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The Economic Significance of Laws Relating to Employment Protection and Different Forms of Employment: Analysis of a Panel of 117 Countries, 1990-2013

Law Working Paper N° 406/2018
May 2018

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Abstract

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Keywords: labour regulation, employment protection, labour flexibility, employment, unemployment, productivity, labour share, leximetrics, time series analysis, pooled mean group regression

JEL Classifications: C22, C23, K31, O15

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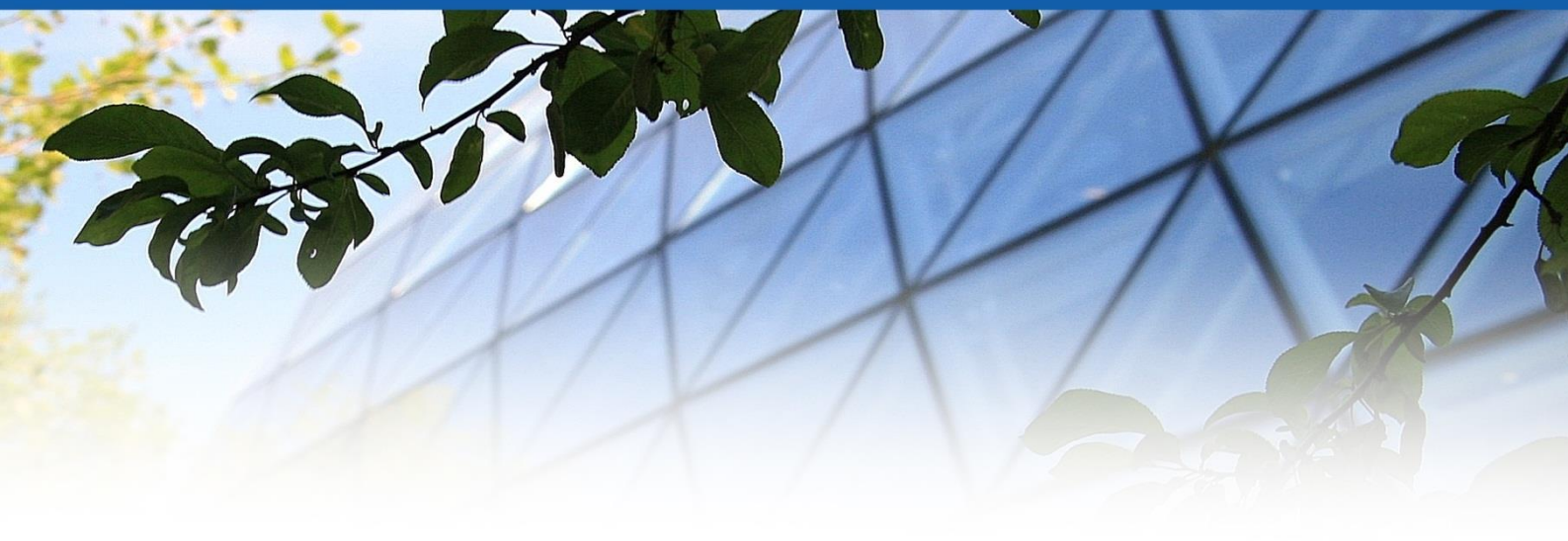
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THE ECONOMIC SIGNIFICANCE OF LAWS RELATING TO EMPLOYMENT PROTECTION AND DIFFERENT FORMS OF EMPLOYMENT: ANALYSIS OF A PANEL OF 117 COUNTRIES, 1990-2013

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Abstract

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Acknowledgements

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1. Introduction

The economic effects of labour regulation continue to be widely debated. For example, the view that worker-protective labour laws have negative economic consequences has influenced the 'structural reforms' initiated since 2008 in response to the sovereign debt crisis in the European Union (Escandre Varniol et al., 2012). However, the European case is in many respects atypical of the way that the debate has been developing. Theory no longer maintains that labour laws necessarily operate to distort market outcomes. In 2015 the World Bank's *Doing Business Report*, in a reversal of its earlier position that 'laws created to protect workers often hurt them' (World Bank, 2008: 19), noted that employment regulations are 'undoubtedly necessary' and 'benefit both workers and firms'; labour laws could have a negative impact on competitiveness and growth not simply where they were 'excessive' but also where they were 'insufficient' (World Bank, 2015: 231).

This shift in perspective reflects a growing theoretical consensus to the effect that labour market institutions are needed to facilitate coordination and allocate risk within the employment relationship. In particular, they provide elements of insurance and income smoothing which cannot be straightforwardly contracted for, considering the presence of information asymmetries and collective action costs. If this view is correct, the net welfare effects of employment regulation may be positive depending on the level of protection implied by the laws concerned. The consequences of labour laws may also depend on how regulations interact with a number of other factors influencing social and economic outcomes at country level. At a theoretical level, the debate has become more complex but also somewhat indeterminate.

The empirical literature has also been evolving without reaching a very clear outcome. In 2013 the World Bank, after reviewing recent studies, suggested that estimated effects of labour regulation 'prove to be relatively modest in most cases' so that 'overall, labour policies and institutions are neither the major obstacle nor the magic bullet for creating good jobs for development in most countries' (World Bank, 2013: 258). This marks a shift from the consensus of a few years ago, which was that the empirical evidence was generally against protective labour laws having beneficial effects (World Bank, 2008), but leaves numerous questions unanswered.

In this paper we present new empirical evidence on the evolution of labour laws and their relationship to changes in employment, unemployment, productivity and inequality, using data from the Labour Regulation Index developed at the Centre for Business Research at Cambridge University (the 'CBR-LRI dataset':

Adams et al., 2017). This dataset provides a unique time series of changes in labour laws across a range of developed and developing countries going back to the early 1970s. Analyses of this dataset have been presented in the past (see Deakin, Lele and Siems, 2007; Deakin and Sarkar, 2008; Deakin, Malmberg and Sarkar, 2014; Deakin, Fenwick and Sarkar, 2014) but only for a few countries. The dataset has now been significantly extended and in this paper we report findings on the relationship between labour laws and economic trends in a panel of over 100 countries for the period from the early 1990s to the present day. Our focus is on the laws relating to the regulation of different forms of employment ('DFE'), including part-time, fixed-term contract and temporary agency work, and on employment protection laws ('EPL') more generally. Section 2 briefly reviews the current state of the art on the theoretical effects of employment protection and related laws, noting its indeterminacy. Section 3 describes the methods used to construct the dataset. Section 4 provides a descriptive account of trends in the data and section 5 sets out the econometric analysis and results. Section 6 concludes.

