Labor and Capital: Is Debt a Bargaining Tool?

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Abstract

This paper examines the effect of labor bargaining power on the equilibrium choice of debt by firms, by using firm-level data from 21 countries over the 1985-2004 period. In contrast to the existing literature that emphasizes the strategic role of debt and thus predicts an increase in financial leverage to counteract increases in labor bargaining power, we find that increases in employment protection are associated with decreases in the use of debt by firms. Our interpretation for this result is that strong labor laws constrain firms' ability to raise debt as they make labor claims effectively senior to debt claim. Consistent with this view, we show that firms react to increases in employment protection by increasing their reliance on short-term debt and trade credit. Furthermore, we find that the effect of labor bargaining power is more pronounced for firms that have lower liquidation value and in countries where bargaining is more decentralized. Our results are robust to changes in empirical specifications, including different definitions of leverage and a differences-in-differences approach that exploits inter-temporal variations in labor laws across countries.

JEL classification: J31, J51, G32, G33, K31.

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I Introduction

Since Modigliani and Miller (1958) financial economists have devoted considerable efforts to understand the nature of the frictions that affect firms' financial decisions. This paper attempts to further our understanding of one such friction: namely, the effect of labor regulation and bargaining power on the capital structure of firms.

There is a substantial literature that emphasizes the strategic role of debt.[1] The argument is that debt is strategically used by firms to increase the surplus they can extract from labor and other suppliers of inputs, and this may be beneficial to the firm as it reduces the cost of these inputs and alleviates the under-investment problem caused by labor holdout power.

The empirical evidence, although scant, provides some support for this view. Bronars and Deere (1991) document a positive correlation between leverage and the degree of unionization as a proxy for labor bargaining power. Matsa (2007) uses changes in labor laws in the US (the adoption of the right-to-work laws and the repeal of the unemployment insurance work stoppage provisions) and finds a positive relationship between increases in labor bargaining power and firm leverage. Interestingly, however, the Graham and Harvey (2001) survey of financial managers, indicates that managers *do not knowingly* use debt as a bargaining tool to extract wage concessions or, if they do, they do not admit to it. Conflicting evidence is also provided by Lee and Mas (2009), who study the impact of firm-level union elections on firm performance. They find that union wins are associated with stock price losses, decreases in firm profitability and growth, but have no effect on leverage.

This paper revisits the relation between labor bargaining power and firms' capital structure providing two main contributions: (i) we propose a simple model of bilateral bargaining to show that labor bargaining power can actually reduce the equilibrium choice of leverage, contrary to the theoretical literature on the strategic role of debt; (ii) we use data from a panel of firms from 21 OECD countries over the 1985-2004 period to show that there is indeed a negative correlation between employment protection (as a proxy for labor bargaining power) and leverage.

The basic theoretical argument of this paper rests on the bargaining power of labor vis-a-vis capital providers. Using a simple theoretical framework that is adapted from Hart and Moore (1994), we show that the relation between labor bargaining power and leverage is theoretically ambiguous: there can be a positive, negative or no correlation depending on how debt affects financiers' outside option. Surprisingly, all theoretical contributions in the literature predict either no correlation or a positive relation between employees' bargaining power and leverage.

To emphasize the departure from the literature, we focus on a special case of

[1] See Baldwin (1983), Bronars and Deere (1991), Perotti and Spier (1993), Dasgupta and Sengupta (1993), Hennessy and Livdan (2009), Brown et al. (2009), and several others.

our general model, in which the benefit of debt is in the form of tax shields and labor claims are paid before debt. In this setting, we show that labor is effectively senior to unsecured debt and junior to secured debt. While firms want to issue as much debt as possible (to take advantage of tax shields), there is a constraint on how much debt a firm can issue without forcing the firm into default. This constraint is increasing in the firm's collateral and decreasing in labor bargaining power. Under these assumptions, we show that leverage is lower than optimal and strictly decreasing in the employees' bargaining power.

In the empirical part, we use data from a panel of firms from 21 OECD countries over the 1985-2004 period. Adopting both a cross-sectional approach and a difference-in-difference research design, we find a negative correlation between labor bargaining power and capital structure decisions of firms. In other words, we find that firms *reduce* their use of debt following reforms that *increase* the bargaining power of workers. This is in sharp contrast to the existing literature that finds that debt increases when labor bargaining power becomes stronger.

In the cross-sectional specifications, which use a time-invariant indicator of labor legislation reforms constructed by Botero, et al. (2004), we find that a one-standard-deviation increase in the labor index is associated with a 4% decrease in firms' leverage. We thus provide evidence on the relation between labor bargaining power and leverage by taking advantage of cross-sectional differences across countries and firms. There is considerable cross-country variation in the specific aspects of labor regulation that may impact labor's bargaining power: for instance, workers' ability to unionize and bargain, their right to go on strike, employers' flexibility to setup short-term or renegotiable labor contracts, or their costs to fire workers without just cause.

A potential drawback of a purely cross-sectional analysis is, however, its inability to control for omitted variables. It is clear that countries that differ in their regulatory framework also differ along many other dimensions, both observable and unobservable. Thus, the comparison between countries with high and low labor protection may capture the effect of omitted variables or unobserved differences. We address this concern by using time-series and cross-sectional information in a difference-in-difference (DID) empirical design, which exploits changes in employment protection legislations (EPLs) across countries and across time. Higher employment protection indicates rigidities in the labor market, created for instance by limitations in the employment contracts and by higher employment costs, which strengthen workers' bargaining power. The results with this approach are also consistent with our insight: an increase in the rigidity of the labor market, as measured by one-standard-deviation increase in EPL is associated with an 10% reduction in firms' leverage.

Furthermore, the model asserts a differential effect of labor bargaining power on leverage depending on the specific rights creditors have in different firms. Specifically, the model implies that an increase in labor bargaining power lowers leverage more for firms that have lower liquidation value. The empirical evidence that we find is consistent with this implication. We find that employment protection decreases

leverage less in firms with more tangible assets and in countries with stronger creditor rights.

In our model labor bargaining power constraints firms' leverage because labor is paid first and thus it is *de facto* senior to debt. If this is true, the Coasian response of firms is to increase short term borrowings (relative to long-term ones), when employment protection increases. We find evidence that is consistent with the prediction. Increases in employment protection are indeed associated with increases in the use of short-term debt (relative to long-term one), greater reliance on trade credit (which is itself shorter in maturity), and to a smaller extent increase in leases.

The model emphasizes also firm-level bilateral bargaining as the critical source of the relationship between labor bargaining power and leverage. Consistent with this prediction, we find that the negative relation between labor and leverage weakens in countries where labor negotiation is more centralized. Finally, we confirm previous evidence that employment protection increases labor costs measured by cost of staff scaled by assets and decreases firms' profitability measured by return on assets (ROA).[2] These results confirm the basic assumption of all bargaining models that employment protection is beneficial to workers and costly to the firm.

This paper connects several strands of the literature, starting with the contributions on the strategic role of debt. Baldwin (1983) and Bronars and Deere (1991) are the first to argue that firms issue debt to strengthen their bargaining power against labor unions. Perotti and Spier (1993) emphasize that debt overhang can be used as a credible bargaining tool to threaten workers that value creating investment will not be undertaken unless labor costs are reduced. Dasgupta and Sengupta (1993) propose a model in which the level of debt is optimally chosen to trade off workers' and shareholders' incentives to invest into the firm because debt affects the way in which surplus is split between workers and shareholders. Hennessy and Livdan (2009) extend this idea to all suppliers of inputs. The general prediction from this set of models is that an increase in labor bargaining power should be associated with an increase in the use of leverage by firms.[3] We show in a simple model that this prediction can be actually reversed.

The paper also relates to a growing literature that documents a negative effect of labor regulation on investment, growth, and firm value. Hirsch (1991) documents that labor union coverage has a negative association with US firms' earnings and market values. Besley and Burgess (2004) argue that labor legislation raises fixed labor costs, since it makes it costly for firms to hire or fire workers, and therefore it discourages investment. Chen, Kacperczyk and Ortiz-Molina (2008) show that US

[2]See Ruback and Zimmerman (1984), Abowd (1989) and Lee and Mas (2009).

[3]Along the same lines, Benmelech, Bergman and Enriquez (2009) show that companies can extract surplus from workers in case of financial distress. They successfully use their financial position to achieve wage concessions.

firms that belong to more unionized industries are characterized by higher cost of equity and that unionization is negatively associated with firms' operating flexibility. Lee and Mas (2009) find that the announcements of union election wins are associated with a loss in firm market capitalization of about $40,500 per unionized worker. However, Dinardo and Lee (2004) find no sizable impact of unions on business failures, employment, output, productivity, and wages. Conversely, Atanassov and Kim (2009) provide international evidence that strong unions are effective in deterring layoffs in distressed firms.[4]

The remainder of the paper is organized as follows. In Section II, we present a simple theoretical framework which motivates our empirical analysis. In Section III, we describe the sample and define the variables. In Section IV we present the empirical methodology and the results. Section V concludes.

II Wage Bargaining and Debt

Consider a firm, in which a risk-neutral manager (representing the interests of all providers of capital) bargain with a set of risk-neutral employees (providers of essential labor input), who are possibly organized in a union. The basic idea is as in Hart and Moore (1994): employees possess a critical input and can hold out the firm by threatening to withdraw their essential labor input. We show that the relation between the bargaining power of employees and leverage is theoretically ambiguous: there can be a positive, negative or no correlation depending on how debt affects financiers' outside option.

