a century after the countries gained independence (Collier and Collier, 1991), while in Africa they were introduced at the end of the colonial period (Cooper, 1996). But because the rent was concentrated in a few privileged firms and sectors, and because those who had the capacity to mobilize also worked there, the labor laws only applied in those sectors. Enforcing such a complex labor code on small production units was both unfeasible and economically disruptive. That is, differential regulation was achieved *de facto* via focusing enforcement efforts on large firms and turning a blind eye to noncompliance with the labor code in small production units.

The colonization strategy in North America and Oceania, on the other hand, was substantially different. Instead of extractive states, the Europeans were more interested in developing places where they and their descendants could live. More competitive markets led to higher wages and a smaller imbalance between capital and labor, and hence, there was less social unrest and demand for redistribution. Furthermore, more competitive markets produced more pressure on the government towards ensuring high levels of compliance across all firms to avoid unfair competition.

5.1 Evidence

The previous section indicates that, first, in countries where the Europeans pursued an extractive colonization strategy we expect more stringent de jure labor regulations compared to those countries where the Europeans formed settler colonies. Second, we expect that in the former extractive colonies, enforcement of labor law is restricted to (or at least largely focuses on) big companies, producing lower overall levels of enforcement and large differences in compliance between large and small firms compared to former settler colonies.

To quantitatively test the validity of the proposed hypothesis I regress an estimate of European settler mortality constructed by Acemoglu, Johnson and Robinson (2001) on a number of labor market regulations. An important limitation is that the former variable is only available for 64 countries severely limiting the size of the sample.[10] Columns 1 and 2 in Table 9 show that, consistent with the proposed hypothesis, current labor laws are more stringent in those countries where the Europeans faced higher mortality during colonial times. For example, the letter of the labor code is very protective in countries that suffered an extractive colonization strategy such as Congo, Gambia, and Sierra Leone, and less protective in countries where the Europeans formed settler colonies such as New Zealand and Canada.

The proposed hypothesis is consistent with an empirical fact that cannot be explained by legal origin theory: former British colonies in Africa and Asia generally have labor codes that are more stringent compared to former British colonies in North America and Oceania.[11]

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[10] See Albouy (2012) and Acemoglu, Johnson and Robinson (2012) for a discussion about this variable. I use the log of the mortality rate capped at 250.

[11] This, of course, does not imply that legal origin theory has no power to explain de jure labor regulation. If we compare countries with similar settler mortality, such as Niger and Nigeria, we observe a less protective labor code in the former British colonies. When *European settler mortality* and *Common law* are included as explanatory variables, both are statistically significant correlated with the letter of actual labor codes.

Table 9. Colonial Origin and Labor Regulation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A	De Jure Employment Index	De Jure Employment Index[a]	Inspector per worker	Inspections per worker	Medium Financial Fine	Medium prison term	Child labor UNICEF	Child labor WDI
European settler mortality	0.062***	0.067***	-2.361**	-29.704**	-1,893**	-0.034	9.560***	15.688***
	(0.015)	(0.017)	(1.016)	(11.407)	(840)	(0.064)	(2.810)	(4.319)
N	64	64	62	47	64	64	49	48
R2	0.17	0.15	0.17	0.16	0.10	0.01	0.29	0.40
Panel B	De Jure Employment Index	De Jure Employment Index[a]	Inspector per worker	Inspections per worker	Medium Financial Fine	Medium prison term	Child labor UNICEF	Child labor WDI
European settler mortality	0.037*	0.049**	-0.188	-4.887	-1,006	-0.022	3.917**	9.032**
	(0.019)	(0.023)	(0.745)	(11.014)	(627)	(0.057)	(1.536)	(3.623)
N	64	64	62	47	64	64	49	48
R2	0.20	0.17	0.31	0.29	0.22	0.01	0.63	0.63

Notes: OLS cross country regressions. [a] This measure excludes minimum wages from the de Jure Employment Index as in Botero et al. (2004). Log European settler mortality (capped at 250) is from Acemoglu, Johnson and Robinson (2001), a variable that is only available for 64 countries. UNICEF measures the % of children age 5-14 engaged in child labor; WDI measures the % of children 5-14 engaged in employment. Panel A does not include any control, Panel B controls for log GDP per capita. * Statistically significant at the 0.10 level, ** at the 0.05 level, *** at the 0.01 level.