2. Theory and research questions

The overriding message from the voluminous literature on the economic effects of labour laws is that 'the theoretical effect of firing restrictions on employment levels is ambiguous' (Autor, Donahue and Schwab, 2006: 214). If the labour market is frictionless, the additional protection provided to workers by mandatory legislation should, in principle, be bargained away, for example through a reduction in wages or other employment benefits, so avoiding any inefficiencies (Gruber, 1994). If the labour market is not perfectly competitive (which is a more realistic basis for analysis: Manning, 2003) the imposition of statutory controls could induce distortions or imperfections in the allocation of resources by raising firm's firing (and hence hiring) costs (Lazear 1990). Simply adding to the costs of hiring and firing workers will not necessarily lead to a net decrease in employment as the two effects may cancel each other out (Bertola, 1990), but slowing down labour market transitions may have broader negative effects, including deterring innovation by market entrants concerned about high severance costs in the event of business failure (Griffith and McCartney, 2010), and exaggerating the effects of the economic cycle (Bentolila and Bertola, 1990; Duval, Furceri and Galles, 2017).

On the other hand, if fairness at work is a benefit that workers value but which employers tend to under-provide, for example because of adverse selection effects, dismissal legislation can induce an increase in labour supply and also help shift the employment exchange to a more efficient contractual equilibrium (Summers, 1989; Levine, 1991). This view is consistent with evidence

associating stricter employment protection laws with increases in firm-level innovation, the logic being that workers are more prepared to share knowledge with managers if the firm can make credible commitments of job security (Acharya, Baghai-Wadji and Subramanian, 2014). In the same vein are studies suggesting positive correlations between employment protection legislation, enhanced worker-employer cooperation, and labour productivity (Koeniger, 2005; Zhou, Decker and Kleinknecht, 2011; Bartling, Fehr and Schmidt, 2014).

As the literature on these questions has evolved, attention has increasingly focused on the detail of employment protection laws. While at one time it was thought that part-time, fixed-term and temporary agency work were inherently more flexible as modes of contracting than the 'standard' model of full-time and indeterminate-duration employment and should therefore be encouraged through selective deregulatory reforms (OECD, 1994), a more recent consensus is that having radically different legal regimes for these separate contract forms may introduce new distortions associated with labour market segmentation (Boeri and Garibaldi, 2008; Wöfl and Mora-Sanguinetti, 2011). Another strand to pay close regard to institutional detail is the literature which suggests that the consequences of employment protection laws will vary across countries according to the presence or absence of complementary mechanisms of economic governance in areas such as corporate governance and vocational training (Amable, Demmou and Gatti, 2007).

A related insight is the suggestion that a given employment protection reform will have different economic effects depending on the overall, pre-existing level of protection in a given country. This would imply that employment protection legislation has a non-linear relationship with economic outcome variables such as employment and productivity, as well as with more general indicators of development and growth. In support of this claim, there is evidence that at low levels of regulation, an increase in EPL is associated with a rise in employment; at medium levels, with a 'plateau', signifying little or no impact; and at higher levels, employment declines (Cazes, Khatiwala and Malo, 2012).

In short, economic theory does not currently offer a clear answer to the question of whether the economic effects of employment protection laws are generally harmful or beneficial. Depending on the underlying assumptions of particular models, laws of this kind may be seen as unwarranted interventions, liable to distort otherwise efficient market outcomes, or, alternatively, as necessary correctives to imperfections and barriers to exchange which are inherent in the way the way labour markets operate. A more complete theory of labour market regulation would enable us to distinguish between static and dynamic effects of particular laws, and would also be able to recognise the degree to which labour

laws crystallise and generalise solutions to coordination problems which arise spontaneously through social interactions, and are to that extent endogenous to the market (Deakin and Sarkar, 2008). We will not arrive at a more realistic and comprehensive theory unless we get better empirical estimates of the relationships between variables of interest, and the first step in achieving this is to get better data.

3. The CBR-LRI dataset

A major challenge in assessing the relative strength of labour market regulation empirically is to establish a methodology that can effectively and transparently measure phenomena which are not easily represented in numerical terms (for discussion, see Adams et al., 2017b). The problem does not so obviously arise for some forms of labour market regulation, such as minimum wage laws, where numerical data can be relatively easily obtained. For many aspects of employment protection law, however, and for laws governing related areas of labour market regulation, such as the rights of those employed in different forms of employment including part-time, fixed-term and temporary agency work, an assessment of the relative protective strength of law is necessarily more complex.

Despite the complexity of these issues, the urgency of the need to promote more and better jobs, together with methodological developments in the analysis of cross-country time-series data, have increased interest in the measurement and prediction of the effects of labour market regulation (Cazes and Aleksynska, 2014: 1). Where dismissal law is concerned, the interest can be traced to the emergence and rise to prominence of the OECD's Employment Protection Index (in the 1990s) and the World Bank's Employing Workers Index (in the 2000s).

The Employing Workers Index (EWI) is mostly based on returns to questionnaires distributed to companies and law firms. Respondents are asked to attribute a score measuring the 'rigidity' of the law in their country as it would apply to a hypothetical case of an adult male worker in permanent, industrial employment. The index has been subject to criticism for the subjectivity and vagueness of the questionnaires used to collate the relevant primary data and the partiality of the hypothetical case (Lee et al., 2008). Following a World Bank review, although the underlying data are still collected and reported, the EWI is no longer used to construct the overall *Doing Business* score for any given country (see World Bank, 2015: 231-251).

The OECD's employment protection indicators, although widely used, also have certain methodological limitations regarding their ability to support cross-country time-series analysis. The OECD methodology has changed over time (see OECD, 2013, 2016). Data were initially gathered at five-year intervals, and only more recently has there been annual updating. The coding methodology has also changed, moving from initial reliance on surveys completed by governments, to use of firm-level surveys supplemented by secondary sources. From 2013 there has been increased use of primary sources including collective agreements. New indicators have been added, and the treatment of collective dismissals has changed over time. The scores to particular indicators have been changed at certain points (for an overview and assessment of changes made to the OECD index, see Adams and Deakin, 2015).

Another drawback of the OECD index is the limited range of countries and years covered. In addition to the 38 OECD member states, in 2016 data were provided on a further 39 national systems, mostly middle income countries in Latin America and Asia (OECD, 2016). However, for most of the non-OECD countries data only go back to the early 2010s, and for this group of countries there are missing values for many of the indicators.

