

We analyze the political determinants of investor and employment protection. Our model predicts that proportional electoral systems are conducive to weaker investor protection and stronger employment protection than majoritarian systems. This prediction is consistent with international panel data evidence. The proportionality of the voting system is significantly and negatively correlated with shareholder protection in a panel of 45 countries, and positively correlated with employment protection in a panel of 21 OECD countries. Other political variables also affect regulatory outcomes, especially for the labor market. The origin of the legal system has some additional explanatory power only for employment protection. (JEL G34, K22, K42)

Recent works on corporate governance show large differences in the degree of investor protection between countries, correlated both with the development of capital markets and with the ownership structure of firms.¹ These studies take the degree of investor protection as exogenous. Laws result from the political process, however, which in turn responds to economic interests. In this sense, legal rules and economic outcomes are jointly determined, politics being the link between them.

In this paper, we apply this principle to the choice of the degree of investor and employ-

ment protection. We investigate whether a political theory can explain the observed international differences in regulation. This question has an obvious bearing on the issue of legal reform, because understanding the determinants of regulation in a given country is a prerequisite to predicting its evolution.

Currently, the consensus explanation of the international differences in investor protection is that they are rooted in the structure of the legal system, which is historical in origin. This approach—proposed by La Porta et al. (1998), hereafter LLSV (1998)—is based on the classification of legal systems into four “families”: the English common-law system and the French, German, and Scandinavian civil-law traditions. LLSV show that shareholder protection is significantly higher in the common-law countries.

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¹ See Rafael LaPorta et al. (1997), La Porta et al. (1998), and La Porta et al. (1999).

Though striking, these correlations per se do not provide a theory of the determinants of investor protection: there is no clear reason why common law should provide noncontrolling shareholders with better protection against insiders. In fact, in contrast with this view, there is evidence that civil law has not always been less suited to business needs than common law.²

Another problem with the “legal-origin approach” is that it lacks predictive power. Since a country’s legal system is the outcome of choices made centuries ago, this approach implies that in civil-law countries noncontrolling shareholders are doomed to weak legal protection, and that accordingly the stock market is bound to remain underdeveloped. This hardly squares, however, with the fact that reforms of corporate law do occur in the real world and have been particularly notable in recent years, as corporate governance problems have come to the fore in the policy debate.

This suggests that politicians can change company law, if they choose to do so. So the question becomes: when and why do they decide to? Political economy models can help answer this question by formalizing the behavior of voters and politicians in response to their economic interest as well as to their ideology. In these models, the voting process aggregates the conflicting preferences of voters, and the State serves as agent for the constituencies that prevail. This approach has been applied extensively to the design of fiscal and monetary policy, but can serve the study of company and labor law equally well.³ In this paper we attempt a first step in this direction by developing a stylized model of the political economy of financial and labor market regulation, and by

testing its predictions on a new panel of international data.

We model an economy with three types of agents: entrepreneurs, rentiers, and workers.⁴ After entrepreneurs have set up their firms, a political vote can change the law. Therefore, when signing contracts, people have to take the possible outcome of elections into account. In particular, the amount of equity finance that external investors are willing to provide is affected by the degree of protection that they expect to receive from company law.

At the voting stage, political preferences are shaped by economic motives. Rentiers, as minority shareholders, want strong investor protection to limit the private benefits extracted by entrepreneurs at their expense. The latter, as controlling shareholders, have the opposite preference. As initial owners of their companies, they ultimately bear the agency cost of weak investor protection, in the form of reduced availability of equity capital. This cost is sunk, however, at the voting stage: once companies have raised external equity, entrepreneurs have the incentive to weaken investor protection to increase their private benefits.

If the political debate were only about the degree of investor protection, this would be trivially determined by the balance of power between entrepreneurs and rentiers. Firms have another important class of stakeholders, however: their employees. The latter’s interests can loom large in the political debate, since they represent a large fraction of the vote and tend to be ideologically cohesive. As a result, the political debate is likely to extend to labor issues, such as protection against dismissal. Accordingly, we model the political agenda as centering on the two main sets of laws that affect stakeholders: company law, insofar as it sets the degree of shareholder protection; and labor law, insofar as it determines employee protection against dismissal.

We assume that two parties (or political coalitions) compete for votes by committing to a policy platform before the elections. Each constituency’s voting behavior is determined by its economic interests as well as by its ideological

² The evidence in Raghuram Rajan and Luigi Zingales (2003) suggests that the finding that common-law countries are more financially developed has not always been true. For instance, they document that at the beginning of the twentieth century, French capital markets were more developed than those of the United States. Naomi R. Lamoreaux and Jean-Laurent Rosenthal (2004) produce evidence that in the nineteenth century the French *Code de commerce* and legal practice offered more sophisticated and flexible solutions to organize business than the Anglo-American legal regime.

³ For a comprehensive treatment of the political economy approach and of its applications to fiscal and monetary policy, see Allan Drazen (2000) and Torsten Persson and Guido Tabellini (2000).

⁴ Rentiers are people whose main source of income is financial wealth. In the model they are noncontrolling shareholders.

bias toward one of the two parties. Voters also have individual political preferences, which are distributed differently across constituencies. Entrepreneurs and employees are relatively homogeneous in their political preferences and are biased toward one of the two parties. In contrast, the rest of the electorate—which includes rentiers as well as self-employed and unemployed workers—has more dispersed individual preferences and a less pronounced bias for either party.⁵

We show that the political outcome hinges crucially on whether the electoral system is proportional (where winning a majority of the votes is crucial), or majoritarian (where winning a majority of districts ensures victory). Our main result is that a proportional system produces weak shareholder protection and strong employment protection, i.e., an outcome favorable to entrepreneurs and employees and unfavorable to the residual group.⁶ A majoritarian system produces the opposite: strong shareholder protection and weak employment protection, i.e., the outcome preferred by rentiers.

The intuition behind these results is that proportional voting pushes political parties to cater more to the preferences of social groups with homogeneous preferences, that is, entrepreneurs and employees. This is because under this voting rule the additional mass of voters that can be attracted by shifting a party's platform is greater if the shift favors a homogeneous constituency. Under a majoritarian system, by contrast, there is keen competition for the votes of the pivotal district, because this is enough to win the elections. In our model, the pivotal district coincides with that dominated by the residual group, precisely because it is not ideologically committed to either party, unlike employee- or entrepreneur-

dominated districts. Thus the very lack of ideological commitment that makes this residual group neglected in a proportional system makes it keenly courted in a majoritarian system.

To test these predictions, we first examine the available cross-country data on investor protection, employment protection, and political variables. Continental European countries and Japan, which tend to have proportional voting systems, have weak investor and strong employment protection; Anglo-Saxon countries, whose political systems tend to be majoritarian, have the reverse. While this evidence is consistent with the model's predictions, it is difficult to test them against those of the main competing view that explains cross-country variation in regulatory outcomes with the origin of the corresponding legal systems. The difficulty arises from the high collinearity between political and legal variables within a single cross section.

To overcome this problem, we construct an international panel dataset for the 1990s by collecting data on shareholder protection and merging it with measures of employment protection and political variables. Using panel estimation techniques, we provide a tighter test of the two competing theories. The proportionality of the voting system is again found to be significant and negatively correlated with shareholder protection, and positively correlated with employment protection. We explore also whether other political variables—such as ideological factors, district size, voting thresholds, competition among parties, and tenure of the democratic system—affect the regulatory outcomes, and we find that some of them play a role, especially in shaping labor market regulation. In contrast with the results obtained on cross-sectional data, in the panel the origin of the legal system has no additional explanatory power for shareholder protection. Instead, it retains an important role in the determination of employment protection.

Our findings accord with the growing political economy literature that identifies the difference between majoritarian and proportional systems as a key variable in the design of economic policy.⁷ Our contribution to this literature

⁵ Therefore, in our model voters are guided by a mix of economic interest and ideology. This contrasts with others who view voters as driven entirely by ideological factors. For instance, Mark J. Roe (2000) attributes the differences between the corporate governance systems in the United States and in continental Europe to the incompatibility of the American ideology with the social democracy common in European countries. In his view, in Europe the state is entrusted with the task of sustaining a social pact between classes, whereby greater equality is exchanged for reduced efficiency.

⁶ Pagano and Volpin (2005) show that a similar convergence of interests between entrepreneurs (or managers) and employees can occur also at the individual company level, not just in the political arena as in this model.

⁷ Gian M. Milesi-Ferretti et al. (2002) document the existence of a strong and very robust positive relationship between the degree of proportionality of the electoral sys-

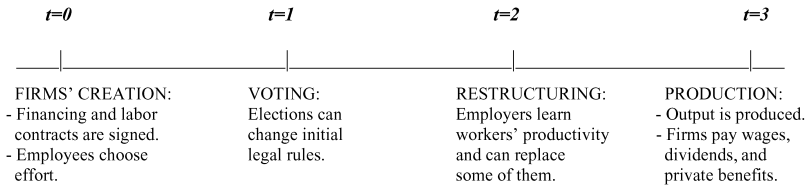


FIGURE 1. TIME LINE

is to show that this variable is important also in shaping financial and labor market regulation. The degree of proportionality helps predict the increase in the degree of shareholder protection and the decline in the degree of employment protection that occurred in the 1990s. These changes in regulation, which are relevant to the debate on corporate governance⁸ and labor relation systems, cannot be explained by the inherently static legal-origin approach.

The paper is structured as follows. Section I introduces the model and its main assumptions. The baseline model is analyzed in Sections II and III, and Section IV develops some extensions. The empirical evidence is presented in Section V. Section VI concludes.

I. Structure of the Model

Consider an economy with three types of agents: R rentiers, W workers, and E entrepreneurs. Rentiers have only a wealth endowment, A_R . Workers have a unit endowment of labor

time per period, and a wealth endowment, $A_W \geq 0$. Entrepreneurs have a wealth endowment A_E and an entrepreneurial idea, which is essential to set up a firm.

Figure 1 illustrates the time line. At $t = 0$ firms are set up by hiring labor and raising capital. Their founders can raise capital only by selling equity stakes. The availability of equity finance determines the scale of the company. Firms hire workers who can invest in effort to raise their productivity. In setting the initial price of equity and wages, entrepreneurs, investors, and workers take account of the legal rules expected to prevail in the future. Once firms are set up, workers split into two subgroups: employees and self-employed (or unemployed) workers.

At $t = 1$, elections are held, with either a proportional or a majoritarian system. Voters are guided by a mix of economic interest and ideology. The members of each constituency (employed workers, entrepreneurs, rentiers, and self-employed workers) share both economic interests and ideological bias toward a party, but their preferences also have an ideological individual component. Two parties compete for votes by proposing platforms defined on two dimensions of regulation: investor protection and employment protection. The first affects the corporate resources that owner-managers can appropriate at the expense of other shareholders, that is, the private benefits of control. The second affects their discretion to reduce labor costs.

