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The Economic Effects of Employment Protection: Evidence from International Industry-Level Data

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Abstract*

This paper examines the economic effects of employment protection legislation in a sample of developed and developing countries. Implementing a difference-in-differences test lessens the potentially severe endogeneity and omitted variable problems associated with cross-country regressions. This test is based on the hypothesis that employment protection regulations are more binding in sectors of activity exposed to higher volatility in demand or supply shocks. The analysis indicates that more stringent legislation slows down job turnover by a significant amount, and that this effect is more pronounced in sectors that are intrinsically more volatile. The paper also finds that employment and value added decline in the most affected sectors, and employment and output effects are driven by a decline in the net entry of firms. In contrast, average employment per plant is not significantly affected.

JEL Code: J23, J32, J63
Keywords: Employment Protection Legislation, Employment Reallocation, Gross Job Flows, Employment, Firm Entry and Exit

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1. Introduction

The effect of labor market regulations, and in particular, the effect of employment protection laws (EPL), has sparked an ongoing debate among economists. While a number of them adhere to the view that labor market institutions impair economic performance, others maintain that they can improve workers' welfare without harming economic efficiency.[1] The empirical evidence available so far has not helped to settle the debate. A large body of literature assessing the impact of EPL on labor market variables, mostly based on the analysis of data for industrial countries, has led to ambiguous results. While some studies find that employment protection regulations have important effects on employment adjustment, worker turnover, employment, or unemployment, others find no evidence of such effects.[2] At the same time, little is known about the effects of economic protection on value added and productivity given the few studies that have examined this issue.[3]

The lack of conclusive results to date may result from various factors. First, while theoretical models offer clear predictions regarding some of the expected effects—as in the case of the expected effects on turnover—they do not offer clear predictions on the expected effects of employment protection laws on employment or value added. Employment protection laws reduce firms' incentives to adjust labor in the event of supply or demand shocks, but they do not necessarily reduce average employment of existing firms (Bertola, 1990). Hopenhayn and Rogerson (1993), however, argue for the importance of firm entry and exit as one important margin affected by the laws. In their model, calibrated to U.S. parameters, an increase in adjustment costs would significantly reduce employment rates as a result of a decline in (net) entry. The empirical literature, however, has not explored much whether there are differential effects in the extensive and intensive margins.[4]

Another important issue is that determining the effect of labor institutions is a difficult endeavor. Labor regulations change very infrequently and tend to be applied at the national level for all workers. From the econometrician's point of view, this situation implies very little

[1] See, for example, Freeman (2005) for a description of the state of this debate, as well as Nickell (1997).
[2] See Blanchard and Wolfers (2000), Lazear (1990), Nickell (1997), Nickell and Layard (1999), and Organization for Economic Cooperation Development (OECD, 1999) for some empirical studies assessing the effects of employment protection and other labor policies in a sample of OECD countries.
[3] Besley and Burgess (2004) is an exception.
[4] Klapper et al. (2004), Besley and Burgess (2004) and Kugler and Pica (2005) are exceptions.

variation over time, across workers, or across geographic locations.[5,6] Most studies resort to cross-country differences in institutions and outcomes as the only existing sources of variation. Such estimates, however, are not sufficiently reliable. First, most studies draw their inferences from a limited number of industrial countries; the small number of countries and the insufficient time variation do not make it possible to control for unobserved country differences, thus greatly increasing the likelihood of omitted variable bias. Second, many studies fail to control for the likely endogeneity of regulations. It is likely, for example, that countries that experience high turnover rates have a high demand for strict employment protection legislation. This implies that cross-country estimates are likely to be upward biased, which in turn may explain the lack of relationship that the literature has found between these two variables.[7] Other examples of such endogeneity come readily to mind: countries with low employment creation or undergoing particularly bad shocks may tend to protect existing jobs.

Another problem related to cross-country estimates is that they do not account for differences in measurement across countries, which may introduce substantial measurement error into the dependent variable. This is particularly relevant for job flows; in some countries data are measured at the firm level, while in others data are collected at the plant level. The two measures are not strictly comparable because firm-level data miss the reallocation that occurs within plants.

In this paper, we propose a new method to estimate the economic effect of employment regulations that overcomes many of the problems faced by existing estimates. In addition to assessing the effects of EPL on employment and turnover, we also assess its effects on variables such as value added, productivity and number of plants, for which few estimates are available. Following Rajan and Zingales (1998), our test exploits differences across sectors and countries to

[5] In most countries labor regulations apply to the whole economy. Two important exceptions are: (1) countries in which small firms are exempted from the law or are covered by a less restrictive code; and (2) countries in which labor regulations vary at the state level, such as India and the United States. In the latter two countries, researchers have exploited geographical-time variation to relate economic outcomes to regulation (See Autor et al., 2003, for the United States and Besley and Burgess, 2004, for India). These studies found negative effects of labor regulations on employment.

[6] In some limited occasions reforms have applied only to some groups of workers, which allows implementing a difference-in-differences estimation of the effects in the treated group, relative to the non-affected group of workers. See Acemoglu and Angrist (2001) and Kugler et al. (2002) for an application of this methodology to U.S. and Spanish data, respectively.

[7] An exception is Caballero et al. (2004).

implement a difference-in-differences methodology.[8] The intuition for the test is developed in a simple model, which shows that sector differences in the intrinsic volatility of demand and supply of shocks lead to differential effects of employment protection across sectors. The model also predicts that EPL is more binding in more volatile sectors. This is the inference that we test in our empirical model.

To identify an industry's intrinsic demand for adjustment, we first study the rank correlation of industry job flows, and when available, of excess reallocation across countries, and we find that correlations tend to be positive, statistically significant, and large. Across countries, some industries exhibit higher levels of job reallocation than others. This suggests that there are important technological or product market characteristics that determine the relative volatility of employment in a sector. Of course, observed sector reallocation is itself affected by labor market institutions. Yet to the extent that institutions affect only the level but not the ranking of sector reallocation within a country, the observed rank correlations across countries would be a good estimate of the true rank correlation in the absence of labor market regulations. Under this assumption, we identify the intrinsic relative employment volatility of an industry in a given country in the absence of adjustment costs by the relative job reallocation of that industry in the United States, which according to many measures has the least restrictive employment protection regulation in our sample. The next step consists in identifying whether industries that require higher levels of reallocation exhibit lower rates of turnover, employment, value added, or firm entry relative to more stable sectors in countries with more stringent job regulations.

To implement these tests, we construct an international database at the industry level for the manufacturing sector. Contrary to most existing literature on employment regulation, which is based solely on industrial countries, our study relies on a larger sample of developed and developing countries. One advantage of expanding the sample to developing countries is that, while in industrial countries the strength of EPL and other labor market institutions may be highly correlated, such correlation is likely to be weaker in the developing country sample. In developing countries EPL is high, but trade union density and coverage are low (ILO, 1997), and protection against unemployment risks is much weaker than in industrial countries (World Bank,

[8] While difference-in differences methodologies exploiting time and geographical variation are common in labor economics, our methodology implies exploiting sector differences across countries. This methodology, has been applied applied in the finance literature. See Claessens and Laeven (2003); Galindo et al (2002); Galindo and Micco (2004), Raddatz (2002) and Rajan and Zingales (1998).

2004). This feature, jointly with our difference-in-differences estimation approach, reduces the likelihood of omitted variable bias.

The data contain information on turnover (at the two-digit level), employment, value added, and number of plants for the manufacturing sector (at the two and three-digit levels). We complement this data with some available measures of the stringency of EPL. Since these are *de jure* measures, which compare labor laws according to the text of the law, we also control for differences in the level of enforcement. The results indicate that employment protection reduces job flows and that this is particularly the case in industries that require a higher level of reallocation. We find that these effects occur within both the samples of developed and developing countries, but the effects are stronger in countries with better law enforcement (proxied by rule of law measures). We also find that employment and value added of high-reallocation sectors decline in relative terms. Such employment effects are entirely driven by a reduction in the entry of new plants in those sectors. In contrast, the average employment per plant is not significantly affected. These results are very robust to changes in specification, sample period, countries in sample, control variables, or estimation method.

The rest of this paper is organized as follows. The second section motivates and describes the empirical framework. The third section presents the data and the methodology to identify sectors in which regulations are more binding. The fourth section describes the main results. The fifth and final section concludes.

2. A Simple Theoretical Framework and Empirical Specification

Our empirical work is based on the notion that some industries require more flexibility than others in adjusting their employment levels. Firms in industries that face high volatility in their product demand or in their technologies are likely to require more flexibility than firms in more stable sectors. In the textile sector, for example, the swings of fashion imply that demand for a certain product or material varies substantially from year to year. Therefore, regulations that impede adjustment are expected to be more binding in sectors that require greater flexibility. In this section, we develop a simple dynamic labor demand model to illustrate this idea and to provide theoretical support for our empirical specification.

2.1 A Simple Model

We use a simple adjustment costs model as in Calvo (1983) to describe the effect of labor rigidities on job reallocation, firm expected profits, number of firms in the market, and total employment at the industry level. First, we solve the model assuming no adjustment costs and then we assess how the solution of the model changes with such costs.