II.A A General Framework

At $t = 0$, the manager of an all-equity firm with total assets F chooses how much debt with face value $D \in \left[0, \overline{D}\right]$ to borrow from risk-neutral and competitive creditors. The gross interest rate in the economy is normalized to 1. The proceeds from the debt issue are paid to shareholders in a debt-for-equity swap. Debt generates some benefits $B(D)$ with $B' \geq 0$ and $B'' \leq 0$ and some costs $C(D)$, with $C' \geq 0$ and $C'' \geq 0$. The functional form $B(D)$ is sufficiently general to capture various benefits of debt like tax shields and incentive effects. Similarly, the cost $C(D)$ can reflect the various costs of debt, for instance debt-overhang and the costs of bankruptcy.

At $t = 1$, employees (re)negotiate their labor compensation with the manager. If they stay, the firm produces $Y + B(D) - C(D)$. If they leave, they receive $W_0 = 0$ (the outside option from alternative employments) and the firm produces $L + x_B B(D) -$

[4]There is also some evidence that labor regulation can actually create positive externalities on firms. For instance, Acharya, Baghai-Wadji and Subramanian (2009) find that stronger labor laws can have an ex ante positive effect on firms' innovation.

$x_C C(D)$ (where $L < Y - W_0$ is the liquidation value of the assets). The parameters $[x_B, x_C] \in [0,1]^2$ capture the idea that possibly part of the costs (x_C) and of the benefits (x_B) of debt will be enjoyed directly by shareholders. For simplicity, we assume that the parameters x_B and x_C are not a function of D.

Renegotiation takes the form of Nash bargaining over W, where $\alpha \in [0,1]$ is labor bargaining power. The empirical counterparty for α is the quality of employment protection. This assumption captures the idea that the providers of inputs have hold up power ex post as they have built a relationship with the firm.

At $t = 2$, if renegotiation is successful, the output $Y + B(D) - C(D)$ is produced. Workers are paid W, creditors and shareholders split the rest, according to absolute priority: creditors are paid $\min\{D, Y + B(D) - C(D) - W\}$, while shareholders receive the rest, $\max\{0, Y + B(D) - C(D) - W - D\}$. If the firm is liquidated, workers receive 0, while creditors receive $\min\{D, L\}$ and shareholders receive $x_B B(D) - x_C C(D) + \max\{0, L - D\}$.

As a benchmark, consider the first best choice of leverage. The problem is to:

$$\max_D \; Y + B(D) - C(D) \tag{1}$$

From the first order condition, the optimal choice of debt is:

$$D_{FB} : B'(D_{FB}) = C'(D_{FB}) \tag{2}$$

We assume that D_{FB} is an interior solution: $\lim_{D \to 0} B'(D) - C'(D) \geq 0$ and $\lim_{D \to \overline{D}} B'(D) - C'(D) \leq 0$.

Now consider employees bargaining over their wage at $t = 1$. The surplus from renegotiation is given by the continuation payoff $(Y + B(D) - C(D))$ net of the outside options of financiers $(L + x_B B(D) - x_C C(D))$ and employees $(W_0 = 0)$:

$$S = [Y + B(D) - C(D)] - [L + x_B B(D) - x_C C(D)] \tag{3}$$

The Nash-bargaining solution is obtained by solving the following problem:

$$\max_W \; (W)^{\alpha} (S - W)^{1-\alpha} \tag{4}$$

where S is given in (**??**) and $\alpha \in [0,1]$ is labor bargaining power.

From the first order condition,

$$W = \alpha S = \alpha \left[(Y - L) + (1 - x_B) B(D) - (1 - x_C) C(D) \right] \tag{5}$$

Notice that the sensitivity of the wage W with respect to the debt D depends on the labor bargaining power (α), the functional forms $B(D)$ and $C(D)$.

Proceeding by backward induction, at $t = 1$ the manager chooses D to maximize firm value:

$$V = L + x_B B(D) - x_C C(D) + (1 - \alpha) S \tag{6}$$

After substituting S from equation (**??**), manager's problem is to:

$$\max_{D\in[0,\overline{D}]} \alpha L + (1-\alpha)\, Y + [1-\alpha\,(1-x_B)]\, B(D) - [1-\alpha\,(1-x_C)]\, C(D) \qquad (7)$$

From the first order condition:

$$D^* = \begin{cases} 0 & \text{if } \frac{[1-\alpha(1-x_B)]}{[1-\alpha(1-x_C)]} < \frac{C'(0)}{B'(0)} \\ \widehat{D} & \text{if } \frac{[1-\alpha(1-x_B)]}{[1-\alpha(1-x_C)]} \in \left[\frac{C'(0)}{B'(0)}, \frac{C'(\overline{D})}{B'(\overline{D})}\right] \\ \overline{D} & \text{if } \frac{[1-\alpha(1-x_B)]}{[1-\alpha(1-x_C)]} > \frac{C'(\overline{D})}{B'(\overline{D})} \end{cases} \qquad (8)$$

where

$$\widehat{D} : [1-\alpha\,(1-x_B)]\, B'(\widehat{D}) = [1-\alpha\,(1-x_C)]\, C'(\widehat{D}) \qquad (9)$$

Comparing D^* given in (**??**) with the first best given in (**??**), we have two results:

Proposition 1. *The choice of debt may depart from the optimal level. Specifically,*

$$D^* \gtreqless D_{FB} \text{ iff } x_B \gtreqless x_C$$

Debt is affected by the degree of employment protection α. Specifically, when $D^* = \widehat{D}$,

$$\text{sign}\left(\frac{\partial D^*}{\partial \alpha}\right) = \text{sign}\,(x_B - x_C)$$

Otherwise, $\frac{\partial D^*}{\partial \alpha} = 0$.

The intuition for these results is simple. The choice of debt departs from the first best whenever shareholders retain an uneven share of the benefits compared to the costs of debt.

If shareholders retain a greater fraction of the benefits than of the costs of debt (that is if $x_B > x_C$), the choice of leverage is greater than optimal. The reason is that debt can be used as a tool to reduce labor compensation. Moreover, in such a case the optimal level of debt will be strictly increasing in labor protection α.

The opposite happens if shareholders retain a greater fraction of the cost compared to the benefits of debt (that is if $x_C > x_B$): in such case, leverage will be lower than optimal and decreasing in the degree of employment protection α. The reason is that, relatively speaking, shareholders will suffer for a greater portion of the costs of debt, while labor will enjoy a greater portion of its benefits.

II.B Discussion

The model above offers a general framework to illustrate the different contributions in the literature. Surprisingly, all the literature has highlighted a positive relationship between employment protection and leverage. However, the general framework proposed above suggests that this is far from obvious.

In Bronars and Deere (1991), employees suffer for the costs of financial distress in proportion to their bargaining power. However, they do not share the benefits of debt as shareholders can pay themselves as dividends all the proceeds from a debt-for-equity swap before labor negotiation starts. In the context of our model, Bronars and Deere's assumptions imply that $x_B > x_C$, and thus that D^* is greater than optimal and strictly increasing in the employee's bargaining power α.

The assumption that $x_B > x_C$ is also in Perotti and Spier (1993), Dasgupta and Sengupta (1993) and Matsa (2007). In Perotti and Spier (1993), debt overhang is used strategically to extract wage concessions from employees. Shareholders suffer no costs from debt overhang as all costs are borne by employees, who accepts lower wages to avoid default. For any $\alpha > 0$, debt is set at the highest possible level: $D = \overline{D}$. Matsa (2007) offers a variation of the same idea where the trade-off is between the benefit of debt for shareholders (as a way to extract greater wage concessions from workers) and the costs due to the loss of private benefits if the firm defaults. This model delivers a monotonic relation between labor bargaining power and leverage as long as the present value of the lost private benefits is strictly increasing in debt. In Dasgupta and Sengupta (1993), since debt reduces workers compensation, it increases shareholders' incentives to invest capital into the firm but decreases workers' incentives to exert effort. Under the assumption that the marginal value of investing in effort increases with the initial capital investment, the first effect is more important than the second and thus debt is value increasing. Since shareholders recover some of the capital in case of liquidation, the choice of debt D^* is greater than optimal and strictly increasing in the employees' bargaining power α.

There are two critical assumptions in the models reviewed above: (i) financiers are able to extract more benefits of debt than employees; and (ii) employees share the costs of financial distress as much as (or more than) shareholders. The first assumption requires shareholders to be able to cash-in from the debt-for-equity swap via equity repurchase or special dividends. If there are limits to their ability to do so, some of the benefits of debt will be obtained by workers. The second assumptions critically depend on what happens when the firm defaults: if employees retain some of the value of the firm in case of default, they suffer less than shareholders from financial distress.

II.C A Different Perspective

Consider a special version of the general model presented above augmented with the following assumptions.

First, the benefit of debt is in the form of tax shields. Specifically, because in case of continuation the firm's output is Y, the wage payment is W and the debt repayment is $D \leq Y$, the firm's profit is $(Y - W - D)(1 - \tau)$, where τ is the corporate tax rate. This implies that the (gross) benefit of debt is $B(D) = D + \tau D$,

where D is simply a transfer due to the debt-for-equity swap and τD is the tax shield. Conversely, in liquidation the firm's profit is $(L - \min\{L, D\})(1 - \tau)$. Hence, the benefit of debt that are enjoyed by financiers in case negotiations break down is $x_B B(D) = D + \tau \min\{L, D\}$ (where the first term is the proceeds from the debt-for-equity swap pocketed by shareholders and the second term is the tax shield in case of liquidation). Thus, in our setting $x_B < 1$ if $D > L$. This assumption is only needed to ensure that there is an optimal choice of debt and to break the indifference.