At $t = 2$, entrepreneurs learn the individual productivity of their employees. Established entrepreneurs can restructure their companies at a profit by replacing less productive workers with new, less expensive ones. The feasibility of this depends on the degree of legal protection of employed workers.

At $t = 3$, wages are paid, the owner-manager extracts private benefits of control, and dividends are distributed to shareholders.

tem and the size of transfer spending in OECD countries. Persson and Tabellini (2004) analyze the impact of the choice between proportional and majoritarian electoral rules on a broad range of fiscal policy choices. They provide evidence that majoritarian systems tend to have smaller governments, less welfare spending, and lower deficits than proportional systems.

⁸ Legal scholars are divided over the degree of convergence that we are likely to see in corporate law, in contractual behavior, and in business practices. Henri B. Hansmann and Reinier H. Kraakman (2001) argue that shareholder pressure will ensure gradual convergence in corporate law as well. John C. Coffee (1999) suggests that corporate governance will converge via actual business practices. Ronald J. Gilson (2001) argues that one is likely to observe interplay of all three types of convergence, with a range of different potential outcomes. In contrast, Lucian A. Bebchuk and Roe (1999) question the idea of smooth and rapid convergence toward a single system of corporate governance, since political and economic forces tend to promote path dependence in corporate law and in business practice.

The rentiers' objective function U_R is simply the final value of their wealth. They can invest either in the representative company's shares or in an alternative asset ("debt") yielding a fixed rate of return, for simplicity normalized to zero. So their objective function is $U_R = \beta_R V + B_R$, where β_R is their equity stake, V is the value of the company (its cash flow net of the private benefits), and B_R is their debt holding.

Workers' expected utility is $U_W = E(c) - \gamma e$, where c is their consumption, γ is the (positive) marginal disutility of effort, and the effort e can take two values, 0 or 1. Workers, like rentiers, can invest in equity or debt and they receive a wage w if employed. Therefore, the consumption of employed workers is $c = \tilde{w} + \beta_W V + B_W$, where \tilde{w} is their wage (a random variable because it depends on whether they are retained or fired), β_W is their equity stake, and B_W is their debt holding. Unemployed workers instead consume $c = \beta_W V + B_W$ because they have no labor income.

Entrepreneurs maximize the value of the stake retained in their company (their percentage stake β_E multiplied by the value of the company, V) plus the resources diverted from the company (their private benefits of control, D). Since in this model entrepreneurs invest all their wealth in their company (as shown below), their objective function is $U_E = \beta_E V + D$.

The model takes as exogenous the electoral system (majoritarian or proportional), the number of agents of each type, technology and preferences, wealth and labor endowments. It determines endogenously the degree of investor and employee protection, private benefits of control, wages and employment, investment, and the equity stake of each type of investor.

Let us now explain the assumptions of the model in greater detail.

A. Firms

Firms have a fixed-coefficients production technology, with labor-capital ratio $N/K = n$. The production of Y units requires N workers and K units of capital, with $Y = \bar{y}N$ (\bar{y} being average labor productivity). A worker's productivity can be low (equal to y) or high (equal to $y + \Delta$). An employee becomes a high-productivity worker with probability x if he

invests in effort ($e = 1$), and remains a low-productivity worker otherwise ($e = 0$). Effort captures investment in firm-specific human capital. It can be undertaken only by workers hired at $t = 0$, and is not observable. It is efficient to elicit effort, since its marginal productivity exceeds its disutility: $x\Delta > \gamma$. To induce workers to exert effort, the firm must agree to pay a sufficiently high wage. The contractual wage cannot be made contingent on workers' individual productivity, which is assumed to be observable but not contractible.⁹

To raise the external capital $K - A_E$, the entrepreneur needs to sell shares in the firm.¹⁰ We assume a perfectly elastic supply of capital, as in a small open economy. The required rate of return on equity is normalized to zero, so that investors must break even in expectation. The entrepreneur's stake β_E is determined by the external investors' participation constraint $(1 - \beta_E)V = K - A_E$. The value of the company V is endogenous: once financial and labor contracts are signed, V is reduced by the amount of private benefits that the law allows the entrepreneur to extract. We assume that in order to keep control of the company (and extract private benefits) the entrepreneur's stake β_E must meet a threshold level β^* .¹¹

⁹ Our model could accommodate the presence of debt, but in this stylized modeling of the agency problem, external debt and equity would not be intrinsically different, except for the possibly different degree of legal protection afforded to creditors and shareholders. In a richer model, debt and equity contracts would pay in different states of nature, and would thus be intrinsically different. Enrico Perotti and Ernst-Ludwig von Thadden (2003) explore a political economy model where creditors tend to side with employees against shareholders.

¹⁰ We view the noncontractibility of individual productivity as a feature of production technology. One could equivalently assume that individual productivity is contractible, but employment protection legislation constrains the extent to which contracts can be made contingent on individual productivity. The reason is that contingent contracts could be effectively used to fire low-productivity workers by paying them less than their reservation wage. (Under this interpretation, the employment protection parameter μ that will be introduced below would be the probability that a court would not enforce such a contingent contract.)

¹¹ As shown by Bebchuk (1999), the entrepreneurs' decision to retain control depends on the magnitude of the private benefits conferred by control. Here we are implicitly assuming that these benefits are large enough to make control desirable, even when shareholder protection is strong.

At $t = 0$ the entrepreneur chooses the scale of the investment K once and for all, so as to maximize his objective function. Given the linearity of the production technology, if capital is productive, he invests as much as possible; otherwise, not at all. To guarantee investment, we assume that the minimal profit per worker, y , exceeds the cost of capital per worker, $1/n$. Therefore, the size of the representative company, K , is determined by the sum of the entrepreneur's initial wealth A_E and of any equity finance that he can raise.

B. Political Decision

At $t = 1$ two political parties (or coalitions) compete for votes, designing their platforms so as to maximize their chances of winning. The electoral system is assumed to be either proportional (nationwide) or majoritarian (single-member districts). In the former, the winner is the party that gets the majority of the votes, in the latter the one that wins the majority of districts. We defer a detailed description of the political stage of the game to Section III.

The policy platforms of the two parties concern employment protection, μ , and shareholder protection, λ , where $(\lambda, \mu) \in [0, \bar{\lambda}] \times [0, \bar{\mu}]$. The labor and financing contracts signed at $t = 0$ shape the economic interests of individuals, and therefore their political preferences, as we shall see in Section II D.

C. Reorganization

At $t = 2$, the entrepreneur learns the individual productivity of his employees. If an employee is retained, he must receive the wage contractually agreed at $t = 0$. If an employee is fired, he can be replaced with a new worker, whose productivity is y because he can no longer acquire firm-specific human capital. This worker is hired at the competitive wage rate w_c , which equals the reservation utility associated with self-employment. To save notation, the latter is set equal to zero, and so is the competitive wage¹²: $w_c = 0$.

¹² To break the tie, we assume that at this wage a worker prefers to become an employee to remaining self-employed.

As we shall see below, the entrepreneur has the incentive to fire the $(1 - x)N$ low-productivity workers. He may be unable to fire all of them, however, because the law protects employment stability. We capture this by assuming that an attempt to lay off an employee is voided by a court with probability $\pi = \pi(\mu)$, which is increasing in employment protection μ . So the entrepreneur can replace at most $(1 - \pi)(1 - x)N$ of his low-productivity employees.

The function $\pi(\cdot)$ captures the effectiveness of judicial enforcement: better enforcement increases an employee's probability of retaining his job, for a given degree of legal protection μ . We assume that $\pi(0) = 0$ and that $\pi(\bar{\mu}) \leq x(x\Delta - \gamma)/[\gamma + x(x\Delta - \gamma)]$. We shall see that this upper bound on the probability π ensures that the firm wishes to elicit effort from its employees—irrespective of the degree of employment protection.

D. Extraction of Private Benefits

The degree of investor protection chosen at $t = 1$ sets a ceiling $D(\lambda)$ on the private benefits that entrepreneurs can extract at $t = 3$. This ceiling is proportional to the size of the company and is decreasing in the degree of shareholder protection λ : $D = d(\lambda)K$, with derivative $\partial D/\partial \lambda = d'(\lambda)K < 0$ everywhere.

II. Equilibrium

In this section we derive the model's subgame perfect equilibria. Therefore, the model is solved backward, from $t = 3$ to $t = 0$. First, we determine the amount of managerial diversion D at $t = 3$. Second, we consider the restructuring phase at $t = 2$. Next, we derive the cash flows and the value of the firm at $t = 1$. Then, we characterize the political preferences of entrepreneurs, workers, and rentiers, but stop short of solving for the equilibrium values of λ and μ chosen in the political arena at $t = 1$. Instead, we derive the companies' ownership structure and equilibrium labor contracts set at $t = 0$ as a function of the expected legal regime. We postpone the determination of the political equilibrium to Section III, where the political subgame is modeled in two alternative fashions, depending on voting rules.

A. Private Benefits of Control

At $t = 3$ production generates a profit $\Pi = (\bar{y} - \bar{w})N$, the average wage \bar{w} and the average productivity \bar{y} having been determined at $t = 2$. Since D is diverted in the form of private benefits, dividends are $\Pi - D$. The level of private benefits that maximizes the owner-manager's utility, conditional on his stake β_E and on shareholder protection λ , solves

$$(1) \quad \max_{D=D(\lambda)} \beta_E(\Pi - D) + D.$$

It is easy to see that the amount appropriated by the owner-manager is decreasing in the degree of investor protection. Since $\beta_E \leq 1$, the maximum is a corner solution: diversion is set at its upper bound $D = D(\lambda)$, which by assumption is a decreasing function of λ .

B. Restructuring

Assuming that employees exert effort, a fraction x of them become high-productivity workers, the others low-productivity workers. The entrepreneur retains the former and fires as many of the latter as he is allowed to, i.e., $(1 - \pi)(1 - x)N$, replacing them with new hires at the competitive wage. This increases the firm's profits by $(1 - \pi)(1 - x)Nw$, since the company saves the efficiency wage w of each of these workers (recall that the competitive wage is standardized at zero).

After restructuring, therefore, the firm has x high-productivity workers and $1 - x$ low-productivity ones. Average productivity is thus $\bar{y} = y + x\Delta$. High-productivity workers are paid w . Among low-productivity workers, those hired at $t = 0$ and not fired at $t = 2$ earn the efficiency wage w , while those replaced at $t = 2$ earn the competitive wage 0. Hence, the average wage is $\bar{w} = [x + (1 - x)\pi(\mu)]w$, which is increasing in the degree of employment protection μ .

