Do Labour Laws Increase Equality at the Expense of Higher Unemployment? The Experience of Six OECD Countries, 1970-2010

Simon Deakin
CBR, University of Cambridge
s.deakin@cbr.cam.ac.uk

Jonas Malmberg
University of Uppsala
lars.jonas.malmberg@gmail.com

Prabirjit Sarkar
Jadavpur University and CBR, University of Cambridge
prabirjit@gmail.com

Abstract

Using longitudinal data on labour law in France, Germany, Japan, Sweden, the UK and the USA for the four decades after 1970, we estimate the impact of labour regulation on unemployment and equality, using labour's share of national income as a proxy for the latter. We employ a dynamic panel data analysis which distinguishes between short-run and long-run effects of legal change. We find that worker-protective labour laws in general have no consistent relationship to unemployment but are positively correlated with equality. Laws relating to working time and employee representation are found to have beneficial impacts on both efficiency and distribution.

1. Introduction

In this paper we present new empirical evidence on the impact of labour laws on equality and unemployment in developed market economies. The issue is one which has preoccupied economists and other social scientists for some time, without any clear consensus emerging. In the 1990s the OECD's *Jobs Study* (OECD, 1994) made the argument for liberalising labour laws as part of a strategy for enhancing labour market flexibility and thereby boosting job creation. During the 2000s similar arguments have been made by the World Bank through its *Doing Business* initiatives (World Bank, various years). Economic theory incorporating equilibrium-based modelling broadly supports these positions, but empirical evidence has been much more equivocal (Skedinger, 2010). A growing number of studies suggest that the supposed negative effects of labour laws may be either very small or simply non-existent (Blanchflower, 2001; Baker et al., 2005), and that such laws could, in fact, have beneficial effects on productivity and innovation (Acharya et al., 2012a, 2012b). In the light of this evidence, some scholars have called for a reappraisal of the assumptions underlying equilibrium-based models of the labour market (Freeman, 2005).

Our contribution to this debate is an empirical one and makes two methodological innovations. Firstly, we make use of a recently constructed dataset, the Centre for Business Research's Labour Regulation Index (LRI), which provides the most detailed and systematic analysis of trends in labour law over time in major industrialised economies. It differs from the most commonly used alternatives (the OECD's Employment Protection Index and the World Bank's Employing Workers Index) in providing a continuous time series based on consistent coding of primary legal sources covering the full range of laws governing individual and collective work relations. Secondly, we analyse the impact of labour law on the economy using econometric techniques which can distinguish between short-run and long-run effects of legal change and take into account dynamic interactions between legal and economic variables. These techniques mark an advance on the more static cross-sectional and time invariant analyses which have mostly been used until now to analyse the economic effects of labour laws.

Our study examines the economic effects of labour laws between 1970 and 2010 in six OECD countries, namely France, Germany, Japan, Sweden, the UK and the USA. These countries span the main legal families (common law and civil law) and the principal 'varieties' of market economy ('liberal market' and 'coordinated market' systems). We carry out a dynamic panel data analysis which shows that, over this time span and for these developed market economies, labour laws across the board have had no clear long-term or short-term effect on unemployment. When we break our analysis down to look more closely at particular kinds of labour law regulation, we find strong evidence that laws providing for working time reductions have the effect of reducing unemployment, and weaker evidence for the same effect on the part of laws protecting worker representation. Then we look at the impact of labour laws on equality, as proxied by labour's share in national income. We find that worker-protective labour laws are associated with a higher labour share and therefore more equality, with laws on working time and employee representation driving this result.

Section 2 below briefly overviews the current state of the art in the debate over the equity-efficiency trade off in labour law. Section 3 introduces our data. Section 4 presents the results of our econometric analysis and section 5 provides an assessment. Section 6 concludes.

2. Equity and efficiency in labour law: is a trade-off inevitable?

In the labour law literature, legal protection of workers is often justified on the grounds that it reduces or mitigates the effects of the inequality of bargaining power which is inherent in the employment relationship. The central aim of labour law has traditionally been thought of as a means 'to ensure a just share of the fruits of progress to all', as the ILO's Philadelphia Declaration put it in 1944 (see Supiot, 2010). The economic critique of labour laws, by contrast, is summed up in the World Bank's argument that 'laws created to protect workers often hurt them' (World Bank, 2008: 19). This is ultimately based on the assumption that the labour market is in a unique equilibrium prior to the law's 'intervention', which must therefore be under stood as upsetting the competitive process and distorting market outcomes. The economic literature on minimum wage laws provides a 'textbook' illustration of this effect: assuming that the market is in a prior state of equilibrium, a mandatory wage

floor artificially raises workers' reservation wage, leading to depressed demand on the part of employers, and hence to reduced employment. Any fairness effects achieved through wage protection for some workers are thereby offset by unemployment for others (Neumark and Wascher, 2008).

However, not all economic arguments go against labour market regulation. Where the employer is a monopsonist or there are asymmetries of information between employers and workers, minimum wage legislation can be expected to have positive effects: under these conditions, it is well understood that a minimum wage floor can raise both wages and employment (Card and Krueger, 1995; Manning, 2005).

Relatedly, the sum total of the norms governing employment – legal, contractual and customary – can be thought of as providing a framework for repeated exchange in a setting characterised by radical uncertainty, in such a way as to improve contractual efficiency. Ex ante, the worker sells to the employer his or her labour power or capacity to work in return for an agreed wage. Ex post, residual income and control rights are vested in the employer. What juridical language refers to as the worker's 'subordination' can be described in economic terminology as contractual incompleteness (Deakin and Wilkinson, 1999). Because the precise terms of the bargain between employer and worker cannot be specified in advance, their formal agreement is supplemented by other norms, many of which have a fairness dimension in the sense of specifying distributions which the parties regard as legitimate. Behavioural studies show that fairness norms help build trust between the parties to the employment contract, thereby reconciling equity and efficiency (Bartling et al., 2012).

That it may be in the enlightened self-interest of employers to offer job security and worker voice in order to improve contractual outcomes is not surprising; this observation is recognised in some well-established economic concepts such as those associated with efficiency wage theory, for example (Bulow and Summers, 1988). It is less obvious that labour law should mandate particular forms of worker protection. It could be argued that if employers would adopt these norms anyway, the law should not impose them; and if they would not, the law would be interfering with autonomous contractual choices. However, this view neglects the presence, in practice, of constraints on the spontaneous emergence of worker-protective rules. Adverse selection effects may deter employers from offering job security to prospective employees (Levine, 1991), while the threat of free-riding by other employers may lead to under-provision of training by firms (Acemoglu and Pischke, 1999). Labour laws setting standards for termination in employment and requiring employers to train are essentially means of overcoming collective action problems associated with the inability of employers to coordinate on efficient rules. Laws of this kind have have often had the support of employer groups and have been legislated for by political parties with a broadly pro-employer leaning (Barry et al., 2006).

A further efficiency-related objection to labour law is that mandatory legal rules may not be well suited to some contexts. However, not all labour laws are straightforward impositions in this sense. The clarity and precision of minimum wage laws setting specified basic rates of pay is the exception, not the rule. Many labour laws set open-ended standards which give expression to fairness norms. Laws governing 'unfair

dismissal' or prescribing a right to 'equal treatment' between different groups of workers have this characteristic. Labour laws also tend to set standards which are as much procedural as substantive in nature. For example, laws governing forms of worker representation in the enterprise or at workplace level establish a framework for social dialogue, and rarely specify particular distributive outcomes.