One option for researchers trying to arrive at a more complete picture of labour regulation around the world would be to take the OECD indicators as a template for further coding of countries and years. A reason not to follow this approach, however, is that the assumptions underlying the OECD's approach to coding do not entirely reflect current theoretical understandings of the functional effects of labour regulations. The OECD's coding templates assume that a higher level of worker protection inevitably translates into increased costs for employers. Employment protection is treated 'as a cost for employers of adjusting employment levels' (Venn, 2009: 6). While the OECD recognises that 'stricter employment protection may… have positive impacts for firms by encouraging longer working relationships between firms and workers, facilitating industrial stability and the build-up of firm-specific human capital' (ibid.), the possibility that increased protection may reduce employers' contracting costs is not reflected in the OECD's coding template, which instead imputes higher costs to employers in proportion to the assumed 'strictness' of regulation. Thus the OECD index, in its mode of construction, takes as a given the existence of a relationship between regulation and costs which should more properly be treated as an open question or hypothesis to be empirically tested (for further discussion of this point see Deakin, 2018).

The CBR-LRI dataset, by contrast, makes no assumption to the effect that a higher level of regulation results in increased costs or rigidities for firms. The index seeks to capture the de jure content of legal rules as indicated in statutory texts, court judgments, and other relevant sources. In this respect it is similar to the ILO's EPLex indicators which seek to 'quantify legal information in the area of employment protection' (Aleksynska, 2015: 5). The EPLex indicators use ILO Conventions and Recommendations as a basis for coding cross-national variations in employment protection rules. The index has a wide country coverage but, at present, a limited time series (for further discussion of the different properties of the CBR-LRI and EPLex indices, see Deakin, 2018).

The CBR index has a total of 40 variables, grouped into five sub-indices. A score is allocated to each individual variable in a range from 0 (little or no worker protection) to 1 (high worker protection). The five sub-indices cover, respectively, the regulation of different forms of employment (self-employment, part-time work, fixed-term employment and temporary agency work); working time (daily and weekly working time limits and rules governing overtime); dismissal (procedural and substantive rules on termination of employment); employee representation (rules on collective bargaining, the closed shop and codetermination); and industrial action (the extent of legal support for the right to strike, including rules on secondary and political strikes). These sub-indices broadly follow the categories developed by Botero et al. (2004) whose analysis, however, lacked a time-series dimension. Moreover, the individual indicators and definitions used in the CBR-LRI differ from those of Botero et al. in a number of respects, being in general more detailed and allowing for the inclusion of more legal data in the final codings (for more detail and justification of the coding methods used to construct the index, see Deakin, Lele and Siems, 2007; Adams and Deakin, 2015; Adams et al., 2017b; for a detailed description of the definitions of coding protocols and access to the dataset, see Adams et al., 2017a).

Our analysis here draws on an expanded version of the initial dataset first presented by Deakin, Lele and Siems (2007). This new version contains data for 117 countries, representing over 95% of World GDP (see Adams et al., 2017a). Most countries are coded from 1970; 'post-socialist' systems are coded from the point of formal legal transition to market system, which in the case of countries of the former Soviet Union and of its sphere of influence is the early 1990s, and in the case of China is 1986 (when the first significant labour laws of the transition period were enacted). The only national systems not coded are those for which primary legal sources cannot be accessed using a combination of online materials, law library collections, and the ILO's EPLex and NATLEX databases (see Adams et al., 2017b).

4. Trends in labour regulation over time as revealed by the CBR-LRI dataset

4.1 Trends in the regulation of different forms of work

The CBR-LRI sub-index on the regulation of different forms of employment is composed of variables that relate to the degree of freedom which employers have under the law to choose between a number of alternatives to the full-time, indeterminate-duration employment relationship (self-employment, part-time work, fixed-term employment, and temporary agency work). Table 1 (DFE column) sets out the individual variables coded for in this sub-index.

Table 1 DFE and EPL variable selection

DFE variables	EPL variables
The law, as opposed to the contracting parties, determines the legal status of the worker	The law, as opposed to the contracting parties, determines the legal status of the worker
Part-time workers have the right to equal treatment with full-time workers	The cost of dismissing part-time workers is equal in proportionate terms to the cost of dismissing full-time workers
The cost of dismissing part-time workers is equal in proportionate terms to the cost of dismissing full-time workers	Fixed-term contracts are allowed only for work of limited duration
Fixed-term contracts are allowed only for work of limited duration	Maximum duration of fixed-term contracts
Fixed-term workers have the right to equal treatment with permanent workers	Legally mandated notice period
Maximum duration of fixed-term contracts	Legally mandated redundancy compensation
Agency work is prohibited or strictly controlled	Minimum qualifying period of service for normal case of unjust dismissal
Agency workers have the right to equal treatment with permanent workers of the user undertaking	Law imposes procedural constraints on dismissal
	Law imposes substantive constraints on dismissal
	Reinstatement normal remedy for unfair dismissal
	Notification of dismissal
	Redundancy selection
	Priority in re-employment
	Codetermination: board membership
	Codetermination and information/consultation of workers

Figure 1 shows overall averages of the eight variables globally and for different regions, and Figure 2 presents a comparison of developed and non-developed countries, as proxied by country membership of the OECD in 2017. The overall average level of formal legal protection of DFEs has risen steadily since the early 1990s, and there have been gradual increases in the strength of legally mandated protection over the long term in most regions. The highest rates of increase were in Europe from the late 1990s onwards, reflecting the implementation of EU-wide standards on protections for part-time workers (Directive 97/81/EC), fixed-term employees (Directive 99/70/EC) and temporary agency workers (Directive2008/104/EC). The averages for African and Asian countries are in both cases lower than the global average at both the beginning and the end of the period. Developed countries had a consistently higher level of protection than developing ones throughout the period.

Figure 3 presents data from three OECD countries to illustrate some of the national-level trends revealed by the dataset. France was one of the earliest adopters of rules providing for equal treatment for part-time, fixed-term and temporary agency workers; laws here date from the early 1980s, over a decade prior to the adoption of the first EU-wide standards in this area. In the case of Germany and the UK, by comparison, the effects of EU-inspired harmonisation of laws can more clearly be seen, although the UK still had a lower overall level of protection than the other two countries at the end of this process.

Figure 4 presents trends from three non-OECD countries which have also seen a strengthening of worker protections in this area of law. In China, the Labour Contracts Act 2007 made a number of changes including requiring temporary agency work contracts to be used only to fill temporary, auxiliary or substitute job positions, and setting a two-year minimum term for the first assignment of an agency worker. In Brazil, following a Supreme Court decision of 2008 casting doubt on the constitutionality of agency work, legislation of 2010 placed limits on the duration of temporary agency work contracts. In Indonesia, legislation of 2003 provided for a right of equal treatment for agency or sub-contracted labour with workers directly employed by the user enterprise, and in 2012 the Constitutional Court ruled that agency work could in certain circumstances be deemed to give rise to a direct relationship between the worker and the user employer.

