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Labor market regulation and the legal system

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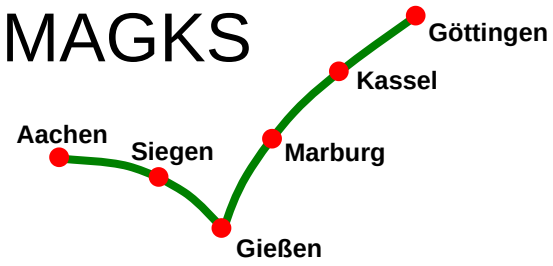

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Labor Market Regulation and the Legal System

Carsten Hefeker* and Michael Neugart†

Abstract

When enacting labor market regulation governments face courts that interpret and implement the legal code. We show that the incentives for governments for labor market reform increase with the uncertainty that is involved in the implementation of legal codes through courts. Given that judges have more discretion in common as opposed to civil law systems more reform activity as a response to crises should be observed in the former system. This finding is backed by evidence from a panel of OECD countries.

Keywords: labor market regulation, labor courts, uncertainty, unemployment

JEL-Classification: D78, K31

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1 Introduction

Countries differ to a considerable degree in the way they regulate their labor markets (see, e.g., OECD (1994) and OECD (2004)). Moreover, very often labor market regulation is put into legal code only in quite general terms. It is left to labor courts to actually interpret and apply the code. Thus, labor courts become actors in the sense that they produce binding rules which firms and workers have to obey. This is particularly the case in legal systems with a common law system, as opposed to countries with a civil law origin, which leaves it to the courts to interpret general rules and to adapt them to specific cases (see von Mehren and Gordley (1957)).

In this paper, we relate differences in countries' legal systems with governments' incentives to change labor market regulation. We develop and test a theoretical model to show that governments have a larger interest in reforming the labor market if they are confronted with a court system that has more discretion in following their own preferences when interpreting the legal code. If the government alone was responsible for achieving its goals, it trades off unemployment and its preferred policy. Facing a court which is possibly interested in unemployment as well the government anticipates that part of its job might be done by the court and has an incentive to adjust its policy closer to its own preferred platform. However, the government is risk averse and therefore acts preemptively if uncertainty about the court's preferences is high.

In the model, governments can undertake politically costly efforts to deregulate labor markets which should result in lower unemployment.[1] Labor courts can, depending on the legal system, change regulation to some degree. If there is more leeway for courts to interpret and change government regulation according to their own preferences, governments have more incentives to set employment friendly legislation. Intuitively this result stems from the fact that a government is more willing to take the political costs of less labor market regulation if it can be less sure that the legal system enforces the legal

[1] An assessment of the impact of various labor market institutions on labor market performance can be found, e.g., in Blanchard (2006), Freeman (2005), or Nickell et al. (2005).

code in an employment friendly way. Contrarily, if there is less uncertainty about the courts' interpretation of the law the government is less willing to pursue costly reforms and relies instead on employment friendly court decisions. Leaving it to the court to take the necessary steps, there is no need for the government to take the blame for unpopular policy measures itself. In addition to formally deriving our results in a simple game-theoretic model, we present empirical evidence to support our theoretical results.

Our argument touches on several strands in the literature. Since our main focus is governments' incentives to reform the labor market, our approach is closely related to the growing literature on the political economy of economic policy reform.[2] In this strand, various arguments have been developed that try to explain the (non)occurrence of economic reform under uncertainty. Relating to earlier work on the influence of interest groups (see Olson (1965)), war of attrition models explain delays in economic reform by arguing that uncertainty about the distribution of adjustment costs is an obstacle to welfare increasing reforms (Alesina and Drazen (1991)). Also, uncertainty about the benefits of a policy change can obstruct efforts. Again, welfare improving reforms may be voted down if the decisive voter is uncertain about his individual benefit from reform (Fernandez and Rodrik (1991)). Policy changes, that would increase overall welfare, may also fail because of the costly acquisition of necessary information which groups of society the government should compensate for losses due to policy reform (Grüner (2002)). Focussing on the interaction between a government and a central bank in a game-theoretic setup closely related to ours, Sibert and Sutherland (2000), Calmfors (2001), Hefeker (2001) or Neugart (2002) study the incentives of governments to reform labor markets as a consequence to a change in the monetary regime. In particular, Hefeker (2006) argues that more uncertainty about the central bank's reaction function can increase the incentives of governments to implement labor market reforms.