Consider an economy where the profits of firm *i* are summarized by the following quadratic profit function:[9]

$$\Pi(A, L) = A_{ijct} L_{ijct} - \tfrac{1}{2} L_{ijct}^2 \qquad (1)$$

where L_{ijct} represents the level of employment of firm *i* in sector *j*, country *c*, and period *t*, and A_{ijct}, the profit shifter, summarizes demand and supply shocks. For each firm, A_{ijct} is a random variable with support $[\underline{A}, \overline{A}]$ and cumulative distribution function $F_{jc}(A)$, which is independent of past values.[10]

In each sector there is a large (unbounded) pool of prospective entrants. To enter, firms must first pay a sunk cost Ψ_i, which is distributed among the continuum of potential producers with a continuous cumulative distribution *G(.)* which is assumed invariant across countries, sectors and time. Firms draw their initial profit parameter A_{ijct} after they pay the entry cost but before they decide their initial level of employment.[11] Finally, the supply of labor is assumed to be infinitely elastic.

2.2 No Adjustment Costs

The desired level of employment (the static optimum) without adjustment costs is $L_{ijct}^* = A_{ijct}$ and the expected present value of future profits, before the firm enters the market is given by $\frac{1}{1-\beta}\int \Pi(A, L^*) dF_{jc}(A) = \frac{1}{(1-\beta)} \frac{1}{2} E(A_{ijct}^{\ 2} \mid_{jc})$, where β is the discount rate and $E(\mid_{jc})$ is the expectation operator conditional on being in sector *j* and country *c*. Firms will enter the market as long as the expected present value of future profits is equal or higher than the entry costs (Ψ_i). Under these assumptions, the number of firms that enter the market is $N_{jct} = N_{jct-1} = G(\frac{1}{(1-\beta)} \frac{1}{2} E(A_{ijct}^{\ 2} \mid_{jc}))$, that

[9] This profit function can be derived assuming linear demand and constant marginal cost functions. Firms are assumed to be price takers in the labor market.

[10] $\underline{A}$ is positive. The profit shifter A_{ijct} may be correlated within sectors and countries: $cov(A_{ijct}, A_{ijct-\tau})=0$, but $cov(A_{hjct}, A_{ijct})\neq 0$ for $i\neq h$.

is, the expected future profits, the number of firms in the market, and the average employment per plant in a given sector-country are time invariant. In addition, job reallocation in sector *j*, country *c*, defined as in Davis and Haltiwanger (1999) is equal to

$$SUM_{jct} = \frac{2\sum_{i\in jc}|L_{ijct} - L_{ijct-1}|}{\sum_{i\in jc} L_{ijct} + \sum_{i\in jc} L_{ijct-1}} = \frac{2N_{jct}E(|L_{ijct} - L_{ijct-1}||_{jc})}{N_{jct}E(L_{ijct}\ |_{jc}) + N_{jct-1}E(L_{ijct-1}\ |_{jc})}$$

Making use of the fact that $N_{jct} = N_{jct-1}$ and $E(L_{ijct}/_{jc}) = E(L_{ijct-1}/_{jc})$ job reallocation can be written as $SUM_{jc} = \frac{E(|L_{ijct} - L_{ijct-1}||_{jc})}{E(L_{ijct}|_{jc})}$ and $SUM^*_{jc} = \frac{E(|\ A_{ijct} - A_{ijct-1}\ ||_{jc})}{E(A_{ijct}\ |_{jc})}$ [12]

2.3 Adjustment Costs

With adjustment costs as in Calvo (1983), entrepreneurs face an exogenous constant probability λ of adjusting employment in a given period. The value function for a firm with profit parameter A_{ijct} and employment level L_{ijct} is equal to:

$$V(A_{ijct}, L_{ijct}) = \Pi(A_{ijct}, L_{ijct}) + \lambda\beta\int V(A_{ijct+1}, \widetilde{L}_{ijct+1})dF_{jc}(A_{t+1}) + (1-\lambda)\beta\int V(A_{ijct+1}, L_{ijct})dF_{jc}(A_{t+1})$$

where $\widetilde{L}_{t+1}$ denotes the dynamic optimal level of employment in *t+1* given the profit parameter A_{t+1}. We derive the dynamic optimal level of employment using the first order conditions (FOC):

$$\widetilde{L}_{ijct} = A_{ijct}(1-\beta(1-\lambda)) + E(A_{ijct}\ |_{jc})\beta(1-\lambda) \qquad (2)$$

The dynamic optimal level of employment is a weighted average between the current (A_{ijct}) and expected, optimal level of employment without adjustment costs $E(A_{ijct}|_{jc})$. Equation (2) implies that adjustment costs do not affect the average firm size (in terms of employment). Using these results, we compute sectoral job reallocation as:[13]

$$SUM_{jc} = \lambda(1-\beta(1-\lambda))\frac{E(|\ A_t - A_\tau\ ||_{jc})}{E(A\,|_{jc})} = \lambda(1-\beta(1-\lambda))SUM^*_{jc}$$

These expressions imply that job reallocation from firms with low to firms with high profits falls with adjustment costs (1-λ), and this decline is larger in sectors with higher volatility of demand

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[11] To avoid considering entry and exit of firms in steady state, we assume that once a firm exits the market it cannot enter again.

[12] An alternative measure of job reallocation based only on the first and second moments of *A* is: [a] $SUM^*_{jc} = \frac{\sum_{i\in jc}(L_{ijct} - L_{ijct-1})^2}{\sum_{i\in jc} L_{ijct} + \sum_{i\in jc} L_{ijct-1}} = \frac{\mathrm{var}(L_{ijct} - L_{ijct-1}|_{jc})}{2E(L|_{jc})} = \frac{Var(A|_{jc})}{E(A|_{jc})}$.

or supply shocks (profit shifters). Lower turnover implies a lower expected future profit for entering the market. Thus the entry value is equal to:

$$\begin{aligned}\int V(A_{ijc},\widetilde{L}_{ijc})dF_{jc}(A) &= \tfrac{1}{1-\beta}E\left(\Pi(A_{ijc},L^{*}_{ijc})\right)-\tfrac{1}{1-\beta}E\left(\Pi(A_{ijc},L^{*}_{ijc})-\Pi(A_{ijc},\widetilde{L}_{ijc})\,|_{jc}\right)\\ &\quad-\tfrac{\beta(1-\lambda)}{1-\beta}\iint\Pi(A_h,\widetilde{L}_h)-\Pi(A_k,\widetilde{L}_k)dF_{jc}(A_h)dF_{jc}(A_i)\end{aligned} \quad (3)$$

Substituting expression (1) into expression (3) yields:

$$\begin{aligned}\int V(A_{ijc},\widetilde{L}_{ijc})dF_{jc}(A) &= \tfrac{1}{1-\beta}\tfrac{1}{2}E(A^{2}\,|_{jc})-\tfrac{1}{2}\tfrac{\beta^{2}(1-\lambda)^{2}}{1-\beta}Var(A\,|_{jc})-\tfrac{\beta(1-\lambda)(1-\beta(1-\lambda))}{1-\beta}Var(A\,|_{jc})\\ &= \tfrac{1}{1-\beta}\tfrac{1}{2}E(A^{2}\,|_{jc})-\tfrac{\beta}{1-\beta}(1-\lambda)\left(1-\tfrac{1}{2}\beta(1-\lambda)\right)Var(A\,|_{jc})\end{aligned},$$

which is smaller than the expected present value of future profits without adjustment costs (first term). This is the result of two effects: First, adjustment costs create a wedge between the static and the dynamic optimal level of employment (second term in the first line). Second, firms cannot adjust to the dynamic optimal level of employment in each period (third term in the first line).[14] Thus the expected entry value decreases with the adjustment costs (1- λ), and this reduction increases with the intrinsic sector variance (the variance of the profit shifter). Therefore, under free entry, the number of operating firms declines with adjustment costs and this decline increases with the intrinsic variance. Using a first-order Taylor expansion, the reduction in the number of firms is given by

$$-g\left(\tfrac{1}{1-\beta}\tfrac{1}{2}E(A^{2}\,|_{jc})\right)\tfrac{\beta(1-\lambda)\left(1-\frac{1}{2}\beta(1-\lambda)\right)}{1-\beta}Var(A\,|_{jc}).$$

Summing up, this simple model yields several empirical implications. First, job reallocation declines with adjustment costs, and this decline increases with the intrinsic volatility of demand and supply shocks, which is summarized in the variability of the desired level of employment without adjustment costs. Second, the reduction in turnover due to adjustment costs reduces the expected entry value. Under free entry, this implies a smaller number of firms operating in the market. This decline is higher in sectors with high intrinsic volatility. Third, in this model the expected size of firms (in terms of employment) is independent of the level of adjustment costs (1-λ). This is because in this model there is no substitute for labor and thus an increase in adjustment costs does not imply a substitution between labor and other factors. Finally, since

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[13] Alternatively, ${}^{a}SUM_{jc} = \lambda(1-\beta(1-\lambda))^{2}\dfrac{Var(A\,|_{jc})}{E(A\,|_{jc})} = \lambda(1-\beta(1-\lambda))^{2}\ {}^{a}SUM^{*}_{jc}$

adjustment costs only affect entry rates, the level of employment (and therefore output) is decreasing with adjustment costs, and moreso for sectors with a higher intrinsic variance of demand or supply shocks. Thus our model implies that effects of employment protection legislation on turnover, employment, value added, and numbers of plants are relatively larger in sectors with higher intrinsic volatility. This is the inference that we test in our empirical analysis.[15]

2.4 Empirical Specification

The previous section suggests that the effects of employment protection legislation are larger in sectors with high intrinsic variance of shocks. Taking, for example, job reallocation (SUM), our simple model implies

$$SUM_{jc} - SUM_{.c} = \lambda(1-\beta(1-\lambda))(SUM^{*}_{jc} - SUM^{*}_{.c})$$

that is, for a given size of the adjustment cost $(1-\lambda)$, the higher the relative intrinsic volatility of sector *j* relative to the country average, the higher the decline in turnover in sector *j* relative to the average of other sectors..