Second, we assume that labor is paid before debt. This assumption implies that labor claims are junior to secured debt (which is backed by the liquidation value of the assets L) but senior to unsecured debt (in amount $\max\{0, D - L\}$), which is not secured by the firm's assets. We believe that this assumption is realistic as it captures what happens if a firm files for bankruptcy in most countries. For simplicity, we assume that the cost of debt is simply the debt payment D: $C(D) = D$. The assumption that debt is senior to labor only up to the liquidation value of the assets L implies that the cost of debt borne by financiers if labor negotiations break down is $x_C C(D) = \min\{L, D\} + \max\{D - L, 0\} = D$ (where the first term is the debt payment that shareholders have to make when negotiations break down and the firm defaults; while the second term is the cost for creditors if the firm is liquidated for L). Therefore, in our setting $x_C = 1$.

Because $x_B < x_C$ (when $D > L$), we expect, following Proposition 1 that the chosen level of debt is below the firm best and that leverage is decreasing in the employee bargaining power α. Notice that the first best in this case is to choose the highest possible level of debt: $D_{FB} = Y$, since $B(D) - C(D) = \tau D$. The following Proposition states the result. A detailed proof is in the Appendix.

Proposition 2. *The optimal choice of debt is:*

$$D^* = Y - \alpha (Y - L)$$

where $D^* < D_{FB}$ *for all* $\alpha > 0$ *and* $D^* = D_{FB}$ *if* $\alpha = 0$.

Given that the book value of the firm is F, the corresponding level of leverage is:

$$l^* = \left(\frac{D^*}{F}\right) = \frac{Y - \alpha (Y - L)}{F} \tag{10}$$

Notice that this model has the opposite prediction from the existing literature even though it starts from very similar assumptions:

$$\frac{\partial l^*}{\partial \alpha} = -\frac{Y - L}{F} < 0, \tag{11}$$

$$\frac{\partial^2 l^*}{\partial \alpha \partial L} = \frac{1}{F} > 0 \tag{12}$$

The first result implies that leverage is decreasing in employees bargaining, which may be empirically proxied by the degree of unionization or by the degree of employment protection in a country. Second, the model suggests that greater tangibility reduces the negative effect of employment bargaining power on debt capacity. The liquidation value L could also proxy for creditor protection and the seniority of debt claims compared to labor claims. These two will be the main predictions tested in the empirical section.

The model also delivers predictions on the relation between labor bargaining power on the one hand, and labor costs and firm profitability on the other. As shown by equation (**??**), the labor cost W^* is strictly increasing in labor bargaining power α, while return on assets ($\frac{Y-W^*}{F}$) is strictly decreasing in α. These predictions will also be tested in Section IV.

Notice that we assume that the firm is already setup at $t = 0$ and is all-equity financed. However, if we were to consider the stage when the firm is set up, in our model, as in Hart and Moore (1994), debt would be the optimal security to use in order to raise external capital. As the amount of capital that can be raised decreases with employment protection α, firms in need of capital may have to reduce the maturity of debt (and increase their seniority) compared to labor. We will see in Section IV that this is indeed happening. Any remaining need of capital can only be provided by the manager or his family in exchange for private benefits of control.

The discussion above indicates that the theory does not deliver univocal predictions on the relationship between leverage and employment protection. While the existing literature emphasizes a positive relation between l^* and α, the proposed model delivers the opposite prediction. Hence, we believe that the answer lies in the empirical analysis to which we turn now.

III Data

In our empirical analysis, we combine three sets of variables: (i) cross-country data on labor regulation; (ii) firm-level data from Worldscope; and (iii) control variables at the country level. In Table I, we present the source, number of observations, means, medians and standard deviations of all the variables that are used in the analysis.

III.A Labor Regulation Indicators

To proxy for the bargaining power of labor, we use two indicators of labor regulation. The first one, used in the cross-sectional analysis, is the indicator developed by Botero, et al. (2004) (BDLLS Indicator). The main advantage of this indicator is that it takes into account several aspects of labor regulation in each country. For example, it measures whether non-standard employment contracts can be made such

as temporary and fixed-term contracts; it considers length of the annual paid leave in manufacturing; it measures job security as the employers' difficulty of firing workers and their costs for individual and collective dismissals. It also incorporates information which reflects the collective bargaining power of workers, measuring for example the power of labor unions and the firms' duty to bargain with unions. Moreover, it reflects information on worker's bargaining through their right to participate in the management of companies or through their right to industrial action, such as the right of workers to strike or the right of employers to defend against such actions. This indicator refers to labor regulation as of 1997 and was constructed based on laws in each country. It takes values from 0 to 3. A higher value of the indicator in one country means that the labor regulation in this country is tougher, i.e., more protective of labor interests compared to other countries.

The second proxy for labor bargaining power that we use is the Employment Protection Legislation (EPL) Indicator. EPL focuses on a particular aspect of labor regulation which governs the employment contracts between the employers and the employees: for instance, it measures the procedural inconveniences for employers in case they want to dismiss an individual employee, the notice period and severance pay for no-fault dismissals, and the difficulty of dismissal associated with regular employment contracts.[5] Although EPL is less broad than the BDLLS indicator, its main advantage is that it provides both cross-sectional and within country, time-variation of labor laws. Therefore, it allows for time-series as well as cross-sectional comparisons across different countries. The source for the EPL indicator is Allard (2005). The indicator ranges from 0 to 6. A higher EPL score indicates more rigid employment contracts, and therefore stronger job security, and vice versa. Figure 1 presents the plots of the EPL Indicator for each individual country. Our sample consists of 21 OECD countries for which both labor indicators described above are available.[6]

[5]More specifically, EPL covers 18 aspects of employment protection legislation grouped into three broad domains: laws protecting workers with regular contracts, those affecting workers with fixed-term (temporary) contracts or contracts with temporary work agencies, and regulations applying to collective dismissals. The regulation related to regular employment contracts refers to: (1) Procedural requirements that need to be followed after the decision of firing is taken so that a regular employment contract is terminated, (2) Notice and severance pay requirements in case of individual dismissal or dismissal due to poor performance, (3) Prevailing standards of and penalties for "unfair" dismissals that specify the conditions under which a dismissal is unfair. The employment protection of temporary contracts, including fixed-term contracts and contracts with temporary work agencies, refer to: (1) "Objective" reasons under which these types of contracts can be offered, (2) The maximum number of successive renewals, (3) The maximum cumulated duration of the contract that is permitted. The regulation related to collective dismissal specifies: (1) what is defined as collective dismissal, (2) any notification requirements provided by law, (3) any additional delays, (4) additional costs to employers. The main source used to keep track of the legislative changes in each country is the ILO's International Encyclopaedia for Labor Law and Industrial Relations.

[6]They are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece,

Although the main emphasis of our analysis is on labor regulation as a measure of labor bargaining power, we also want to explore whether the structure of labor bargaining matters. Specifically, if debt is a negotiation tool, we would expect labor regulation to have a greater impact on leverage in countries where wage bargaining is more decentralized, taking place at the firm level rather than at the country level. For this purpose, we collect cross-country information on the degree of centralization of the bargaining process. We thus define an indicator which characterizes the degree of centralization of bargaining. This indicator (CE Indicator) is extracted from the OECD Institutions Dataset, provided by Nickell (2006) and is available for 20 countries of our sample for the 1970-2000 period (the indicator is not available for Greece). The centralization indicator takes values from 1 to 5 as well and is increasing in the degree of centralization.[7]

III.B Firm-Level Data

The main data source employed in the study is Worldscope. This database provides detailed coverage of financial statements of public firms in more than 50 countries and is widely used in the literature for firm-level analysis across countries. Our sample contains financial information on over 8,900 manufacturing companies in the 21 countries, for which both labor indicators are available. The sample spans the 1985-2004 period. Sample size varies over time on account of missing information on some variables used in the analysis. We follow the 2-digit SIC classification to form our group of manufacturing companies. On average, the manufacturing sector comprises about 40% of total assets in the 21 countries.

Following the literature, we define leverage as debt to assets, where debt is defined in three ways. In the first definition, debt is the sum of long-term debt, short-term debt, and current portion of long-term debt. In the second definition, debt simply stands for the total long-term debt of the firm. Finally, the third definition of debt is net debt and includes cash as negative debt, i.e., debt is defined as the sum of long-term debt, short-term debt, and current portion of long-term debt minus cash. Total assets refers to the book value of firms' assets. We also test our results using market leverage. We thus compute leverage as the book value of debt over the market value of the firm (sum of book value of debt and market value of equity). In our regression analysis, we include the standard set of controls for leverage at the firm-level as identified by Rajan and Zingales (1995). Thus, we include tangibility (which

Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

[7]According to the OECD Institutions Dataset, the CO Indicator equals: 1, if company and plant level is predominant; 2, if the dominant form of bargaining is a combination of industry and company/plant level, with an important share of employees covered by company bargains; 3, if industry level is predominant; 4, if the bargaining is predominantly industrial bargaining, but also recurrent central-level agreements; 5, if central-level agreements have overriding importance.

is defined as net property, plant and equipment over total assets), firms' size (which is defined as the logarithm of firms' sales), profitability (as measured by the Return on Assets (ROA), which is the ratio of EBIT over total assets) and the market-to-book ratio (that is, the ratio of the market value of equity plus book value of debt over the book value of debt plus equity).

III.C Other Country-Level Variables

To control for the differences in macroeconomic conditions and income across countries, we include in our set of control variables country-level GDP growth and GDP per capita. An important variable for our analysis is creditor protection since it captures the effective seniority of debt and thus the bargaining power of creditors. Creditors' protection is measured by the creditor rights indicator from Djankov, McLiesh and Shleifer (2007). The creditor rights index takes values from 0 to 4, with higher values indicating stronger creditor rights and it provides time variation in creditor protection.[8] This variable is also used as a control in our regressions. We also control for other institutional factors such as the countries' tax systems and the countries' legal origin. We also take into account whether an economy is market-based or bank-based.[9]

IV Empirical Results

In the first part of this section we empirically examine the effect of labor bargaining power on firms' financial structure by employing two identification strategies. The first approach exploits the cross-sectional variation in the BDLLS index of labor regulation as the source of identification. The second approach exploits both time series and cross-sectional variation in the EPL index of employment protection.