C. Value of the Firm

At $t = 1$, the value of the company is equal to profits less the private benefits of control, $V = \Pi - D$. Recalling that $\Pi = (\bar{y} - \bar{w})N$ and using the expressions just found for the average pro-

ductivity and wage, the company's value at $t = 1$ can then be written as:

$$(2) \quad V_1 = \{y + x\Delta - [x + (1 - x)\pi(\mu)]w\}N - D(\lambda).$$

This expression shows that the value of the company is decreasing in the degree of employment protection μ . Greater employment protection increases labor costs and thereby reduces profits by preventing the replacement of incumbent low-productivity workers with new hires. The value of the company is also increasing in shareholder protection λ , since private benefits D are a decreasing function of this parameter.

D. Political Preferences

As a result of the creation of firms, the initial three types of economic agents turn into four political constituencies: entrepreneurs, rentiers, employees, and self-employed (or unemployed) workers. In this section we analyze how λ and μ affect their expected utility as of $t = 1$, neglecting debt holdings, which are unaffected by these parameters.

Entrepreneurs favor weak employment protection and weak shareholder protection:

$$(3) \quad U_E = \beta_E V_1 + D(\lambda).$$

Rentiers favor weak employment protection and strong shareholder protection, since both increase the value of their shareholdings:

$$(4) \quad U_R = \beta_R V_1.$$

The political preferences of workers depend on whether they are employed by firms or not. Employees favor the greatest possible degree of labor protection,¹³ and also shareholder protection insofar as they own shares:

$$(5) \quad U_W = [x + (1 - x)\pi(\mu)]w + \beta_W V_1 - \gamma e.$$

¹³ This requires that workers do not own the entire firm ($N\beta_W < 1$), which holds by assumption, since the entrepreneur owns a positive stake β^* .

TABLE 1—POLITICAL PREFERENCES

Type of agent	Effect of λ on utility	Effect of μ on utility
Entrepreneur	Negative	Negative
Employed worker	Positive	Positive
Rentier, unemployed, self-employed	Positive	Negative

In contrast, self-employed workers favor weak employment protection and strong shareholder protection, insofar as they have any equity holdings. Their expected utility as of $t = 1$ can be written as $(1 - x)(1 - \pi(\mu))w_c + \beta_w V_1 = \beta_w V_1$, where we use the assumption that the competitive wage $w_c = 0$. The self-employed thus share the political preferences of rentiers, so the two groups will be lumped together and referred to as “residual” voters, for whom we retain the letter R used so far to label rentiers.

The political preferences of each type of agent as of $t = 1$ are contained in Table 1.

Postponing full analysis of the political equilibrium to Section III, let us derive the initial labor contract and ownership structure, taking λ and μ as given. These two parameters will be determined by the political process at $t = 1$, but we assume that at $t = 0$ economic agents form rational expectations of the political outcome, and contract accordingly.

E. Equilibrium Labor Contract

Suppose that at $t = 0$ the firm wishes to offer a wage w capable of eliciting effort from workers. Knowing that in the reorganization phase they can be fired with some probability, workers are interested in their expected wage. If an employee exerts effort, the expected wage is $[x + (1 - x)\pi(\mu)]w$.¹⁴ If instead the employee exerts no effort, his productivity is always low and he gets the wage only owing to employment protection, that is, with probability π . Therefore, his expected income is πw .

¹⁴ The first term refers to the high-productivity state: in this state, which occurs with probability x , the worker always receives the agreed wage w because the firm has no incentive to fire him. The second term refers to the low-productivity state. This occurs with probability $1 - x$, and the worker is retained with probability μ , so that he is paid the wage with probability $(1 - x)\mu$.

Hence, to elicit effort the wage w must satisfy the incentive-compatibility constraint:

$$(6) \quad [x + (1 - x)\pi(\mu)]w - \gamma \geq \pi(\mu)w$$

where the left-hand side is the worker's utility with effort (expected wage minus disutility of effort) and the right-hand side his utility with no effort. Profit maximization by employers ensures that the incentive compatibility constraint (6) holds with equality. This yields the following expression for the efficiency wage:

$$(7) \quad w = \frac{\gamma}{x(1 - \pi(\mu))}.$$

The wage w is increasing in the degree of employment protection μ , because greater protection lowers the probability π of being fired, making the required efficiency wage larger. Note that this wage level ensures that the workers' participation constraint is also met, since reservation utility is normalized to zero.

From equation (7), the expected wage of a worker hired at $t = 0$ is $[x + (1 - x)\pi(\mu)]w = \gamma z(\mu)$, where $z(\mu) = 1 + \pi(\mu)/[x(1 - \pi(\mu))] > 1$. The expected wage exceeds the cost of effort, as firms must pay efficiency wages. It is increasing in employment protection μ because the efficiency wage w is increasing in μ . Obviously $\gamma z(\mu)$ is also the cost of a worker to the firm, so that from equation (2) the firm's value as of $t = 0$ is:

$$(8) \quad V_0 = [y + x\Delta - \gamma z(\mu)]N - D(\lambda).$$

This expression shows that at $t = 0$ the value of the firm is decreasing in the degree of employment protection (since the expected labor cost increases with μ) and increasing in the degree of shareholder protection (since the private benefits of control decrease with λ).

The foregoing derivations rest on the assumption that the firm wants to elicit effort from its employees. This is true provided the firm's expected gain $x\Delta$ from incentivizing an employee exceeds the cost of paying an efficiency wage $\gamma z(\mu)$. Since the latter is increasing in employment protection μ , this condition is satisfied for any value of μ if it holds for the maximal employment

2protection $\bar{\mu}$. This amounts to the assumption on $\pi(\bar{\mu})$ made in Section I C.

F. Equilibrium Ownership Structure

At $t = 0$, the entrepreneur chooses the scale of investment to maximize the value of his stake in the company plus his private benefits of control:

$$(9) \quad \max_K \beta_E V_0 + D = \beta_E \{ [y + x\Delta - \gamma z(\mu)] n K - d(\lambda) K \} + d(\lambda) K$$

where in the second step we use equation (8) and the definitions of N and D . This maximization problem must take account of the investors' participation constraint:

$$(10) \quad \beta_E = 1 - \frac{K - A_E}{V_0} \\ = 1 - \frac{K - A_E}{[y + x\Delta - \gamma z(\mu)] n K - d(\lambda) K}$$

and the entrepreneur's need to retain the controlling stake $\beta_E \geq \beta^*$.

Solving this problem, one finds that the entrepreneur chooses to retain only the control stake β^* . He will choose firm size:

$$(11) \quad K^* = \frac{A_E}{1 - (1 - \beta^*) \{ [y + x\Delta - \gamma z(\mu)] n - d(\lambda) \}}$$

and his implied level of utility will be:

$$(12) \quad U_E^* = A_E + \{ [y + x\Delta - \gamma z(\mu)] n - 1 \} K^*.$$

From expressions (11) and (12), we immediately obtain:

PROPOSITION 1: *The optimal scale of the company and the entrepreneur's ex ante utility are strictly increasing in the degree of shareholder protection λ , and decreasing in employment protection μ .*

PROOF:

See Appendix.

A low degree of shareholder protection and a high degree of employment protection create ex ante inefficiency by causing equity rationing. If entrepreneurs could commit to strong shareholder protection, they would do so, because this would increase their utility. Raising shareholder protection implies a Pareto gain. Entrepreneurs benefit, while rentiers and workers are indifferent, since perfect competition ensures that they maintain their reservation level of utility. Here we assume that entrepreneurs cannot precommit to support such regulation, but in Section IV A we discuss ways in which such precommitment could be achieved.

By determining the entrepreneur's optimal stake $\beta_E = \beta^*$, the model pins down the aggregate equity stake of outside investors but leaves the stakes of the representative rentier β_R and of the representative worker β_W indeterminate. These may depend on transaction costs, taxation, social security, privatization policy, and other institutional arrangements that we do not model explicitly.

III. Political Equilibrium

As is shown in Section II D, at $t = 1$ there are three distinct groups of voters: entrepreneurs (E), employed workers (W), and a residual group (R) formed by rentiers, unemployed workers, and self-employed workers, whose utilities are represented in equations (3), (4), and (5). We assume that two parties (or coalitions), A and B , compete for their votes and that no single group is an absolute majority. We denote groups by $j = E, R, W$, and parties by $p = A, B$. The entrepreneurs are a fraction $s_E = E/(E + R + W)$ of the total population. Employed workers are a fraction $s_W = EN/(E + R + W)$. The size of residual group is $s_R = 1 - s_W - s_E$.

Our model of the electoral competition is an adaptation of the setting proposed by Persson and Tabellini (1999) to compare the performance of majoritarian and proportional systems. Parties commit to policy platforms, \mathbf{q}_A and \mathbf{q}_B respectively, before the vote. The policy \mathbf{q} is a two-dimensional vector $(\lambda, \mu) \in [0, \bar{\lambda}] \times [0, \bar{\mu}]$. In setting their platforms \mathbf{q}_A and \mathbf{q}_B , parties act simultaneously and do not cooperate. Each seeks to win the election because the winner enjoys a nonmonetary rent.

We assume probabilistic voting to ensure the existence of a voting equilibrium. In

one-dimensional voting problems, two-party competition is known to produce the median voter result. But in our setting, where voters' preferences are expressed on two dimensions, cycling problems emerge. These problems vanish if there is uncertainty about the preferences of each voter (Dennis C. Mueller, 1989). Specifically, we assume that voter i in group j votes for party A if

$$(13) \quad U_j(\mathbf{q}_A) > U_j(\mathbf{q}_B) + \delta + \tilde{\sigma}_{ij}$$

where $\tilde{\delta}$ reflects the general popularity of party B and is uniformly distributed on $[-1/(2\psi), 1/(2\psi)]$, while $\tilde{\sigma}_{ij} = \bar{\sigma}_j + \tilde{\varepsilon}_{ij}$ reflects voter i 's ideological preference for party B . The parameter $\bar{\sigma}_j$ is the group-specific ideological preference for party B . The term $\tilde{\varepsilon}_{ij}$ is idiosyncratic to voter i and differs across groups: it is uniformly distributed on $[-1/(2\phi_j), 1/(2\phi_j)]$, where the parameter ϕ_j is an index of group j 's ideological cohesion.