Based on this implication, our empirical approach follows the literature on difference-in-differences to test for a differential effect of employment protection legislation in sectors that are inherently more volatile. This approach allows us to use country and sector fixed effects to control for all observable and unobservable country and sector characteristics. In particular, it allows us to control for differences in country and sector output volatility as well as for differences in the coverage and methodology of data collection across countries. This approach also alleviates the potential problem of endogeneity of regulations present in cross-country analysis. Thus, by using sector level data and controlling for country-wide volatility with country fixed effects we account for the feedback from employment outcomes to regulations.[16]

We exploit country-sector variation estimating the following specification:

$$Y_{jc} = \alpha_j \tau_j + \alpha_c \tau_c + \delta_0 R_c X_j + \delta_1 Z_{jc} + \varepsilon_{jc} \qquad (3)$$

where Y_{jc} denotes an economic indicator in sector *j*, country *c*, τ_j and τ_c are sector and country

[15] These conclusions do not depend on the assumption of temporary shocks. In Micco and Pagés (2004) we developed a version of this model with quadratic adjustment costs and permanent shocks with similar results for turnover and average employment. The entry decision was not considered in that model.

[16] To claim endogeneity, one would have to argue that across countries a high level of turnover or low job creation in some sectors determines the level of employment protection in the whole country.

fixed effects, $Z_{jc.}$ is a vector of controls that vary at the country-sector level, R_c is a measure of (*de jure*) employment protection legislation in country c, and X_j is a variable that measures the flexibility requirements of sector j.

To identify intrinsic volatility, we assume that in a frictionless world the ranking of variability across industries would be the same across countries. Therefore, relative industry reallocation in countries with low adjustment costs provides a good proxy of the intrinsic volatility of sectors in a country up to a constant value. The United States provides a good candidate for such a benchmark because its labor market is less regulated than in other countries. Therefore we use industry reallocation in U.S. industries to identify the frictionless level of reallocation, although we assess the robustness of our results to the use of different benchmarks. Reassuringly, while we cannot observe frictionless reallocation in countries with high regulation, in the next section we show that the rank correlation across countries in sector reallocation is in most cases positive, statistically significant and high, lending support to our identification strategy.[17]

Besides labor regulations, there are a number of factors that may influence the relative size and growth of some sectors over others. Thus, for example, Rajan and Zingales (1998) provide evidence that sectors that require more external financing grow faster in countries with higher financial development. Following a similar methodology, Claessens and Laeven (2003) show that sectors that are more intensive in the use of intangible assets (such as patents, copyrights, or clients lists) benefit more and therefore grow faster in countries with more secure property rights. Finally, Klapper et al. (2004) show that sectors with a high natural rate of entry of new firms experience higher firm entry—and thus possibly higher employment and output growth—in countries with low barriers to the entry of new firms.

While is unlikely that these effects—related to the structure of financing and asset portfolios of industries—are correlated with how labor regulations affect industries with various degrees of intrinsic volatility, we control for these effects by adding three additional controls to

[17] Similar identification strategies have been recently proposed in the literature. For example, Rajan and Zingales (1998) test whether sectors with higher intrinsic dependency of external funds grow faster in countries with more developed financial markets. They assume that external dependence ratios in U.S. industries are a good proxy for the intrinsic industry external dependency ratios in all countries. In this study we go one step further and show that there is a high correlation in observed job reallocation across countries.

our analysis.[18] The first variable follows Rajan and Zingales (1998) and interacts external dependency in U.S. industries (as a measure of a sector dependency on external dependency) with a measure of financial development at the country level. The second control variable follows Claessens and Laeven (2003) and interacts the ratio of intangible to fixed assets in U.S. industries (as a measure of a sector dependency on intangible assets) with a country-level indicator of property rights. Finally, following Klapper et al (2004), the third variable interacts a measure of the entry rate in U.S industries (as a measure of a sector intrinsic natural entry rate) with a measure of barriers to entry at the country level.[19]

3. Data and Correlations

3.1 Data

This paper uses data from a large number of sources at the country and sector level of disaggregation. Table 1 provides information regarding the description of the variables and their sources. In terms of the outcome variables, we assemble data on employment, value added, and number of establishments from the *Industrial Statistics Yearbook* produced by the United Nations Industrial Development Organization (UNIDO, 2002) at the two- and three-digit level of disaggregation in the International Standard Industrial Classification (ISIC-rev2). The data are for the manufacturing sector. For each variable, we construct five-year averages covering the periods 1985-90 and 1991-95, although we focus most of our analysis on the later period. Table 2 provides summary statistics of these variables for the period 1991-95, for all countries and also distinguishing between industrial and developing countries. Depending on the variables considered, the database covers between 65 and 69 countries, and more than half the countries are outside the sample of industrial countries.

We also collect data on average annual job flows at the two-digit level for manufacturing industries. There is no readily available dataset on job flows that spans a large number of developing and developed countries. Gathering data from diverse sources, we collect data for 11 developed and seven Latin American countries during the 1980s and 1990s (see Table 2 and

[18] The correlation between job reallocation and external financial dependence is 0.15, and with the intangibility ratio is 0.10. There is a slightly higher positive correlation between reallocation and entry rates (0.25).

[19] One important institutional feature that we cannot account for in our empirical analysis is the share of workers under fixed-term contracts in each sector. The use of such contracts is widespread in a number of European countries (OECD, 1999) and the liberalization of their use is akin to a reduction in EPL (Cahuc and Postel-Vinay,

Tables A.1 and A.2 in the Appendix for a full description of the periods and sources of these data, and for job reallocation rates by country and sector, respectively). Following Davis and Haltiwanger (1999), job reallocation is defined as the sum of job creation and job destruction. Plant-level data have been used for most countries, except for Argentina, Italy, and the United Kingdom, where only firm-level information is available. Job reallocation due to firm entry and exit data are available for all countries except Argentina, Uruguay, and Venezuela. Data are obtained from industrial surveys, except for Brazil and Mexico, for which social security registry and industrial survey data are available. Finally, for a few countries in which they are available, we also collect data on excess reallocation, defined as the difference between job reallocation and net job creation.[20]

To characterize job security across countries, we use two measures of the stringency of employment protection regulations as of 1997 obtained from Botero et al. (2004). The first measure, denominated *monetary cost of dismissal* (*MC*), measures the cost of firing 20 percent of the workers (10 percent fired for redundancy and 10 percent fired without just cause). This cost is calculated as the sum of advance notice, severance pay, and other mandatory penalties. If dismissals are not allowed by law, the measure sets the costs of dismissal to the annual wage.

The second measure, denominated *administrative costs of dismissal* (*AC*), measures employment protection in terms of the extent of the administrative procedures involved in dismissals. It is computed as the average of the following seven dummy variables, which equal one if any of the following conditions occurs: (1) if the employer must notify a third party before dismissing more than one worker; (2) if the employer needs the approval of a third party before dismissing more than one worker; (3) if the employer must notify a third party before dismissing one redundant worker; (4) if the employer needs the approval of a third party to dismiss one redundant worker; (5) if the employer must provide relocation or retraining alternatives for redundant employees before dismissal; (6) if there are priority rules applying to dismissal or lay-offs; and (7) if there are priority rules applying to reemployment. For the purposes of our work,

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2002). This could imply that in some countries our measures of EPL overestimate the amount of employment protection, which in turn, implies that we may underestimate its effects.

[20] See Davis and Haltiwanger (1999). In the absence of heterogeneous job creation and destruction patterns across firms within sectors, excess job reallocation is zero. Instead, excess reallocation measures tend to be quite large, indicating that a large share of job reallocation is not driven by aggregate shocks (more than 70 percent of job reallocation in our sample is driven by idiosyncratic shocks). There is a high correlation between sector job reallocation and sector excess job reallocation (0.99).

we standardize both measures between zero and one. Given the high correlation between the two variables (0.71) in most specifications, we use the sum of both measures as a summary measure of employment protection legislation.[21]

It can be argued, however, that the stringency of the regulatory environment depends on the level of enforcement of the law. While direct measures of the degree of enforceability of labor laws do not exist, it is expected that countries with better overall rule of law are more likely to enforce labor laws. We use the simple time average for period 1996-2002 of the variable "Rule of Law" constructed by Kauffman et al. (2003) to account for differences in law enforceability across countries. This indicator reflects the responses given by a large number of enterprises, citizens, and expert survey respondents across the world. Higher values reflect better rule of law.

We construct our main variable by interacting the former country-specific regulatory variables with sector job reallocation (or excess job reallocation) obtained from John Haltiwanger's job flows database.[22] Such variables are available at the four-digit SIC classification, which are easily convertible to ISIC-Rev2 classification at the two- and three-digit level.