In general, then, labour law rules can be understood in Coasean terms as transaction-cost reducing devices which expand the scope for contractual cooperation and thereby increase gains from trade (Deakin and Wilkinson, 1999). The possibility of an alignment between efficiency and fairness in the operation of labour law rules should not be taken to imply that worker protection is always and everywhere efficient. Labour law rules are often an incomplete match for specific market imperfections such as monopsony or adverse selection (Kaufman, 2009). For some, this implies that legal abstention is to be preferred to active regulatory intervention (Bertola, 2009). While this perspective has some validity, it must also be borne in mind that labour law rules do not operate in a vacuum. Even if there were no worker-protective rules, the employment relationship would be subject to legal regulation through rules of contract and property law which structure the basic exchange, providing the employer with the legal authority to coordinate production and with residual property rights over the enterprise and the fruits of its activities (Deakin and Wilkinson, 2005). The idea that labour law should not 'intervene' in the employment relationship to protect the rights of workers needs to take into account the 'interventions' of private law in favour of the employer.

An empirically-grounded model of labour law also needs to move away from the notion that worker-protective legal rules operate on a pre-existing, uniquely efficient equilibrium. At a micro-level, the employment relationship is shaped by path-dependent norms which, when expressed at the macro-level of the market as a whole, influence distributive outcomes as well as the efficiency of resource allocations. When labour laws are modified through judicial decision or statutory action, the effect is akin to one of selection among a range of possible equilibria, each of them representing a particular conjunction of equity and efficiency outcomes. Some of these equilibria may involve equity gains being made at the expense of efficiency (trade-offs) while others may give rise to resource allocations which are both more efficient and more fair than feasible alternatives (complements).

The empirical literature gives a sense of the conjunctions (trade-offs and complements) between equity and efficiency which may arise from the operation of labour laws. Legislation mandating working time reductions is generally associated with productivity improvements, as labour productivity tends to diminish with longer working hours, but the resulting efficiency gains do not always translate into superior job creation; they may instead lead to higher unemployment as firms maintain existing levels of production with reduced labour inputs (White, 1981; Golden, 2011). Employment protection laws may raise hiring and termination costs simultaneously, the two effects balancing out in terms of their impact on unemployment levels (Bertola, 2009). Employment protection laws may give firms incentives to train in order to minimise the costs associated with statutory constraints on their ability to dismiss workers in a downturn (Koeniger, 2005), but can also lead to the displacement of excluded workers into a secondary sector of more casual employment

(Saint Paul, 1997). Some of these potentially negative effects of employment protection and working time laws can be mitigated in systems with legally-mandated vocational training systems (Acemoglu and Pischke, 1998).

Codetermination or employee involvement laws, which may mandate various types of employee representation at workplace and company level, operate in a similar way to employment protection laws in providing firms and employers with incentives to make complementary investments in firm-specific skills (FitzRoy and Kraft, 2005; Jirjahn et al., 2011). Laws of this kind appear to work best in an environment of stable corporate ownership, the intuition here being that employers' commitments to job security have more credibility in a context where shareholders cannot easily exit the firm and remove assets from it through a merger or takeover (Aoki and Jackson, 2008; Gatti, 2009).

Even in systems with relatively liquid capital markets, empirical studies suggest that worker-protective dismissal laws have the effect of increasing innovation, as measured by patents, citations to patents, numbers of high-tech start-ups and numbers employed in such firms (Acharya et al., 2012a, 2012b). The basic insight here is that legal constraints on the employer's power to dismiss at will reduce the exposure of workers to employer hold-up and makes them more likely to invest their skills and time in developing innovative products and processes, rents from which will be captured by the firm and its shareholders.

There is less ambiguity about the distributional effects of labour laws and related labour market institutions including mechanisms for collective worker representation and wage determination. The evidence that collective bargaining reduces labour pay inequality is 'overwhelming' at least for developed countries (Freeman, 2005). Dispersion of pay is lower in countries with strong sector-level collective bargaining and wage indexation laws, while within systems with decentralised wage determination, pay dispersion is reduced in workplaces with a union presence (Freeman and Schettkat, 2001; Manacorda, 2004).

The conclusion to be drawn from this developing literature is that labour laws can have a number of effects on efficiency, both positive and negative, depending on context. Their implications for distribution are more often positive although also context-dependent. These perspectives point the way to the need for empirical evidence to establish the nature and magnitude of labour laws' effects.

3. Empirical evidence on time trends in labour laws: data from the CBR Labour Regulation Index

Although the literature examining the economic impact of labour laws is large, very little of it uses time series data, even though this is the kind of evidence 'that most empiricists would regard as providing a stronger and more valid test of any claim' than time-invariant data of the kind commonly used in cross-sectional regressions (Freeman, 2005: 14). Part of the reasons is the lack, until recently, of reliable time series on legal and related institutional changes. The dataset most heavily relied on in empirical studies of labour legislation, the OECD's Employment Protection Index ('EPI'), has only a limited longitudinal dimension. Data have been collected at

various points since the EPI's inception in the 1990s (see Grubb and Wells, 1993) but there are gaps in the time series. In any event the EPI only covers employment protection laws, mostly relating to unfair dismissal legislation. Laws on working time and industrial action are not contained in the EPI, and those governing codetermination, employee involvement and collective worker representation are only covered in so far as they relate to collective dismissals and related aspects of employment terminations. The right to strike is not covered at all in the EPI. The index prepared by Botero et al. (2004) does cover these areas of labour law (as well as some aspects of social security laws) but is not longitudinal. The various *Doing Business Report* indices relating to labour law, building on Botero et al. (2004), provide limited longitudinal data, but going back only to the early 2000s.

The Labour Regulation Index (LRI) is one of a number of databases developed at the Centre for Business Research in Cambridge since the mid-2000s which provide longitudinal data on changes in labour and company law. The LRI is based on a 'fine-grained' approach to the coding of primary legal sources which makes it possible to indicate not just the presence or absence of a worker-protective law in a given country, but to estimate magnitudes concerning the degree of protection conferred on workers by a given legal rule. These are represented using graduated scores between 0 (indicating little or no protection of workers) and 1 (indicating high protection of workers). Coding algorithms or protocols are used in an attempt to ensure consistency in the scoring of legal rules, and primary sources are reported in full alongside the scores for particular variables (for further details, see Deakin, Lele and Siems, 2007, and, for more general discussion of the 'leximetric' methods used to create these datasets, see Deakin and Sarkar, 2008; Siems and Deakin, 2010). The LRI dataset is publicly available (at http://www.cbr.cam.ac.uk/research/projects/project2-20output.htm).

The LRI contains forty indicators in all, spread across 5 sub-indices, covering, respectively, the regulation of alternative employment contracts (self-employment, part-time work, fixed-term employment and temporary agency work), working time (daily and weekly working time limits and rules governing overtime and nightwork), dismissal (procedural and substantive rules on termination of employment), employee representation (rules on collective bargaining, the closed shop and codetermination) and the industrial action (the extent of legal support for the right to strike, including rules on secondary and political strikes).