We take party A to be right wing, i.e., ideologically close to entrepreneurs, and party B to be left wing, i.e., close to workers. The residual group is not biased toward either party, i.e., on average has no ideological preference:

$$(14) \quad \bar{\sigma}_E = -\bar{\sigma} < \bar{\sigma}_R = 0 < \bar{\sigma}_W = \bar{\sigma}$$

where $\bar{\sigma} > 0$. We also assume this group to have more dispersed ideological preferences than the other two:

$$(15) \quad \phi_E = \phi_W = \phi > \phi_0 = \phi_R.$$

Indeed, this social group is more heterogeneous, as it includes voters as different as rentiers, self-employed workers, and unemployed workers, and unlike entrepreneurs and employees, all of these lack trade associations that aggregate and direct their votes toward a party.

Before proceeding to the description of the electoral rules, we must determine the probability that each group j will vote for party A conditional on the general popularity factor $\tilde{\delta}$. In each group there is a voter k who is indifferent between the two parties. For this voter, the ideological component is such that $\tilde{\varepsilon}_{kj} = U_j(\mathbf{q}_A) - U_j(\mathbf{q}_B) - \delta - \bar{\sigma}_j$. All voters with an

individual ideological preference $\varepsilon \leq \tilde{\varepsilon}_{kj}$ vote for party A . The others prefer party B . Hence, the fraction of individuals in group j voting for party A is:

$$(16) \quad \tilde{p}_{A,j} = \phi_j[U_j(\mathbf{q}_A) - U_j(\mathbf{q}_B) - \delta - \bar{\sigma}_j] + \frac{1}{2}.$$

In what follows we consider two different electoral systems: in Section III A the proportional and in Section III B the majoritarian. In Section III C we compare the systems and discuss the results.

A. Proportional Electoral System

In a proportional electoral system, the party with the absolute majority of the votes will win the election. Hence, the probability that party A wins the election is:

$$(17) \quad p_A = \text{Prob}\left(\sum_j s_j \tilde{p}_{A,j} \geq \frac{1}{2}\right)$$

where $\tilde{p}_{A,j}$ is given by (16). Integrating with respect to the general popularity factor $\tilde{\delta}$, equation (17) becomes:

$$(18) \quad p_A = \frac{\psi}{\phi} \left\{ \sum_j s_j \phi_j [U_j(\mathbf{q}_A) - U_j(\mathbf{q}_B) - \bar{\sigma}_j] \right\} + \frac{1}{2}$$

where $\bar{\phi} = \sum_j s_j \phi_j$ is the average degree of ideological cohesion, which can be regarded as a measure of the importance of ideology in voting. Expression (18) indicates that, under proportional voting, the importance of each constituency in affecting the electoral outcome depends both on its demographic weight s_j and on its ideological cohesion ϕ_j . The intuition is that the larger and the more cohesive a group, the larger the mass of voters who can be attracted by a change in the political platform toward their preferred policy.

Party A will choose the platform \mathbf{q}_A to maximize the probability of winning in (18), while taking the opponent's, \mathbf{q}_B , as given. Symmetrically, party B will choose \mathbf{q}_B to maximize its probability of winning, $1 - p_A$, taking \mathbf{q}_A as given. The following proposition

describes the symmetrical Nash equilibrium outcome.

PROPOSITION 2: *Under a proportional electoral rule, in equilibrium the winning political platform is $\mathbf{q}^P = (\lambda^P, \mu^P) = (0, \bar{\mu})$, that is, weak shareholder protection and strong employment protection.*

PROOF:

See Appendix.

The intuition is that proportional voting pushes political parties to cater to the preferences of the social groups with homogeneous preferences: entrepreneurs and employees. This is because under this voting rule the number of extra voters who can be won over by altering the platform is greater if the shift is in favor of a more homogeneous constituency. In our setting, the residual group of rentiers, self-employed workers, and unemployed workers is the most heterogeneous, and under proportional voting it gets the short straw.

B. Majoritarian Electoral System

In a majoritarian electoral system, the party that wins more districts wins the election. We assume that there are three districts and that each district contains only voters belonging to a single group: the voters of district 1 are entrepreneurs, those of district 3 are employed workers, and those of district 2 belong to the residual group. The argument generalizes to any odd number of districts, if the number of districts of each type is approximately proportional to the fractions of the three groups. Under appropriate conditions on the parameters, the model generalizes also to the case in which districts do not coincide perfectly with political groups.¹⁵

¹⁵ As shown in the proof of Proposition 3, the existence of a symmetric equilibrium requires only that the district inhabited by the residual group is pivotal. The entrepreneur- and employee-dominated districts are not pivotal when the ideological bias of entrepreneurs and workers toward their respective party is sufficiently large that the competing party cannot win them over. If entrepreneurs and employees represent only a simple majority of the inhabitants in their districts rather than the totality, the conditions for the existence of the equilibrium become more stringent, in the sense

To guarantee the existence of a voting equilibrium under the majoritarian rule, one must assume that the entrepreneurs' ideological bias to party A and that of the workers to party B are strong enough (that is, $\bar{\sigma}$ is sufficiently large), as in Persson and Tabellini (1999). This condition, which is derived in the Appendix, ensures that there exists a symmetrical equilibrium in pure strategies in which the two parties announce the same platform, and competition takes place only in district 2, which is populated by the residual group. Districts 1 and 3 are never pivotal, because party A is so likely to win district 1 and lose district 3 that both parties are concerned only to win over the voters of district 2.¹⁶

Therefore, the probability of party A winning is simply the probability of it obtaining the majority of district-2 votes:

$$(19) \quad p_A = \text{Prob}[\tilde{p}_{A,R} \geq 1/2] \\ = \psi[U_R(\mathbf{q}_A) - U_R(\mathbf{q}_B)] + 1/2.$$

We conclude:

PROPOSITION 3: *Under a majoritarian electoral rule, the winning political platform in a symmetrical equilibrium is $\mathbf{q}^M = (\lambda^M, \mu^M) = (\lambda, 0)$, that is, strong shareholder protection and weak employment protection.*

PROOF:

See Appendix.

that greater ideological polarization of workers and entrepreneurs is required.

¹⁶ The analysis in this section can be generalized to the case in which other districts are pivotal, by assuming that there is uncertainty on the pivotal district. With this generalization, parties effectively maximize a social surplus defined by the weighted average of the utility of all social groups, where the weights are the probabilities that each district (group) will be pivotal. Even in this more general case, in the majoritarian system the preferences of rentiers affect the outcome more than in the proportional system. To understand why, recall that the political weight of the rentiers in a proportional system is inversely related to their ideological dispersion, and therefore under our assumptions is very low. In a majoritarian system their weight is likely to be greater, because it is given by the probability of their district's being pivotal, which is unaffected by ideological dispersion.

The intuition is that a majoritarian system creates keen competition for the pivotal district, because this is what wins the elections. In our model, this district coincides with the voters in the residual group, who, unlike employees or entrepreneurs, are ideologically uncommitted. Thus the very lack of ideological commitment that makes this residual group politically neglected in a proportional system makes it the most keenly courted constituency in a majoritarian system.

C. Comparison between Electoral Systems

For brevity, we label the outcome predicted by Proposition 2 under the proportional system as “corporatist,” insofar as it combines the preferences of employers and employees, at the expense of other social groups. This contrasts with the “noncorporatist” outcome that obtains under the majoritarian system according to Proposition 3. The hallmark of the corporatist outcome is that the policy parameter μ is set at a higher level and λ at a lower level.

Hence the empirical prediction of these two propositions: (a) in a cross-section of countries with different electoral systems, investor and employment protection should be negatively correlated; and (b) proportional systems should be associated with the corporatist outcome and majoritarian systems with the noncorporatist. In Section V we examine to what extent these predictions are consistent with the data.¹⁷

IV. Extensions

In this section, we discuss three possible extensions of the model. In our model, legal rules are chosen after firms are created. In Section IV A we discuss how changing this timing would affect the results. In Section IV B we present an extension in which some firms are created after the elections. Finally, in Section IV C we consider how the model’s predictions would change if, as a consequence of the diffusion of “equity culture,” the political cohesion of minority shareholders were to increase. These extensions will be seen to yield interesting

predictions. Insofar as existing firms need to raise additional finance or new firms are created after the elections, even a proportional electoral system may support shareholder protection. The same result obtains also if there is a sufficient increase in the political cohesion of minority shareholders. Therefore, the need to raise fresh capital by firms and the diffusion of “equity culture” among investors may lead to better corporate governance legislation, even in the context of a proportional voting system.

A. Timing of the Elections

In our model, legal rules are chosen after firms have been created. The rationale is that often the legal rules can be changed after contracts have been signed. The results of the model would be very different if the rules could not be changed once firms were created, shareholder and employee protection perhaps being enshrined in the constitution and not changeable by the normal legislative process.

If such regulatory “lock-in” were possible, shareholder protection λ would be set at its highest level to avoid the inefficiency arising from equity rationing. Instead, employment protection μ would depend on the relative political power of workers and other classes, since the expected wage is increasing in μ (see Section II E). Locking into low employment protection would be efficient, as it would minimize the cost of motivating workers, but would reduce their expected incomes, thus generating an ex ante trade-off between efficiency and distributional equity. But in practice both shareholder and employment protection are set by ordinary legislation, so such “lock-in” is not realistic. An alternative potential “lock-in” mechanism is available if entrepreneurs and financiers can “contract out” of their national legal system by listing the company in a foreign exchange or incorporating it in a jurisdiction featuring better shareholder protection.¹⁸

A second important issue related to the timing of the model is whether companies go back to the capital market after they have been started up. We assume that they need capital only at $t =$

¹⁷ Combining the results in this section with Proposition 1, we also predict less investment and more unemployment in countries with proportional elections.

¹⁸ This mechanism is discussed by Coffee (1999) and Gilson (2001). Relevant evidence is provided by Pagano et al. (2001) and William A. Reese, Jr., and Michael S. Weisbach (2002).

0, so that at $t = 1$ entrepreneurs want poor investor protection in order to maximize their private benefits. If entrepreneurs needed external financing again later, then their political preferences at $t = 1$ might be different: they might prefer strong investor protection to reduce the future cost of capital. Our assumption remains reasonable if firms need more external financing at the start-up than afterward.

B. Entry of New Entrepreneurs

In this section we extend the model by assuming that at $t = 1$ workers know that with some probability at $t = 2$, they will have the option of becoming entrepreneurs by hiring unskilled workers and raising equity capital (in this extension, the market for capital is taken to still be open at that date, like the market for labor). Suppose that they intend to avail themselves of this opportunity. This expected future change of role could make them politically more favorable to shareholder protection in the present. To see this point most graphically, assume that workers have no equity stake in their portfolios ($\beta_w = 0$) and ignore labor income.