Regarding the additional control variables, following Rajan and Zingales (1998), we use as an indicator of the financial development in a given country a measure of the reliability of financial reporting, or *accounting standards* (see Table 1 for further information on this and the rest of variables used in this study). We also gather an indicator *of dependence on external financing* for U.S. industries from the same authors. This measure reports the fraction of investment in U.S. firms financed externally (to the firm) by sector of activity. We follow Claessens and Laeven (2003) and use their measure of intangible asset intensity, and the property rights indicator constructed by the Heritage Foundation.[23] We measure the cost of starting a

[21] Since our outcome variables are measured for the early 1990s, it would be preferable to have measures reflecting the labor laws prevailing in the 1980s rather than in the 1990s; however, such variables are not available for a wide sample of countries. It is well known, however, that labor laws do not vary much over time. Indeed, judging from the sample of industrial countries for which employment protection measures are available for both the late 1980s and the late 1990s from OECD (1999, Table 2.5), we find that the correlation between both measures is 0.96. It is then highly plausible that our measures of regulation provide a good approximation of the legal environment in the 1980s.

[22] John Haltiwanger's data are available at http://www.econ.umd.edu/~haltiwan/download.htm

[23] The data can be downloaded from http://www.heritage.org

business in a given country using the cost associated with complying with the regulation of entry (as a percentage of the GDP per capita) constructed by Djankov et al. (2002) and the intrinsic entry rate in each sector in absence of entry or labor regulations, with a measure of the entry rate in U.S. industries constructed by Dunne et al. (1988).

Table 2 reports summary statistics. Employment is well diversified across sectors, with the average share of employment in each sector being 4 percent of total manufacturing employment. Not surprisingly, average value added and labor productivity are higher in the sample of industrial countries. Job reallocation is very similar in both sub-samples. However, this is partly due to the lack of entry and exit data in some of the developing countries in the sample (only Latin American countries for this variable). In fact, the average reallocation for all Latin American countries with entry and exit data is 26.37, which is higher than the average for industrial countries. Cross-country comparisons, however, should be treated cautiously. Besides the treatment of entry and exit, differences in the collection and nature of the data, in the definition and treatment of firm mergers, or in firm size imply that data are not strictly comparable. This is a standard problem in cross-country exercises, which we address using a differences-in-differences methodology.

Dismissal costs (both monetary and administrative) are on average higher in the sample of developing countries. The lower prevalence and lower level of coverage of unemployment insurance may explain such differences. Yet such laws are likely to be less enforced in developing countries. As expected, the rule of law measure suggests higher compliance in industrial countries.

In addition to labor regulation, other aspects of the business environment are more favorable in industrial countries. On average, industrial countries experience lower costs of starting a firm, more secure property rights, higher prevalence of rule of law, and better accounting standards.

3.2 Ranking Sectors According to Flexibility Requirements

Table 4 shows the Spearman rank correlation across pairs of countries in two-digit ISIC sector job reallocation. It also shows the rank correlation in job reallocation between each country and the simple average of job reallocation among English-speaking countries (nineteenth row) as well as with the simple average in our sample (twentieth row). Remarkably, the rank correlation

across countries is positive in all but 14 pairs, while the hypothesis of independence is rejected, at the 10 percent level, in only three instances. Moreover, the rank coefficients are in most cases very high. Focusing on the correlations with the United States (seventeenth row), the pair-wise rank correlations with developing and developed countries are positive and statistically significant in 17 out of 18 cases, and higher than 0.65 in 12 cases, respectively. The rank correlations between the United States and the other three English-speaking countries in our sample (Canada, New Zealand, and the United Kingdom), all highly deregulated countries, are 0.85 or higher. The two countries with the lowest pair-wise correlation with the United States, and in general with most countries, are Finland, and Sweden.[24]

The large correlation among countries in sector job reallocation is not exclusively the product of common sector shocks. In fact, the rank correlation in sector excess job reallocation across countries is positive, large, and in most cases statistically significant (see Table 5). Unfortunately, such data are available only for a small sample of countries. While observed rank correlations are affected by labor market regulations, it is reassuring that the highest rank correlation values are found among countries that are relatively unregulated, such as the English-speaking countries of our sample. The former suggests common sector shocks and also important commonalities in the distribution of shocks.

4. Results

In this section we assess the results of using differences in sector characteristics to implement a difference-in-differences estimation of the effects of employment regulations. We first assess whether employment protection legislation affects the level of reallocation, since this is the driver mechanism for the effects on the other variables identified in our model. We then assess whether there are any effects on employment, output, and firm entry. We drop the United States from the sample in those specifications in which reallocation in U.S. industries is used as a measure of frictionless job reallocation by industry.

[24] It is unclear why turnover patterns are different in these countries relative to the rest of the sample. One possibility may be that high coverage of collective bargaining alters the ranking of turnover across sectors. As of 1990, coverage of collective bargaining in OECD countries was the highest in Finland (95 percent). Yet, Germany (90) and France (92) had higher coverage rates than Sweden (83) (OECD, 1994).

4.1 Job Flows and Employment Protection

Table 6 shows the results of estimating specification (3) for job reallocation as a dependent variable. The main result for job flows is presented in column (1). After controlling for country and sector fixed effects, we find that more intrinsically volatile industries present lower levels of job turnover, relative to less volatile sectors, in countries with more stringent employment protection laws. The sign of the coefficient on the interaction terms is negative and statistically significant. The row labeled *differential in job reallocation* at the bottom of the table shows the magnitude of the impact of job security on job turnover differentials across sectors and countries, according to our estimation. For example, in column (1), this differential is -6.31. This number is interpreted as follows: job reallocation in an industry in the 90th percentile of flexibility requirement relative to an industry in the 10th percentile is 6.31 percentage points lower in a country with strict employment protection (that is, in the 90th percentile of job security) than in a country with low employment protection (in the 10th percentile). These are large numbers if we consider that the average level of job turnover in our sample is 20 percent.

These results survive a large number of robustness tests, presented in columns (2) through (11) in Table 5. For example, it could be argued that these results are driven by differences in sector volatility across countries with different levels of income per capita, which in turn are correlated with differences in regulatory levels.[25] To control for such effects, we add to the regression the interaction between income per capita and U.S. job reallocation. The results do not change (column 2). Results are also robust to measuring sector specific adjustment requirement using the average sectoral reallocation in the English-speaking countries in our sample (column 3) or excess reallocation in U.S. industries (column 4).

The entry and exit of firms explains a large share of total labor reallocation (Davis and Haltiwanger, 1999). Therefore, regulations that increase the cost of entry can also dampen labor reallocation. It is quite plausible that across countries the political economy that leads to the enactment of job security regulations also leads to the enactment of regulations on entry. If that is so, our estimates may be capturing the effects of other regulations. To assess whether this is the case, we control for a measure of the cost of entry at the country level (as a percentage of GDP per capita) multiplied by the importance of firm entry in a given industry (measured by

[25] Heckman and Pagés (2004) and Botero et al. (2004) show that the stringency of employment protection laws decreases with income levels.

percentage of firms less than two years old in U.S. industries).[26] Column (5) shows that our main results for job flows are unchanged if such regulations are controlled for.

In some countries of the sample, regulations may be poorly enforced. To account for differences in law enforcement, we add a new control variable interacting our constructed regulatory variable at sector, country level with rule of law by country, while allowing for another interaction between reallocation by sector and rule of law, which captures differences in reallocation associated with differences in rule of law (but unrelated to job security regulations). Interestingly, we find a negative and statistically significant coefficient on the interaction between the regulatory term and rule of law, as shown in column (6). Such a negative coefficient indicates that the effect of employment protection laws on flows increases with rule of law. In fact, the effect of EPL on job flows is not statistically significant in countries that score low on the rule of law measure.

Results are also robust regardless whether manufacturing census or social security registry data is used for Brazil and Mexico. Results are also robust if job reallocation is measured in logarithms rather than in absolute terms, as shown in column (8). This implies that our results hold regardless of whether we assume sector intrinsic employment variability to be constant across countries up to a constant additive or multiplicative term. The results also hold if the data are split into two sub-samples for developed and developing countries, as in columns (9) through (11). We find that in the developing countries sample the effect is maintained in countries with higher values in the rule of law measure, while the effect is not statistically significant in countries with an ineffective rule of law. In contrast, rule of law does not play a large role in the developed country sample. Nonetheless, an F test of the coefficients on labor regulations and regulations interacted by rule of law indicates that they are both statistically significant at the 15 percent in the Latin American sample and at the 5 percent in the developed countries sample. Results are also robust to changes in the sample of countries and sectors.[27]

In sum, using a difference-in-differences methodology that controls for country, sector, and income effects allows us identifying sizeable and robust effects of job security on turnover.

[26] Here, we adopt a similar procedure to labor regulations. We proxy the importance of entry in an industry in a given country, with the proportion of firms less than two years old in that industry in the U.S.—a relatively less regulated economy where firm entry regulations are less likely to distort the importance of entry across sectors.

[27] It is well known that cross-country analysis often suffers from lack of robustness. To test for this possibility, we re-run our baseline estimates—columns (2) and column (10) in Table 6—excluding one country and one sector at a

Such effects hold in industrial countries, as well as developing countries with an effective rule of law. It should be added that these estimates are not the result of the sample, but rather of the methodology used for the estimates. A standard cross-country regression of job flows against regulations—controlling for GDP variability, as well as for whether the data capture entry/exit and whether data are collected at the plant/firm level—yields no statistically significant relation between these variables, as found in similar exercises in the literature.[28] Instead, our difference-in-difference results are in line with recent estimates at the micro-level. For example, Boeri and Jimeno (2003) find that in Italy the dismissal probabilities of permanent workers (subject to EPL) increase relative to those of temporary workers (not subject to EPL) in firms that are exempted from EPL (below 15 employees). Kugler and Pica (2005) also measure the effects on job flows of a recent reform that increased the cost of dismissal only for workers in firms with fewer than 15 employees in Italy, and they obtain similar results.[29]

4.2 Results for Employment

We now turn to examine the effect of employment protection legislation on employment. In this section we study sector outcomes at the three-digit ISIC level in 53 countries. We report the results in Table 7.