In this paper we report findings from data coding exercises covering six countries (France, Germany, Sweden, Japan, the UK and USA) for the period from the early 1970s to more or less the present day. France, Germany, the US and USA are among the five countries initially coded up to 2006 (see Deakin et al., 2007). Japan and Sweden have been added to the dataset and their coding covers the period 1970-2010.

Figures 1-6 present data on labour laws in these six countries over the four decades from 1970. Scores are represented as five-year averages in order to illustrate general trends over time. Figure 1 represents the trend in labour laws as a whole (that is, covering each of the five sub-indices). The time trend is represented in terms of five-year moving averages. As Figure 1 makes clear, the individual country experiences vary greatly. Labour law is much more worker-protective in France and Sweden than

in the United States, for example. There is also considerable variation over time, particularly in the UK and Sweden. In the USA and Japan, on the other hand, labour law has changed very little over the period covered by the dataset.
Figures 2-6 break down the aggregate scores by sub-index, with the data again presented in five-year averages. From this it can be seen that the composition of the different elements of labour law systems differs across the different countries (the dataset, available on line (above), has full details of the relevant laws and explanations of the coding). France has particularly strong working time protections and in the area of collective labour law places greater emphasis on the right to strike than on employee representation. Both Germany and Japan, by contrast, emphasise worker protection in the area of employee representation over the protection of the right to strike. Germany's high scores on the employee representation sub-index are a function of its support for multi-employer collective bargaining and codetermination at enterprise and workplace level. In Japan, strong protections in the country's constitution for both collective bargaining and the right to strike are reflected in a high level of legal support for collective bargaining and worker representation at company level and in the workplace.

user 2.1.14 13:58
Gelöscht:

These three countries also have different approaches to the regulation of alternative employment contracts. Japan has a lower score for protection of agency workers and fixed-term employees than the other countries, reflecting the absence of a right to equal treatment for these groups and the flexibility employers have in respect of the dismissal of fixed-term employees. At the opposite extreme, French labour law adopted the principle of equal treatment for alternative employment forms in the early 1980s, prior to the adoption of EU-wide standards on this issue, and continues to have more protective rules on this issue than comparable developed countries. In Germany, the 'Hartz' reforms of the mid-2000s, which were intended to introduce greater flexibility into the hiring of workers in alternative employment forms, had their greatest impact in areas of social security law and tax law, rather than in labour law. The labour changes made by 'Hartz IV' relate to the rules governing temporary agency work. Although these reforms allowed employers more leeway in employing temporary agency workers, they were offset by the introduction of a legal requirement of equal treatment in respect of the wages and conditions of employment of agency workers and permanent workers in the same establishment.

In Sweden and the UK, labour law systems have seen greater change over the period of the study. Swedish labour law was extensively reformed during the 1970s with the aim of strengthening the position of employees in the workplace. Although this legislation has remained politically controversial, its basic content has remained intact. Employers' access to alternative forms of employment was, significantly liberalised through successive changes since the 1990s, but since the Swedish accession to the EU in 1995, a series of amendments of labour legislation has been adopted in order to implement EU directives on the issue of discrimination against workers in part-time, fixed-term and agency work.

In the United Kingdom, as in Sweden, the 1970s were a period of increasing regulation, in particular in the area of employment protection legislation. This body of law largely survived intact the reforms of the 1980s, but in other respects, particularly in relation to working time, worker representation and the right to strike, the 1980s

was a period of rapid and far-reaching deregulation under Conservative-led governments. From the mid-1990s, at first under the growing influence of European Union law and then following the election of a Labour government in 1997, the tide of regulation turned again, although there was no return to the extensive right to strike of the 1970s; increases in worker protection mostly occurred in the areas of alternative employment contracts as the UK, in a manner similar to Sweden, implemented EU directives on the right to equal treatment of part-time and fixed-term contract workers, and in the area of working time, where the UK implemented most aspects of the EU Working Time Directive while taking advantage of an opt-out for the 48-hour limit on weekly working time.

In respect of labour law, the United States is as an outlier among developed countries. There is no constitutional protection for worker representation or the right to strike, and its collective labour laws offer virtually no scope for employee involvement along the lines of codetermination laws. Individual employment law remains dominated by the principle of employment at will, according to which the employer can terminate the employment relationship without the need to show good cause or compliance with due process, although the passage of federal legislation governing notice periods and severance pay in the event of economic dismissals in the late 1980s was a small but significant change. The US has working time protections dating from federal legislation of the 1930s which are minimal by comparison to those in the other countries.

5. Econometric analysis of the impact of labour laws on unemployment and equality

In this section we present the results of an econometric analysis of the effects of labour law on the unemployment rate and the share of wages in domestic output (the 'labour share').

Figure 7 reports data on the unemployment rate in the six countries of our study, expressed as five-yearly averages. Unemployment rose steadily in France, Germany and Sweden throughout the period from the early 1970s up to the first quinqennium of the 2000s. By contrast, the USA and UK show a declining trend from the mid-1980s up to the second quinqennium of the current century (2005-10) the latter part of which was marked by the sub-prime loan crisis and credit crunch which began in these two countries.

Figure 8 presents data on the labour share, that is, the share of wages in domestic output (GDP). Changes in the labour share over time are a good indicator of equality as they indicate the extent to which wages keep pace (or not) with increases in national wealth, although it should be noted that this measure does not capture earnings inequalities between different groups in the labour force. The labour share fell steadily from over 70% to below 60% in four of the countries, France, Sweden, the UK and USA, from the early 1970s onwards. In Germany it was largely stable until 2000 after which it began a slow decline. Japan had the lowest labour share (around 55%) but also experienced the least fluctuation.

Our econometric method involves regressing the scores in the LRI against measures of unemployment and the labour share for the six countries. We pool the times-series data from six countries to form a panel. We control for the level of economic activity in the countries concerned by including the log of GDP, expressed in real terms (purchasing power parity dollar values), in the regression equation.

The time dimension of our data makes it possible to estimate both short-run and long-run impacts of labour laws. In principle, new labour laws could induce short-run changes to both employment and distribution, the effects of which are then absorbed as firms and workers adjust their behaviour to a new legal environment. It is possible that the law's effects would be akin to a temporary 'shock' which has no lasting effects. If this is so we would expect to see no long term impacts emerging from the regression analysis. Alternatively, legal changes could bring about more fundamental changes in the economy's equilibrium path, inducing a lasting rise or fall in unemployment or equality as the case might be. This would appear in the regression analysis as a long-term impact.

We use the dynamic panel data methodology recommended by Pesaran and Shin (1999) for panels with a sizable dimension (here, four decades of data). They show that some of the most widely used procedures for estimation of panel data models, such as fixed effects, instrumental variables and generalised method of moments (GMM) analyses, 'can produce inconsistent, and potentially very misleading estimates of the average values of the parameters in dynamic panel data models unless the slope coefficients are in fact identical' (Pesaran,Shin and Smith, 1999: 622). Their recommended procedure involves using a vector error correction methodology which can take into account likely country-level differences.