With steps similar to those followed in Section II F to derive equations (11) and (12), one can show that at $t = 2$ they will be able to create a firm of size

$$(20) \quad K_w^* = \frac{A_w}{1 - (1 - \beta^*)[yn - d(\lambda)]}.$$

Accordingly, their expected utility as of $t = 1$ is:

$$(21) \quad U_w = A_w + \rho(ny - 1) \times \frac{A_w}{1 - (1 - \beta^*)[yn - d(\lambda)]}$$

where ρ is the probability of becoming an entrepreneur. This expression is increasing in the degree of shareholder protection λ :

$$(22) \quad \frac{\partial U_w}{\partial \lambda} = -\rho(ny - 1) \times \frac{A_w(1 - \beta^*)d'(\lambda)}{\{1 - (1 - \beta^*)[yn - d(\lambda)]\}^2} > 0.$$

Clearly, the greater the probability ρ of becoming an entrepreneur after the elections, the more workers' voting preference will shift toward shareholder protection. This implies that in a proportional voting system, a party that tries to maximize the probability of winning in expression (18) will assign a greater weight to shareholder protection. For a sufficiently high value of ρ , even in a proportional voting system the equilibrium political platform may go over to a positive value of λ .

C. Equity Culture

It is often claimed that the recent diffusion of equity ownership in many countries has been accompanied by a greater awareness of the importance of investor protection, as well as by more active lobbying by institutional investors for the reform of corporate governance. In our model, this translates into greater political cohesion of the "residual group," which includes minority shareholders. A simple way to capture this is to assume, in contrast with Section III, that the ideological cohesion of this group exceeds that of the other constituencies, that is, $\phi_0 > \phi$.

Under this assumption, by proceeding through the same steps as in the proof of Proposition 1, it is easy to show that under a proportional voting rule the outcome would be strong investor protection and weak employment protection. In other words, the political outcome would be $\mathbf{q}^P = (\lambda^P, \mu^P) = (\bar{\lambda}, 0)$, just as under a majoritarian voting rule. This suggests that the diffusion of equity culture can lead to better corporate governance legislation even in the context of a proportional voting system.

V. Empirical Evidence

In this section we test the main implications of the model, using measures of shareholder protection, employment protection, and proxies for the political variables suggested by the model. First, we show that OECD countries cluster in two groups, as predicted by Propositions 2 and 3: corporatist countries, with weak shareholder protection and strong employment protection, and noncorporatist countries, with the opposite pattern. Internationally, therefore, we observe a negative correlation between shareholder and employee protection. Second,

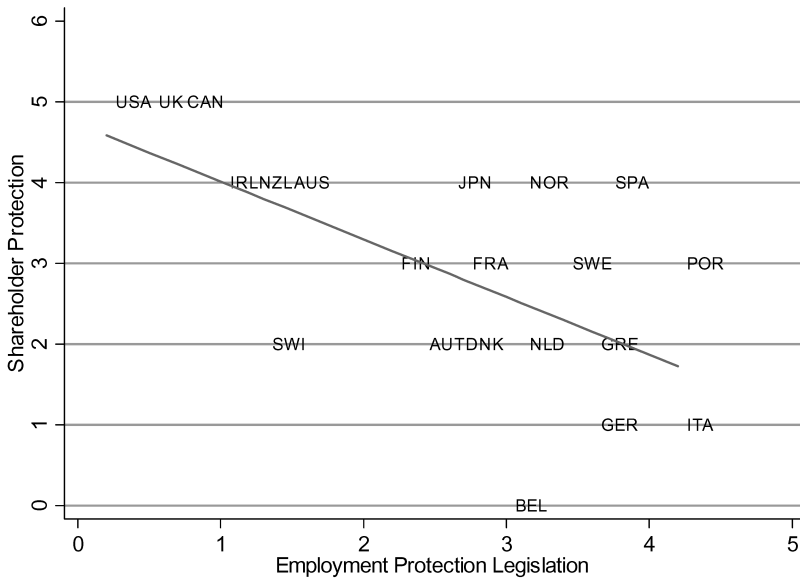


FIGURE 2. EMPLOYEE AND SHAREHOLDER PROTECTION

Notes: “Employment protection legislation” is the OECD 1990 average of indicators on regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal), short-term contract (fixed-term and temporary), and collective dismissals. Values increase with the strictness of protection (Nicoletti and Scarpetta, 2001). “Shareholder protection” is the anti-director rights indicator from Table 2 of LLSV (1998).

we investigate the determinants of shareholder and employment protection, comparing the predictive power of the model’s political approach and of the established legal-origin approach, within a panel of 45 countries comprising both OECD and developing nations. The entire dataset and details about definitions and sources are available in the Web Appendix at http://www.e-aer.org/data/sept05_data_pagano.zip.

A. Shareholder Protection and Employee Protection

Figure 2 plots an indicator of employment protection against the LLSV measure of shareholder protection for 21 OECD countries. These indicators are the empirical counterparts of the parameters μ and λ in our model, respectively. The measure of employment protection is the 1990 average of the OECD Employment Protection Legislation (EPL) indicator for regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal) and for short-

term contracts, published by Giuseppe Nicoletti and Stefano Scarpetta (2001). The measure of shareholder protection is the “anti-director rights” index of shareholder protection compiled by LLSV (1998), which is the sum of six dummy variables, capturing whether: (a) proxy by mail is allowed; (b) shares are not blocked before a shareholder meeting; (c) cumulative voting for directors is allowed; (d) oppressed minorities are protected; (e) the share capital required to call an extraordinary shareholder meeting is less than 10 percent; and (f) shareholders have preemptive rights at new equity offerings. The values of the two indicators are reported in the first two columns of Table 2.

The two variables plotted in Figure 2 are inversely correlated, as shown by the fitted regression line: their correlation is -0.62 , with a p -value of 0.3 percent. This result is consistent with the first empirical prediction of our model, highlighted in Section III C.

The observations appear to cluster into two distinct groups: the countries of continental Eu-

TABLE 2—SHAREHOLDER PROTECTION, EMPLOYMENT PROTECTION, AND ELECTORAL RULES

Country	Shareholder protection (1)	Employment protection (1990) (2)	Proportionality (1986–90 average) (3)	English legal origin (4)
Australia	4	1.06	1	1
Austria	2	2.39	3	0
Belgium	0	3.02	3	0
Canada	5	0.63	0	1
Denmark	2	2.43	3	0
Finland	3	2.22	3	0
France	3	2.73	1	0
Germany	1	3.55	2	0
Greece	2	3.61	2	0
Ireland	4	1.00	3	1
Italy	1	4.15	3	0
Japan	4	2.64	0	0
Netherlands	2	3.06	3	0
New Zealand	4	1.01	0	1
Norway	4	3.09	3	0
Portugal	3	4.20	3	0
Spain	4	3.66	2	0
Sweden	3	3.45	3	0
Switzerland	2	1.27	2	0
United Kingdom	5	0.51	0	1
United States	5	0.22	0	1

Notes: “Shareholder protection” is the anti-director rights index designed by LLSV (1998): it is the sum of six dummy variables, indicating if proxy by mail is allowed, shares are not blocked before a shareholder meeting, cumulative voting for directors is allowed, oppressed minorities are protected, the percentage of share capital required to call an extraordinary shareholder meeting is less than 10 percent, and existing shareholders have preemptive rights at new equity offerings. “Employment protection” is the EPL measure defined as the average of indicators for regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal) and short-term contracts (fixed-term and temporary) in 1990. Values increase with the strictness of protection (Nicoletti and Scarpetta, 2001). Proportionality equals 3 if 100 percent of seats are assigned via a proportional rule, 2 if the majority of seats are assigned by this rule, 1 if a minority of seats is assigned proportionally, and 0 if no seats are assigned in this way. It is defined as $PR - PLURALTY - HOUSESYS + 2$, which are variables drawn from the World Bank Database of Political Institutions 2000 (hereafter WBDPI), and defined in Beck et al. (2002). English legal origin is a dummy variable that takes value 1 if the origin of the legal system is the English law and 0 otherwise, based on LLSV (1998).

rope and Japan, which to varying extents feature the corporatist outcome, and Anglo-Saxon countries, which feature the noncorporatist outcome. Our model suggests that electoral systems should differ systematically across the two clusters: the former should be associated with proportional voting systems, and the latter with majoritarian ones.

To test this second prediction, we construct an indicator of the degree of proportionality of the voting system based on the World Bank Database of Political Institutions (hereafter WBDPI) described by Thorsten Beck et al. (2001). We combine in a single indicator three

WBDPI dummy variables that describe the electoral system: (a) PR, which equals one if at least some candidates are elected via a proportional rule (i.e., on the basis on the percentage of votes received by their party), and zero otherwise; (b) PLURALTY, which equals one if at least some legislators are elected via a majoritarian rule (i.e., a winner-take-all or first-past-the-post rule), and zero otherwise; and (c) HOUSESYS, which equals one if most seats are allocated via a majoritarian rule, and zero if most seats are allocated with a proportional rule. Our synthetic indicator of proportionality is defined as: $PR - PLURALTY - HOUSESYS + 2$. This variable

equals 3 if all the seats are assigned via a proportional rule (pure proportionality), 2 if the majority of seats are assigned via this rule, 1 if a minority of seats are assigned proportionally, and 0 if no seats are assigned in this way (pure majoritarianism).

The third column of Table 2 displays the average value that this indicator of proportionality took for each country in the 1986–1990 interval. This indicator is averaged over five years and lagged relative to shareholder and employment protection in order to capture the likely delay and gradualism with which electoral systems affect legislation. The OECD countries that exhibit a higher degree of proportionality tend to have stronger employment protection and weaker shareholder protection, in accordance with the second prediction of our model. The correlation between proportionality and shareholder protection is -0.65 , with a p -value of 0.1 percent, while the correlation between proportionality and employment protection is 0.67 , with a p -value of 0.9 percent.

The data shown in Figure 2, however, may be as consistent with our model as with the well-known legal-origin approach proposed by LLSV (1998). As noticed above, a noncorporate outcome tends to occur in Anglo-Saxon countries, that is, to be associated with common law. This is confirmed by the data in the fourth column of Table 2, which show the LLSV dummy for English legal origin. The correlation of this variable with shareholder protection is 0.69 , and with employment protection is -0.84 .¹⁹

In Table 3 we take a first stab at assessing the relative importance of the proportionality variable and the legal-origin dummies as determinants of shareholder and employment protection, using the cross-sectional data reported in Table 2. Since according to our model these two variables are jointly determined, we estimate a system of seemingly unrelated regressions (SUR). Column 1 confirms the impression conveyed by Figure 2: the proportionality of the voting system is negatively correlated with shareholder protection and positively associated

with employment protection. Column 2 indicates that legal variables are at least as robustly associated with our two regulatory indicators: in particular the coefficient of the English legal-origin dummy is highly significant in both regressions, with a positive sign in the shareholder protection regression and a negative one in the employment protection regression. In column 3 both legal and political variables are included as regressors. The results show that both legal origin and proportionality are significantly related to shareholder protection, whereas only the coefficients of the legal-origin variables retain their statistical significance in the employment protection regression. The R^2 of the regressions in Table 3 indicates that the explanatory power of legal origin exceeds that of our political variable, and wipes it out completely for employment protection.