Statistically testing the second part of the proposed hypothesis is inherently difficult due to the lack of data on the distribution of labor enforcement across firm size within each country. Ideally, we would like to observe the expected fine each firm faces in case of noncompliance with labor regulations. Evidence suggests that in Sub-Saharan Africa (i.e., the region where the European colonizers were most likely to implement an extractive strategy) the labor inspectorate only covers registered firms—which are larger and more profitable than non-registered businesses—turning a blind eye to noncompliance in the informal sector. For example, according to the opinion of owners of small and informal businesses in the region, one of the reasons for not registering their firms is because of the inspections that would take place if they registered.[1] Conversely, in North America, Australia, New Zealand and, even to some extent, in Latin America, there is some degree of enforcement of labor standards in smaller firms. But hard data on the distribution of labor inspections across firm size regrettably do not exist.[2]

Therefore, I explore other data that, in spite of a number of limitations, provide useful information. First, I explore whether former extractive colonies have lower overall enforcement. Second, I analyze whether violations of labor law tend to be more prevalent among small firms in the former extractive colonies. The rationale for using the latter proxy is that higher levels of noncompliance to some extent reflect lower enforcement. Columns 3 and 4 in Table 9 show that European settler mortality is negatively correlated with the actual measures of inspection resources and activities. That is, in those countries where the Europeans pursued an extractive strategy there is less overall inspection.

The last two columns of Table 9 use child labor as a proxy for violation of working age regulations. Child labor is a phenomenon that tends to occur almost exclusively in small

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[1] The evidence is from the Informal Surveys. Avoiding inspections is an important or very important reason for not registering their business according to the opinion of almost one third of interviewees. Data are available at https://www.enterprisesurveys.org/ and the countries are: Cape Verde, Democratic Republic of Congo, Ghana, Ivory Coast, Kenya, Madagascar, Mauritius, Niger, and Rwanda.

[2] The Enterprise Survey conducted by the World Bank is apparently a very useful source of information since the employer reports the number of employees in the firm, and whether it has been inspected or not by a labor and social security official during the previous year. This information is available for firms located in 32 out of the 64 counties for which Acemoglu, Johnson and Robinson (2001) collected mortality data. Regrettably, however, the sample only includes registered firms, which in less developed countries usually represent a quite small share of the population of businesses. Furthermore, as discussed before, anecdotal evidence indicates that in developing countries labor inspection agencies tend to exclusively focus on registered firms, implying that the inspection rate among registered firms is a poor proxy for the inspection rate among all firms. Having this caveat in mind, I compute the difference between the inspection rate among the relatively small registered firms and the relatively large registered firms in each country. In all countries, large registered firms are more likely to be inspected (also see Almeida and Ronconi, 2015), but particularly so in those countries with higher European settler mortality. This result is consistent with the proposed hypothesis, although it has severe limitations, as discussed above.

production units: usually in the household, but in some cases in small firms. Assuming that large firms do not violate working age regulations, then, the extent of child labor in each country is a proxy for differences in noncompliance with labor law between small and large firms, and thus, a proxy for differential enforcement of labor law against large firms. The results, using either data from UNICEF or from World Development Indicators, show that noncompliance with working age regulations—a phenomenon that is largely concentrated in small firms—is more prevalent in former extractive colonies.

Finally, I measure the extent of noncompliance with the minimum wage across firm size, and use the difference between large and small firms as a proxy for differential enforcement. Table 10 shows that in the United States—a country where the Europeans settled—the extent of noncompliance with the minimum wage is on average low (8.7 percent) and only slightly higher in small firms compared to large firms (15.5 percent vs. 6.8 percent). In Ghana—a country where the Europeans created an extractive state—overall noncompliance is higher (31.6 percent) and violations are very much concentrated among small firms (i.e., noncompliance is less than 2 percent among large firms and over 50 percent among small firms). Argentina, a country somewhere in the middle in terms of colonization strategy, also lies in the middle in terms of differential compliance (i.e., noncompliance is 7 percent among large firms and 36 percent among small firms). These results are consistent with the claim that those former colonies that introduced more protective labor regulation were interested in only enforcing it in part of the economy.

Table 10. Share of Employees with Salary below the Legal Minimum, by Country and Firm Size

Country	European settler mortality	Share employees with wage < legal minimum				Difference small vs. large
		Total	Small firm	Medium firm	Large firm	
United States	Low	8.71	15.47	10.43	6.75	8.17***
Argentina	Medium	18.48	36.08	10.20	6.70	29.38***
Ghana	High	31.62	50.58	23.84	1.56	49.02***

Notes: The European settler mortality rate is from Acemoglu, Johnson and Robinson (2001) and equals 15 deaths in 1,000 per year in the United States, 69 in Argentina and 668 in Ghana. To compute the share of workers with a salary below the legal minimum I use the CPS March 2013 for the US, the Permanent Household Survey 2012 for Argentina, and the Urban Household Worker Survey 2006 for Ghana. The sample is restricted to employees with positive earnings working between 10 and 60 hours per week. Small firm size is 1 to 10 employees, medium is 11 to 100, and large is more than 100 employees. *** Statistically significant at the 0.01 level.