Column (1) presents the main results, which suggest that employment regulations greatly reduce employment of the most affected sectors. The implied magnitude of the effects is very large. Increasing employment protection legislation from the 10^{th} least regulated percentile to the 90^{th} most regulated percentile in the sample reduces employment in the 90^{th} most variable sector relative to the 10^{th} most variable sector by 54 percent.

Our results are maintained if we re-run our baseline specification with a number of controls that in the literature have been found to affect the activity levels across sectors. Yet, the magnitude of the effects increases from 54 to 94 percent. These results suggest that increasing employment protection from the 10^{th} to the 90^{th} percentile in the sample wipes out employment in very volatile sectors. We also find the expected signs for the controls. Thus capital market

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time. The results, available upon request, indicate that the coefficients presented in Table 6 remain stable and statistically significant at conventional levels in all cases.

[28] See Micco and Pagés (2004).

[29] Yet, not all micro-level studies find such effects. Bauer et al. (2004) explore the effects of changes in size-threshold exemptions in Germany. They find no significant relationship between worker flows and the stringency of dismissal protection.

development allows the expansion of employment in sectors with higher dependence on external funds, while better property rights allow the expansion of employment in industries dependent on intangible assets.. In addition, we also find that higher costs of entry reduce employment growth in industries where entry is more important. The results also hold if, rather than expressing the dependent variable in log levels, we express it as a share of employment, as seen in column (6). This is not surprising given that the inclusion of country dummies implies that all results for log levels are relative to the country average. The results also hold if, rather than using the average (log) employment in the 1991-95 period, average (log) employment in the 1986–90 period is used; this substitution is shown in column (7).

We find both measures of employment protection (administrative costs and monetary costs) to affect employment, as shown in columns (3) through (5) of Table 7. When both measures are included in the specification, the results indicate a stronger adverse effect for administrative costs than for monetary costs. In addition, while the coefficient for administrative costs is statistically significant at the 1 percent level, the coefficient for monetary costs is only significant at the 20 percent level. The explanation could be that there might be a higher pass-through in the form of lower wages in the case of monetary costs than in the case of administrative costs.[30]

We find strong adverse effects of employment protection both in the sample of industrial and developing countries, as shown in columns (8) and (9). The coefficient on the interaction of rule of law is negative, suggesting that the stronger the rule of law the higher the adverse effects; however, the coefficient is not statistically significant, as shown in column (10).

We find these results to be very robust to changes in the level of aggregation of the data, measures of sector reallocation, control variables, and sample of countries and sectors. For example, performing the estimation with the data aggregated at the two-digit level does not alter our main results. Our results are also maintained if we measure intrinsic reallocation with excess reallocation rather than gross flows or if we eliminate one country or sector at a time. The results also hold if we control for systematic differences in the distribution of employment across industries in countries with different levels of income. To do so, we add to our baseline

[30] Workers may pay for higher employment protection benefits by accepting lower wages. Such a trade-off may be more likely when employment protection takes the form of severance payments, relative to when it takes the form of administrative restrictions to employment adjustment.

employment regression—column (2) of Table 7—sector dummies for both developing and developed countries, respectively or sector dummies multiplied by income per capita. Finally, the results also hold if rather than using accounting standards, we measure capital market development by the ratio of credit to GDP.[31]

4.3 Results for Other Economic Outcomes

Employment protection legislation also has a bearing on other economic outcomes. Table 8 reports the results of running the same baseline specification as in column (2) of Table 7 for value added, labor productivity, number of plants, and workers per plant (all in log average). We find that more stringent employment protection regulation is associated with lower value added and a lower number of establishments in industries with higher intrinsic volatility.

The results also indicate that higher employment protection is associated with a decline in average labor productivity and average employment per plant. These results, however—unlike the results for reallocation, employment, value added, and number of plants—are not robust to changes in the number of countries included in the sample. For example, eliminating Nigeria from the sample yields a positive but not statistically significant coefficient for labor productivity. In the case of the average firm size estimates (in terms of employment), eliminating either Malaysia or Portugal from the sample renders the coefficient on the labor regulations not statistically significant. Yet in both cases, further removing other countries or sectors one at a time from the sample does not change the results relative to those found excluding these outlier countries. Therefore, since the effects in most samples are not statistically different from zero, it is safer to conclude that labor regulations do not robustly alter labor productivity or the average employment per plant. The effect of regulations on value added reported in Table 8 also appears large. However, again, this effect is entirely driven by Nigeria. Once this country is removed from the sample, the effect of regulations on output is reduced to 60 percent: that is, increasing regulations from the 10^{th} to the 90^{th} percentile reduces value added in the most variable sectors by 60 percent. Further eliminating one sector or country at a time from the sample does not alter the magnitude of this estimate. We therefore conclude that the evidence points to strong negative effects of employment protection on employment, value added, and number of

[31] We used accounting standards rather than financial development because the first is a better measure of the development of the financial market. However, the second measure is available for a larger number of countries.

establishments, and no statistically significant effects on labor productivity or average employment per plant.

5. Conclusions

This paper proposes a new method for estimating the economic effect of employment regulations. This test is based on assessing whether regulations are more binding in industries that require more flexibility. By implementing a difference-in-differences approach, we can control for a number of unobservable country and sector effects, which in turn reduce the omitted variable and endogeneity problems that weaken the credibility of estimates based on cross-country analysis. We also include a large number of developing countries and examine the effects on output, productivity and net entry for which very few estimates exist.

This paper has shown that employment protection reduces turnover, employment, and value added by reducing the growth of highly volatile sectors, such as leather products and apparel. Our model and our estimates suggest that the decline in employment is mostly accounted by a decline in net entry of firms, with no discernible changes in average employment or output per firm. The effects are likely to go beyond the patterns of sector specialization across countries. By reducing the size of the most affected industries, labor regulations are likely to reduce firm entry, employment, and value added at the aggregate level.

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Appendix Table A.1
Job Reallocation Data Sources

1/ Brazil (SSR) denotes data from the social security agency (*Relação Anual de Informações Sociais*),and BRA (IS) from the Manuf. Annual Survey (*Pesquisa Industrial Anual*). 2/ Due to methodology changes in 1992, we restrict the data to the period 1993-1999. 3/ Mexico (SSR) denotes data from the social security agency (Instituto Mexicano del Seguro Social). Mexico (IS) denotes data from the Manuf. Annual Survey (Encuesta Industrial INEGI.). 4/ Venezuela uses data from the Industrial Survey (Encuesta Industrial de Venezuela – Instituto de Estadísticas de Venezuela). (*) Data at 2-digit available at the Job Flows Database. Inter-American Development Bank. http://www.iadb.org/res/pub_desc.cfm?pub_id=DBA-002 Sectors with fewer than 40 plants are not included.

Country	Period	Sectors	Reallocation due to entry / exit of firms available in data set?	Firms/Plants?	Source
Argentina	1991-2001	9	No	Firms	Sánchez and Butler (2004) (*)
Brazil (SSR)	1992-2000	8	Yes	Plants	Menezes-Filho coordinator (2003) (*)
Brazil (IS)	1997-2000	9	No	Plants	Authors Construction [1]
Canada	1979-1988	9	Yes	Plants	Baldwin, Dunne and Haltiwanger (1998)
Chile	1991-1999	8	Yes	Plants	Bergoeing, Hernando & Repetto (2003) (*)
Colombia	1993-1999	9	Yes	Plants	Medina, Meléndez & Seim (2003) [2] (*)
Germany	1986-1989	9	Yes	Plants	Grey (1995)
Finland	1985-1988	9	Yes	Plants	Grey (1995)
France	1984-1988	9	Yes	Plants	Gourinchas (1999)
United Kingdom	1987-1989	9	Yes	Firms	Barnes & Haskel (2002)
Italy	1987-1989	9	Yes	Firms	Grey (1995)
Mexico (SSR)	1994-2000	9	Yes	Plants	Kaplan, Martínez & Robertson (2003)
Mexico (IS)	1994-2000	9	No	Plants	Authors Construction [3]
Norway	1984-1986	9	Yes	Plants	Grey (1995)
New Zealand	1986-1989	9	Yes	Plants	Grey (1995)
Portugal	1992-1996	9	Yes	Plants	Blanchard and Portugal (2001)
Sweden	1980-1991	9	Yes	Plants	Grey (1995)
Uruguay	1988-1995	6	No	Plants	Casacuberta, Fachola & Gandelman (2003) [4] (*)
United States	1973-1993	9	Yes	Plants	Baldwin, Dunne and Haltiwanger (1998)
Venezuela	1996-1999	9	No	Plants	Authors Construction [5]

Appendix Table A.2
Job Reallocation per Country and Sector

This table presents job reallocation data (SUM) by country and sector. Only sectors with 40 plants or more are included. (SSR) denotes data from the social security registry, (IS) from the Manufacturing Annual Survey.