We then expand our analysis to study the relation between employment protection and leverage across firms and countries that differ in terms of liquidation values, creditor rights and labor bargaining structure. This approach effectively allows to check for robustness of our main results and to test secondary predictions of our model. We also examine the relation between labor bargaining and maturity of debt to check if the results are consistent with our assumption that labor is implicitly senior. Finally, we look at the impact of employment protection on wages and profitability, to check

[8]It is based on the La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) creditor rights indicator. The main difference is that the Djankov et al. (2007) indicator provides us with time-variation in creditor rights.

[9]According to the literature, it is an empirical question to see how capital structures differ between bank-based and market-based economies. See Schmukler and Vesperoni (2001) for a recent discussion.

whether, as bargaining models assume, employment protection benefits workers and damages firms.

IV.A Cross-Sectional Analysis

In this section, we employ a cross-sectional regression analysis to evaluate the effect of labor regulation on firms' capital structure. For this purpose, we estimate the following specification,

$$y_{it} = \alpha_j + \gamma_t + \delta \cdot BDLLS_k + \beta \cdot X_{it} + \epsilon_{it}, \tag{13}$$

where i represent a firm, t is a year, j is an industry and k is a country; y_{it} is the dependent variable of interest (Debt to Assets, Long-term Debt to Assets, Net Debt (Debt minus cash) to Assets); α_j and γ_t are industry and year fixed effects respectively. X_{it} is the vector of firm-level and country level controls that are presented in Table I and ϵ_{it} is the error term. We use the Labor index constructed by Botero et al. (2004) to measure the strength of labor regulation in different countries . The BDLLS index does not vary at the country level and thus relies on cross-country variations for the purpose of identification. The industry fixed effects capture time-invariant industry-specific factors and year fixed effects control for aggregate fluctuations. It is important to note that in this specification we are unable to control for country fixed effects or firm fixed effects as this would absorb the BDLLS index. However, the specification does allow us to control for industry specific shocks, such as changes in industry level investment opportunities, by including interacted year and industry fixed effects ($\alpha_j * \gamma_t$). Finally, we cluster standard errors at the country and year level.

We present the cross-sectional evidence on the effect of labor laws on leverage in Table II. We use three alternative measures of leverage: Total debt over assets in Columns 1 and 2; Long-term debt over assets in Columns 3 and 4; and Net debt over assets in Columns 5 and 6. As can be seen, the coefficient δ in our leverage regression (**??**) is negative and statistically different from zero across all specifications. The negative effect of our labor indicator on firms' leverage is robust to alternative specifications of leverage. These results indicate that stricter labor regulation is negatively correlated with firms' leverage. In the odd columns (1, 3 and 5), we report the basic regression results with year and industry fixed effects (at 2-digit level). In the even columns (2, 4, 6), we control for industry-specific shocks by including the interaction of industry times year fixed effects. Our results remain unchanged across these specifications. Regarding the economic significance of the result, across specifications we find that firms' leverage is approximately 0.09 percentage points lower in countries where employment protection is one standard deviation higher. This correspond to a decrease in leverage, which is, on average, about 4%.

In Table III, we consider alternative definitions of leverage where we replace the book value of equity with its market value. Notice that we do not have the market

value of leverage as most of the debt is in the form of loans (rather than bonds) and is not traded. As can be seen, the results are virtually unchanged from Table II: the coefficient δ is negative and statistically different from zero across all specifications.

The negative correlation between labor protection and leverage is consistent with the hypothesis suggested in Section II.C, and inconsistent with the basic view that debt serves as a bargaining tool in wage negotiations. However, the causal interpretation of these results relies on the assumption that conditional on observables there is a random assignment of labor laws in these countries. Clearly, countries that differ in labor laws differ in several dimensions (both observable and unobservable). Thus, there are concerns that the reported estimates are potentially biased. To examine this further, we exploit both time series and cross-sectional variation in labor laws in different countries.

IV.B Differences-in-Differences Approach

In this section we employ a differences-in-differences research design to identify the causal impact of labor regulations on the capital structure of firms. Using firm level data as before, we analyze the following specification:

$$y_{it} = \gamma_t + \lambda_i + \delta \cdot EPL_{k,t-1} + \beta \cdot X_{it} + \epsilon_{it}, \tag{14}$$

where i denotes a firm, t denotes a year, j is an industry, and k is a country; y_{it} is leverage (alternatively measured as Debt to Assets, Long-term Debt to Assets, Net Debt to Assets); λ_i and γ_t are firm and year fixed effects respectively. X is the vector of the financial controls presented in Table I and ϵ_{it} is the error term. We use the EPL index, described in the data section, to take advantage of variation over time as well as across countries. We use year fixed effects to control for aggregate fluctuations in financial structure of firms that are driven, for instance, by common shocks that hit all countries simultaneously and firm fixed effects control for time-invariant, firm-level variables that affect the financial structure of firms. Furthermore, as in the previous specification, we also include interacted year and industry fixed effects ($\alpha_j * \gamma_t$) to control for all industry specific shocks in a certain year. We lag the EPL indicator by one period to capture the gap between the passage of the law and its effective implementation. According to the literature, laws come into force normally one year after they are enacted. Once again, we cluster standard errors at the country and year level. The variable of interest is δ which captures the DID effect. It is important to note that this specification is more flexible since it allows us to control for country fixed effects. Finally, we use country level macro variables such as GDP growth to capture capture country specific shocks as the specification does not allow us to control for country specific shocks using ($\alpha_k * \gamma_t$) as such a control would absorb the EPL variable.

A similar research design has been used in several studies, particularly in labor economics, of which Card and Krueger (1994) and Bertrand and Mullainathan (2003)

are some notable examples. The multiple pre-intervention and post-intervention time periods take care of many threats concerning validity. This methodology is best illustrated by the following example.[10] Suppose there are two countries, A and B, undergoing legal changes at times $t = 1$ and $t = 2$, respectively. Consider $t = 0$ to be the starting period in our sample. From $t = 1$ to $t = 2$, country B initially serves as a control group for legal change; and after that it serves as a treated group for subsequent years. Therefore, most countries belong to both treated and control groups at different points in time. This specification is robust to the fact that some groups might not be treated at all, or other groups that were treated prior to 1985, which is our sample's beginning date.

The results are reported in Table IV. In Panel A, the dependent variable is firms' total debt to assets. The basic results are presented in Column 1, where year and 2-digit industry fixed effects are taken into account. The coefficient of interest, δ, is negative and statistically different from zero at the 1% level. In Column 2, the result remains unchanged after controlling for industry times year fixed effects ($\alpha_j * \gamma_t$). In Column 3, we add country fixed effects in the previous specification to control for country time-invariant characteristics. In Column 4, we use year and firm fixed effects to control for firm level heterogeneity and in Column 5 we add interacted year times industry fixed effects to the firm fixed effects. The coefficient of the EPL indicator remains negative and statistically different from zero at 1% significance level. Our results are also economically significant. As can be seen, leverage falls by 2.5 percentage points when EPL increases by one standard deviation. This corresponds to a decrease in leverage which is, on average, about 10%.

In Panels B and C of Table IV, we test if our previous finding is robust to different definitions of leverage. In Panel B, leverage is defined as long-term debt to assets and in Panel C it is defined as net debt over the firm's assets. We estimate the same specifications as described above. In most of our specifications, the coefficient of the EPL Indicator is negative and statistically different from zero at the 1% significance level. The magnitude of the effect is also economically significant. On average, the leverage of a firm, falls by 4% when leverage is measured by long-term debt to assets and by 24% when it is measured as debt minus cash over assets. In all regressions, we cluster standard errors at the country and year level.

The analysis is repeated in Table V with market-based definition of leverage: book value of debt over the sum of book value of debt and market value of equity in Panel A; long-term debt over the sum of book value of debt plus market value of equity in Panel B; and net debt over the sum of book value of debt plus market value of equity in Panel C. The results are very similar to those in Table IV: throughout our specifications, increases in labor protection are associated with decreases in leverage.

[10]Here we assume that the labor variable is a 0-1 binary variable. However, this intuition extends when the labor variable (e.g. *Labor Laws*) is an index. Essentially, the DID strategy identifies out of differences.

IV.C Cross-Sectional Heterogeneity

The results from the identification strategy suggest that labor laws have a causal impact on the financial structure of firms. Specifically, we document a negative relation between stricter labor regulations and financial leverage. To confirm these results we conduct some additional tests that exploit cross-sectional heterogeneity between different firms. One of the implications of the model is that the strengthening of labor laws should have less of a negative impact on firms that have a higher liquidation value of assets. A higher L increases the outside option of the creditors and thus increases the debt capacity of firms. We use three proxies for the liquidation value of the assets: (i) tangibility of assets as defined as the ratio of net property, plant and equipment to total assets (Rajan and Zingales 1995); (ii) creditor rights as defined by the LLSV index; and (iii) a measure that is constructed by taking the product of tangibility of assets and creditor rights.

We argue that firms with more tangible assets have higher liquidation values and this provides the rationale for the first proxy. The second proxy can be rationalized on the grounds that stronger creditor rights increase the liquidation value of the assets. Finally, the third proxy is a simple refinement of the first and second proxies; the liquidation value of the asset is not only a function of tangibility, but also of the rights of creditors to liquidate firms.