This conclusion may reflect, however, the collinearity between the legal and political variables at a cross-sectional level. Indeed, English legal origin has a strong inverse correlation (-0.69) with the proportionality of the voting system. But this collinearity can be overcome by exploiting both cross-sectional and time-series variation in the data. To this purpose, we extend the indicator constructed by LLSV (1998) to the entire interval between 1993 and 2001, relying on the answers to questionnaires sent to legal experts and business practitioners around the world.²⁰ Our panel includes 47 of the original 49 countries studied by LLSV (1998), since for Jordan and Sri Lanka there were no responses to our questionnaire.²¹ Symmetrically, we draw from Nicoletti and Scarpetta (2001) a panel of the OECD employment protection measure, spanning the 1990–1998 interval. Finally, we construct a panel of political indicators, including our measure of proportionality, based on the WBDPI.

Table 4, which presents descriptive statistics for this panel, reveals that there is some time-series variation—though admittedly less than cross-country variation—in shareholder and employment protection, as well as in political

¹⁹ This correlation is consistent with the findings of the recent study by Juan Botero et al. (2004) on the regulation of labor markets.

²⁰ Details on sources are available in the Web Appendix.

²¹ In our panel data regression, we have only 45 countries, because our political variables are not available for Hong Kong and Nigeria.

TABLE 3—DETERMINANTS OF SHAREHOLDER AND EMPLOYMENT PROTECTION: CROSS-SECTIONAL SEEMINGLY UNRELATED REGRESSIONS

	(1)	(2)	(3)
<i>Dependent variable: Shareholder protection</i>			
Constant	4.38*** (0.42)	2.14*** (0.36)	3.55*** (0.58)
Average proportionality	-0.72*** (0.19)		-0.58*** (0.20)
English legal origin		2.36*** (0.53)	1.33** (0.58)
German legal origin		0.11 (0.60)	-0.29 (0.53)
Scandinavian legal origin		0.86 (0.60)	1.19** (0.52)
R ²	0.416	0.522	0.656
<i>Dependent variable: Employment protection</i>			
Constant	1.18*** (0.38)	3.49*** (0.20)	3.20*** (0.38)
Average proportionality	0.63*** (0.17)		0.12 (0.13)
English legal origin		-2.75*** (0.30)	-2.54*** (0.38)
German legal origin		-1.03*** (0.34)	-0.94*** (0.35)
Scandinavian legal origin		0.69** (0.34)	-0.76** (0.34)
R ²	0.395	0.805	0.813
Number of observations	21	21	21

Notes: The dependent variables are “shareholder protection,” which is the anti-director rights index designed by LLSV (1998), and “employment protection,” which is the EPL indicator by Nicoletti and Scarpetta (2001). “Average proportionality” is the 1986–1990 average of “proportionality” as defined in Table 3. “English, German, and Scandinavian legal origin” are dummy variables that reflect the origin of the legal system, drawn from LLSV (1998). Standard errors are reported in parenthesis; *, **, *** indicate significance at the 10-, 5-, and 1-percent level, respectively.

variables. To exemplify, shareholder protection improved in 14 countries out of 47 countries. The countries recording the largest increases are Italy and South Korea (from 1 to 5 and from 1 to 4, respectively). The overall average rose from 3.17 to 3.60. The proportionality of the voting system changes in six countries.²² To implement a systematic analysis of the correlations between political variables, legal origin, and regulatory outcomes, we resort to panel data estimation. This approach allows to control for the effect of unobservable heterogeneity that can lead to spurious correlations, and thereby produce unreliable cross-sectional estimates.

²² The proportionality of the voting system decreases in Italy (1994) and Venezuela (1989), while it increases in France (1986), Japan (1994), New Zealand (1993), and the Philippines (1996).

B. Explaining Shareholder Protection

Table 5 presents the results of panel regressions on the determinants of shareholder protection. In columns 1 to 3, we reestimate the specifications of Table 3 with maximum-likelihood random effects on our panel. As in the cross-sectional estimates, when introduced separately, both the proportionality indicator and the English legal-origin dummy enter the regression with highly significant coefficients. Again, shareholder protection is negatively correlated with proportionality and positively correlated with English legal origin. However, when political and legal variables enter the list of regressors jointly, only the coefficient of proportionality retains its sign, magnitude, and significance. In contrast, the coefficients of all the legal-origin dummies are no longer statistically different from zero.

TABLE 4—PANEL DATA: DESCRIPTIVE STATISTICS

Variable	Mean	Standard deviation (overall)	Standard deviation (between)	Standard deviation (within)	Number of observations	Number of countries
Shareholder protection	3.31	1.22	1.15	0.40	382	45
Employment protection	2.21	1.14	1.14	0.24	210	21
Proportionality	1.77	1.22	1.25	0.17	382	45
Left	0.35	0.48	0.36	0.32	382	45
Center	0.08	0.27	0.19	0.18	382	45
Right	0.39	0.49	0.37	0.33	382	45
District size (million inhab.)	2.13	4.44	4.24	0.76	367	45
Tenure of democracy	3.90	2.31	2.35	0.30	382	45
Threshold	2.06	2.46	2.42	0.56	282	32
Competitiveness of democracy	0.90	0.30	0.29	0.10	382	45

Notes: The panel spans the 1993–2001 interval and includes 45 countries, which coincide with that of LLSV (1998), with the exception of Hong Kong, Jordan, Nigeria, and Sri Lanka. For “employment protection” only, the panel spans the 1990–1998 interval and includes the subset of countries listed in Table 2. “Shareholder protection” is the LLSV anti-director rights index as updated by the responses to our questionnaires. “Employment protection” is the average of indicators on regular contracts (procedural inconveniences, notice and severance pay for no-fault individual dismissals, difficulty of dismissal) and short-term contract (fixed-term and temporary), drawn from Nicoletti and Scarpetta (2001). “Proportionality” equals 3 if 100 percent of seats are assigned via a proportional rule, 2 if the majority of seats are assigned by this rule, 1 if a minority of seats is assigned proportionally, and 0 if no seats are assigned in this way. It is defined as $PR - PLURALITY - HOUSESYS + 2$, which are variables drawn from WBDPI, and defined in Beck et al. (2002). “Left,” “center,” and “right” are dummy variables capturing political orientation of the executive as measured in the WBDPI. They do not sum to 1 because of the presence of political parties that do not fit into left-center-right classification. “District size” is the average number of inhabitants per district, in millions. It is computed as the mean number of representatives elected by each district in elections for the lower house divided by the total number of seats (drawn from the WBDPI) and multiplied by million inhabitants (drawn from the World Penn Tables). “Tenure of democracy” measures how long a country has been a democracy, measured in decades. It equals the variable “tenure of system” (TENSYS) in the WBDPI, since all countries in our sample are democracies. “Threshold” is defined as the minimum vote share that a party must obtain in order to take at least one seat in systems where some seats are assigned via a proportional rule. Therefore, it does not apply to purely majoritarian systems. “Competitiveness of democracy” equals 1 if the largest party has less than 75 percent of the seats ($LIEC = 7$ in WBDPI), and 0 otherwise.

In column 4, we report the corresponding estimates with fixed-effects estimation. In this case, the legal-origin variables cannot be included, since they are constant by definition. The coefficient of proportionality is larger in absolute value (-1.31) and more precisely estimated than in column 1 (-1.02), where it was obtained with random effects. The economic significance of these estimates is also quite large: changing the voting system from the average degree of proportionality (Proportionality = 1.77) to a pure majoritarian system (Proportionality = 0) is associated with an estimated increase in shareholder protection between 1.8 and 2.3—a large increase for a variable that ranges between 0 and 6.

Another interesting finding that emerges from Table 5 is that the coefficients of the time dummies are almost monotonically increasing with time, from approximately 0 in 1994 to almost 0.5 in 2001. Therefore, over the 1990s

the shareholder protection index improved on average by almost half a point, for reasons independent of electoral systems. This finding also implies that in this decade there was international convergence in shareholder protection.

C. Explaining Employment Protection in OECD Countries

In Table 6, the same panel-data estimation is carried out for employment protection. Since in this case the dependent variable is the OECD measure of employment protection, the panel is limited to the 21 OECD countries for the 1990–1998 interval.

As in Table 5, we start by estimating three random effects regressions with calendar year dummies. Column 1 shows that proportionality by itself has a positive and statistically significant coefficient. Column 2 indicates that English, Scandinavian, and German legal-origin

TABLE 5—DETERMINANTS OF SHAREHOLDER PROTECTION

	(1)	(2)	(3)	(4)
Constant	4.81*** (0.28)	2.73*** (0.22)	4.93*** (0.39)	5.41*** (0.20)
Average proportionality	-1.02*** (0.11)		-1.04*** (0.11)	-1.31*** (0.11)
English legal origin		1.21*** (0.33)	-0.18 (0.50)	
German legal origin		-0.31 (0.45)	-0.85 (0.65)	
Scandinavian legal origin		0.06 (0.53)	0.99 (0.77)	
Year 1994	0.01 (0.07)	0.01 (0.09)	0.01 (0.07)	0.01 (0.07)
Year 1995	0.13* (0.07)	0.13 (0.09)	0.13* (0.07)	0.13* (0.07)
Year 1996	0.13* (0.07)	0.13 (0.09)	0.13* (0.07)	0.13* (0.07)
Year 1997	0.14* (0.07)	0.14 (0.09)	0.14* (0.07)	0.14** (0.07)
Year 1998	0.27*** (0.07)	0.26*** (0.09)	0.27*** (0.07)	0.27*** (0.07)
Year 1999	0.34*** (0.07)	0.33*** (0.09)	0.34*** (0.07)	0.34*** (0.07)
Year 2000	0.41*** (0.07)	0.39*** (0.09)	0.41*** (0.07)	0.42*** (0.07)
Year 2001	0.47*** (0.07)	0.44*** (0.09)	0.47*** (0.07)	0.47*** (0.07)
Estimation method	ML random effects	ML random effects	ML random effects	Fixed effects
Number of observations	382	382	382	382
Log-likelihood	-232.57	-274.61	-230.52	
R ²				Overall: 0.110 Within: 0.410 Between: 0.090

Notes: The regression estimates are obtained from a panel of 45 countries over the 1993–2001 interval. The sample coincides with that of LLSV (1998) with the exception of Hong Kong, Jordan, Nigeria, and Sri Lanka, which are missing in our sample. The dependent variable is “shareholder protection,” which is the LLSV anti-director rights index as updated by the responses to our questionnaires. “Average proportionality” is the average, computed over the previous five years, of the “proportionality” indicator defined in Table 4. “English, German, and Scandinavian legal origin” are dummy variables that reflect the origin of the legal system, drawn from LLSV (1998). Standard errors are reported in parenthesis; *, **, *** indicate significance at the 10-, 5-, and 1-percent level, respectively.

dummies are negatively correlated with employment protection, the effect being particularly large for the English legal-origin dummy. This implies that French legal-origin countries, being the default case, feature a significantly higher degree of employment protection. In column 3, political and legal variables are used jointly as regressors, and their coefficients are all seen to be significantly different from zero.