We start by postulating a long-run relationship involving the dependent or outcome variable X (the unemployment rate or labour share), the control variable Y (GDP in natural log) and the independent or causal variable Z (labour regulation as measured by the LRI) as follows:

(1) $X_{it} = \psi_i Y_{it} + \pi_i Z_{it} + \eta_{it}$

where i (=1,2,3,4,5,6) stands for countries, t (=1,2,…) stands for time-periods (years), ψ_i and π_i are the long-run parameters, and η_{it} is the error term.

We are interested to know whether there exist long-term and short-term effects of Z (labour protection) along with Y (GDP measuring economic activities) on X (unemployment rate or labour share) and whether there exists a stable adjustment path from the short-term relationship (if any) to the long-run relationship.

Following Pesaran, Shin and Smith (1999), our panel data analysis is based on the following error correction representation:

(2) $X_{it} = \theta_i (\eta_{it-1}) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta X_{i,t-j} + \sum_{k=0}^{q-1} \psi_{ik} \Delta Y_{i,t-k} + \sum_{l=0}^{r-1} \pi_{il} \Delta z_{i,t-l} + \mu_i + \phi_{it}$

where Δ is the difference operator, θ_i is the country-specific error-correcting speed of adjustment term, λ_{ij}, ψ_{ik} and π_{ij} are the coefficients of the lagged variables, μ_i is the country-specific effect and ϕ_{it} is the disturbances term. The existence of a meaningful long-run relationship with a stable adjustment dynamic requires $\theta_i < 0$.

Within this general structure, we can have three alternative models. At one extreme, we have a dynamic fixed effect estimators (DFE) model, in which intercepts are allowed to vary across the countries but all other parameters and error variances are constrained to be the same. At the other extreme, we can estimate separate equations for each country and calculate the mean of the estimates to get a glimpse of the overall picture. This is a mean group estimator (MG) model. Pesaran and Smith (1995) showed that the MG model can give consistent estimates of the averages of parameters in a dynamic panel data analysis. The intermediate alternative is a pooled mean group (PMG) estimator, suggested by Pesaran, Shin and Smith (1999). It allows intercepts, short-run coefficients and error variances to differ freely across the countries but the long run coefficients are constrained to be the same; that means that $\psi_i = \psi$ and $\pi_i = \pi$ for all i in equation (1), while θ_i, λ_{ij} etc of equation (2) may differ from country to country.

Using the STATA-based software developed by Blackburne and Frank (2007) we estimate each of the three alternative models, MG, PMG and DFE. We use the Lag Exclusion Wald Test for each variable separately to determine the lag structure of the regression (that is, the assumed delay in the impact of the independent or causal variable). We use the Hausman test to select the appropriate model, comparing two at a time (PMG vs. MG, MG vs. DFE, and so on). This tests for the null hypothesis, namely that the difference in the estimated coefficients is not systematic. If the null hypothesis is accepted, implying no systematic difference between the two estimates, the choice of the appropriate model is based on the efficiency property of the estimated coefficient. If the null hypothesis is rejected, implying systematic difference between the two estimates, the choice of the appropriate model is based on the consistency property of the estimated coefficients.

Considering firstly the impact of labour laws in general (LABALL) on unemployment, we observe neither a long-term nor a short-term relationship between the overall scores in the LRI and level of unemployment. This is the case for each of the three models. When we break the LRI down into its sub-indices, the finding of no relationship between legal regulation and unemployment holds for three of them (alternative employment contracts (ALTCON), dismissal protection (DISMISS), and the law governing industrial action (INDACT).

We do however observe effects for the other two sub-indices. The working time indicator (WORKTIME) is negatively correlated with the unemployment over the long run for two of the three models, the DFE and PMG models. None of the three models shows a short-term effect. The adjustment process from short-run to long-run effects is stable in each case. The Hausman tests select the DFE model as the most appropriate, lending further support to this result.

In the case of the employee representation indicator (EMPREP), we observe a negative relationship with unemployment over both the long and short run in the PMG model. The DFE model chosen by the Hausman test does not indicate a statistically significant relationship although the negative sign is the same as in the PMG model.

We therefore have evidence to suggest that worker-protective labour laws, in general, are not related to unemployment levels after controlling for the overall level of economic activity in the economy as measured by GDP. When we take a closer look at the effects of particular laws, protective laws in the areas of working time and (less clearly) employee representation are seen to be associated with reduced unemployment, after controlling for GDP.

Turning now to the relationship between labour law and distribution, we observe a positive relationship between the overall score for labour law and the share of labour in national income according to the PMG model, which is the one selected by the Hausman test in this regression. We also see a positive correlation between labour law and the labour share over the short run in the case of the alternative employment contracts, working time and employee representation sub-indices, and over the long run in the case of the working time and employee representation sub-indices. The models reporting the long-run effects (the DFE model for working time and the PMG model for employee representation) are identified as the most appropriate by the Hausman test. Again, these results are arrived at after controlling for country-level GDP.

6. Assessment

Our panel data analysis suggests that there is no consistent relationship, either negative or positive, between labour laws in general and unemployment in developed countries. Some types of labour regulation may have the effect of reducing unemployment. In the case of working time regulation, this effect could be the combined result of work-sharing arrangements and improved labour productivity. In the case of worker representation laws, the impact could be derived from the positive effects of these laws on employee motivation and morale.

There is some evidence, then, that labour laws are compatible with improved efficiency at the level of the firm and with enhanced economic performance at national level. This is consistent with some aspects of the literature on labour regulation, outlined above (section 2). Our other finding is that labour laws in general, and working time laws and employee representation laws in particular, have positive distributional effects. In this respect our findings tally with the consensus from other empirical studies (see section 2 above).

The absence of clear findings on two of our sub-indices, those relating to employment protection and strike law, suggests that further research is needed to disentangle their possible effects. As others have pointed out (see Bertola, 2009), employment protection laws could have offsetting effects on unemployment, limiting hiring but also making dismissals more costly. The absence of short-run and long-run effects in

our results may be due to these multiple influences. In relation to strike law, our results suggesting the absence of economic effects of either a positive or a negative kind are perhaps not surprising when the aims of this type of regulation, which is principally concerned with issues of freedom of association and human rights than with inducing particular economic outcomes, is borne in mind.

There are limitations to the approach we have taken and this need to be borne in mind when assessing our findings. The labour regulation data that we have presented are based on a process which codes for the formal law, that is, 'law in the books'. There may well be a gap between the formal content of a legal rule and its application in practice. However, in the case of the developed countries in our sample, we would not expect this gap to be very substantial. They all have well functioning legal systems and transmission mechanisms allowing for the translation of legal norms into practice at the level of the firm, through legal advice and human resource management functions inside firms. Thus in this case, we think that the measures of the formal law that we have provided are a good proxy for what we want to study, the regulatory impact of the law on the behaviour of labour market actors.

A further limitation is that we have focused here on macro-level impacts (changes to the laws of countries) and outcomes (national-level data on employment and distribution). National laws may be mediated or supplemented in practice by regulations operated at firm or sector level, and their effects can be studied using firm-level data. These avenues can be followed up in future research. Additional analysis is also needed to identify more precisely the channels through which laws impact on efficiency at the level of the firm. As suggested above, laws can alter the environment for contracting between labour and capital in various ways: they can affect firms' hiring decisions, their labour input decisions more generally, and their approach to human resource management. They can also affect worker morale and effort. These issues should be explored in future through the use of firm-level data in econometric analysis, and in firm-level case studies, each of which may fill out our analysis using macro-level data.