We investigate the differential impact of strengthening of labor bargaining power, as measured by the EPL index, on capital structure of firms that vary in the liquidation value of the assets. Thus, we estimate the following regression specification:[11]

$$y_{it} = \gamma_t + \lambda_i + \delta \cdot EPL_{k,t-1} + \zeta \cdot L_{it} + \theta \cdot (EPL_{k,t-1} \times L_{it}) + \beta \cdot X_{it} + \epsilon_{it} \qquad (15)$$

Here L_{it} denotes the liquidation value of the assets and our variable of interest is θ. All the other variables and subscripts are defined as in the previous specification. According to the model presented in Section II.C, we expect θ to be positive and statistically different from zero. We focus henceforth on the main definition of leverage: hence, the dependent variable y_{it} is total debt over assets.

Specification (**??**) essentially represents a differences-in-differences-in differences analysis. This specification has the added benefit as it allows us to control for country specific shocks as it allows us to include $(\alpha_j * \alpha_t)$. This addresses concerns that there might be changes at the country level, such as changes in the tax rates for example, which can have an impact on firms' leverage and which coincide with the labor regulation changes.

The results are reported in Table VI. We use first tangibility as the proxy for the liquidation value (L_{it}) of the assets. In Column 1, we report the results with year and

[11]For robustness, we also estimate the regression (**??**) using the BDLLS indicator instead than EPL. Results are not reported as they are similar to those in Table IV but are available upon request.

firm fixed effects. The coefficient of interest, θ is positive and statistically different from zero at the 1% level. In Column 2, we add interacted year times industry fixed effects to control for industry specific shocks. The magnitude and the significance of the coefficient remains the same. Further, our results are robust when we additionally control for country specific shocks in Column 3.

Columns 4-5 of Table VI examine the impact of the interaction of the EPL indicator with creditor rights on firms' leverage. Stronger rights indicate stronger creditor protection and can reflect seniority of debt claims in case of default. Therefore, creditors can seize firms' assets more easily when creditor rights are stronger. In Column 4, year and firm fixed effects are included. The interaction coefficient θ is positive and statistically different from zero at the 1% level. The results remain unchanged when we also control for industry specific shocks in Column 5 of Table VI. Unlike the tangibility interaction, we cannot control for country specific shocks $(\alpha_k * \gamma_t)$ in this specification since this would absorb the interaction term.

Finally, in Columns 6-8, we report one further test of cross-sectional heterogeneity using the product of tangibility and creditor rights as a proxy for L_{it}. This is a more powerful measure, in essence, since it takes into account both the degree of creditor protection and the value of the firms' liquidation value. It therefore addresses the concern that high liquidation value may not be valuable for creditors if the company operates in a low creditor protection country. The specifications take into account various controls, defined as in the regressions reported in columns 1-3. The results are robust to various fixed effects. In Column 8, the inclusion of country specific shocks decreases the magnitude of the interaction coefficient. However, the coefficient is still significant at the 1% level.

IV.D Organizational Design of Labor Unions

In this section we exploit a unique feature of our data: the organizational structure of labor bargaining differs across countries. In some countries bargaining is centralized (at the national and industry level) while in others the bargaining process is more decentralized (at the firm level). For instance, countries in Continental Europe are characterized by more concentrated and coordinated organizational structures compared to the United Kingdom and the United States. The degree of centralization a direct impact on the likelihood that debt is used as a bargaining tool. More specifically, bargaining models as those discussed in Section II assume that bargaining is decentralized, at the firm level. To the extent that bargaining is centralized we should see no effect of labor bargaining power on debt. In other words, EPL is a good measure of labor bargaining power only if bargaining is decentralized. According to the model presented in Section II.C, we expect EPL to have a lower effect on firm leverage in countries with more centralized bargaining structure. To examine

this hypothesis, we estimate the following regression specification:

$$y_{it} = \gamma_t + \lambda_i + \delta \cdot EPL_{k,t-1} + \zeta \cdot CE_{k,t} + \theta \cdot (EPL_{k,t-1} \times CE_{k,t}) + \beta \cdot X_{it} + \epsilon_{it}, \quad (16)$$

where $CC_{k,t}$ denotes the centralization indicator. All the other variables and subscripts are defined as in the previous specifications. Our prediction is that θ should be positive and statistically different from zero. The models that treat leverage as a bargaining tool would also predict that the effect of EPL on firm leverage should be weaker in countries with more centralized bargaining structure. However, their prediction would be that θ should be negative and statistically different from zero.

Columns 1-2 of Table VII present the estimated coefficients θ of this specification. These specifications are similar to those presented in the previous subsections. We cannot control for $\alpha_k * \gamma_t$ in this specification since this would absorb the interaction term. As expected, the interaction coefficient is positive and statistically different from zero at 1% level. This means that when labor regulation becomes tougher, the negative effect on firms' capital structure is smaller for countries where bargaining is characterized by higher degree of centralization. Notice that this result also rejects the models, which emphasize debt as a bargaining tool, as they would predict the opposite sign for θ.

We report one additional test of cross-sectional heterogeneity including the interaction of EPL with both the CE Indicator and tangibility, creditor rights and tangibility∗creditor rights respectively in Columns 3-5 of Table VII. These specifications control for firm fixed effects and interacted industry times year fixed effects. The coefficients of both interaction terms are positive and statistically significant at 1% level. This is a further robustness check which addresses the concern that firms with higher liquidation values could be actually the ones characterized by also more centralized bargaining structures.

IV.E Debt Maturity, Trade Credit and Leases

In our model labor bargaining power constraints firms' debt capacity because labor is paid first and thus it is *de facto* senior to debt. An immediate implication is that firms will try to make debt claims more senior. In this section, we consider three ways in which this can be achieved.

First, in Table VIII, we look at whether firms increase their use of short-term debt to counter-act increases in labor protection. The dependent variable in Table VIII is the proportion of short-term debt over total financial debt. Our finding is that throughout most specifications firms increase their use of short-term debt (relative to total debt) when labor protection increases. The coefficient on labor regulation is positive and statistically different from 0 in the cross-sectional analysis: in Columns 1 and 2, where BDLLS proxies for labor protection, and in Columns 3-5, where EPL proxies for labor protection. The economic effect varies between 2 and 5 percentage

points for an increase in labor protection by 1 unit. It is interesting to notice that the statistical significance disappears in Columns 6 and 7 where we control for firm fixed effects. This finding is conflicting evidence for our prediction. Notice however that we expect short-term debt to increase only in countries in which creditors are not protected enough. Where creditor protection is large, debt can be easily raised without any need to shorten its maturity.

To address the puzzle, in Columns 8 and 9 we control for the interaction term of EPL and creditor rights (as defined in Djankov, McLiesh and Shleifer, 2007). With this control variable, we find that indeed increases in EPL are associated with increases in the use of short-term debt overall (as the coefficient on EPL is positive and statistically different from 0 at the 5% level) but not in countries with strong creditor rights (as the coefficient on EPL*Creditor rights is negative and statistically different from 0 at the 5% level). In other words, for a country that scores 0 in creditor rights (like France), an increase by one unit in EPL is associated with an increase by 5 percentage point in the use of short-term debt. Conversely, in a country like the UK, that scores 4 out of 4 in creditor rights, the same increase in EPL is associated with a decrease by 5 percentage point in the use of short-term debt.

A second way to make debt senior to labor is to increase the use of trade credit. Trade credit is by its very nature short-term and relatively senior (see Petersen and Rajan, 1997). We would then expect companies that are financially constrained to increase their use of trade credit as a consequence of an increase in labor bargaining power. The results are reported in Panel A of Table IX. In this case, we do not find statistically significant differences in the use of trade credit across firms (as shown in Columns 1-3). However, when we control for firm fixed effects (in Column 4 and 5), we find that indeed increases in labor protection are associated with large increases in the use of trade credit by firms.

A third way to increase debt seniority is to increase the use of leases, claims that are senior and secured across all institutional settings (see Eisfeldt and Rampini, 2008, for a recent discussion). The results are reported in Panel B of Table IX. In this case, the results have the expected sign but are significantly weaker. The first three columns tell us that there are large differences across countries in the use of leases, which are strongly positively correlated with employment protection. Consistent with our expectations, leases are more common in countries with stronger labor laws. However, the coefficient on EPL is not statistically different from zero in Columns 4 and 5: this suggests that there is no increase in the use of leases as a response to the increase in labor protection. One reason is that the ability to access leasing is restricted to specific firms and thus firms have limited flexibility to use leases as a Coasian response to changes in regulation.

IV.F Employment Protection, Labor Costs and Profitability

An immediate implication of the view that labor compensation is the result of bargaining between the firm and its employees is that employment protection should be positively correlated with labor costs and, as a consequence, negatively correlated with firm profitability. This is a direct implication of the model proposed in Section II.C as well as all models discussed in Section II.B.

In Table X, we show that indeed this is the case in our sample: we find that increases in EPL are associated with increases in the cost of staff, scaled by assets (Panel B). Similarly, increases in EPL are associated with lower profitability, as measured by return on assets (Panel C). Interestingly, we find no effect of EPL on the size of the workforce in Columns 3-5 of Panel A. This suggests that firms in countries with stronger employment protection have limited ability (the sign of the coefficient on EPL is negative but not statistically different from 0) to substitute capital for the more expensive labor inputs.

These results confirm the basic assumption of any bargaining model that employment protection is beneficial to workers and costly to firms.