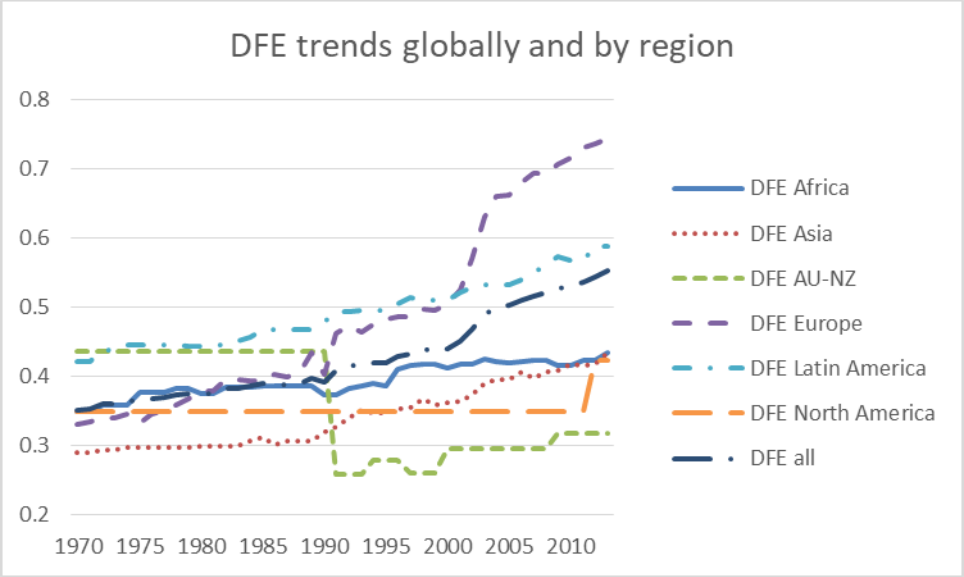


Figure 1. Global and regional trends in the regulation of different forms of employment, 1970-2013. Source: CBR-LRI (Adams et al., 2017a).

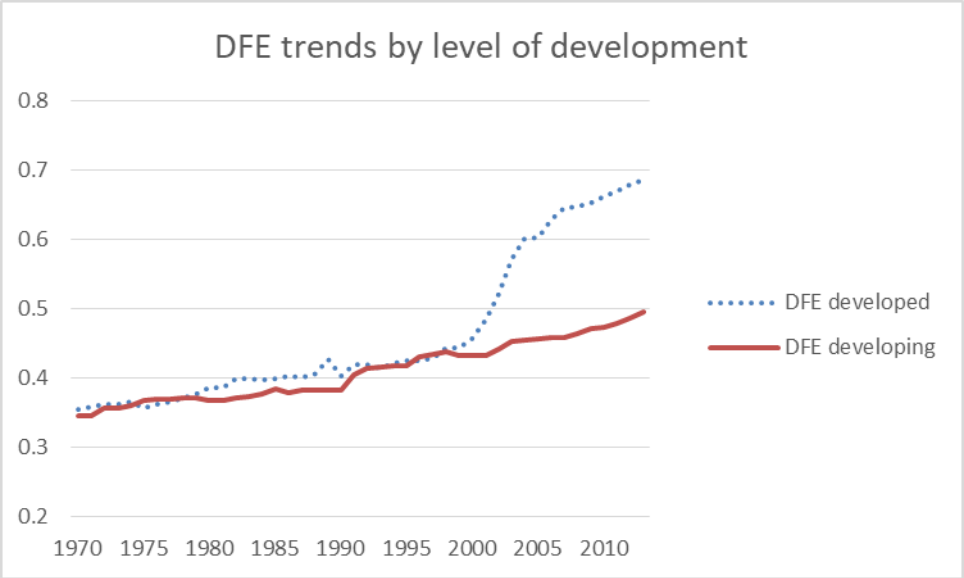


Figure 2. Trends in the regulation of different forms of employment, 1970-2013, by level of development. Source: CBR-LRI (Adams et al., 2017a). 'Developed' countries are defined as those in OECD membership in 2017, 'developing' countries are those not members of the OECD in 2017.

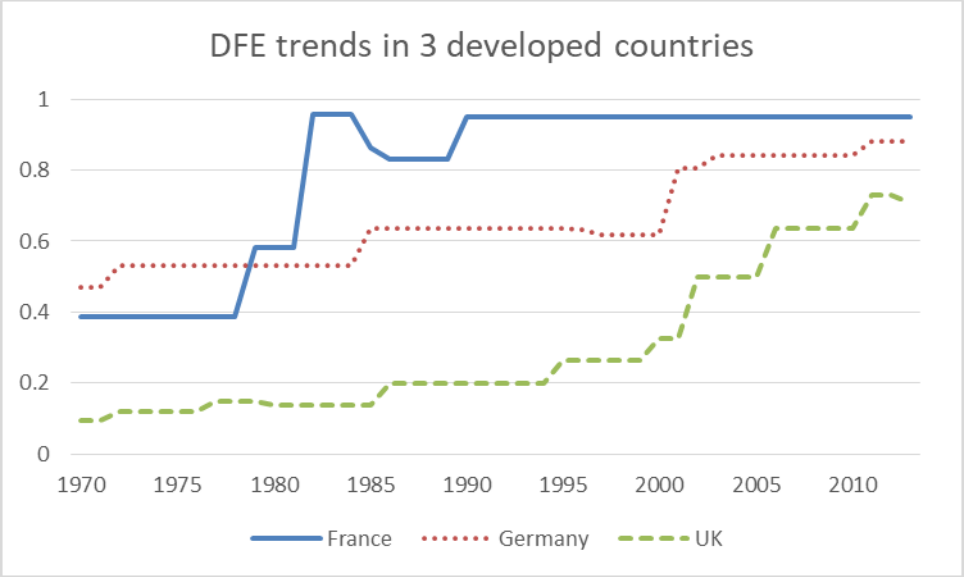


Figure 3. Trends in the regulation of different forms of employment, 1970-2013, in three developed countries. Source: CBR-LRI (Adams et al., 2017a).