Country /Sector	Food, beverages and tobacco	Textile, apparel, and leather	Wood and wood products	Paper, printing and publishing	Chemicals, petroleum, coal, rubber	Non-metallic minerals products	Basic metal industries	Fabricated metal products	Other manufacturing industries
ISIC (Rev 2)	31	32	33	34	35	36	37	38	39
Argentina	15.3	15.5	17.4	12.7	12.9	12.0	12.3	15.4	17.3
Brazil (SSR)	34.4	36.4	36.5	27.7	30.3	29.9	30.3	31.7	NA
Brazil (IS)	13.8	9.8	10.7	8.6	8.6	8.4	8.6	9.8	7.3
Canada	17.6	26.0	27.7	16.6	18.6	23.0	13.3	25.1	28.1
Chile	28.4	22.8	32.7	21.3	21.8	23.5	9.8	25.4	NA
Colombia	24.9	23.4	29.6	22.7	20.5	19.8	16.0	23.4	22.4
Germany	15.9	15.0	17.5	11.6	8.6	13.0	10.1	12.5	14.6
Finland	14.6	18.9	18.2	19.2	14.7	13.8	10.7	19.6	16.7
France	31.2	21.5	28.8	17.3	18.4	14.0	27.4	20.2	28.4
Italy	22.4	25.4	23.1	17.4	15.8	17.7	19.1	19.4	38.9
Mexico (SSR)	23.5	35.5	39.6	26.3	22.5	24.9	21.4	26.7	30.8
Mexico (IS)	5.9	7.9	9.0	5.5	6.0	6.5	6.1	8.1	6.3
Norway	14.8	17.4	15.7	11.8	12.0	14.3	7.3	18.9	16.3
New Zealand	27.3	34.3	32.7	23.8	27.4	30.9	25.1	32.3	38.3
Portugal	27.1	24.4	27.1	23.3	22.0	22.2	18.1	24.4	26.0
Sweden	24.6	21.7	24.6	20.7	20.2	26.1	32.6	22.3	19.0
Uruguay	11.9	17.6	NA	10.5	10.9	12.2	NA	15.3	NA
United Kingdom	23.0	26.2	29.8	22.2	20.0	22.3	20.9	23.9	35.6
United States	17.6	21.8	22.6	15.3	17.3	20.1	15.6	19.2	24.0
Venezuela	9.4	7.6	11.4	7.4	8.7	10.2	4.5	10.1	9.3
Average	20.2	21.4	23.9	17.1	16.9	18.2	16.3	20.2	22.3

NA: Not Available.

Table 1
Description and Source of Variables

Variable	Description and Source
	Country-Level Variables
Index Employment Protection Legislation --Monetary Costs (EPLmon)	As described in Botero and others (2004). "Measures the cost of firing 20 percent of a firm's workers (10% are fired for redundancy and 10% without cause). The cost of firing a worker is calculated as the sum of the notice period, severance pay, and any mandatory penalties established by law or mandatory collective agreements for a worker with three years of tenure with the firm. If dismissal is illegal, we set the cost of firing equal to the annual wage. The new wage bill incorporates the normal wage of the remaining workers and the cost of firing workers. The cost of firing workers is computed as the ratio of the new wage bill to the old one". Source: Botero and others (2004)
Index Employment Protection Legislation --Administrative Costs (EPLadm)	As described in Botero and others (2004). "Measures worker protection granted by law or mandatory collective agreements against dismissal. It is the average of the following seven dummy variables which equal one: (1) if the employer must notify a third party before dismissing more than one worker; (2) if the employer needs the approval of a third party prior to dismissing more than one worker; (3) if the employer must notify a third party before dismissing one redundant worker; (4) if the employer needs the approval of a third party to dismiss one redundant worker; (5) if the employer must provide relocation or retraining alternatives for redundant employees prior to dismissal; (6) if there are priority rules applying to dismissal or lay-offs; and (7) if there are priority rules applying to re-employment". Source: Botero and others (2004)
GDP per Capita (GDPpc)	GDP per capita measured in Constant 1995 US dollars. Source: World Bank Development Indicators (WDI, 2005).
Accounting Standards (AS)	This index ranks the market disclosure in annual company reports in each country as of 1990. A higher number indicates more disclosure. Obtained from Table 2, Rajan and Zingales (1998)
Property Rights (PR)	It measures the extent by which governments protect private property by enforcing laws. Countries are ranked from 1 to 5. The higher the protection of private property, the lower the score. This measure is obtained from the Heritage Foundation Web page http://www.heritage.org/research/features/index/ Average 1995-2006.
Rule of Law (RL)	Measures whether a country has an environment with fair and predictable rules, and the extent by which property rights are protected. It is based on the aggregation of measures based on perception of incidence of crime, the effectiveness and predictability of the judiciary and the enforceability of contracts.1996-2002. Higher values indicate better rule of law. Source: Governance Matters III. Kaufmann and others (2003) http://www.worldbank.org/wbi/governance/govdata/
Entry Costs (ECgdp)	Direct cost (as a fraction of GDP per capita in 1999) associated with meeting government requirements before a business can legally open. Source: Table III, Djankov and others (2002).

Table 1 (Cont.)
Description and Source of Variables

Sector-Level Variables	
Job Reallocation in United States (SUM_USA)	Job reallocation defined as sum of job creation and job destruction at 4 digit SIC code. Time average by sector for period 1973-1993. Source: Job Flows data Davis, Haltiwanger and Schuch (1996) http://www.econ.umd.edu/~haltiwan/download
Excess Job Reallocation in United States (EXC_USA)	This variable is defined as job reallocation minus the absolute value of net job creation. As with job reallocation, we compute the time average of the annual measures. Same source and period as *SUM_USA* .
Rate of Firm Entry (ENTRY)	Mean firm entry rate computed as number of new firms between periods *t-1* and *t* divided by number of firms in period *t* for the United States. Two-digit SIC. Source: Table 5 Dunne et al (1988).1963-1982.
External Financial Dependence (EFD)	Fraction of investments in U.S. firms financed externally during the 1980's. Three-digit ISIC code. Source: Table 1, Rajan and Zingales (1998).
Intangible Intensity (IA)	1980-1989 at the two-digit SIC. Source: Claessens and Laeven (2003).
Country and Sector-Level Variables	
Job Reallocation (SUM)	This variable is defined as the sum of job creation and job destruction. We construct a sector-country data set computing the time average of the annual measures. The data come from several sources. In some cases, like Brazil, Chile, Mexico, and Venezuela, we directly compute the reallocation measures based on industrial surveys or social security registries. For the other countries, we use data available from published articles to build a sector-country data set. See Table A.1 for a complete description of sources for each country and Table A.2 for a full presentation of the data. The data set covers industries in the manufacturing sector defined according to the two-digit ISIC Rev.2 classification. The periods covered, the unit of observation (whether plant or firm) and the treatment of entry and exit differ across countries (see Table A.1). For the countries in which we directly construct the job reallocation measures we include only industries with more than 40 plants.
Log Employment 91-95 (lemp91-95)	Average of the values of Log (number of workers) for 1991-95 at the three-digit ISIC level from UNIDO (2002) database.
Log Value Added 91-95	Average of the values of Log of Value Added (in US dollars) for 1991-95 at the three-digit ISIC level from UNIDO (2002) database.
Log Number of Establishments	Average of the values of Log of Number of Establishments for 1991-95 at the three-digit ISIC level from UNIDO (2002) database.
Log Plant size	Average of the values of Log (Number of Establishments/Number of Workers) for 1991-95 at the three-digit ISIC level from UNIDO (2002) database.
Log Labor Productivity	Average of the values of Log (Value Added/Number of Workers) for period 1991-95 at the three-digit ISIC level from UNIDO (2002) database.

Table 2
Summary Statistics

Summary Statistics for Employment, Value Added and Firm Size (in Logs) as well as Employment Share from UNIDO (2002) database. *SUM* is the sum of job creation and job destruction at the two-digit level. *SUM_USA* is the average job reallocation rate at three-digit ISIC for the U.S. during period 1973-1993. Also reported averages of country-level institutional variables for the set of countries for which UNIDO data is available. (See Table 1 for sources and definitions of all variables included in the study). EPLmon and *EPLadm* are Employment Protection measures summarizing the monetary and administrative costs of dismissals. *Accouting Standards* measures the degree of reliability of financial reporting across countries. *Entry Cost* measures the monetary cost of complying with entry regulations. *Property Rights* measures the extent goverments protect private property (average 1995-2006). Rule of Law measures capacity of the State to enforce laws. GDPpc denotes GDP per capita and is obtained from World Bank Development Indicators (WDI) (2005). See Table 1 for definitions and sources

Panel A - All Countries: Country - Sector level data averages (1991-1995)					
Variable	Obs	Mean	Std.Dev.	Min.	Max.
Ln(Emp)	1473	9.29	1.97	1.79	14.50
Ln (Value Added) (VA)	1471	14.78	2.61	3.63	21.39
Ln (VA / Emp)	1471	5.49	1.31	-1.03	9.52
Ln(Firm Size)	1408	4.14	1.10	0.36	8.22
Sector Share (Emp)	1473	0.04	0.06	0.00	0.70
SUM_USA * JS Bot (MC+AC)	1473	0.15	0.08	0.00	0.38
Job Reallocation (SUM)	157	20.88	7.42	4.48	39.57
Country Averages (Time invariant)					
ELPmon+EPLadm	59	0.80	0.43	0.00	1.49
EPLmon	59	0.42	0.22	0.00	0.81
EPLadm	59	0.38	0.29	0.00	0.86
Acc. Standards	40	60.83	13.55	24.00	83.00
Property Rights	59	3.92	0.87	2.50	5.00
Entry Cost (%GDPpc)	59	0.37	0.63	0.00	3.35
Rule of Law	59	0.59	1.02	-1.27	2.14
Ln (GDPpc) Avg.1985-89	59	8.15	1.58	4.96	10.35