We add to this existing literature by explicitly taking into account the legal system as an additional player, because in our view too little attention has

[2]There are excellent surveys on the political economy of reform provided by Roland (2002) or Drazen (2000).

been paid to the active role that the court system may play in the context of policy reform. This is particularly true in the field of labor market regulation where an increasing body of evidence suggests that courts have considerable leeway in interpreting the legal code which, in turn, has repercussions on the performance of labor markets. In the U.S., for instance, the tremendous increase in the share of temporary agency work has been attributed to the erosion of the employment-at-will doctrine through court rulings (Autor (2003)). There is also evidence for Italy that labor courts increasingly advocate in the interests of employees if the labor market is depressed (Ichino et al. (2003)). For Germany, Berger and Neugart (2008) find evidence for a nomination bias in court rulings, that is, the share of settlements reached at each stage of the legal process and the propensity to appeal systematically varies with the political color of the government that nominated the judges. Furthermore, they present evidence that the number of cases filed to labor courts increases unemployment significantly.

Finally, we relate to the literature on legal origin (e.g. Glaeser and Shleifer (2002), Klerman and Mahoney (2007) or Roe (2007)) and the role of legal origin for regulatory action (e.g. La Porta et al. (1998), Djankov et al. (2002), Djankov et al. (2003), La Porta et al. (2004), and Botero et al. (2005)). There, legal origin is classified either as civil or common law with the distinguishing feature that common law systems exhibit more judicial discretion. According to this approach, one should observe different institutional technologies depending on the legal tradition of countries; while common law countries depend more on markets and contracts, civil law countries depend more on regulation. We use a binary variable developed to test those theories of legal origin to distinguish common from civil law countries in our empirical analysis as a proxy for the uncertainty governments face with respect to what the legal system will do in response to its policies. The underlying hypothesis is that court behavior is less predictable in common law countries which can therefore be characterized as creating more uncertainty for governments, inducing less stringent labor market regulation.

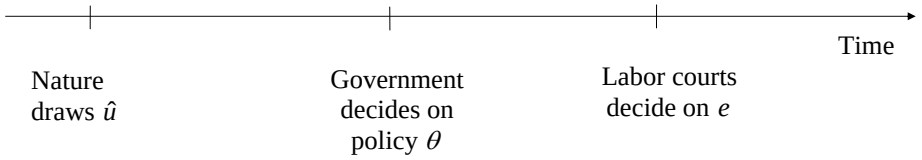

Figure 1: Sequence of events

2 The model

Our model consists of two players, the government (G) and the legal system (C) which comprises all labor courts.[3] We assume the government is Stackelberg-leader vis à vis the labor court (see figure 1), taking into account the expected reaction function of the court. First, the government makes its policy choice θ concerning the level of labor market regulation. Taking this as given, the court then decides whether and to what degree to confirm, change or enforce the legal code. The labor court's level of regulation is denoted by e. Since the model is solved by backward induction, we begin by deriving the court's policy before turning to the government's policy choice. First, however, we describe the economy and the objective functions of the players.

2.1 The economy

Unemployment is given as

$$u = \widehat{u} + e, \tag{1}$$

where $\widehat{u}$ refers to the non-regulation level of unemployment in the economy that is exogenous to government policy and court decision. This level may also reflect cyclical developments, changes in wages, changes in domestic or foreign demand for domestically produced goods (for instance due to ex-

[3] We thus abstract from potential complications of non-coordinated behavior or conflicts among individual courts.

change rate developments), or technological developments in the economy with employment friendly technological developments lowering $\widehat{u}$ and vice versa.[4]

We denote with $e > 0$ the regulation level set by the labor court which may confirm the level of regulation that the government has set, which we denote with $\theta > 0$, but may also deviate from that level $e \gtreqless \theta$. Government regulation could reflect, for instance, an increase in hiring or firing costs, the implementation of minimum wage laws, benefit systems or other actions by the government that increase unemployment. The model is very simple in the sense that we only look at unemployment and assume that all regulation will increase unemployment. This is obviously a very strong simplification of the labor market. Likewise, we postulate that all deregulation will lead to more employment. Deviations of e from θ reflect the influence of labor courts, which might increase $e > \theta$, decrease $e < \theta$, or simply confirm government policy in court $\theta = e$. We hence assume that $e(\theta)$ is some function of θ. The relation between e and θ will be determined by the court's behavior.