7. Conclusion

When it comes to evaluating the economic effects of law, economists and labour lawyers confront similar problems. Both disciplines assume that labour laws have an impact on the behaviour of employers and employees. While economists apply theoretically developed models using assumptions about agents' preferences and choices, legal scholars rarely express the assumptions made about how legal rules affect behaviour in the labour market. The assumptions applied are usually based on intuitive or common-sense assessments, often supported by anecdotal observations of how the rules are applied in different situation or concrete disputes. On the other hand, labour law scholarship can supply a more nuanced description of the content of law and its interaction with other institutions than is often found in economic research. Common to both fields of research is difficulty in producing empirical evidence to support or refute hypotheses concerning the economic effects of labour laws.

In this paper we have sought to bridge the gap between economic and legal analysis, by providing data on labour law systems in a form which captures some of the complexity of this type of regulation and its variance over time, while also permitting quantitative empirical testing of claims concerning its effects. Our empirical analysis of six OECD countries suggests that labour laws in general do not lead to higher unemployment, and that some types of regulations, those relating to working time and employee representation, may have the effect of reducing it. We also find that labour laws in general, and laws relating to working time and employee representation in particular, are correlated with positive distributional effects, as measured by labour's share of national income. Our study suggests that hypotheses on the economic effects of labour must incorporate the possibility of an alignment between efficiency and fairness in the operation of labour law rules.

References

Acemoglu, D. and Pischke, J. (1999) 'Beyond Becker: training in imperfect labour markets' *Economic Journal*, 109: F112-F142.

Acharya, V., Baghai-Wadji, R. and Subramanian, K. (2012a). 'Labor laws and innovation' NBER Working Paper No. 16484, updated version 2012 available at: http://pages.stern.nyu.edu/~sternfin/vacharya/public_html/Labor%20Laws%20and%20Innovation_27June2012.pdf.

Acharya, V., Baghai-Wadji, R. and Subramanian, K. (2012b). 'Wrongful discharge laws and innovation' working paper, NYU-Stern Business School, available at: http://pages.stern.nyu.edu/~sternfin/vacharya/public_html/WDL_Innovation_paper_withnames_30Apr2012.pdf.

Aoki, M. and Jackson, G. (2008) 'Understanding an emergent diversity of corporate governance and organisational architecture: an essentiality-based analysis' *Industrial and Corporate Change*, 17: 1-27.

Baccaro, L. and Rei, D. (2007) 'Institutional determinants of unemployment in OECD countries: does the deregulatory view hold water?' *International Organization*, 61: 527-69.

Baker, D., Glyn, A., Howell, D. and Schmitt, J. (2005). 'Labour market institutions and unemployment: a critical assessment of cross-country evidence', in D. Howell (ed.) *Fighting Unemployment: The Limits of Free Market Orthodoxy* (Oxford: OUP).

Barry, M., Michelotti, M. and Nyland, C. (2006) 'Protectionism, common advocacy and employer interests: business contribution to labour market regulation in Australia', in C. Arup, P. Gahan, J. Howe, R. Johnstone, R. Mitchell, and A. O'Donnell (eds.) *Labour Law and Labour Market Regulation: Essays on the Construction, Constitution and Regulation of Labour Markets* (Sydney: Federation Press).

Bartling, B., Fehr, E. and Schmidt, K. (2012) 'Use and abuse of authority: a behavioral foundation of the employment relation'. Available at SSRN: http://ssrn.com/abstract=2175701 or http://dx.doi.org/10.2139/ssrn.2175701.

Bertola, G. (2009). 'Labour market regulation: motives, measures, effects' Conditions of Employment and Work Research Series No. 21 (Geneva: ILO).

Blackburne, E. and Frank, M. (2007) 'Estimation of nonstationary heterogeneous panels' *Stata Journal*, 7: 197-208.

Blanchflower, D. (2001) 'Unemployment, well-being, and wage curves in eastern and central Europe' *Journal of the Japanese and International Economies*, 15: 364-402.

Botero J., Djankov S., La Porta R., Lopez-de-Silanes F. and Shleifer A. (2004) 'The regulation of labor' *Quarterly Journal of Economics*, 119: 1340-82.

Bulow, J. and Summers, L. (1986) 'A theory of dual labour markets with application to industrial policy, discrimination and Keynesian unemployment' *Journal of Labor Economics*, 4: 376-414.

Card, D. and Krueger, B. (1995). *Myth and Measurement – the New Economics of the Minimum Wage*, Princeton: Princeton University Press.

Deakin, S., Lele, P., Siems, M. (2007) 'The evolution of labour law: calibrating and comparing regulatory regimes', *International Labour Review*, 146: 133-162. Deakin,

Deakin, S. and Sarkar, P. (2008) 'Assessing the long-run economic impact of labour law systems: a theoretical reappraisal and analysis of new time series data' *Industrial Relations Journal*, 39: 453-487.

Deakin, S. and Wilkinson, F. (1999) 'Labour law and economic theory: a reappraisal', in G. De Geest, J. Siegers and R. van den Bergh (eds.) *Law and Economics and the Labour Market* (Aldershot: Elgar).

Deakin, S. and Wilkinson, F. (2005) *The Law of the Labour Market: Industrialization, Employment, and Legal Evolution* (Oxford: Oxford University Press).

FitzRoy, F. and Kraft, K. (2005) 'Co-determination, efficiency and productivity' *British Journal of Industrial Relations,* 43 (2): 233-247.

Freeman, R. (2005) 'Labor market institutions without blinders: the debate over flexibility and labour market performance' NBER Working Paper No. 11286.

Freeman, R. and Schettkat, R. (2001) 'Skill compression, wage differentials and employment: Germany versus the US' *Oxford Economic Papers*, 582-603.

Gatti, D. (2009) 'Macroeconomic effects of ownership structure in OECD countries' *Industrial and Corporate Change*, 18: 901-28.

Golden, L. (2011) 'The effects of working time on productivity and firm performance: a research synthesis paper' Conditions of Work and Employment Series No. 33 (Geneva: ILO).

Grubb, D. and Wells, W. (1993) 'Employment regulation and patterns of work in EC countries' *OECD Economic Studies*, 21: 7-58.

Jirjahn, U., Mohrenweiser, J. and Backes-Gellner, U. (2011) 'Works councils and learning: on the dynamic dimension of codetermination' *Kyklos*, 64: 427-447.

Kaufman, B. (2009) 'Labor law and employment regulation: institutional and neoclassical perspectives' in K. Dau Schmidt, S. Harris and O. Lobel (eds.) *Labor and Employment Law and Economics* Cheltenham: Edward Elgar, 3-58.

Koeniger, W. (2005) 'Dismissal costs and innovation' *Economics Letters*, 88: 79-85.

Levine, D. (1991) 'Just-cause employment policies in the presence of worker adverse selection' *Journal of Labor Economics*, 9: 294-305.

Manacorda, M. (2004) 'Can the Scala Mobile explain the fall and rise of earnings inequality in Italy? A semiparametric analysis, 1977-1993' *Journal of Labor Economics*, 22: 585-613.