This is in striking contrast with the cross-sectional results presented in column 3 of Table 3, where the proportionality of the voting system loses all explanatory power once the legal-origin dummies are included in the regression. It also differs from the panel data estimates obtained for shareholder protection in Table 5, since for employment protection, legal origin retains considerable explanatory power.

TABLE 6—DETERMINANTS OF EMPLOYMENT PROTECTION IN OECD COUNTRIES

	(1)	(2)	(3)	(4)
Constant	1.51*** (0.25)	3.41*** (0.19)	2.61*** (0.28)	1.53*** (0.17)
Average proportionality	0.46*** (0.08)		0.34*** (0.08)	0.45*** (0.09)
English legal origin		-2.50*** (0.28)	-1.94*** (0.34)	
German legal origin		-0.86*** (0.32)	-0.66* (0.35)	
Scandinavian legal origin		-0.81*** (0.32)	-1.03*** (0.35)	
Year 1991	-0.03 (0.05)	-0.02 (0.06)	-0.03 (0.05)	-0.03 (0.06)
Year 1992	-0.09* (0.05)	-0.08 (0.06)	-0.09 (0.05)	-0.09 (0.06)
Year 1993	-0.22*** (0.05)	-0.21*** (0.06)	-0.21*** (0.05)	-0.22*** (0.06)
Year 1994	-0.22*** (0.05)	-0.21*** (0.06)	-0.22*** (0.05)	-0.22*** (0.06)
Year 1995	-0.26*** (0.05)	-0.25*** (0.06)	-0.26*** (0.05)	-0.26*** (0.06)
Year 1996	-0.31*** (0.05)	-0.29*** (0.06)	-0.30*** (0.05)	-0.30*** (0.06)
Year 1997	-0.31*** (0.05)	-0.29*** (0.06)	-0.30*** (0.05)	-0.30*** (0.06)
Year 1998	-0.31*** (0.05)	-0.29*** (0.06)	-0.30*** (0.05)	-0.30*** (0.06)
Estimation method	ML random effects	ML random effects	ML random effects	Fixed effects
Number of observations	210	210	210	210
Log-likelihood	-18.53	-18.05	-8.59	
R ²				Overall: 0.307 Within: 0.347 Between: 0.306

Notes: The regression estimates are obtained from a panel of 21 OECD countries listed in Table 2 over the 1990–1998 interval. The dependent variable is “employment protection,” which is the average of indicators on regular contracts and short-term contract, drawn from Nicoletti and Scarpetta (2001). “Average proportionality” is the average, computed over the previous five years, of the “proportionality” indicator defined in Table 4. “English, German, and Scandinavian legal origin” are dummy variables that reflect the origin of the legal system, drawn from LLSV (1998). Standard errors are reported in parenthesis; *, **, *** indicate significance at the 10-, 5-, and 1-percent level, respectively.

Fixed-effect estimates confirm the strong correlation between proportionality and employment protection: in column 4 the coefficient of proportionality is almost identical and as precisely estimated as in the random effect regression of column 1. It is also economically significant: changing the voting system from the average degree of proportionality to a pure majoritarian system is associated with an estimated increase in employee protection of 0.8 points, a

large effect for a variable ranging between 0.2 and 4.2 in the sample.

Table 6 also indicates that, on average, employment protection decreased in OECD countries during the 1990s: the coefficients of the time dummies are decreasing with time, from approximately 0 in 1991 to -0.3 in 1998. Since the indicator has a lower bound at zero, this suggests international convergence also in the degree of employment protection.

D. Robustness Check: Other Political Variables

So far, our empirical analysis has focused on the proportionality of the voting system, since this political variable emerged directly from our model as the relevant one. Other features of political systems, however, may contribute to shape regulatory outcomes.

Like proportionality, some of these features have to do with the design of the voting system or of the political system, such as the average size of voting districts and the threshold for representation in parliament. The potential impact of some of these variables is intrinsically related to the proportionality of the voting system. The size of voting districts is relevant for a majoritarian system but not for a purely proportional one, and it is more relevant the larger is the proportion of seats assigned by a majoritarian mechanism. So it makes sense to interact this variable with a measure of "majoritarianism," defined as the complement to our proportionality measure. Conversely, a voting threshold is present only in proportional systems, and its impact is likely to be larger the greater is the fraction of seats assigned via such mechanism. So it seems appropriate to interact it with our measure of proportionality.

Other potentially relevant political variables relate to the behavior of voters rather than to the design of the system. Such is the political color of the executive, the degree of competition between political parties, and the length of democratic tradition in the country.

In this section we explore whether adding these variables to the baseline specifications of our panel regressions (column 3 in Tables 5 and 6, respectively) affects the results concerning the degree of proportionality. A potential by-product of this exercise is to identify other political mechanisms affecting shareholder and employment protection.

In Table 7 we perform a general-to-specific specification search. Column 1 reports the estimates of a random-effects regression for shareholder protection which, beside our measure of proportionality and the legal origin dummies, includes all the political variables mentioned above. In column 2 we retain only the variables whose coefficients are significantly different from zero at the 5-percent level: Proportionality

and Center.²³ The coefficient of Proportionality is still negative and precisely estimated, and only slightly smaller in absolute value than in Table 5. The positive coefficient of Center indicates that shareholders enjoy better protection in countries where the electorate is less polarized between left- and right-wing parties. The result can be reconciled with our model, where the constituency that supports shareholder protection is assumed to be in the middle of the political spectrum and to have looser ideological allegiances to the two competing parties.

In columns 3 and 4, we repeat the specification search for employment protection. In this case, we cannot include Competitiveness of Democracy among the explanatory variables, since for OECD countries this variable always equals 1. Employment protection appears to be correlated with a larger set of variables than shareholder protection.

First, as in Table 6, the coefficients of both proportionality and legal-origin variables retain their sign and statistical significance, although their absolute value is considerably reduced.²⁴

Second, a higher voting threshold is associated with stronger employment protection. This may reflect the fact that thresholds reduce the significance of voters belonging to smaller, less cohesive political groups, such as minority shareholders, and by the same token they increase the weight of larger, more cohesive ones, such as employees.

Third, the tenure of democracy appears to be inversely correlated with employment protection: younger democracies are more pro-worker. Since this regression is estimated on data for OECD countries, the youngest democracies in the sample are those of countries such as Spain, Portugal, and Greece, followed by Germany, Japan, and Italy. It is likely that as these countries emerged from former right-wing dictatorships, the new democratic legislators passed pro-worker legislation to ensure their popular support.

²³ If the regression is estimated with fixed effects (not reported for brevity), only the coefficient of proportionality is statistically different from zero at the 5-percent level.

²⁴ As for shareholder protection regression, this result survives also if the equation is estimated with fixed effects. With this estimation method, however, the coefficients of the other political variables are not significantly different from zero at conventional significance levels.

TABLE 7—ROBUSTNESS CHECK: OTHER POLITICAL VARIABLES

Dependent variable	Shareholder protection		Employment protection	
	(1)	(2)	(3)	(4)
Average proportionality	-0.93*** (0.11)	-0.90*** (0.10)	0.18** (0.08)	0.19** (0.09)
District size × majoritarian	-0.04 (0.08)		0.09 (0.06)	
Threshold × proportionality	0.01 (0.01)		0.03** (0.02)	0.04*** (0.02)
Competitiveness of democracy	0.11 (0.17)			
Tenure of democracy	0.09 (0.06)		-0.16*** (0.06)	-0.26*** (0.06)
Left	-0.08 (0.14)		0.85* (0.45)	
Center	0.47*** (0.16)	0.53*** (0.09)	0.87* (0.47)	
Right	-0.06 (0.15)		0.84* (0.45)	
English legal origin	-0.06 (0.47)		-1.74*** (0.26)	-1.35*** (0.28)
German legal origin	-0.83 (0.59)		-0.57** (0.27)	-0.52** (0.26)
Scandinavian legal origin	0.55 (0.73)		-0.52* (0.26)	
Number of observations	367	382	210	210
Number of countries	45	45	21	21
Log-likelihood	-211.55	-216.13	0.16	-4.19

Notes: In columns 1 and 2, the sample spans the 1993–2001 interval and includes 45 countries, which coincide with that of LLSV (1998), with the exception of Hong Kong, Jordan, Nigeria, and Sri Lanka. The dependent variable is “shareholder protection,” which is the LLSV anti-director rights index as updated by the responses to our questionnaires. In columns 3 and 4, the sample spans the 1990–1998 interval and includes the subset of countries listed in Table 2. The dependent variable is “employment protection,” which is the average of indicators on regular contracts and short-term contract, drawn from Nicoletti and Scarpetta (2001). All explanatory variables are defined in Table 4, except for “majoritarianism,” which equals 3—Proportionality. All explanatory variables are lagged once. Regressions are estimated with maximum-likelihood random effects and include a constant and year dummies (not reported). Standard errors are reported in parenthesis; *, **, *** indicate significance at the 10-, 5-, and 1-percent level, respectively.

Finally, the political orientation of the executive (left, right, or center) appears to have no additional explanatory power for employment protection, once the other political variables and the legal-origin dummies are included. In this respect, the panel data evidence confirms the cross-sectional findings by Botero et al. (2004), who report that legal-origin variables wipe out the effect of the political power of the left in accounting for international variation in labor regulation.

In summary, the evidence of Table 7 confirms that the proportionality variable is the most significant political variable in explaining both share-

holder and employment protection, while legal-origin dummies retain considerable explanatory power for labor market regulation. In addition, the estimates suggest that other political variables are significantly related to the observed regulatory outcomes, especially insofar as employment protection is concerned. Given the exploratory nature of this evidence, more remains to be done to exploit the observed variation in the data. For such empirical efforts to be fruitful, the theory presented in this paper should be extended so as to generate further predictions linking political variables to regulatory outcomes. We leave this task to future research.