V Conclusion

This paper examines the link between labor regulation and capital structure in a panel of firms from 21 OECD countries. We provide evidence that firms reduce leverage when employment protection increases using two different approaches. We employ both a cross-sectional estimation and a difference-in-differences methodology, and use two measures of labor regulation: a time-invariant indicator, which provides a general measure of labor bargaining power, and a time-varying indicator, which focuses on the rigidity of the labor market.

We propose a simple model to explain this result. In our model, firms want to issue as much debt as possible to maximize debt tax shields. However, labor can hold out the firm forcing it into default. Since in case of default only secured debt will be paid, firm's debt is constrained by labor bargaining power.

The finding of a negative impact on firms' capital structure following pro-employees changes in labor law complements a growing literature in economics, which demonstrates a negative effect of strict labor regulations on firms' value, growth and investment decisions. It is also consistent with the notion of a slowdown in economic growth in worker-friendly regulatory environments. As complementary evidence, we find that increases in employment protection are associated with increases in labor costs and decreases in firm profitability. Moreover, the model emphasizes firm-level bilateral bargaining as the critical source of the relationship between labor bargaining power and leverage. Consistent with this prediction, we find that the negative

relation between labor and leverage is weaker in countries where labor negotiations are more centralized.

Furthermore, the results of this paper suggest a differential effect of labor regulation on firms with different levels of debt capacity, which is measured by the liquidation value of the firms' assets. Specifically, our results indicate that the negative effect of labor-friendly legislation on firms' leverage is more pronounced when the liquidation value of firms' assets is lower. Intuitively, this is the case when firms do not possess many tangible assets, i.e. assets easier to secure and thus more valuable to the secured creditors in case of liquidation. Similarly, we find a stronger negative correlation between leverage and employment protection in countries with weaker creditor protection.

We also find some evidence of a Coasian response by firms to changes in regulation. Firms react to increases in labor protection by increasing the use of short-term debt and trade credit, which are by their very nature senior to labor claims.

The uncovered negative correlation between employment protection and leverage is inconsistent with a large strand of the literature, which argues that firms use debt as a strategic tool to strengthen their bargaining position with employees. The strategic use of debt would predict that leverage increases with workers' bargaining power. On the contrary, our results suggest that tough labor law conditions have a negative impact on firms' leverage.

Our findings conflict with the empirical evidence in Bronars and Deere (1991) and Matsa (2007) while they are more in line with the results in Lee and Mas (2009). There are many differences between their analysis and ours that may help explain the different results. The methodology and the measures of labor bargaining power are different: Bronars and Deere (1991) focus on the effect of the degree of unionization, Matsa (2007) looks at changes in labor laws, and Lee and Mas (2009) study the consequences of union elections. More importantly, their evidence comes from US data, while we rely on cross-country data from 21 OECD countries. Systematic differences between the US and the average country in our sample may explain the different results. For instance, as shown by our model, debt is a better bargaining tool when it is a harder claim that cannot be credibly renegotiated. US firms may rely more on public debt as compared to bank debt than firms from other countries. Hence, debt in the US may be more difficult to renegotiate. A second important difference is that our evidence is from a more recent period than their. One of the consequence of the Chapter 11 reorganization procedure introduced in the 1978 bankruptcy code was to make violation of absolute priority more likely, particularly in favor of labor claims. Moreover, in recent years, debt renegotiation, even for public debt, has become easier because of the role played by hedge funds and distressed investors. This discussion is only indicative as more analysis will be needed to further our understanding of the relation between labor bargaining power and leverage.

Appendix

Proof of Proposition 2: To find the subgame perfect equilibrium, we proceed by backwards induction starting from $t = 1$, when employees bargain with financiers. If negotiations succeed, the firm's value is

$$V_S = \max\{Y - W - D, 0\}(1 - \tau) + \min\{D, Y - W\} \tag{A1}$$

The first term is the value of equity while the second term is the value of debt. Notice that labor claims are paid before debt in case of continuation. Conversely, if negotiations fail, the firm's value is

$$V_L = (L - \min\{L, D\})(1 - \tau) + \min\{L, D\} \tag{A2}$$

The first term is the value of equity (if any) while the second term is the value of debt. Recall that in case of liquidation, labor leaves and receives its outside option $W_0 = 0$. In what follows we assume that $L < D$ and check that this is consistent with the equilibrium.

The surplus that workers and financiers share is that W that equates the two expressions above:

$$S = \begin{cases} Y + \frac{\tau D - L}{(1-\tau)} & \text{if } W + D \leq Y \\ Y - L & \text{otherwise} \end{cases} \tag{A3}$$

The bargaining problem at $t = 1$ is to

$$\max_W \ (W)^{\alpha} (S - W)^{1-\alpha} \tag{A4}$$

where S is given in expression (**??**). The equilibrium solution is

$$W = \begin{cases} \alpha\left[Y + \frac{\tau D - L}{(1-\tau)}\right] & \text{if } D \leq \frac{(1-\tau)(1-\alpha)Y + \alpha L}{(1-\tau)+\alpha\tau} \\ Y - D & \text{if } D \in \left(\frac{(1-\tau)(1-\alpha)Y + \alpha L}{(1-\tau)+\alpha\tau}, Y(1-\alpha) + \alpha L\right] \\ \alpha(Y - L) & \text{if } D > Y(1-\alpha) + \alpha L \end{cases} \tag{A5}$$

The problem at $t = 0$ becomes:

$$\max_D \ [\max\{Y - W - D, 0\}(1 - \tau) + \min\{D, Y - W\}] \tag{A6}$$

where W is given in equation (**??**).

The optimal solution is:

$$D = Y - \alpha(Y - L) \equiv D^* \tag{A7}$$

Thus workers receive

$$W = \alpha(Y - L) \equiv W^* \tag{A8}$$

while shareholders obtain

$$E^* = (Y - W^* - D^*)(1 - \tau) = 0 \tag{A9}$$

The only condition left to check is whether $D^* > L$. The assumption that $Y > L$ ensures that. ■

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Table I: Descriptive Statistics

This table reports summary statistics for all variables used in the analysis. The BDLLS labor law indicator is time-invariant. Its values range from 0 to 3 and it is sourced from year 1997. The EPL Indicator is time-varying and its value range is 0-6. CE Index is available for the period 1970-2000 for all the countries of the sample except for Greece and takes values from 1 to 5. Assets refer to the book value of assets. Size is measured as the logarithm of firms' sales. Market to Book is the ratio of market value of assets over book value of assets and it is capturing firms' investment opportunities. Return on Assets is calculated as earnings before interest and taxes (EBIT) over total assets. The statistics for leases over debt presented are conditional on leases taking positive values. Worldscope variables are winzorized at the 1% tails. GDP per Capita is the logarithm of GDP per Capita expressed in current prices. Creditor Rights takes values from 0-4. Market Based is a dummy variable taking the value of 1 if the economy is market based and 0 if it is bank-based. The variables French Legal Origin, English Legal Origin, Scandinavian Legal Origin, and German Legal Origin are dummies which take the value of 1 if the legal mother of the countries is France or Spain, UK, Scandinavian countries and Germany, respectively. The sample consists of manufacturing firms in 21 countries. The sample period is from 1985 to 2004.

	Source	Observations	Mean	Median	Std. Dev.
Labor Law Indicators					
BDLLS Indicator	Botero et al (2004)	86,055	1.179	1.476	0.465
EPL Indicator	Allard (2005)	86,055	1.657	1.570	0.908
CE Index	OECD, Nickell (2006)	67,898	1.571	1.000	0.941
Firm-level Variables					
Total Debt/Assets	Worldscope	80,022	0.245	0.228	0.164
Long-term Debt/Assets	Worldscope	75,178	0.149	0.127	0.118
(Total Debt-Cash)/Assets	Worldscope	79,299	0.121	0.121	0.227
Total Debt/Market Value	Worldscope	73,065	0.284	0.241	0.218
Long-term Debt/Market Value	Worldscope	68,836	0.167	0.134	0.143
(Total Debt-Cash)/Market Value	Worldscope	77,476	0.120	0.111	0.317
Short-term Debt/Debt	Worldscope	69,355	0.431	0.409	0.278
Leases/Debt	Worldscope	17,739	0.090	0.037	0.126
Net Trade Credit/Assets	Worldscope	63,188	-1.576	-0.411	5.571
Tangibility	Worldscope	84,037	0.300	0.297	0.152
Size	Worldscope	81,962	12.474	12.394	1.782
Market to Book	Worldscope	76,839	1.199	0.902	0.903
ROA	Worldscope	82,235	0.064	0.069	0.105
Cost of Staff/Assets	Worldscope	17,231	0.276	0.262	0.151
Employees/Assets	Worldscope	56,158	0.080	0.062	0.064
Country Factors					
GDP Growth (%)	IMF, WEO	86,055	2.466	2.673	1.762
log (GDP Per Capita)	IMF, WEO	86,055	10.126	10.149	0.317
Creditor Rights	Djankov et al (2007)	86,055	2.151	2.000	1.182
Tax System	Fan et al (2006)	86,055	0.147	0.000	0.354
Market Based	Demirguc-Kunt et al (1999)	86,055	0.438	0.000	0.496
French Legal Origin	La Porta et al (1997)	86,055	0.152	0.000	0.359
English Legal Origin	La Porta et al (1997)	86,055	0.407	0.000	0.491
Scandinavian Legal Origin	La Porta et al (1997)	86,055	0.061	0.000	0.240
German Legal Origin	La Porta et al (1997)	86,055	0.381	0.000	0.486