2.2 Preferences

The government's objective function (a loss function) is given as

$$V^G = E\left[(u - k\widehat{u})^2 + c(\theta - \widehat{\theta})^2\right], \tag{2}$$

with E as the expectation operator. The government is interested in avoiding deviations of unemployment from a target level lower than the non-regulation level of unemployment $\widehat{u}$, namely $k\widehat{u}$ with $0 < k < 1$. Moreover, the government is averse to deviations of labor market regulation from its preferred level $\widehat{\theta}$. The fact that governments aim at a consistently lower level of unemployment and that they have "target" levels for regulation can be motivated by postulating ideological leanings for the government, or by a politically optimal level of unemployment and regulation, resulting from political sup-

[4]We therefore separate out regulation and other influences on unemployment. While apparently hard to separate in reality, we choose this setup in order to focus on our variable of interest.

port maximizing motives and a trade-off between the interests of different groups in society, such as labor unions or employers' associations (see, e.g., Saint-Paul (2000)).[5] Changes in government policy that lead to a deviation of regulation from this level lead to an increasing loss in utility (for instance in the form of votes that can be obtained). This basically reflects the redistributive feature of labor market policy reforms where some groups in society gain and others lose. The influence of such particular interests is reflected in c with a low c denoting a government being more concerned with employment per se and a high c reflecting a government under considerable pressure concerning regulation from societal groups.

For the labor court we assume an objective function (a loss function)

$$V^C = (1-\epsilon)(u - k\widehat{u})^2 + (b+\epsilon)\,(e-\theta)^2\,. \tag{3}$$

The labor court also aims to avoid that unemployment deviates too much from the target level.[6] Furthermore, losses occur if the enacted legislative code deviates from the enacted labor market regulation of the government θ. Analogue to the specification of the government loss function both terms enter additively and are weighted with terms $(1-\epsilon)$ and $(b+\epsilon)$, respectively. We define $b > 0$, and ϵ as a random variable with support $[-b, 1]$, mean $E[\epsilon] = 0$, and variance $Var[\epsilon] = \sigma^2$. This allows us to capture characteristics of legal systems as well as the issue of uncertainty in the behavior of the courts from the perspective of the government.

Consider the extreme case where there was no heterogeneity in court behavior in which case ϵ would just drop out of eq. (3). Then, it was only b describing to which extent a deviation of the courts' behavior e would enter a judge's loss function. A relatively higher b could characterize a civil as opposed to a common law system as the former imposes tighter constraints for the court's behavior.

[5] One could allow for different ideological leanings of the government by assuming $\widehat{\theta}_i$ with i reflecting different types of governments. A left wing government would have a higher $\widehat{\theta}_i$ than a right wing government and vice versa.

[6] For simplicity, we assume that the court has the same target level for unemployment. Our results would also go through if we had imposed a somewhat different target level of unemployment for the court.

Generally, however, the court's action is not perfectly predictable due to the discretionary nature of the judicial system. Uncertainty with respect to what judges do arises in common as well as in civil law systems as the interpretation of the legal code is essentially done by judges along their preferences. Thus, it is very likely not only the average weight with which the losses from deviating from the government legislation are weighted. Quite naturally, however, in a common law system – a legal tradition which allows judges to interpret and implement government legislation to a larger extent – the judges' expression of opinions will also be more dispersed. This is not to say that uncertainty does not play a role in civil law systems. Yet, it is certainly a more salient feature in common law systems. The more independent the legal system is, the more a judge can follow its own convictions. Thus a government may not be able to predict the production of legal rulings perfectly. Augmenting the weights with a random variable ϵ allows us to take this into account assuming that governments are uncertain about how labor courts weigh their concern with unemployment against the losses that accrue from deviating from the legal code.[7]

Assuming a loss function (3) that builds on two loss terms, one on the policy preference, and the other on the deviation from the legal norm finds widespread support in the relevant strands of the literature. Behavioral foundations of judges suggest to take account policy-orientation when explaining court outcomes (see Posner (2005)).[8] Furthermore, there is a large body of evidence on the political preferences of judges (see, e.g., George and Epstein (1992), Songer and Lindquist (1996), Segal and Spaeth (1996), and Berger and Neugart (2008)). However, judges are rarely entirely free to set policies but are forced, at least to some degree, to take the existing labor market regulation as a basis for their rulings. This suggests the inclusion of a loss term for the deviation from the government policy level θ (see also Posner

[7]Because there exist many labor courts and judges in those courts more or less frequently change, we argue that uncertainty prevails over time and is not eroded by a process of learning by the government.

[8]For example, Shepsle and Bonchek (1997) coin judges as "legislators in robes". A recent contribution analyzing consequences on the evolution of common law from politically motivated judges is Gennaioli and Shleifer (2007a).