Manning, A. (2003), *Monopsony in Motion: Imperfect Competition in Labor Markets*, Princeton: Princeton University Press.

Neumark, D. and Wascher, W. (2008) *Minimum Wages*, Cambridge, MA: MIT Press.

OECD (1994) *OECD Jobs Study, Evidence and Explanations, Part I: Labour Market Trends and Underlying Forces of Change* (Paris: Organization for Economic Cooperation and Development).

Pesaran, M. H., Shin, Y., and Smith, R. (1999) 'Pooled mean group estimation of dynamic heterogeneous panels' *Journal of the American Statistical Association*, 94: 621-634.

Pesaran, M. H. and Smith, R. (1995) 'Estimating long-run relationships from dynamic heterogeneous panels' *Journal of Econometrics*, 68: 79-113.

Saint-Paul, G. (1997) 'Is labour rigidity harming Europe's competitiveness? The effect of job protection on the pattern of trade and welfare' *European Economic Review*, 41: 499-506.

Siems, M. and Deakin, S. (2010) 'Comparative law and finance: past, present and future research' *Journal of Institutional and Theoretical Economics*, 166: 120-140.

Skedinger, P. (2010) *Employment Protection Legislation – Evolution, Effects, Winners and Losers* (Cheltenham: Edward Elgar).

Supiot, A. (2010) *L'esprit de Philadelphie: la justice sociale face au marché total* (Paris: Seuil).

White, M. (1981) *Case Studies of Shorter Working Time* (London: Policy Studies Institute).

World Bank (2008) *Doing Business in 2008* (Washington, DC: World Bank).

Figures

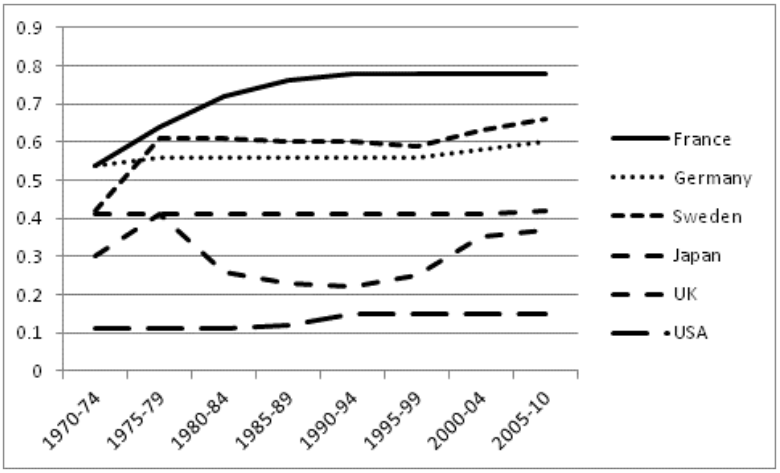

Figure 1. Labour laws (all) in six OECD countries, 1970-2010

Source: CBR Labour Regulation Index (LRI): http://www.cbr.cam.ac.uk/research/projects/project2-20output.htm

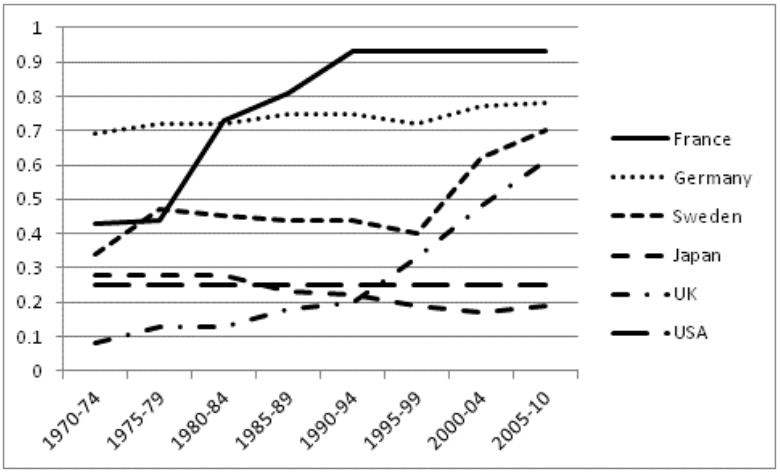

Figure 2. Alternative employment contracts in six OECD countries, 1970-2010

Source: see Figure 1.

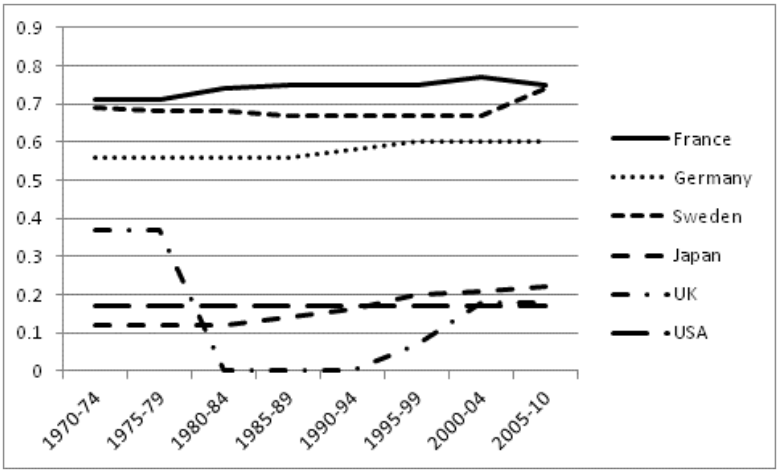

Figure 3. Working time laws in six OECD countries, 1970-2010

Source: see Figure 1.

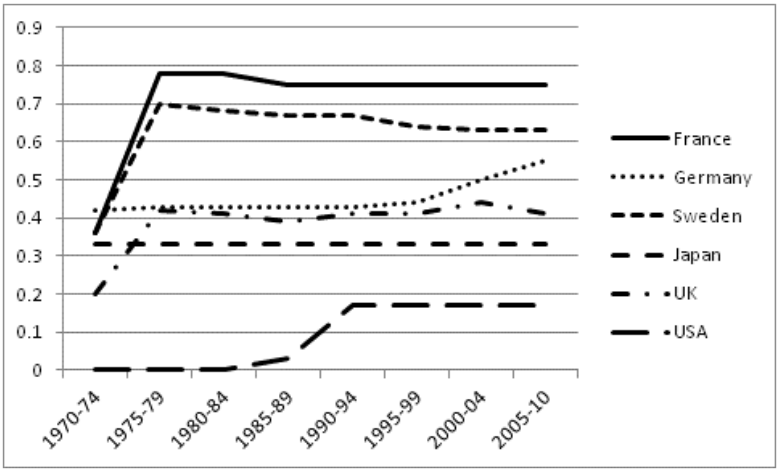

Figure 4. Dismissal laws in six OECD countries, 1970-2010

Source: see Figure 1.