VI. Conclusion

This paper proposes a model of the political determinants of the degree of shareholder and employment protection. Under proportional voting, the political outcome is a low degree of shareholder protection and a high degree of employment protection. This benefits entrepreneurs and workers, while damaging outside shareholders. Weak shareholder protection allows entrepreneurs to extract high private benefits of control, while strong worker protection enables low-productivity workers to retain well-paid jobs. In contrast, in a majoritarian system, legislation will feature strong shareholder pro-

tection and weak employee protection, which is the outcome preferred by outside shareholders.

This prediction is consistent with international panel data evidence. The proportionality of the voting system is significantly and negatively correlated with shareholder protection in a panel of 45 countries, and positively correlated with employment protection in a panel of 21 OECD countries. Also, other political variables—such as ideological factors, district size, voting thresholds, and the tenure of the democratic system—appear to affect regulatory outcomes. The origin of the legal system has some additional explanatory power only for employment protection.

APPENDIX

PROOF OF PROPOSITION 1:

By using (10), we can rewrite the problem as:

$$\max_K [y + x\Delta - \gamma z(\mu)]nK - K + A_E$$

subject only to the constraint:

$$1 - \frac{K - A_E}{[y + x\Delta - \gamma z(\mu)]nK - d(\lambda)K} \geq \beta^*.$$

Since by assumption $Ny > 1$ and $x\Delta > \gamma$, the objective function is strictly increasing in K , while the constraint is decreasing in K . Hence, the optimal policy requires the constraint to be binding. This implies that $\beta_E = \beta^*$ and that the optimal investment K^* is given by (11). Substituting K^* into the entrepreneur’s objective function, one finds his indirect utility (12). Differentiating expression (11) with respect to λ yields:

$$\frac{\partial K^*}{\partial \lambda} = -K^* \frac{1 - \beta^*}{1 - (1 - \beta^*)\{[y + x\Delta - \gamma z(\mu)]n - d(\lambda)\}} d'(\lambda) > 0.$$

Similarly, differentiating expression (11) with respect to μ yields:

$$\frac{\partial K^*}{\partial \mu} = -K^* \frac{(1 - \beta^*)\gamma n}{1 - (1 - \beta^*)\{[y + x\Delta - \gamma z(\mu)]n - d(\lambda)\}} z'(\mu) < 0.$$

Since it is immediate from (12) that U_E^* is increasing in K^* , it is also increasing in λ and decreasing in μ .

PROOF OF PROPOSITION 2:

For party A, maximizing the probability of winning given in (18) is equivalent to maximizing the politically weighted social surplus $\bar{U}(\mathbf{q}_A) = \sum_j s_j \phi_j U_j(\mathbf{q}_A)$. Using (3), (4), and (5), one can rewrite this expression as:

$$\bar{U}(\mathbf{q}_A) = \bar{\beta}V + s_E\phi_E D + s_W\phi_W[x + (1-x)\mu]w$$

where $\bar{\beta} = [E\phi\beta_E + R\phi_0\beta_R + (W - EN)\phi_0\beta_W + EN\phi\beta_W]/(E + R + W)$ is a weighted average of the equity holdings in the economy, where the weights are the products of the size and the ideological cohesion of the respective constituencies. Recall that the ideological cohesion of entrepreneurs ϕ_E and workers ϕ_W equals ϕ and that of the residual group is $\phi_0 < \phi$. The first derivative of the politicians' objective function with respect to λ is:

$$(A1) \quad \frac{\partial \bar{U}}{\partial \lambda} = (s_E\phi - \bar{\beta})K \frac{\partial D}{\partial \lambda}$$

and the first derivative with respect to μ is:

$$(A2) \quad \frac{\partial \bar{U}}{\partial \mu} = (s_W\phi - N\bar{\beta})(1-x)w = N(s_E\phi - \bar{\beta})(1-x)w$$

where, in the second step, we have used the fact that $s_W = Ns_E$. The sign of these two derivatives coincides with that of the expression $s_E\phi - \bar{\beta}$. To determine the sign of the latter, notice that equilibrium in the equity market requires that the total holdings of domestic equity by domestic investors do not exceed the total stock of domestic equity

$$E\beta_E + R\beta_R + W\beta_W \leq E$$

where the inequality is strict if there are foreign shareholders. Using this inequality and the definition of $\bar{\beta}$, we find that

$$\bar{\beta} \leq s_E\phi - (\phi - \phi_0) \frac{R\beta_R + (W - EN)\beta_W}{E + R + W} < s_E\phi$$

which implies that $s_E\phi - \bar{\beta} > 0$. Hence, the derivative (A1) is strictly negative and the derivative (A2) is strictly positive. Therefore, the optimal platform offered by both parties under the proportional electoral rule is a corner solution: $\lambda^P = 0$ and $\mu^P = \bar{\mu}$. In equilibrium, party A wins with probability $p_A^* = \frac{1}{2} - \psi\phi\bar{\sigma}s_E(N-1)/\phi$, and party B with probability $1 - p_A^*$.

PROOF OF PROPOSITION 3:

We proceed in two steps. First, we find a sufficient condition for the existence of a symmetrical Nash equilibrium in which district 2 is pivotal and therefore the political outcome is (0, 1). Next, we prove that this is the unique symmetrical Nash equilibrium in pure strategies.

First, notice that the candidate symmetrical Nash equilibrium satisfies the following three conditions: (i) each party wins district 2 with $\frac{1}{2}$ probability; (ii) each party wins the district where it is ideologically favored; (iii) deviating from the strategy of maximizing the probability of winning district 2 is not optimal. Notice that, taken together, conditions (i) and (ii) imply that the party that wins district 2 wins the elections, i.e., that it is the pivotal district. Suppose for the moment that condition (iii) holds. Then the only symmetrical equilibrium is one in which party A maximizes p_A in (19) and party B maximizes $1 - p_A$. To do so, they will both announce the platform $\mathbf{q}^M = (\lambda^M, \mu^M) = (\bar{\lambda}, 0)$, and win the majority of the votes in district 2 with $\frac{1}{2}$ probability, as suggested by condition (i).

Condition (iii) also implies that the party winning in district 2 wins also in another district: otherwise, it would not win the elections. In particular, in equilibrium, party A wins in district 1 and

party *B* wins in district 3, provided $\bar{\sigma} > \frac{1}{2\psi}$. To show this, notice that $\text{Prob}(\bar{p}_{A,E} \geq \frac{1}{2}) = 1$ is equivalent to $\text{Prob}(\bar{\delta} \leq \bar{\sigma}) = 1$ in a symmetrical equilibrium, which holds if $\bar{\sigma} > \frac{1}{2\psi}$. The same condition implies that party *B* wins in district 3, i.e., $\text{Prob}(\bar{p}_{B,W} \geq \frac{1}{2}) = 1$.

Now we turn to condition (iii) itself and establish that it holds for sufficiently large values of $\bar{\sigma}$. Consider first whether party *B* has the incentive to deviate from its candidate equilibrium strategy by competing for votes in districts 1 and 3. The deviation, denoted by platform $\hat{\mathbf{q}}$, is optimal if

$$\max_{\hat{\mathbf{q}}} \min \left\{ \psi[U_E(\hat{\mathbf{q}}) - U_E(\mathbf{q}_A) - \bar{\sigma}] + \frac{1}{2}, \psi[U_W(\hat{\mathbf{q}}) - U_W(\mathbf{q}_A) + \bar{\sigma}] + \frac{1}{2} \right\} \geq \frac{1}{2}.$$

By substituting from equations (3), (4), and (5), and recalling that in the candidate equilibrium $\mathbf{q}_A = (\lambda, 0)$, this becomes

$$\begin{aligned} \max_{\hat{\mathbf{q}}} \min \{ & (1 - \beta_E)[D(\hat{\lambda}) - D(\bar{\lambda})] - \beta_E(1 - x)\hat{\mu}Nw - \bar{\sigma}, \\ & (1 - N\beta_W)(1 - x)\hat{\mu}w - \beta_W[D(\hat{\lambda}) - D(\bar{\lambda})] + \bar{\sigma} \} \geq 0. \end{aligned}$$

The deviation is not profitable if the first term $(1 - \beta_E)[D(\hat{\lambda}) - D(\bar{\lambda})] - \beta_E(1 - x)\hat{\mu}Nw - \bar{\sigma}$ is negative. This is ensured by condition $\bar{\sigma} > (1 - \beta^*)[D(0) - D(\bar{\lambda})]$, under which the maximal value of this expression is negative.

Consider next if party *A* has the incentive to deviate from its candidate equilibrium strategy by competing for districts 1 and 3. The deviation, denoted by platform \mathbf{q}' , is optimal if:

$$\max_{\mathbf{q}'} \min \left\{ \psi[U_W(\mathbf{q}') - U_W(\mathbf{q}_B) - \bar{\sigma}] + \frac{1}{2}, \psi[U_E(\mathbf{q}') - U_E(\mathbf{q}_B) + \bar{\sigma}] + \frac{1}{2} \right\} \geq \frac{1}{2}.$$

By substituting from equations (3), (4), and (5), this becomes

$$\begin{aligned} \max_{\mathbf{q}'} \min \{ & (1 - N\beta_W)(1 - x)\mu'w - \beta_W[D(\lambda') - D(\bar{\lambda})] - \bar{\sigma}, (1 - \beta_E)[D(\lambda') - D(\bar{\lambda})] \\ & - \beta_E(1 - x)\mu'wN + \bar{\sigma} \} \geq 0. \end{aligned}$$

For the deviation not to be profitable, it is sufficient that the first term $(1 - N\beta_W)(1 - x)\mu'w - \beta_W[D(\lambda') - D(\bar{\lambda})] - \bar{\sigma}$ is negative. Condition $\bar{\sigma} > (1 - \beta_WN)(1 - x)w$ ensures that this term is always negative, since it makes its maximal value negative.

In conclusion, a sufficient condition for the existence of a symmetrical Nash equilibrium is

$$\bar{\sigma} > \max \left\{ \frac{1}{2\psi}, (1 - \beta^*)[D(0) - D(\bar{\lambda})], (1 - \beta_WN)(1 - x)w \right\}.$$

Finally, we show that $(\bar{\lambda}, 0)$ is the unique equilibrium outcome in symmetrical strategies. Indeed, for any policy platform $(\lambda, \mu) \neq (\bar{\lambda}, 0)$ offered by part *A*, party *B* can increase its probability of winning by offering a platform $(\lambda + \varepsilon, \mu)$ for any $\varepsilon > 0$. With this deviation, party *B* is elected with probability 1, by winning districts 2 and 3. Similarly, for any policy platform $(\lambda, \mu) \neq (\bar{\lambda}, 0)$ offered by party *B*, party *A* can increase its probability of winning by offering a platform $(\lambda, \mu - \varepsilon)$ for any $\varepsilon > 0$. With this deviation, party *A* is elected with probability 1, by winning districts 1 and 2.

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