(1993)). While a judge may be able to deviate from the prevailing interpretation of the legal code to express his own policy preferences, he will usually also incur costs from doing so. Reversal from common legal practice may be costly in terms of his career concerns (see also Levy (2005)), or in terms of being alienated from other judges whose work he criticizes. In any case, a deviation from a target level involves costly expression of a separate opinion in terms of providing reasons for the judgement – an assumption which is also made and extensively discussed in Gennaioli and Shleifer (2007b).

2.3 Policy decisions

As indicated above, we assume that the government is the Stackelberg-leader in this game between the government and the legal system. This assumption is justified by the fact that regulation policy set by the government is relatively infrequent whereas the actions of the court are more frequent.

Inserting equation (1) in the court's objective function (3), we find the optimal level of regulation ruled by the court as

$$e = \frac{1}{1+b}\left((b+\epsilon)\theta - (1-k)(1-\epsilon)\widehat{u}\right). \tag{4}$$

The court will set a more employment friendly regulation level the higher is the non-regulation level of unemployment $\widehat{u}$ and the lower is the court's (and the government's) employment target $k\widehat{u}$. Periods of crises and structural effects, like globalization, which increase $\widehat{u}$ lead to more employment friendly policies because judges as well are assumed to aim for low unemployment. Moreover, regulation is increasing in the level of regulation set by the government θ because deviations from government regulation are to some degree costly to the court. The court's regulation also increases as it puts a higher relative weight (b) on losses incurring from enacting a legal code which deviates from the legal code of the government.

As we argued above, the government is uncertain about the court's behavior. It cannot predict perfectly the relative weight with which deviations from the government's regulation θ are taken into account. Thus, solving for

the government's policy after taking expectations yields

$$\theta = \frac{c(1+b)^2\widehat{\theta} - (1-k)(b^2+\sigma^2)\widehat{u}}{c(1+b)^2 + b^2 + \sigma^2}. \tag{5}$$

Comparative statics on the optimal policy of the government yield the following results[9]:

- θ is decreasing in uncertainty σ^2, that is, the higher is the uncertainty about the court's behavior the lower is the level of regulation set by the government. If governments cannot fully control courts they are prompted to be less aggressive in their regulation policy.

- θ is decreasing in $\widehat{u}$ reflecting the fact that increases in trend unemployment will lead governments to pursue a less aggressive regulatory policy in order not to increase unemployment further.

- θ decreases more when $\widehat{u}$ increases if the uncertainty σ^2 about the court's behavior is larger. That is, uncertainty and trend unemployment are mutually reinforcing in their influence on government policy.

- θ is ambiguous in changes in b, the relative weight (net of uncertainty) that the court puts on reaching its preferred level of worker protection. A fall in b would lower regulation if $\sigma^2 > b$. In the case of the civil law system (with σ^2 approaching zero), a fall in b would increase regulation. This is intuitive: as the court has lower costs from deviating from government policy, government would compensate for this through increasing regulation and vice versa.

- θ decreases more when $\widehat{u}$ increases if the weight b on deviations from government regulation increases if $\sigma^2 > b$. That is, the effect from uncertainty on government regulation is increased through higher unemployment if uncertainty is large. Put differently, if the weight b is relatively large the level of regulation decreases less when $\widehat{u}$ increases and b is slightly increased.

[9]In Appendix B we provide a formal derivation of the results.

- Finally, θ is increasing in c, the government's aversion to deviations from its preferred level of regulation. Obviously, the more important regulation is for the government, the more it will attempt to reach this preferred level.

Using θ one can determine the equilibrium level of e and then derive the equilibrium unemployment. Both solutions are not shown or discussed as our focus is on explaining labor market regulation.[10]

3 Evidence

Next, we use panel data to test for the predictions of our model, particularly the effect of uncertainty of court behavior on governments' incentives to change labor market regulation.