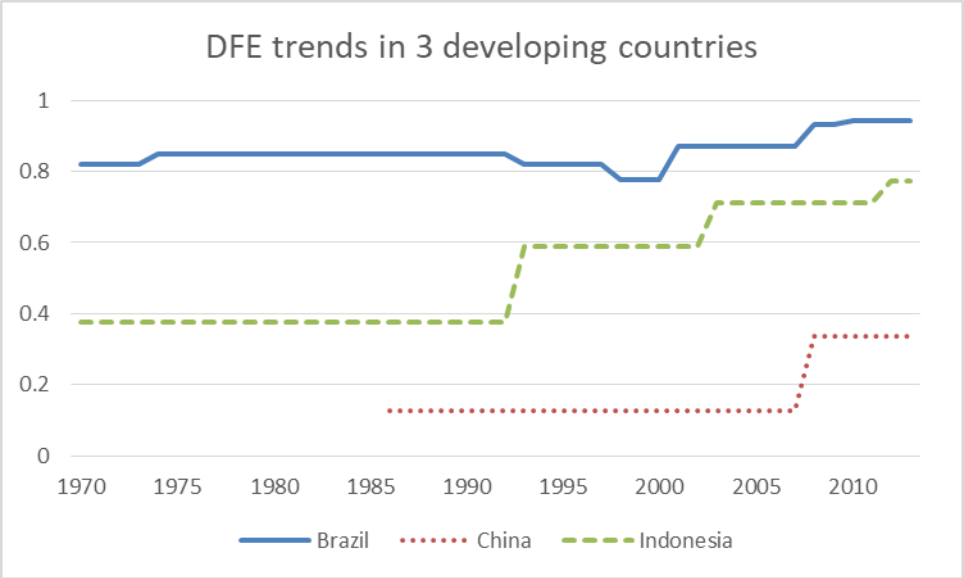


Figure 4. Trends in the regulation of different forms of employment, 1970-2013, in three developing countries. China is coded from 1986. Source: CBR-LRI (Adams et al., 2017a).

4.2 Trends in employment protection legislation

EPL is generally understood as consisting of laws on some or all of the following issues: protection against dismissal from employment (both procedural and substantive); compensation requirements in the event of dismissal from employment; and regulation of the use of fixed term contracts. As noted above, the CBR-LRI sub-index on different forms of employment contains several variables concerning regulation of dismissal in the context of fixed-term contracts of employment, as well as variables relating to determination of employment status and the rights of part-time workers to have access to legal protection. A further nine variables are contained in the CBR-LRI sub-index on regulation of dismissal which covers procedural and substantive constraints on dismissal, redundancy selection and payment, and related aspects of regulation of termination of employment. Within the CBR-LRI sub-index for employee representation there are also two variables relating to legal regulation of co-determination and employee information and consultation rights. They are included in the present selection of variables relevant to EPL given that co-determination and consultation mechanisms have a role in dismissal procedures, particularly in relation to collective dismissals. Table 1 (EPL column) lists the 15 variables used in the present analysis.

Figure 5 shows the global average for EPL, together with regional trends. The picture for Europe is largely consistent with the global trend but also shows a small decline after 2008, reflecting the response to the sovereign debt crisis in the Eurozone. This decline is not very large when set against the overall trend since 1970s of a steady increase in the level of protection. The trends for Latin America, Asia and Africa do not show the recent decline experienced in Europe. Figure 6 shows that there is little difference between developed and developing countries (as proxied by OECD membership in 2017), but that developed countries have on average had higher regulation over the period covered by the dataset.

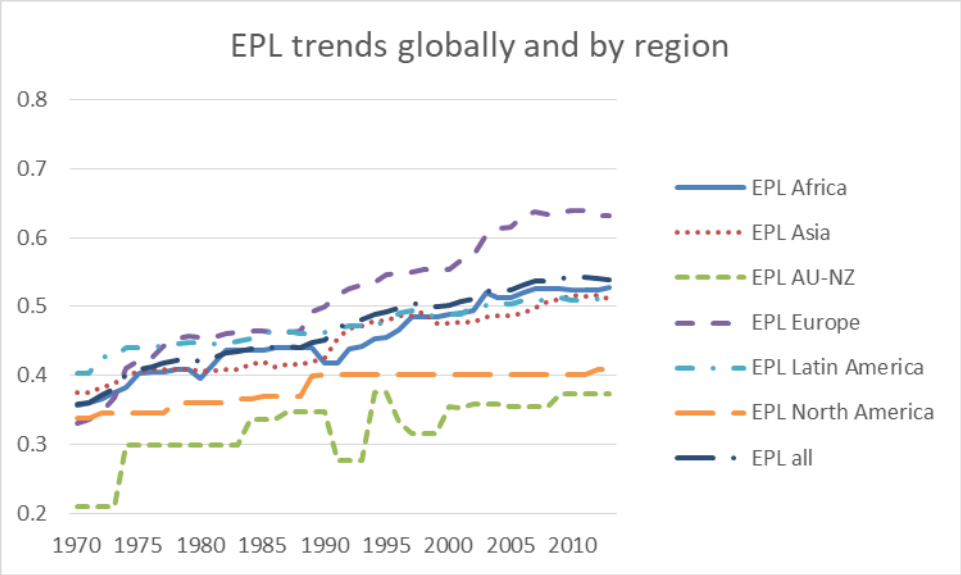


Figure 5. Global and regional trends in employment protection legislation, 1970-2013. Source: CBR-LRI (Adams et al., 2017a).

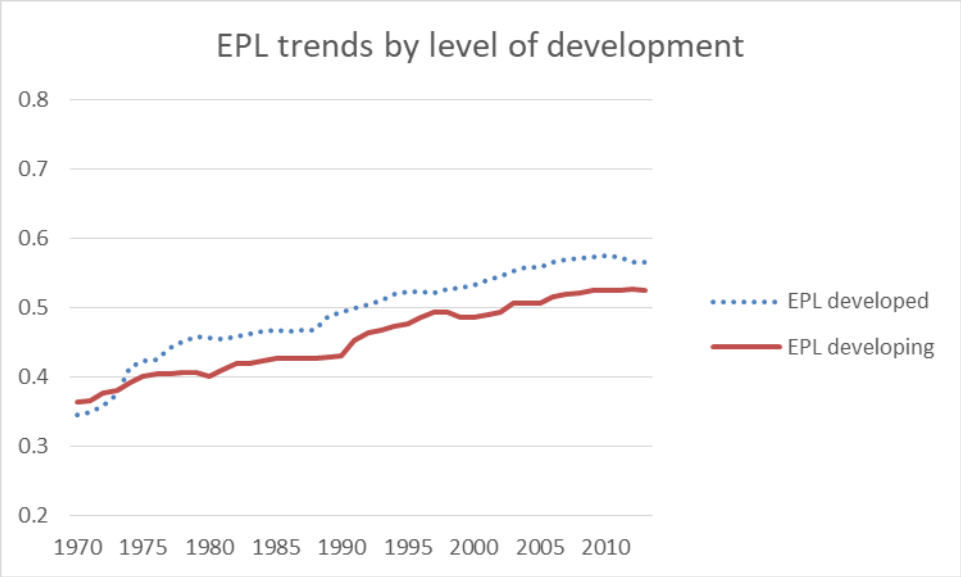


Figure 6. Trends in employment protection legislation, 1970-2013, by level of development. Source: CBR-LRI (Adams et al., 2017a). 'Developed' countries are defined as those in OECD membership in 2017, 'developing' countries are those not members of the OECD in 2017.