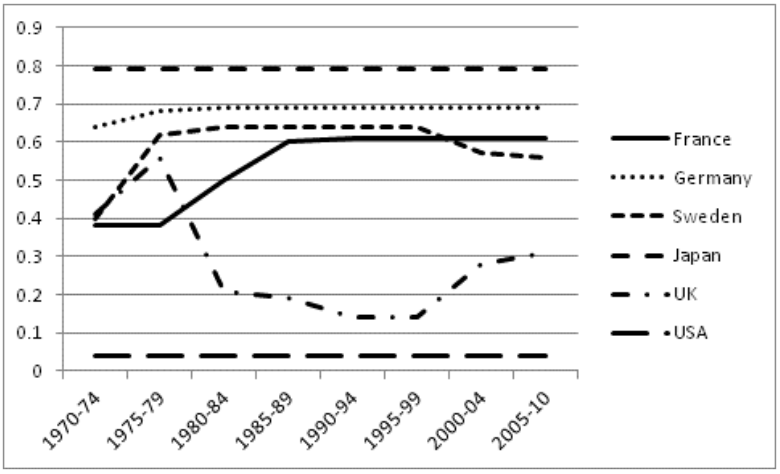

Figure 5. Employee representation laws in six OECD countries, 1970-2010

Source: see Figure 1.

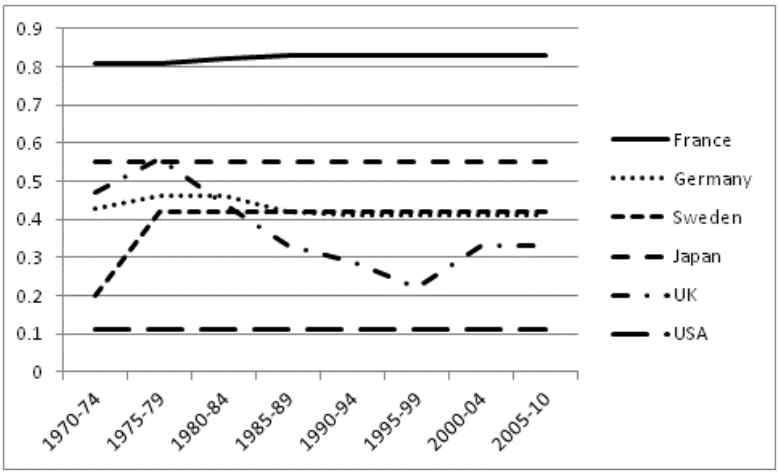

Figure 6. Industrial action laws in six OECD countries, 1970-2010

Source: see Figure 1.

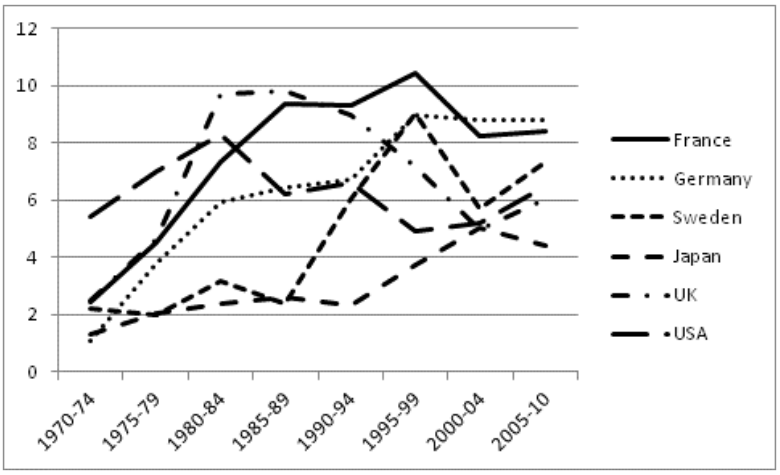

Figure 7. Unemployment in six OECD countries, 1970-2010

Source: ILO, LABOURSTA database.

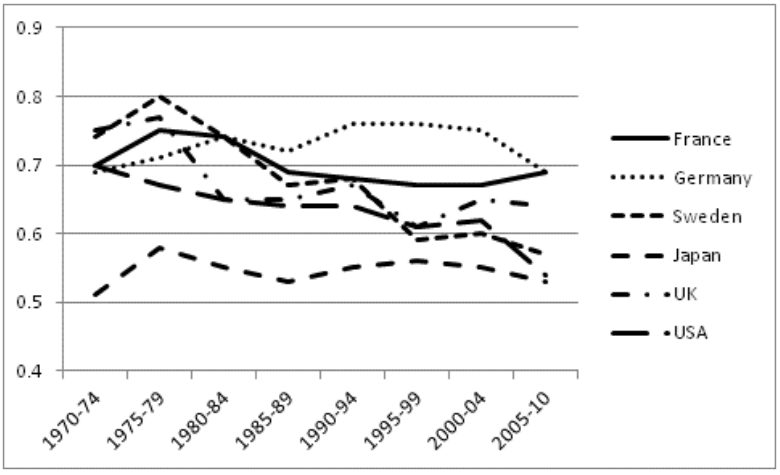

Figure 8. Labour share in six OECD countries, 1970-2010

Source: OECD, Employment Outlook, various years.

Tables

Table 1

Table 1a. Short-run and long-run effects of labour laws (all): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-3.124***	-1.293*	-3.654***
LABALL	-0.537	24.694	1.508
Short-term relationship			
Adjustment Coefficient θ	-0.159***	-0.273***	-0.122***
$\Delta UNEMP_{t-1}$	0.46***	0.455***	0.51***
$\Delta UNEMP_{t-2}$	-0.115***	-0.009	-0.161***
ΔGDP_t	-17.894***	-19.296***	-15.28***
$\Delta LABALL_t$	-4.76	9.391	-2.673
μ	-5.905***	0.329	4.77***
Chosen model		MG	

Table 1b. Short-run and long-run effects of labour laws (alternative employment contracts): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-3.304***	2.063***	3.869***
ALTCON	0.421	9.9089	2.303
Short-term relationship			
Adjustment Coefficient θ	0.156***	-0.217***	-0.121***
$\Delta UNEMP_{t-1}$	0.453***	0.442***	0.514***
$\Delta UNEMP_{t-2}$	-0.121***	-0.043	-0.154**
ΔGDP_t	-17.841***	-18.918***	-15.594***
$\Delta ALTCON_t$	-0.382	-0.617	-0.207
μ	5.939***	3.399	4.893***
Chosen model		MG	

Table 1c. Short-run and long-run effects of labour laws (working time): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-2.609***	-1.212	-2.997***
WORKTIME	-15.742***	-16.231	-8.979***
Short-term relationship			
Adjustment Coefficient θ	-0.197***	-0.275***	-0.132***
$\Delta UNEMP_{t-1}$	0.449***	0.433***	0.518***
$\Delta UNEMP_{t-2}$	-0.095**	-0.18	-0.145**
ΔGDP_t	-16.766**	-17.288***	-15.649***
$\Delta WORKTIME_t$	3.319	-0.337	-1.525
μ	7.212***	5.38	5.069***
Chosen model	PMG		

Table 1d. Short-run and long-run effects of labour laws (dismissal): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-3.377***	-1.887	-3.966***
DISMISS	1.696	9.075	3.348
Short-term relationship			
Adjustment Coefficient θ	-0.159***	-0.258***	-0.119***
$\Delta UNEMP_{t-1}$	0.445***	0.445***	0.508***
$\Delta UNEMP_{t-2}$	-0.117***	-0.27	-0.16***
ΔGDP_t	-18.154***	-19.212***	-15.556***
$\Delta DISMISS_t$	-0.166	-0.834	-0.733
μ	6.607***	3.142	4.853***
Chosen model			DFE