Estimation technique

Although we restrict ourselves (due to data availability) to a rather homogeneous set of OECD countries controlling for heterogeneity in a panel data set is key. Thus, we want to have country and time fixed effects included. One of our independent variables, the way we measure uncertainty of the government with respect to the behavior of the courts as described below, is time invariant. This makes the time invariant measure of uncertainty co-linear with the country fixed effects. Recently, Troeger and Plümper (2007) proposed an estimation technique – fixed effects vector decomposition – which is able to cope with such data characteristics (which are quite common for panel data analyses employing some sort of institutional explanatory variables.) The procedure of the fixed effects vector decomposition is to carry out a three step estimation. (1) In the first step the unit fixed effects are estimated in a panel regression excluding the time-invariant right hand side

[10]Technically, the equilibrium level of e must be non-negative which requires that θ is sufficiently large. It is conceivable that governments have a non-positive target level of regulation. However, in that case, a meaningful discussion of the interaction between the government and the legal system is impossible and we neglect this case. Note also that for a positive e we will always have a positive level of unemployment.

variable. (2) Then the fixed effects vector generated by the first-stage regression is regressed on the time-invariant variables by OLS. (3) Finally, a pooled OLS model is estimated including all time-variant and time-invariant explanatory variables as well as the unexplained part of the stage 2 regression (which we will denote with η later on). The idea behind this estimation technique is to decompose on stage 2 the fixed effects vector obtained from stage 1 into a part that can be explained by the time-invariant variables and an error term. Including the error term into the stage 3 regression takes account of all unobservable country effects. Various Monte-Carlo simulations showed (see Troeger and Plümper (2007)) that for the type of data that we use this estimator is superior to a random effects model, a pooled OLS, and the Hausman-Taylor model in terms of potentially biased estimates and efficiency.[11]

Data description

Our data comprises 19 OECD countries.[12] As described below, our dependent variable is available on a five year basis starting in 1970. For some countries data is only available for later periods. Thus, we have an unbalanced panel with slightly more than 100 observations.

As a measure for labor market regulation we recur to a (sub)index of the Fraser Institute's Index of Economic Freedom.[13] This index (*lmr*) quantifies labor market regulations such as minimum wages, hiring and firing practices, the share of the labor force whose wages are set by centralized collective bargaining, and unemployment benefits (See table 1 for summary statistics for all variables that we use.) In principle this index may vary between 0 and 10. Our sample has a mean of 4.73 with the most regulated economy showing up with a value of 2.6 (the Netherlands in year 1970) and the least regulated being classified with 8.1 (Japan in year 1985).

[11]The estimator is programmed in STATA. The *ado* and *help* files for the fixed effects vector decomposition estimator (*xtfevd*) can be downloaded from *www.polsci.org/pluemper/xtfevd.htm.*

[12]See Appendix A for a list of countries.

[13]In Appendix A we provide a detailed description of all variables and corresponding data sources.

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
lmr	4.73	1.53	2.6	8.1
ur	6.7	4.27	0.2	23.9
inflation	6.8	5.58	-0.607	28.78
misery	3.21	1.19	-2.85	5.49
exe_left	0.21	0.41	0	1
union	0.42	0.2	0.09	0.91
common	0.22	0.417	0	1

Our model recurs to variation in structural unemployment as the source of crises to which governments and labor courts react in terms of regulation. Because we lack panel data for that variable, we make use of the misery index in our testing which uses the sum of the (logs of) the unemployment rate and the inflation rate. Based on the concept of a natural rate of unemployment, our misery index serves as a proxy for the structural unemployment rate. Deviations of the actual unemployment rate (which we measure) from a natural rate of unemployment are adjusted for by the inflation rate. According to the natural rate hypothesis changes in the actual unemployment rate that mirror a change in the underlying structural unemployment rate should not be accompanied by any variation in the inflation rate. Contrarily, if for example a drop in the unemployment rate did not reflect a shift in the structural rate of unemployment, inflation should have increased which would lead to a smaller (or no) change in the misery variable indicating that actual unemployment decreased but not the structural rate. The mean unemployment rate in our sample is 6.7%. The inflation rate is averaging at 6.8%. Both variables show considerable variation over time and countries and are negatively correlated.

The degree of uncertainty with which a government is confronted as courts decide is central to our story. We use legal origin as a proxy for that. The underlying assumption for using this indicator is that in a common law system where courts decide on a case basis outcomes of the legal system may vary to a larger extent than in a civil law system which codifies (strict) rules that judges have to follow.

Note, however, that in our model a comparative static exercise looking into the consequences of a change from a civil law system to a common law systems maps into looking into the consequences of a (possible) decrease of b combined with an increase in σ^2 on the level of labor market regulation. Partial derivatives from our theoretical model imply that if the effect arising from uncertainty is strong enough we should always observe a lower level of regulation. Furthermore, we may utilize the cross derivatives for testing as these also suggest that in a common law system the effect from an increase in unemployment should lead to a larger decrease in labor market regulation if uncertainty is a sufficiently strong driving variable. Technically, this prediction relates to the results on the cross-derivatives $\partial^2\theta/\partial\widehat{u}\partial\sigma^2$ and $\partial^2\theta/\partial\widehat{u}\partial b$ derived in Appendix B.