Panel B- Industrial Countries: Country - Sector level data averages (1991-1995)					
Variable	Obs	Mean	Std.Dev.	Min.	Max.
Ln(Emp)	622	9.99	1.81	4.61	14.50
Ln (Value Added) (VA)	622	16.42	1.98	10.13	21.39
Ln (VA / Emp)	622	6.42	0.68	4.42	9.52
Ln(Firm Size)	589	3.80	0.99	1.06	7.18
Sector Share (Emp)	622	0.04	0.05	0.00	0.61
SUM_USA * JS Bot (MC+AC)	622	0.14	0.08	0.01	0.35
Job Reallocation (SUM)	99	21.14	6.45	7.3	38.9
Country Averages (Time invariant)					
ELPmon+EPLadm	25	0.74	0.41	0.08	1.40
EPLmon	25	0.39	0.21	0.00	0.69
EPLadm	25	0.35	0.26	0.00	0.86
Acc. Standards	24	66.54	9.85	36.00	83.00
Property Rights	25	4.72	0.46	4.00	5.00
Entry Cost (%GDPpc)	25	0.13	0.12	0.00	0.59
Rule of Law	25	1.63	0.43	0.74	2.14
Ln (GDPpc) Avg.1985-89	25	9.71	0.43	8.65	10.35

Table 2 (Continuation)

Summary Statistics: UNIDO data base three-digit ISIC Rev.2

Panel C- Developing Countries: Country - Sector level data averages (1991-1995)					
Variable	Obs	Mean	Std.Dev.	Min.	Max.
Ln(Emp)	851	8.77	1.93	1.79	14.16
Ln (Value Added) (VA)	849	13.58	2.36	3.63	19.18
Ln (VA / Emp)	849	4.81	1.25	-1.03	9.34
Ln(Firm Size)	819	4.39	1.12	0.36	8.22
Sector Share (Emp)	851	0.04	0.06	0.00	0.70
SUM_USA * JS Bot (MC+AC)	851	0.16	0.09	0.00	0.38
Job Reallocation (SUM)	58	20.42	8.87	4.48	39.57
Country Averages (Time invariant)					
ELPmon+EPLadm	34	0.84	0.44	0.00	1.49
EPLmon	34	0.44	0.22	0.00	0.81
EPLadm	34	0.40	0.30	0.00	0.86
Acc. Standards	16	52.25	14.08	24.00	76.00
Property Rights	34	3.32	0.56	2.50	5.00
Entry Cost (%GDPpc)	34	0.56	0.78	0.03	3.35
Rule of Law	34	-0.18	0.52	-1.27	1.25
Ln (GDPpc) Avg.1985-89	34	7.00	1.03	4.96	8.73

Table 3: Sector-specific Variables: Averages for United States industries.

Job Reallocation rate at three-digit SITC for the United States during period 1973-1993. *Excess Job Reallocation* is defined as Job Reallocation minus net job growth. *External Financial Dependence* is the fraction of investments in U.S. firms financed externally. *Intangible Assets* are blueprints, patents, copyrights, client lists and trademarks. *Entry Rate* is defined as the number of new firms divided by average number of firms (See Table 1 for descriptions and sources).

Sector (ISIC-rev 2)		Job reallocation	Excess job reallocation	External financial dependence	Intangible to fixed assets	Entry rate
ISIC	Manufacturing of:	(1)	(2)	(3)	(4)	(5)
353	Petroleum refineries	0.08	0.05	0.04	0.02	0.34
351	Chemicals	0.12	0.09	0.33	0.96	0.33
341	Paper	0.12	0.10	0.11	0.20	0.31
314	Tobacco	0.14	0.09	-0.45	0.49	0.21
371	Iron and Steel prod.	0.15	0.08	0.09	0.11	0.32
355	Rubber prod.	0.15	0.10	0.23	0.46	0.43
362	Glass prod.	0.15	0.11	0.53	0.05	0.34
313	Beverages	0.17	0.14	0.08	0.75	0.39
372	Non ferrous prod.	0.17	0.12	0.01	0.11	0.32
342	Printing and publishing	0.17	0.15	0.20	4.54	0.49
385	Scientific equipment	0.17	0.14	0.96	0.90	0.60
361	Pottery prod.	0.18	0.13	-0.15	0.05	0.34
311	Food	0.18	0.16	0.14	0.75	0.24
321	Textile	0.18	0.14	0.11	0.21	0.37
352	Other chemicals	0.18	0.14	0.75	0.96	0.33
384	Transport equipment	0.18	0.13	0.29	0.24	0.47
354	Petroleum and coal prod.	0.19	0.14	0.33	0.02	0.34
383	Electric machinery	0.19	0.14	0.86	0.77	0.46
382	Machinery	0.20	0.15	0.68	0.25	0.47
381	Fabricated metal prod.	0.21	0.16	0.24	0.31	0.43
332	Furniture	0.22	0.17	0.24	0.49	0.47
324	Footware	0.22	0.16	-0.08	0.33	0.29
369	Other non-metallic prod.	0.22	0.18	0.06	0.05	0.34
356	Plastic prod.	0.23	0.17	1.14	0.46	0.43
331	Wood	0.23	0.18	0.28	1.20	0.50
323	Leather	0.24	0.18	-0.14	0.33	0.29
390	Other manfuc. industries	0.24	0.20	0.47	2.29	0.40
322	Apparel	0.25	0.20	0.03	0.53	0.40
Dif. P90-p10		0.12	0.09	1.00	1.15	0.20
Dif. P75-p25		0.07	0.05	0.29	0.64	0.11

Table 4
Spearman Rank Correlation of Sectoral Job Reallocation between Pairs of Countries

Spearman rank correlation coefficients of job reallocation at the sector level (two-digit ISIC Rev2) between pairs of countries.In parenthesis the probability that the two variables are independent. All coefficients are estimated with either 8 or 9 observations (depending on whether information for sector 39 ISIC Rev2 is available).*English-speaking* denotes the unweighted average of sectoral job reallocation for Canada,United Kingdom, New Zealand and United States.

	ARG	BRA	CAN	CHL	COL	DEU	FIN	FRA	U.K.	ITA	MEX	NOR	NZL	PRT	SWE	URY	USA	VEN
Argentina	1																	
Brazil	0.85	1																
	(0.00)																	
Canada	0.78	0.64	1															
	(0.00)	(0.00)																
Chile	0.61	0.64	0.68	1														
	(0.00)	(0.00)	(0.00)															
Colombia	0.75	0.76	0.43	0.77	1													
	(0.00)	(0.00)	(0.00)	(0.00)														
Germany	0.63	0.71	0.58	0.83	0.78	1												
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)													
Finland	0.52	0.11	0.38	0.17	0.53	0.11	1											
	(0.00)	(0.11)	(0.00)	(0.01)	(0.00)	(0.09)												
France	0.62	0.81	0.22	0.42	0.56	0.61	-0.13	1										
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)											
ıited Kingd	0.82	0.78	0.85	0.75	0.63	0.81	0.4	0.5	1									
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)										
Italy	0.77	0.9	0.69	0.57	0.55	0.77	0.18	0.7	0.91	1								
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)									
Mexico	0.78	0.51	0.83	0.55	0.66	0.67	0.66	0.19	0.86	0.67	1							
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
Norway	0.74	0.66	0.8	0.73	0.59	0.57	0.57	0.26	0.8	0.7	0.73	1						
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)							
Jew Zealan	0.74	0.68	0.96	0.56	0.33	0.53	0.28	0.24	0.8	0.74	0.74	0.81	1					
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)						
Portugal	0.72	0.64	0.52	0.85	0.86	0.84	0.35	0.66	0.76	0.68	0.59	0.64	0.41	1				
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)					
Sweden	-0.39	0.16	-0.34	0.17	-0.11	0.17	-0.54	0.14	-0.14	-0.04	-0.28	-0.24	-0.28	-0.11	1			
	(0.00)	(0.01)	(0.00)	(0.00)	(0.09)	(0.01)	(0.00)	(0.04)	(0.00)	0.55	(0.00)	(0.00)	(0.00)	(0.09)				
Uruguay	0.65	0.71	0.94	0.48	0.31	0.54	0.08	0.37	0.88	0.77	0.65	0.88	0.94	0.37	0.42	1		
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.30)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)			
Jnited State	0.69	0.71	0.94	0.73	0.39	0.7	0.12	0.34	0.87	0.78	0.74	0.73	0.94	0.53	-0.1	0.94	1	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Venezuela	0.33	0.34	0.58	0.87	0.42	0.58	0.07	0.12	0.49	0.23	0.43	0.51	0.46	0.55	0.2	0.37	0.61	1
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.30)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	
ıg-speakir	0.8	0.71	0.98	0.77	0.52	0.7	(0.36)	0.32	0.92	0.78	0.85	0.84	0.94	0.64	-0.26	1.00	0.96	0.61
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 5

Spearman Rank Correlation Coefficient of Sectoral Excess Correlation between Pairs of Countries

Spearman rank correlation coefficients of excess job reallocation at the sector level (two-digit ISIC Rev2) between pairs of countries. In parenthesis the probability that the two variables are independent. All coefficients are estimated with either 8 or 9 observations (depending on whether information for sector 39 ISIC Rev2 is available).English-speaking denotes the unweighted average of sectoral job reallocation for United Kingdom and United States.