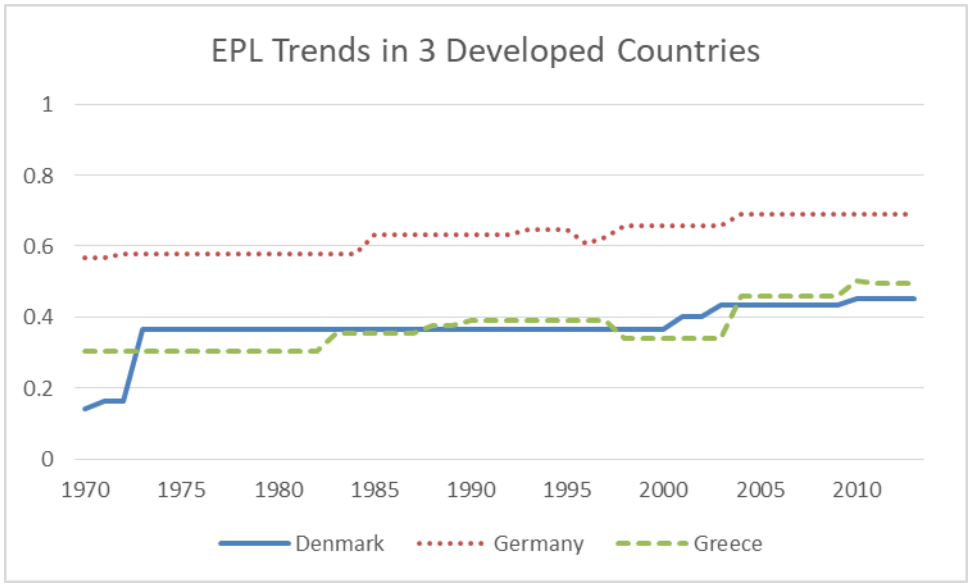


Figure 7. Trends in employment protection legislation, 1970-2013, in three developed countries. Source: CBR-LRI (Adams et al., 2017a).

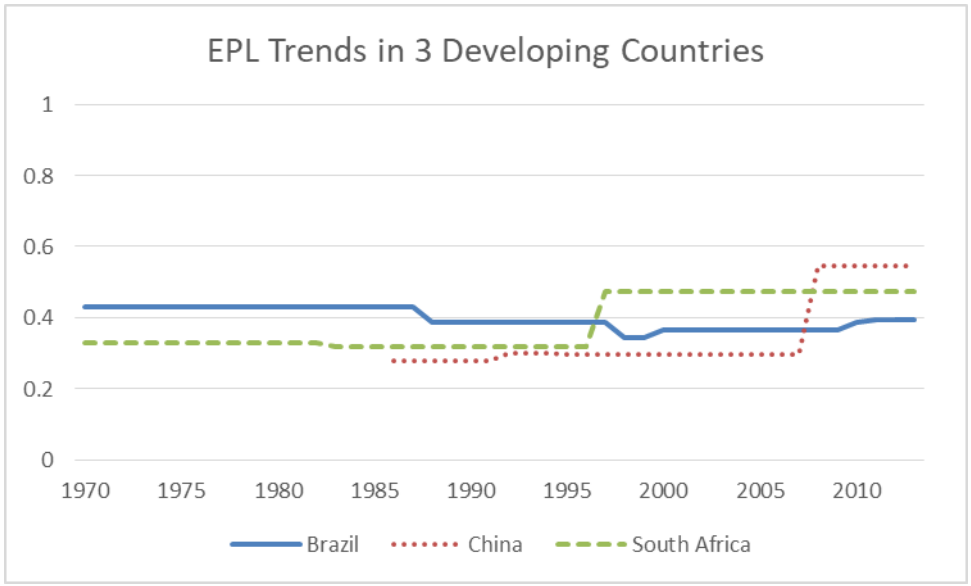


Figure 8. Trends in the employment protection legislation, 1970-2013, in three developing countries. China is coded from 1986. Source: CBR-LRI (Adams et al., 2017a).

Figures 7 and 8 highlight selected country level trends. Figure 7 contrasts regulation in three European countries. The score for Germany is towards the higher end of the scale throughout the period covered by the dataset, and has not seen any significant recent decline. Germany scores particularly highly, from the point of view of worker protection, in respect of those variables which relate to the maximum duration of fixed term contracts, the length of the qualifying period for unfair dismissal, the substantive control of the dismissal decision, the rules on notification of dismissal (reflecting the prominent role of the works council in controlling employment terminations), and laws on redundancy selection, as well as those relating to collective consultation and codetermination rights.

The aggregate score for Germany is higher than that for Greece throughout the period since the 1970s. Although reforms to Greece's labour laws is one of the conditions imposed by the Troika of the IMF, European Central Bank and European Commission in return for financial support since the onset of the sovereign debt crisis (Escandre Varniol et al., 2012), Greece does not have a system of employment protection law which is particularly strong by European standards. It scores below Germany in respect of the variables for notice periods, redundancy payments, qualifying periods, and both procedural fairness and substantive fairness in dismissal. It has the highest score in relation to the variable on notification of dismissal, as since 1983 it has had legislation in place requiring prior consultation with trade unions or other relevant workers' representatives over collective dismissals, and notification to the public administration. Where the employer and workers' representatives fail to reach an agreement, the public authority has the power to disallow the dismissals. Germany also scores highly although less than the maximum under this variable, as its law provides that the works council must be consulted before collective dismissals, and that the consequences of a failure of consultation can include nullification of the dismissal decision.

As our data do not currently go beyond 2013, they do not code for the very latest changes in Greek law, which include the successful challenge, before the Court of Justice of the EU, to the role of the public authorities in regulating collective dismissals (Countouris and Koukiadaki, 2017). But even before this change to Greek law, it does not seem plausible to regard Greece as having a highly protective EPL regime.