The notion of legal origin defining the discretion of the judiciary system has gained considerable attention in the literature as a major cause for the proliferation of market regulation. See, e.g., La Porta et al. (1998), Djankov et al. (2002), Djankov et al. (2003), La Porta et al. (2004), and Botero et al. (2005). We give a twist to the existing studies by using this well known indicator also as a proxy for uncertainty from the perspective of the government about how courts will handle labor market regulation. In principle, we use the same indicator which draws on the CIA's World Factbook. The assertion made in these references as to whether a legal system has a common or a civil law origin refers to a country's legal system in general. Note that out of the 19 countries in our sample, five have a common (labor) law (Canada, Germany, Ireland, United Kingdom, United States).

In order to control for other, possibly competing explanations of labor market regulation, we introduce a set of additional variables. One may be concerned that ideologies towards certain types of regulatory actions explain economic policy reform. In this case, simply the color of the ruling governments should have an impact on the policy. For this we control with a dummy variable that is one (and otherwise zero) if the executive stemmed from the left side of the political spectrum as defined by the World Bank Indicators on Political Institutions. Furthermore, we take care of the potential influence interest groups may exert on labor market regulation. Here we

opted for union density as a proxy for the influence of trade unions on (labor market) policies. The sample mean for union density is at roughly 40% of the workforce (ranging from 9% to 91%).

All variables are averages of the last five years, i.e. a variable at a given year t holds the average of the values for t, $t-1$, $t-2$, $t-3$, and $t-4$. We address potential causality problems by lagging the *misery* index and its interaction with the legal system variable (*common*) by five years.

Results

In table 2 the regression results are summarized. Model 1 presents the results of the third stage regression where we included the lagged dependent variable[14], *common* which relates to the weight b of our theoretical model and is also the measure for the uncertainty (σ^2) that a government faces with respect to the behavior of the court system, the misery index (lagged by five years), time dummies d, the decomposed error η from the second stage regression, and a constant. Note, that the fixed effects vector decomposition technique allows us to include the time invariant variable *common* while taking account of country fixed effects comprised by η. The point estimate for the dummy *common* yields a positive sign implying a lower level of labor market regulation (Remember that higher levels of *lmr* coincide with lower labor market regulation.) Thus, the data suggests that the uncertainty which comes with a common law system compared to a civil law system trumps the potentially countervailing effect arising from a larger weight for deviations from government's labor market regulation. As one might also expect, negative shocks to the economy indicated by a higher *misery* variable reduce labor market regulation. Year dummies are significant for 1975 and 1995. Furthermore, the unobservable country effects η are significant. In summary this lends support to our theoretical model. Results are robust if further controls are included as shown in column 3. Neither the political color of the government exe_left, nor union density as a proxy for the influence of interest groups shows up significantly.

[14]Note, however, that our estimates are subject to the Nickell bias as $N > T$. Thus, an interpretation of the size of the parameter with respect to the speed of the adjustment process would be misleading.

As argued before, the cross-partial derivatives of the theoretical model suggest that if uncertainty is pervasive we should also find interaction effects with unemployment pointing towards lower labor market regulation. We can test for this prediction by the inclusion of an interaction term for the *misery* variable and the *common* variable. Model 2 confirms the proposition. The estimated parameter for the interaction term ($common \cdot misery(t-5)$) is positive and significant at the 1% level suggesting that governments facing common law legal systems deregulate more as unemployment rises. However, the inclusion of the interaction effect renders the coefficient on the *common* variable insignificant. This does not come as a surprise given that *common* and the interaction effect are strongly correlated. Apart from this the comparison of Model 2 and Model 1 shows that results are robust. This is also true if we include the control variables on the political color of the government and union density in addition to the interaction term. Model 4 compared to Model 2 shows the same pattern of significant variables with the size of the estimated parameters hardly changing. In terms of the quantitative effects, an increase in *misery* by one standard deviation leads to an increase in *lmr* by 0.3 points evaluated at the sample mean of *common* for Model 2.

Robustness

Overall, we are quite satisfied with our empirical findings. A check for robustness of Model 2 where we excluded countries sequentially from our sample was rather promising. Only in one case (Japan) the parameter on the misery variable became (marginally) insignificant.[15] Apart from the potential sensitivity of the results on the inclusion of certain countries – which overall occurs not to be the case – one may raise concerns with respect to our endogenous variable as the Fraser Institute is usually considered as a liberal think-tank perhaps biasing the labor market regulation index. Firstly, such a bias will not affect our results as long as it leads to an exaggerated description of the extent of labor market regulation throughout the panel. Secondly, the

[15]Note, however, that our results react sensitively to the inclusion of New Zealand in our sample.