Table II: Cross-sectional Evidence

This table presents estimations from regressions of leverage on the BDLLS labor Indicator and a set of controls. Leverage is defined as total debt over total assets (in Columns 1-2), long-term debt over total assets (in Columns 3-4) and total debt minus cash over total assets (in Columns 5-6). The BDLLS labor indicator is time-invariant, taking one value for each of the 21 countries in the sample. Its values range from 0 to 3 and it refers to year 1997. The source for the index is Botero, et al (2004). Columns 1, 3 and 5 include year fixed effects and two-digit industry fixed effects. Columns 2, 4 and 6 include interacted year fixed effects times two-digit industry fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

	Total Debt/Assets		Long-term Debt/Assets		(Debt-Cash)/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)
BDLLS	-0.029	-0.019	-0.016	-0.017	-0.023	-0.024
	(0.008)***	(0.008)**	(0.005)***	(0.005)***	(0.009)***	(0.009)***
Control Var.	X	X	X	X	X	X
Year FE	Yes	No	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No	Yes	No
Ind.*Year FE	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.13	0.13	0.15	0.16	0.19	0.19
Observations	66,941	66,941	63,323	63,323	66,609	66,609

Table III: Cross-sectional Evidence

This table presents estimations from regressions of leverage on the BDLLS labor Indicator and a set of controls. Leverage is defined as total debt over market value of the firm(in Columns 1-2), long-term debt over market value of the firm (in Columns 3-4) and total debt minus cash over market value of the firm (in Columns 5-6). Market value of the firm is defined as the sum of the book value of debt and the market value of equity. The BDLLS labor indicator is time-invariant, taking one value for each of the 21 countries in the sample. Its values range from 0 to 3 and it refers to year 1997. The source for the index is Botero, et al (2004). Columns 1, 3 and 5 include year fixed effects and two-digit industry fixed effects. Columns 2, 4 and 6 include interacted year fixed effects times two-digit industry fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

	Total Debt/Market Value		Long-term Debt/Market Value		(Debt-Cash)/Market Value	
	(1)	(2)	(3)	(4)	(5)	(6)
BDLLS	-0.026	-0.015	-0.038	-0.024	-0.029	-0.022
	(0.010)***	(0.010)***	(0.006)***	(0.006)***	(0.014)**	(0.012)*
Control Var.	X	X	X	X	X	X
Year FE	Yes	No	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No	Yes	No
Ind.*Year FE	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.34	0.34	0.27	0.27	0.19	0.19
Observations	66,662	66,662	63,168	63,168	69,689	69,689

Table IV: DID Analysis-Employment Protection Legislation

This table presents estimations from regressions of leverage on the EPL Indicator and a set of controls. Leverage is defined as total debt over total assets (Panel A), long-term debt over total assets (Panel B) and total debt minus cash over total assets (Panel C). The EPL Indicator is time-varying and its value range is 0-6. The indicator is an extension of the OECD Employment Protection Legislation provided by Allard (2005). EPL is lagged by one year. Column 1 includes year fixed effects and two-digit industry fixed effects. Column 2 includes interacted year times two-digit industry fixed effects. Column 3 includes interacted year times two-digit industry fixed effects and country fixed effects. Column 4 includes year fixed effects and firm fixed effects and finally, Column 5 includes interacted year and two-digit industry fixed effects in addition to the firm fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

Panel A					
	Total Debt/Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.029	-0.029	-0.034	-0.028	-0.027
	(0.003)***	(0.003)***	(0.007)***	(0.010)***	(0.010)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.13	0.13	0.14	0.71	0.71
Observations	61,654	61,654	61,654	61,654	61,654
Panel B					
	Long-term Debt/Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.017	-0.017	-0.016	-0.006	-0.006
	(0.003)***	(0.003)***	(0.003)***	(0.004)	(0.004)*
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.15	0.16	0.16	0.63	0.63
Observations	58,339	58,339	58,339	58,339	58,339
Panel C					
	(Total Debt-Cash)/ Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.015	-0.015	-0.040	-0.031	-0.032
	(0.004)***	(0.004)***	(0.008)***	(0.011)***	(0.011)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.18	0.19	0.19	0.76	0.76
Observations	61,378	61,378	61,378	61,378	61,378

Table V: DID Analysis-Employment Protection Legislation

This table presents estimations from regressions of leverage on the EPL Indicator and a set of controls. Leverage is defined as total debt over market value of the firm (Panel A), long-term debt over market value of the firm (Panel B) and total debt minus cash over market value of the firm (Panel C). Market value of the firm is defined as the sum of the book value of debt and the market value of equity. The EPL Indicator is time-varying and its value range is 0-6. The indicator is an extension of the OECD Employment Protection Legislation provided by Allard (2005). EPL is lagged by one year. Column 1 includes year fixed effects and two-digit industry fixed effects. Column 2 includes interacted year times two-digit industry fixed effects. Column 3 includes interacted year times two-digit industry fixed effects and country fixed effects. Column 4 includes year fixed effects and firm fixed effects and finally, Column 5 includes interacted year times two-digit industry fixed effects in addition to the firm fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

Panel A					
	Total Debt/Market Value				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.030	-0.030	-0.051	-0.042	-0.042
	(0.005)***	(0.005)***	(0.009)***	(0.011)***	(0.011)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.33	0.34	0.34	0.74	0.74
Observations	61,388	61,388	61,388	61,388	61,388
Panel B					
	Long-term Debt/Market Value				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.015	-0.015	-0.026	-0.015	-0.016
	(0.003)***	(0.003)***	(0.004)***	(0.006)***	(0.005)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.26	0.27	0.27	0.65	0.65
Observations	58,211	58,211	58,211	58,211	58,211
Panel C					
	(Total Debt-Cash)/ Market Value				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.004	-0.003	-0.064	-0.054	-0.054
	(0.005)	(0.005)	(0.010)***	(0.012)***	(0.012)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.19	0.19	0.20	0.73	0.73
Observations	64,128	64,128	64,128	64,128	64,128

Table VI: Cross-sectional Heterogeneity- Firms' liquidation values

This table presents estimations from regressions of cross-sectional heterogeneity. Total debt over assets is regressed on the interaction of the Labor Indicator with a proxy for the liquidation value of the firms' assets (L) and a set of controls. Columns 1-3 report the results of regressions where tangibility is used as the proxy for L. Columns 4-5 report the results of regressions where creditor rights are used as a proxy for L. In Columns 6-8, the proxy for L is the product of creditors rights and tangibility. Column 1, 4 and 6 include year fixed effects and firm fixed effects. Columns 2, 5 and 7 include interacted year times two-digit industry fixed effects and firm fixed effects. Columns 3 and 8 control additionally for interacted country times year fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

	Total Debt/ Assets							
	L=Tangibility			L=Creditor Rights		L=Tangibility*Creditor Rights		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPL	-0.041	-0.040		-0.090	-0.089	-0.053	-0.052	
	(0.010)***	(0.010)***		(0.023)***	(0.023)***	(0.012)***	(0.011)***	
EPL*L	0.041	0.039	0.039	0.033	0.033	0.039	0.039	0.024
	(0.010)***	(0.010)***	(0.009)***	(0.008)***	(0.008)***	(0.006)***	(0.006)***	(0.004)***
Control Var.	X	X	X	X	X	X	X	X
Year FE	Yes	No	No	Yes	No	Yes	No	No
Ind*Year FE	No	Yes	Yes	No	Yes	No	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Count.*Year FE	No	No	Yes	No	No	No	No	Yes
Adj. R^2	0.71	0.71	0.72	0.71	0.71	0.71	0.71	0.76
Obs.	61,654	61,654	61,654	61,654	61,654	61,654	61,654	61,654

Table VII: Cross-sectional Heterogeneity-Organizational Design of Bargaining

This table presents estimations from regressions of leverage on the Centralization Indicator (CE Index) in Columns 1-2 and on a set of controls. Columns 3 includes interactions of the CE Index with EPL and of tangibility with EPL. Column 4 includes interactions of the CE Index with EPL and of the creditor index with EPL and Column 5 includes interactions of the CE Index with EPL and of tangibility*creditor with EPL. Leverage is defined as total debt over total assets. Columns 1 and 3 include year fixed effects and firm fixed effects. All other Columns include firm fixed effects and interacted year fixed effects times two-digit industry fixed effects. The source for the Centralization Indicator (CE Index) is OECD. It is available for the period 1970-2000 and takes values from 1 to 5. It is extracted from the OECD Institutions dataset, provided by William Nickell. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 20 countries. Coverage: 1985-2000.