The third European country coded is Denmark. Denmark is sometimes held up as an example of a country characterized by a regime of 'flexicurity', thanks, it is said, to having only minimal legal regulation of the dismissal decision

(Commission, 2006). However, while Denmark lacks a statutory regime for unfair dismissal of the kind which is found in most other EU countries, since 1973 the General Agreement between the Danish Employers' Confederation and the Danish Confederation of Trade Unions provides that no arbitrary action should be taken in relation to dismissal of employees, and sets out a procedure for resolving disputes arising from dismissal, which applies to an employee who has been employed for nine months. The General Agreement also makes provision for information and consultation rights in relation to collective dismissals which are towards the more protective end of the spectrum. Given the wide coverage of collective bargaining in Denmark and the general applicability of the procedure set out in the General Agreement, it can be regarded, for the purposes of the coding of Danish law, as the functional equivalent of an unfair dismissal statute setting minimum, labour market-wide standards, and should be coded for accordingly. On this basis, Denmark has an EPL regime which is less protective than that in Germany but around the same level as that in Greece.

Figure 8 contrasts three developing countries. The increase in protective regulation in China following the passage of the Labour Contracts Act 2007 can be seen. This Act significantly strengthened procedural and substantive standards relating to dismissal along with rules on redundancy selection and severance pay. It also specified reinstatement as the normal remedy for an unfair dismissal where the employee requested it. By contrast, dismissal regulation in Brazil is relatively weak: both procedural and substantive requirements for dismissal are minimal, relating mostly to a duty to make a severance payment and to report the termination of employment to the labour inspectorate, which has no right to review or veto the dismissal decision. The figure also shows the increase in protective regulation which occurred in South Africa after the end of Apartheid. Changes made to the Labour Relations Act in 1997 strengthened the content of the substantive test of fairness in dismissal, extended the minimum period of notice for dismissal along with redundancy payment rights, and made reinstatement the principal remedy for an unfair dismissal. Changes made in 2015 which strengthened the laws governing dismissal in respect of fixed-term employment fall outside the period currently coded. Even after taking account of these laws, South Africa does not have an EPL regime which is more protective than that operating in China after the Labour Contracts Act of 2007.

5. Econometric analysis of the effects of labour regulation on employment, productivity and inequality

We now turn to our econometric analysis. As we have seen (section 2), the literature on the economic implications of labour regulation illustrates that much depends on the chosen model and its underlying assumptions; they will affect the conclusions that can be drawn about the relationship of legal regulation to economic outcomes. From a macroeconomic perspective, the much-cited work of Lazear (1990) considers the effect of EPL on the labour market and concludes that, in theory, severance payments do not have any effect in a competitive labour market. Lazear argues that a higher severance payment will be incorporated by both parties (employers and employees). The effect cancels out through the willingness of employees to forgo part of their salary, while knowing their fixed probability of keeping their job in subsequent periods and their severance payment in case of dismissal. Labour markets being however imperfect in reality, Lazear's empirical findings show negative effects of severance payments on unemployment rates, hours worked, employment rate, and labour force participation. Other authors have revised Lazear's data (see Addison and Grosso, 1996), as well as the estimation techniques (see Addison, Teixeira, and Grosso, 2000). Montenegro and Pagés (2003) are among those whose findings suggest that EPL leads to fewer employment opportunities for certain groups, particularly women and young workers. But overall, the results of empirical analysis have been mixed. The inconsistent findings are conditioned by variation in key aspects including panel size, number of independent variables, econometric techniques, and indicators of EPL.

In our empirical analysis, we examine legal regulation of both DFE and EPL. Because of lack of data on outcome variables for the earlier part of the period covered by the dataset, we focus on the period from 1991. We consider the relationship of labour regulation to labour force participation, the employment-to-population ratio, the self-employment rate, the share of labour in national income, and the unemployment rate. We use the rate of coverage for unemployment insurance provided by the ILO (2015) as an additional covariate in the unemployment relationship. We also consider the relationship between the strength of legal regulation and productivity, measured as output per worker. To explore the effects of legal regulation on inequality, we use estimated Gini coefficients presented in the ILO *World Employment and Social Outlook 2015* (ILO, 2015b). In this context we also consider the relationship of legal regulation to measures of well being captured by the Human Development Index. Bearing in mind that our underlying legal data code for de jure, not de facto regulation, we use data from Freedom House to proxy for general

acceptance and regard for the legal system or the rule of law.

The large country-range in our dataset, coupled with the extended time period, facilitate a number of different empirical estimation strategies. At the same time, our analysis can at most indicate the direction (positive or negative) of potential effects of legal regulation. In this first use of the expanded CBR-LRI dataset our aim is to offer insights concerning possible estimation strategies and their implications for our understanding of the relationship between labour regulation and economic trends.

One way of addressing potential unit root issues in the variables we are analysing is through exploratory non-stationary panel analysis (see Pesaran et al., 1999). We focus on a Pooled Mean Group (PMG) estimator which allows for country-specific short-term effects, but constrains long term effects to be equal across countries.[i] The Pooled Mean Group estimator is in principle the most appropriate to our analysis, as it is plausible that legal regulation of worker protection might have different effects in the long-run than in the short-run. In particular, the potentially beneficial effects of this kind of legal change (see section 2 above) might only be evident after a lag, as firms adjust to a new regulatory environment; even if there is a beneficial long-run effect, the short-run effects of an increase in employers' costs may well be negative. The PMG estimator should be able to capture these dynamic effects. In the event of shocks causing deviations from the long-run relationship, this non-stationary panel analysis estimates the percentage of the deviation, which is corrected after one year through the so-called error correction term. The error correction term should lie between -1 and 0, with values close to -1 indicating fast adjustments, and low values indicating slow adjustments to deviations.

Table 2 summarizes the direction of the relationship between the relevant economic variables and changes in DFE or EPL for a number of different estimation strategies which are detailed below and in the Appendix. A statistically significant relationship (at the 5% level or below) is denoted by a plus or minus sign, whereas a dot indicates that no significant relationship was estimated through the model. In the following discussion we focus on the discussion of the PMG estimates, which are set out in the two last columns.