Global Labor Survey, an internet based survey among labor practitioners including union leaders, activists or professor for labor law revealed that the index by the Fraser Institute (which we use) gives a similar picture as the Global Labor Survey (Chor and Freeman (2005)). This lends additional support to our choice. The advantage of the Fraser Institute is its time dimension which gives us an additional source of variation.

4 Conclusions

In this paper, we look at the issue of labor market policy regulation. Our approach differs from the existing literature in that we explicitly take into account labor courts as a strategic player. We believe that the role of courts has so far been largely neglected in studying governments' incentives for policy change. This is problematic, given the ample evidence concerning the discretion that courts have in interpreting the legal code. Our main finding is that as labor courts' actions are more uncertain from the perspective of the government, governments will reform more intensively. The more discretion labor courts have, the more governments have an incentive to pursue employment friendly regulatory policy. In addition to the formal derivation of this result, we also present evidence to support this finding. Taking the legal origin of countries as a proxy for judiciary discretion, and thus uncertainty about labor courts' actions, we find that governments' policies differ significantly in response to crises. Countries with a civil law origin respond less to economic crisis than countries with a common law system.

While we stress the interaction between governments enacting labor market regulation and labor courts activity, there are certainly other fields of economic policy making where this type of interaction between governments and the legal system could play an important role in explaining policy making. There is, for instance, also little knowledge about economic policy making in the context of a European legal system, an issue which is becoming more and more important for national policymakers.

Table 2: Regression results

Variable	(1) lmr	(2) lmr	(3) lmr	(4) lmr
lmr(t-5)	0.33***	0.31***	0.38***	0.38***
	(0.084)	(0.082)	(0.087)	(0.087)
common	1.58***	-0.11	1.44***	-0.42
	(0.248)	(0.689)	(0.268)	(0.781)
misery(t-5)	0.18***	0.14**	0.30***	0.23***
	(0.062)	(0.059)	(0.092)	(0.088)
common·misery(t-5)		0.48***		0.55***
		(0.189)		(0.217)
exe_left			-0.07	0.08
			(0.139)	(0.146)
union			0.24	0.21
			(0.311)	(0.311)
d_{1975}	0.48**	0.53***	0.71***	0.74***
	(0.202)	(0.201)	(0.244)	(0.240)
d_{1980}	0.05	0.09	0.17	0.18
	(0.18)	(0.173)	(0.196)	(0.191)
d_{1985}	-0.09	-0.09	-0.06	-0.08
	(0.168)	(0.164)	(0.186)	(0.181)
d_{1995}	0.32*	0.36**	0.43**	0.46**
	(0.175)	(0.173)	(0.203)	(0.198)
d_{2000}	0.13	0.24	0.34*	0.40*
	(0.177)	(0.180)	(0.211)	(0.209)
η	1.00***	1.00***	1.00***	1.00***
	(0.138)	(0.130)	(0.159)	(0.148)
constant	2.16***	2.32***	1.36***	1.70***
	(0.414)	(0.411)	(0.538)	(0.533)
Observations	104	104	93	93
Adj. R-squared	0.89	0.90	0.89	0.90

Standard errors in parentheses: ***, **, * denote significance at the 1%, 5% and 10% level, respectively. Estimated with panel fixed effects regression with vector decomposition. STATA's estimation command: $xtfevd$.

Appendix A: Data sources

In the following we summarize the definitions of the variables used in the regression models and the data sources.

- *countries*: The countries included are Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

- *lmr*: Labor market regulation as measured by the Fraser Institute's Index of Economic Freedom, Area 5B. This comprises information on labor market regulations such as minimum wages, hiring and firing practices, the share of the labor force whose wages are set by centralized collective bargaining and unemployment benefits system. The index may vary between 0 and 10 with higher values indicating a less regulated economy. Source: Economic Freedom of the World, 2005 Annual Report by J. Gwartney, R. Lawson and E. Gartzke.