	ARG	BRA	CHL	COL	U.K.	MEX	URY	U.S.	VEN
Argentina	1								
Brazil	0.66	1							
	(0.00)								
Chile	0.63	0.75	1						
	(0.00)	(0.00)							
Colombia	0.83	0.71	0.58	1					
	(0.00)	(0.00)	(0.00)						
United Kingdom	0.82	0.63	0.5	0.79	1				
	(0.00)	(0.00)	(0.00)	(0.00)					
Mexico	0.57	0.51	0.33	0.76	0.9	1			
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)				
Uruguay	0.82	0.14	0.48	0.42	0.54	0.14	1		
	(0.00)	(0.08)	(0.00)	(0.00)	(0.00)	(0.08)			
United States	0.56	0.8	0.6	0.45	0.8	0.65	0.02	1	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.73)		
Venezuela	0.24	0.61	0.8	0.42	0.08	0.01	-0.08	0.12	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.20)	(0.82)	(0.30)	(0.06)	
English-speaking	0.69	0.73	0.5	0.68	0.86	0.8	0.14	0.91	0.14
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.08)	(0.00)	(0.03)

Table 6
Effects of Employment Protection on Job Flows

Results for job reallocation at two-digit ISIC(rev2). In addition to the variables listed in this table, all specifications include sector and country fixed effects. *SUM* denotes job reallocation, *SUM_USA* denotes job reallocation in the United States and *EPLmon+EPLadm* is the sum of the monetary and administrative cost of dismissal from Botero and others (2004). *EXC_USA* measures excess reallocation in the US at the sector level, while *SUM_ES* denotes average sector gross job flows for all the English-speaking countries of our sample. *ENTRY* denotes the firm entry rate per sector, while *ECgdp* is the cost of entry as a % of GDP per capita. *RL* denotes rule of law, *GDPpc* denotes GDP per capita. *[1]* All countries but U.S.; *[2]* All Countries but U.S. In Brazil and Mexico job flows computed from manufacturing census data (only continuous plants) instead of administrative database. *[3]* Latin American countries, *[4]* Industrial countries with the exception of U.S.

	(1) SUM	(2) SUM	(3) SUM	(4) SUM	(5) SUM	(6) SUM	(7) SUM	(8) Log(SUM)	(9) SUM	(10) SUM	(11) SUM
SUM_USA*(EPLmon+EPLadm)	-0.689	-0.673			-0.690	-0.292	-1.037	-0.032	-0.983	-2.561	-1.507
	(0.244)***	(0.241)***			(0.243)***	(0.242)	(0.217)***	(0.012)**	(0.739)	(2.119)	(0.364)***
SUM_ES*(EPLmon+EPLadm)			-0.447								
			(0.158)***								
EXC_USA*(EPLmon+EPLadm)				-0.574							
				(0.307)*							
ENTRY*ECgdp					-2.209						
					(2.386)						
SUM_USA*JS Bot (MC+AC)*RL						-1.098			-1.512	1.389	
						(0.339)***			(0.772)*	(2.657)	
SUM_USA*RL						1.006			1.852	-2.142	-0.908
						(0.244)***			(0.569)***	(2.522)	(0.658)
SUM_USA*GDPpc		-0.086			-0.080	-0.085	0.118	-0.002	-0.323	-0.121	0.209
		(0.131)			(0.133)	(0.412)	(0.117)	(0.007)	(0.337)	(0.764)	(0.454)
SUM_AS*GDPpc			-0.066								
			(0.092)								
EXC_USA*GDPpc				-0.181							
				(0.160)							
Observations	148	148	157	148	148	148	149	148	58	90	90
R-squared	0.83	0.83	0.84	0.83	0.84	0.85	0.86	0.86	0.94	0.80	0.80
Sample	*[1]*	*[1]*	*ALL*	*[1]*	*[1]*	*[1]*	*[2]*	*[1]*	*[3]*	*[4]*	*[4]*
F test: JS Bot (MC+AC)(1+RL)=0						0.00			0.14	0.00	
Diff. In Job Flows P90-P10	-6.31	-6.16	-6.06	-6.26	-6.32		-9.50	-0.27			

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7
Effects of Employment Protection on Employment

Results for employment. Dependent Variable: Average employment (1991-1995) (*lemp91-95*) , average employment share (1991-1995) (*ShE91-95*) or Average employment (1986-1990) *(lemp86-90)* at the three-digit ISIC(rev2*)* . Independent Variables: In addition to the variables listed in this table, all specifications include country and sector fixed effects. *SUM_USA* denotes job reallocation in the U.S. at 3-digit ISIC(rev2) (time average 1973-1993). *EFD* is a measure of the dependence on external finance per sector based on Rajan and Zingales (1998). *IA* is a measure of intangible to fixed asssets per sector. *Property Rights* measures the degree of protection of private property across countries. *ENTRY* measures the percentage of firms less than 2 year old per sector. *EPLadm and EPLmon* denote the administrative and the monetary costs of firing workers across countries. *RL* is a measure of the Rule of Law across countries. *Acc. standards* is a measure that ranks countries according to the transparency and reliability of the reporting standards in accounting. *ECgdp* as a fractior

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	lemp91-95	lemp91-95	lemp91-95	lemp91-95	lemp91-95	ShE91-95	lemp86-90	lemp91-95	lemp91-95	lemp91-95
SUM_USA * (EPLmon+EPLadm).	-3.724	-6.504				-0.178	-5.498	-7.94	-6.788	-5.858
	(1.324)***	(1.360)***				(0.072)**	(1.350)***	(1.661)***	(2.126)***	(1.881)***
SUM_USA * EPLmon			-8.617		-4.722					
			(2.774)***		(2.95)					
SUM_USA * EPLadm				-8.724	-7.548					
				(1.916)***	(2.051)***					
SUM_USA * (EPLadm+EPLmon)* RL										-0.552
										(1.40)
EFD* Acc.Standards		0.028	0.028	0.029	0.028	0.001	0.025	0.037	0.013	0.029
		(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.000)***	(0.004)***	(0.008)***	(0.007)*	(0.005)***
IA * Property Rights		0.088	0.088	0.088	0.087	0.003	0.103	0.119	0.018	0.088
		(0.030)***	(0.030)***	(0.030)***	(0.030)***	(0.002)*	(0.030)***	(0.059)**	(0.06)	(0.030)***
USA Entry Rate * E.Cost (%GDPpc)		-0.805	-0.835	-0.774	-0.795	-0.008	-0.843	-0.27	-0.372	-0.807
		(0.220)***	(0.222)***	(0.220)***	(0.221)***	(0.01)	(0.219)***	(0.27)	(0.42)	(0.221)***
SUM_USA * GDPpc	-0.231	-0.965	-0.905	-0.839	-0.938	-0.013	-0.119	-7.853	-0.837	-0.468
	(0.36)	(0.435)**	(0.440)**	(0.433)*	(0.437)**	(0.02)	(0.47)	(1.547)***	(0.95)	(0.76)
SUM_USA * RL										-0.324
										(1.48)
Observations	1475	1001	1001	1001	1001	1001	993	569	432	1001
Countries	59	39	39	39	39	39	39	23	16	39
Sample	All	All	All	All	All	All	All	IND	Dev.	All
R-squared	0.835	0.852	0.850	0.852	0.852	0.556	0.854	0.893	0.835	0.852
F test: JS Bot (AC+MC)(1+RL)=0	1991	1991	1991	1991	1991	1991	1986	1991	1991	1991
Diff. In Job.Real. P90-p10	-0.54	-0.94	-0.59	-0.89		-0.03	-0.79	-1.14	-0.98	

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8

The effects of Employment Protection Laws on Value Added, Labor Productivity, Number of Plants and Employment per Plant

In addition to the variables included in this table, each specification includes country and sector fixed-effects. *SUM_USA* denotes job reallocation at three-digit ISIC(Rev2) for the U.S. (average 1973-1993). *EFD* denotes External Financial Dependence at the sector level. *Int. Assets* denotes Intangible to Fixed Assets ratio. ENTRY denotes entry rate of new firms in each sector *EPLadm* and *EPLmon* denotes the sum of the two EPL indices constructed by Botero and others (2004) ECgdp denotes entry cost as a fraction of GDPpc. GDPpc denotes the average GDP per capita in period 1986-1990. See additional information on definitions and sources in Table 1.

	(1)	(2)	(3)	(4)
	Log Value Added 91-95	Log Labor Productivity 91-95	Log Number of Plants 91-95	Log Plant Size 91-95
SUM_USA * (EPLadm+EPLmon)	-8.888	-2.386	-4.249	-2.42
	(1.626)***	(0.977)**	(1.510)***	(1.136)**
EFD* Acc.Standard	0.036	0.008	0.016	0.012
	(0.005)***	(0.003)**	(0.005)***	(0.004)***
Int.Assets * Property Rights	0.101	0.014	0.065	0.024
	(0.036)***	(0.02)	(0.031)**	(0.02)
USA ENTRY Rate * E.Cost (%GDPpc)	-0.386	0.419	-1.672	0.841
	(0.26)	(0.158)***	(0.232)***	(0.174)***
SUM USA * GDPpc	-1.046	-0.082	-0.042	-0.991
	(0.520)**	(0.31)	(0.46)	(0.346)***
Observations	1001	1001	940	940
R-squared	0.8469	0.8214	0.8806	0.7965
Countries	39	39	36	36
Diff. In Job.Real. P90-p10	-1.28	-0.34	-0.61	-0.35

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%