6. Conclusion

This paper has a number of objectives: First, it provides new measures of enforcement of labor law across countries in the world. The constructed dataset shows that countries with more stringent de jure regulation tend to enforce less, a stylized fact that has been largely ignored. The dataset also shows that a substantial number of less developed countries—mostly located in Sub-Saharan Africa—combine both stringent labor laws and very weak enforcement, a situation that constitutes a "labor policy paradox." Second, the paper empirically tests whether the influential legal origin theory can adequately explain effective labor regulation. While civil law countries tend to have more stringent de jure labor codes as predicted by legal origin theory, it is not true that they enforce more. It actually appears that civil law countries tend to enforce less, suggesting a more nuanced version of legal origin theory and the need for an alternative explanation.

Third, the paper develops a new hypothesis to explain variation in effective labor regulation across countries, heavily borrowing from Acemoglu, Johnson and Robinson (2001) and other economic historians. Succinctly, the hypothesis is that in those territories where the Europeans pursued an extractive strategy, they created economies characterize by monopolies and exploitation of workers, which led to social unrest and ultimately to the introduction of stringent labor laws in an attempt to buy social peace. But because rent was concentrated in a few privileged firms and sectors, and because those who had the capacity to mobilize also worked there, the labor laws only applied de facto in those sectors. Fourth, consistent with this colonial origin hypothesis, results show that those territories with higher European settler mortality now have more stringent de jure labor regulations, lower overall labor inspection, and larger differences in effective regulation against bigger firms.

The paper also has a number of limitations, which can be considered avenues for future research. The most important presumably are the following. First, while the measures of labor enforcement include data about actual inspection resources and activities, they only include information about de jure penalties in case of violation of minimum wage regulations. To what extent penalties are effectively collected is a topic that has received little attention. Second, the proposed hypothesis requires further development and empirical support. One possible way is a comparative historical analysis of labor legislation in the former colonies. Such an analysis would be particularly valuable since I make a number of claims regarding the mechanisms

linking colonization strategy and actual labor regulation but do not provide any historical evidence. Another possibility is to analyze the distribution of current enforcement across firm size, either colleting new data or using noncompliance as a proxy for enforcement. Beyond these limitations, however, I consider that the central assertion of this paper holds: enforcement matters. Future research should go beyond the letter of the law and focus on effective regulation.

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Appendix

Variables	Description
Alternative employment contract	Measures the existence and cost of alternatives to the standard employment contract, computed as the average of (1) a dummy equal to one if fixed-term contracts are prohibited, (2) the normalized maximum duration of fixed-term contracts.
Cost of increasing hours worked	Measures the cost of increasing the number of hours worked, computed as the average of (1) the normalized maximum of working days per week, (2) a dummy equal to one if the workweek for a single worker can be extend to 50 hours per week (including overtime) for 2 months each year to respond to a seasonal increase in production, (3) a dummy equal to one if there are restrictions on night work, (4) a dummy equal to one if there are restrictions on weekly holiday work, (5) the normalized paid annual leave.
Cost of firing workers	Measures the cost of firing 20 percent of the firm's workers for redundancy. The cost of firing a worker is calculated as the sum of the notice period, severance pay and penalties for a worker with five years of tenure with the firm (except for the penalty which is the average for 1, 5 and 10 years of tenure). If dismissal is illegal, the cost of firing is assumed to be equal to the annual wage. The cost of firing workers is computed as the ratio of new wage bill (defined as the normal wage of the remaining workers and the cost of firing) to the old wage bill.
Dismissal procedures	Measures worker protection against dismissal. It is the average of the following seven dummy variables which equal one if (1) the employer must notify a third party before dismissing one redundant worker, (2) the employer needs the approval of a third party in order to dismiss one redundant worker, (3) the employer must notify or consult a third party prior to a collective dismissal (9 employees), (4) the employer must obtain prior approval from a third party before a collective dismissal, (5) there is a retraining or reassignment obligation before an employer can make a worker redundant, (6) there are priority rules that apply to redundancy dismissals or lay-offs, (7) there are priority rules applying to re-employment.
Minimum wage	The normalized ratio of the minimum wage to value added per worker.
de jure Employment Index	Measures the protection of employment laws as the average of the above five variables (1) alternative employment contract, (2) cost of increasing hours worked, (3) cost of firing workers, (4) dismissal procedures, (5) minimum wage.

Notes: This table presents brief definitions of the variables used to create a de jure employment index. All measures are from the World Bank's *Doing Business 2011*. Higher values indicate higher worker protection. All dummy variables are equal to one or zero; all normalized variables lie between 0 and 1 where 0 (1) is the minimum (maximum) value in the sample.