Table 1e. Short-run and long-run effects of labour laws (employee representation): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-3.149***	-1.485	-3.577
EMPREP	-9.517*	-6.766	-3.087
Short-term relationship			
Adjustment Coefficient θ	-0.166***	-0.229***	-0.123***
$\Delta UNEMP_{t-1}$	0.459***	0.457***	0.516***
$\Delta UNEMP_{t-2}$	-0.101***	-0.034	-0.152**
ΔGDP_{t}	-17/649***	-18.527***	-15.538***
$\Delta EMPREP_{t}$	-3.943	-2.151	-1.208
μ	6.606***	4.355***	5.024***
Chosen model			DFE

Table 1f. Short-run and long-run effects of labour laws (industrial action): dependent variable unemployment

	PMG model	MG model	DFE model
Independent variable			
Long-run relationship			
GDP	-0.2.559***	1.31	-2.679**
INDACT	15.695	-4.236	8.121
Short-term relationship			
Adjustment Coefficient θ	-0.139***	0.218***	-0.108***
$\Delta UNEMP_{t-1}$	0.494***	0.486***	0.574***
$\Delta UNEMP_{t-2}$	-0.117***	-0.54	-0.177***
ΔGDP_{t}	-19.485***	-19.205***	-16.635***
ΔGDP_{t-1}	5.398	2.161	5.575***
$\Delta INDACT_{t}$	-4.93	-3.897	-1.796
μ	3.595***	3.228	3.019***
Chosen model			DFE

Notes to Table 1:

Variables are as follows: GDP = gross domestic product; LABALL = labour laws (all); ALTCON = laws on alternative employment contracts; WORKTIME = laws on working time; DISMISS = laws on dismissal; EMPREP = laws on employee representation; INDACT = laws on industrial action; UNEMP = unemployment. For sources of data, see Notes to Figures 1, 7 and 8 above.

Models are as follows: PMG = pooled mean group regression; MG = mean group regression; DFE = dynamic fixed effect regression.

*** Significant at the 1% level
** Significant at the 5% level
* Significant at the 10% level

Table 2

Table 2a. Short-run and long-run effects of labour laws (all): dependent variable labour share

	PMG model	MG model	DFE model
Independent Variable			
Long-run relationship			
GDP	0.0686***	-0.47	-0.92***
LABALL	0.267**	0.-448	0.146
Short-term relationship			
Adjustment Coefficient θ	0.282***	0.409***	-0.175***
$\Delta LABSHARE_{t-1}$	0.319***	0.307***	0.257***
ΔGDP_t	-0.13***	-0.212***	-0.201***
$\Delta LABALL_t$	0.121	0.153	0.128***
μ	-0.303***	-0.503***	0.226***
Chosen Model	PMG		

Table 2b. Short-run and long-run effects of labour laws (alternative employment contracts): dependent variable labour share

	PMG model	MG model	DFE model
Independent Variable			
Long-run relationship			
GDP	0.56***	-0.067**	-0.084***
ALTCON	-0.59	-0.64	-0.63
Short-term relationship			
Adjustment Coefficient θ	-0.267***	-0.353***	-0.173***
$\Delta LABSHARE_{t-1}$	0.307***	-0.303***	0.262***
ΔGDP_t	-0.124***	-0.222***	-0.192***
$\Delta ALTCON_t$	0.784**	0/059***	0.063***
μ	0.296***	0.434***	0.231***
Chosen model			DFE

Table 2c. Short-run and long-run effects of labour laws (working time): dependent variable labour share

	PMG model	MG model	DFE model
Independent Variable			
Long-run relationship			
GDP	-0.06***	-0.055***	-0.089***
WORKTIME	0.216***	-0.238	0.215
Short-term relationship			
Adjustment Coefficient θ	-0.304***	-0.369***	-0.188***
$\Delta LABSHARE_{t-1}$	0.319***	-0.369***	-0.188***
ΔGDP_t	-0.16***	-0.218***	-0.196***
$\Delta WORKTIME_t$	0.087	0.181	0.74***
μ	0.321***	0.442***	0.234***
Chosen model			DFE

Table 2d. Short-run and long-run effects of labour laws (dismissal): dependent variable labour share

	PMG model	MG model	DFE model
Independent Variable			
Long-run relationship			
GDP	-0.47***	-0.039***	-0.099***
DISMISS	0.006	0.08	0.168
Short-term relationship			
Adjustment Coefficient θ	-0.463**	-0.619***	-0.189***
$\Delta LABSHARE_{t-1}$	0.413***	0.461***	0.313***
$\Delta LABSHARE_{t-2}$	0.087	0.172	-0.105
$\Delta LABSHARE_{t-3}$	0.105	0.188***	-0.035
ΔGDP_t	-0.101*	-0.137***	-0.195***
$\Delta DISMISS_t$	0.007	0.031	-0.001
μ	0.473**	0.527***	-0.252
Chosen model			DFE

Table 2e. Short-run and long-run effects of labour laws (employee representation): dependent variable labour share

	PMG	MG	DFE
Independent Variable			
Long-run relationship			
GDP	-0.052***	-0.043**	-0.041**
EMPREP	0.185***	0.164	0.103
Short-term relationship			
Adjustment Coefficient θ	-0.293***	-0.371***	-0.155***
$\Delta LABSHARE_{t-1}$	0.349***	0.356***	0.296***
ΔGDP_{t}	-0.234***	0.277***	-0.306***
ΔGDP_{t-1}	0.257***	0.224***	0.366***
$\Delta EMPREP_{t}$	-0.038	-0.044	0.051
μ	0.278	0.342***	0.133***
Chosen model	PMG		

Table 2f. Short-run and long-run effects of labour laws (industrial action): dependent variable labour share

	PMG	MG	DFE
Independent Variable			
Long-run relationship			
GDP	-0.05***	-0.046***	-0.043**
INDACT	0.03	0.164	-0.042
Short-term relationship			
Adjustment Coefficient θ	-0.269***	-0.337***	-0.141***
$\Delta LABSHARE_{t-1}$	0.331***	0.324***	0.291***
ΔGDP_{t}	-0.208***	-0.259***	-0.302***
ΔGDP_{t-1}	0.282***	0.24***	0.364***
$\Delta INDACT_{t}$	0.051	-00.071	-0.006
μ	0.262	0.417***	0.133
Chosen model	PMG		

Notes to Table 2

*** Significant at the 1% level
** Significant at the 5% level
* Significant at the 10% level

Notes to Table 2:

Variables are as follows: GDP = gross domestic product; LABALL = labour laws (all); ALTCON = laws on alternative employment contracts; WORKTIME = laws on working time; DISMISS = laws on dismissal; EMPREP = laws on employee representation; INDACT = laws on industrial action; LABSHARE = labour's share of national income. For sources of data, see Notes to Figures 1, 7 and 8 above.

Models are as follows: PMG = pooled mean group regression; MG = mean group regression; DFE = dynamic fixed effect regression.

*** Significant at the 1% level
** Significant at the 5% level
* Significant at the 10% level