	Total Debt/ Assets				
	(1)	(2)	(3)	(4)	(5)
EPL	-0.109	-0.107	-0.090	-0.120	-0.085
	(0.031)***	(0.031)***	(0.021)***	(0.029)***	(0.022)***
CE Index *EPL	0.035	0.034	0.022	0.016	0.021
	(0.010)***	(0.010)***	(0.006)**	(0.005)	(0.006)**
L *EPL			0.035	0.029	0.014
			(0.011)***	(0.008)***	(0.004)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.72	0.72	0.72	0.72	0.72
Observations	48,941	48,941	48,941	48,941	48,941

Table VIII: Debt Maturity

This table presents estimations about the effect of labor bargaining on debt maturity. Our dependent variable is short-term debt to debt. Columns 1 and 2 present estimations of short-term debt on BDLLS labor Indicator and a set of controls. The BDLLS labor indicator is time-invariant, taking one value for each of the 21 countries in the sample. Its values range from 0 to 3 and it refers to year 1997. The source for the index is Botero, et al (2004). Column 1 includes year fixed effects and two-digit industry fixed effects. Column 2 includes interacted year fixed effects times two-digit industry fixed effects. Columns 3-7 present regressions of short-term debt to debt on the EPL Indicator and a set of controls. The EPL Indicator is time-varying and its value range is 0-6. The indicator is an extension of the OECD Employment Protection Legislation provided by Allard (2005). EPL is lagged by one year. Column 3 includes year fixed effects and two-digit industry fixed effects. Column 4 includes interacted year times two-digit industry fixed effects. Column 5 includes interacted year times two-digit industry fixed effects and country fixed effects. Column 6 includes year fixed effects and firm fixed effects and finally, Column 7 includes interacted year times two-digit industry fixed effects in addition to the firm fixed effects. In Columns 8-9, short-term debt to debt is regressed on the interaction of the Labor Indicator with creditor rights as a proxy for the liquidation value of the firms' assets (L) and a set of controls. Column 8 includes year fixed effects and firm fixed effects and Column 9 includes interacted year times two-digit industry fixed effects and firm fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

	Short-term Debt/ Debt								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDLLS	0.056	0.037							
	(0.017)***	(0.014)***							
EPL			0.019	0.020	0.023	0.008	0.008	0.056	0.052
			(0.007)***	(0.007)***	(0.012)**	(0.011)	(0.010)	(0.023)**	(0.022)**
EPL*Cred.								-0.026	-0.023
								(0.010)**	(0.010)**
Control Var.	X	X	X	X	X	X	X	X	X
Year FE	Yes	No	Yes	No	No	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No	No	No	No	No	No
Ind.*Year FE	No	Yes	No	Yes	Yes	No	Yes	No	Yes
Firm FE	No	No	No	No	No	Yes	Yes	Yes	Yes
Country FE	No	No	No	No	Yes	No	No	No	No
Adjusted R^2	0.22	0.23	0.22	0.23	0.23	0.57	0.57	0.57	0.57
Observations	58,911	58,911	55,113	55,113	55,113	55,113	55,113	55,113	55,113

Table IX: Net Trade Credit and Leases

This table presents estimations from regressions of net trade credit (Panel A) and of leases over total debt (Panel B) on the EPL Indicator and a set of controls. The EPL Indicator is time-varying and its value range is 0-6. The indicator is an extension of the OECD Employment Protection Legislation provided by Allard (2005). EPL is lagged by one year. Column 1 includes year fixed effects and two-digit industry fixed effects. Column 2 includes interacted year times two-digit industry fixed effects. Column 3 includes interacted year times two-digit industry fixed effects and country fixed effects. Column 4 includes year fixed effects and firm fixed effects and finally, Column 5 includes interacted year times two-digit industry fixed effects in addition to the firm fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

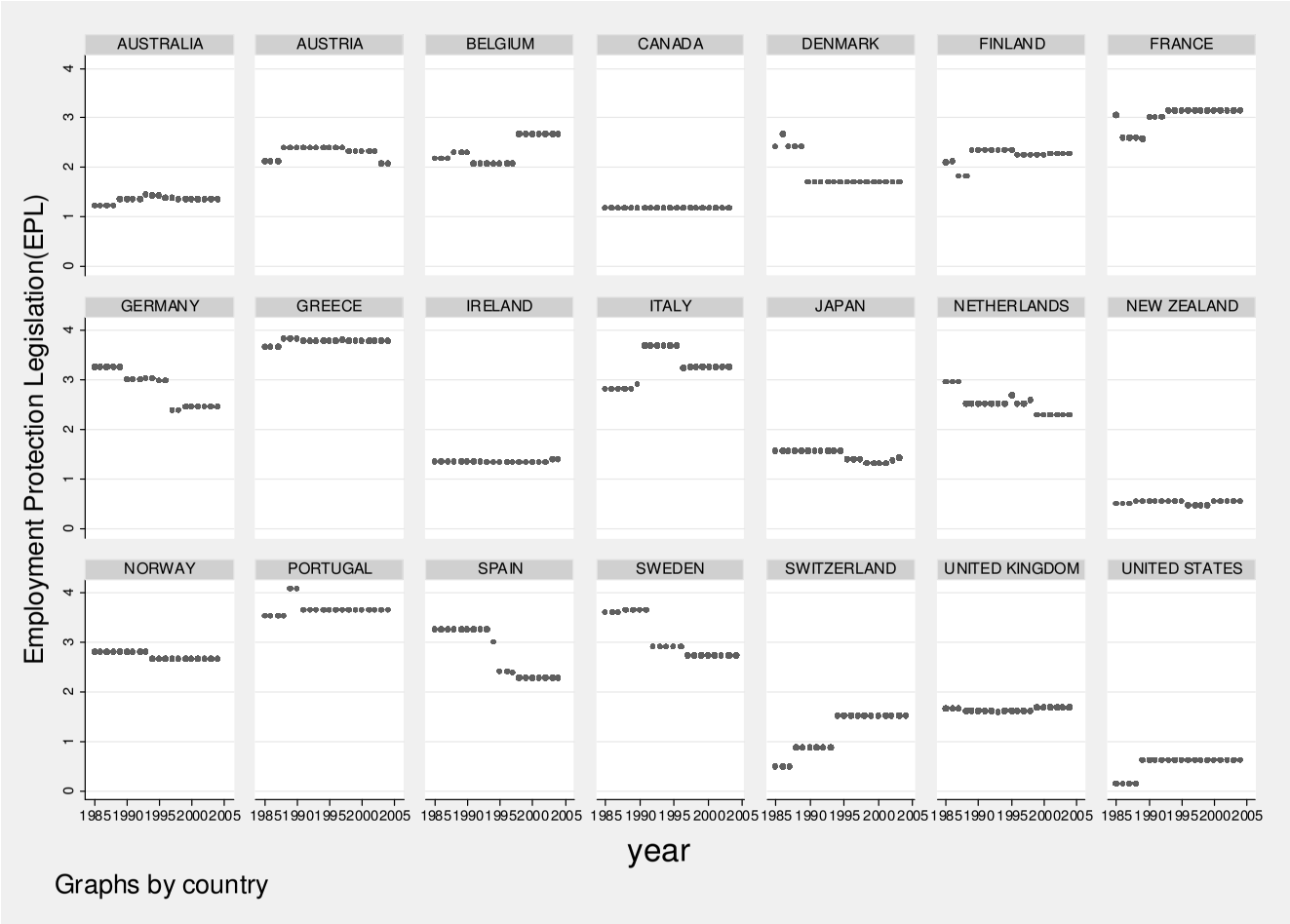
Panel A					
	Net Trade Credit/Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	0.045	0.039	0.102	0.614	0.601
	(0.081)	(0.082)	(0.129)	(0.152)***	(0.148)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.04	0.05	0.05	0.42	0.42
Observations	51,894	51,894	51,894	51,894	51,894
Panel B					
	Leases/ Total Debt				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	0.005	0.005	0.005	-0.005	-0.0005
	(0.001)***	(0.001)***	(0.001)***	(0.001)	(0.001)
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.30	0.31	0.31	0.63	0.63
Observations	60,893	60,893	60,893	60,893	60,893

Table X: Labor Bargaining and Firms' Employees, Cost of Labor and Profitability

This table presents estimations from regressions of firms' employees (Panel A), cost of firms' labor (Panel B) and of firms' profitability (Panel C) on the EPL Indicator and a set of controls. The measure used for firms' employees is employees over assets. Cost of staff over assets is used as a measure of labor cost and ROA is a measure of firms' profitability. The EPL Indicator is time-varying and its value range is 0-6. The indicator is an extension of the OECD Employment Protection Legislation provided by Gayle Allard. EPL is lagged by one year. Column 1 in all 3 Panels includes year fixed effects and two-digit industry fixed effects. Column 2 includes interacted year times two-digit industry fixed effects. Column 3 includes country fixed effects and interacted year times industry fixed effects, Column 4 includes year and firm fixed effects and finally, Column 5 includes interacted year times two-digit industry fixed effects and firm fixed effects. The controls are reported in Table I. Robust standard errors are reported in parentheses. *, **, ***, indicates significance at the 10%, 5% and 1% respectively. Standard errors are clustered at the country and year level. Firm-level variables are winsorized at the 1% tails. The sample consists of manufacturing firms in 21 countries. Coverage: 1985-2004.

Panel A					
	Employees/Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	0.017	0.017	-0.004	-0.003	-0.003
	(0.002)***	(0.002)***	(0.003)	(0.003)	(0.003)
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.49	0.49	0.54	0.87	0.87
Observations	46,382	46,382	46,382	46,382	46,382
Panel B					
	Cost of Staff/Assets				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	0.051	0.052	0.047	0.025	0.024
	(0.008)***	(0.008)***	(0.011)***	(0.006)***	(0.006)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.27	0.29	0.32	0.86	0.86
Observations	13,499	13,499	13,499	13,499	13,499
Panel C					
	ROA				
	(1)	(2)	(3)	(4)	(5)
EPL Indicator	-0.005	-0.004	-0.020	-0.026	-0.025
	(0.003)*	(0.003)	(0.004)***	(0.004)***	(0.004)***
Control Var.	X	X	X	X	X
Year FE	Yes	No	No	Yes	No
Industry FE	Yes	No	No	No	No
Ind.*Year FE	No	Yes	Yes	No	Yes
Firm FE	No	No	No	Yes	Yes
Country FE	No	No	Yes	No	No
Adjusted R^2	0.17	0.18	0.18	0.54	0.55
Observations	64,820	64,820	64,820	64,820	64,820

Figure 1: EPL


AUSTRALIA
AUSTRIA
BELGIUM
CANADA
DENMARK
FINLAND
FRANCE
GERMANY
GREECE
IRELAND
ITALY
JAPAN
NETHERLANDS
NEW ZEALAND
NORWAY
PORTUGAL
SPAIN
SWEDEN
SWITZERLAND
UNITED KINGDOM
UNITED STATES
Employment Protection Legislation(EPL)
0
1
2
3
4
1985 1990 1995 2000 2005
year
Graphs by country