- *misery*: This variable is the sum of the logs of the unemployment rate ur and the inflation rate *inflation* in a respective country at time t as an average of the past five years. The inflation rate is based on consumer prices. The unemployment rate corresponds to the OECD's definition of standardized unemployment rates. Source: World Development Indicators ($http://web.worldbank.org$) and OECD ($http://www1.oecd.org/scripts/cde/members/lfsindicatorsAuthenticate.asp$)

- *common*: This is a dummy variable with the value of 1 for all countries classified as having a common law origin. The variable is zero for all other cases. Legal origin is defined as in Botero et al. (2005). Source: $http://mba.tuck.dartmouth.edu/pages/faculty/rafael.laporta/publications.html$ and CIA World Factbook 2007, $https://www.cia.gov/cia/publications/factbook/$.

- exe_left: This variable is based on data provided by the World Bank Indicators on Political Institutions. The variable holds the five year average of a dummy variable that is one if the party affiliation of the executive is *left*. Source: DPI2004 Database of Political Institutions: Changes and Variable Definitions, by P. Keefer, July 2005 ($http://econ.worldbank.org$).

- *union*: Union density as a five year average of yearly values. The values for the years 1996-2000 are averages of the years 1996 to 1998. Source: LMIDB Version 2.0, Nickell and Nunziata (2001).

Appendix B: Derivation of partial effects

We begin with establishing our main results: The partial effect of uncertainty on regulation is

$$\frac{\partial \theta}{\partial \sigma^2} = -\frac{c\left(1+b\right)^2\left[\widehat{\theta}+\left(1-k\right)\widehat{u}\right]}{\left[c\left(1+b\right)^2+b^2+\sigma^2\right]^2} < 0$$

An increase in the uncertainty about the court's preference weights will lead the government to lower its level of regulation. It also implies that the cross-derivative with respect to $\widehat{u}$ is negative

$$\frac{\partial^2 \theta}{\partial \sigma^2 \partial \widehat{u}} < 0$$

We proceed with the partial effect of c. It is given as

$$\frac{\partial \theta}{\partial c} = \frac{\left(1+b\right)^2\left(b^2+\sigma^2\right)\left[\widehat{\theta}+\left(1-k\right)\widehat{u}\right]}{\left[c\left(1+b\right)^2+b^2+\sigma^2\right]^2} > 0$$

That is, an increase in the relative weight the government puts on reaching its target level of regulation $\widehat{\theta}$ will clearly lead to a higher actual level of regulation.

The partial derivative with respect to b is ambiguous. It is given as

$$\frac{\partial \theta}{\partial b} = \frac{2c\left(1+b\right)\left(\sigma^2 - b\right)\left[\widehat{\theta} + \left(1-k\right)\widehat{u}\right]}{\left[c\left(1+b\right)^2 + b^2 + \sigma^2\right]^2}$$

That is, an increase in b, the relative weight that the court puts on following the laws of the government will lead to an increase in the level of regulation set by the government if uncertainty is sufficiently high. In the case that there is no uncertainty ($\sigma^2 = 0$), government regulation will fall. Government knowing that the court will follow and truthfully implement labor laws forces it to avoid setting too high a level of regulation in order to keep unemployment low. It will increase regulation in response to b if uncertainty is high enough.

Note that $\sigma^2 > b$ is only possible if b is sufficiently small. Since ε is distributed between $(-b, 1)$, however, its variance can take easily values larger than b if the latter is not too large.

Note also that the cross-derivative $\frac{\partial^2 \theta}{\partial b \partial \widehat{u}}$ is positive if $\sigma^2 > b$ and vice versa.

Legal systems, uncertainty, and its effect on labor market regulation

A change in the legal system in general can have two effects: our main hypothesis is that a common law systems allows more discretion to the labor court. This materializes in an increase in uncertainty (as we argue in the main paper), but it could also imply a reduction in b as one may argue that a common law system entails lower costs for labor courts to deviate from government set regulation.

Taking into accounts that a common law system as opposed to a civil law system could entail both effects, the total effect of a comparison of the law systems as we measure it in our empirical set-up on regulation is given as

$$d\theta = \frac{\partial \theta}{\partial \sigma^2} d\sigma^2 + \frac{\partial \theta}{\partial b} db.$$

Thus, a common law system should lower regulation if this expression is negative. Since the first term is always negative and b would likely fall under common law, the second partial derivative should be positive, which is the case if uncertainty is large enough. Even if this were not the case, regulation would also fall if the overall change in db is relatively small in comparison to $d\sigma^2$, that is, if the common law systems has a stronger influence on uncertainty than on the court's costs of not following government regulation. If uncertainty is the dominant characteristic and if uncertainty is relatively large, regulation will thus always be lower under common law. Notice that in this case an increase in $\widehat{u}$ has an additional negative influence on θ as our discussion of the cross-derivatives establishes.

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