Table 2 Summary of econometric findings

Outcome variables	Time period	LRI	OLS (1)	Fixed effects (2)	GMM 1 (3)	PMG LT (4)	PMG SR (5)
Labour force participation	1991 – 2013	DFE	+	.	.	+	.
		EPL	.	.	.	+	.
Employment to population ratio	1991 – 2013	DFE	.	.	.	+	-
		EPL	.	.	.	+	.
Self-employment rate	1991 – 2013	DFE	.	.	.	-	.
		EPL	.	.	.	+	.
Labour productivity per worker	1991 – 2013	DFE	+	.	.	.	.
		EPL	+	.	.	.	.
Labour share	1991 - 2013 (unbalanced)	DFE	.	.	.	+	.
		EPL	.	.	.	+	.
Unemployment rate	1991 – 2013	DFE	.	.	.	-	+
		EPL	.	.	.	-	.
	1991, 2000, 2013	DFE	.	.	.		
		EPL	.	.	.		
Market Gini	2005, 2011	DFE		.			
Net Gini		EPL		.			
	2005, 2011	DFE		.			
		EPL		.			
Human Development Index	2005 – 2013	DFE	.	.	+		
		EPL	.	.	.		

Notes: A relationship significant at the 5% level is denoted by a plus or minus sign, whereas a dot indicates that no significant relationship was estimated through the model. Column 1 shows direction of estimates through Ordinary Least Squares estimation, including a lagged dependent variable. Standard errors are clustered at the country-level. Column 2 displays the estimated direction of coefficients in a fixed effects framework. Estimates in column 3 are dynamic panel estimates making use of System GMM as presented by Arellano and Bover (1995) and Blundell and Bond (1998), using first differences as well as levels of the dependent and explanatory variables. Columns 4 and 5 show the short-run and long-run estimates from the Pooled Mean Group Estimation as in Pesaran et al. (1999). Columns 1 – 3 include the additional covariates GDP growth, size of working age population, the Freedom House indicator, and year fixed effects.

We estimate that relatively stronger legal regulation of DFE is negatively linked to the self-employment rate in the long-run (Tables A.1, A.2 and A.5). On the other hand, an increase in EPL is estimated to be positively associated with self-employment. The estimates are highly significant, but of small magnitude in the PMG model, meaning that on average, we expect a 1 percent increase in legal regulation of DFE to decrease the self-employment rate by 0.0471 percent in the long run. The effect of EPL is estimated to be even smaller (0.0349 percent). The error correction term for both legal regulation of DFE and for EPL is around -0.24, suggesting an adjustment of 24 percent in the first year of a

deviation from the long-term relationship. This could imply that as the relative strength of legal regulation for DFE increases, more workers are likely to be engaged in dependent employment, that is, that self-employment becomes less attractive relative to wage employment, including DFE. This is consistent with experimental research modeling the choice of employment form under different assumptions concerning the framework of labour regulation (Bartling et al., 2014). No significant short-run relationships are estimated, indicating that the change in the relative incidence of employment and self-employment does not take place in the short-run.

As shown in Tables A.1, A.2 and A.6, relatively stronger legal regulation is not estimated to have a statistically significant link to productivity, as measured through output per worker, in the PMG model (although a positive and significant relationship is reported in the Ordinary Least Squares model). Productivity per worker is most likely being driven by other variables, which are not included in our model. At best we can say that our results do not clearly confirm or reject the claim that increased worker protection can be compatible with improved labour productivity.

An increase in legal regulation of DFE and EPL is positively associated with the employment to population ratio in each of our models (see Tables A.1, A.2 and A.4). The estimated coefficient for the EPL indicator is larger than the estimated coefficient for legal regulation of DFEs. Using the PMG model, we find that, on average, a 1 percent increase in the relative strength of legal regulation of DFE is associated with an increase in the employment to population ratio of 0.2393 percent, while a similar increase in the relative strength of EPL is associated with an increase of 0.3468 percent. A negative short-run relationship is estimated for an increase in DFE, but not in the case of EPL. The error correction term is small in both cases, pointing towards a slow adjustment after deviations from the long-run relationship.

Increasing legal regulation of DFE and EPL is estimated to have a significant positive relationship with labour force participation (Tables A.1, A.2 and A3). This association is however a small one, with on average, a 1 percent increase in EPL associated with an estimated 0.0572 percent increase in long-run labour force participation in the PMG model. Negative short-run effects are found but are not estimated to be significant at the 10 percent level. The error correction term for EPL is around -0.14, suggesting an adjustment of 14 percent in the first year of a deviation from the long-term relationship.

Increases in the relative strength of legal regulation of DFE and of EPL are both positively associated with the unadjusted labour share in the long-run (Table A.1, A.2 and A.7). On average, a 1 percent increase in the relative strength of

legal regulation of DFE is estimated to lead to a 0.0274 percent increase in the unadjusted labour share in the PMG model. The coefficient for EPL is similarly small (0.0374). No significant short-run relationships are estimated for DFE and EPL. The estimated error correction term is quite large, indicating a faster adjustment to deviations in the long-run relationship. Because the labour share has been falling within most countries since the early 1990s (ILO, 2015b), the implication of our finding is that stronger employment protection laws have been mitigating this trend.

For the investigation of a link between the unemployment rate and legal regulation of worker protection, we first estimate as with the previous variables. As shown in Tables A.1, A.2 and A.8, increasing the relative strength of legal regulation of DFE and EPL is associated with a reduction in the unemployment rate in the long-run. The EPL coefficient is greater in magnitude, with on average, a 1 percent increase in legal regulation of EPL associated with a decrease in the unemployment rate of 0.2281 percent, and of DFE to a fall of 0.0763 percent in the long-run in the PMG model. An increase in DFE is further associated with a positive short-run effect of 0.0210. Both error correction terms are around 9 percent.

We then introduce the rate of de jure coverage for unemployment insurance using data from the ILO *World Employment and Social Outlook* report for 2015 (ILO, 2015b: chapter 2). This inclusion is made since it seems plausible to assume a link between the percentage of the population legally entitled to unemployment coverage, and the effective level of unemployment in a given country. However, as data are available only for three points in time (1990, 2000, and 2013), the choice of estimation methods is limited. As shown in Table A.9, we find that after accounting for unemployment coverage, no significant link is estimated between the unemployment rate and the relative strength of EPL.

We further examine possible links between legal regulation of DFE and EPL, on the one hand, and net and market income inequality, on the other. Making use of these Gini estimates we apply a simple panel two-period fixed effect model with income inequality measures around 2005 and 2011 (see Table A.10). A priori, if stronger legal regulation of worker protection led to more equality, we would expect a possible link to appear in its relationship with market income inequality, before the redistributive effort of the state. However we estimate that legal regulation of DFE and EPL has no significant impact on market income inequality.

Yearly estimates of the Human Development Index are available from 2005 onwards. We investigate the link between legal regulation of DFE and EPL with

the HDI in a dynamic panel framework (see Table A.11). We find a small but significant relationship between the Human Development Index and a relatively stronger EPL. Note that the results for the three last economic variables are not comparable to the estimations using non-stationary panel analysis. It cannot be inferred from these last estimates that there is no relationship to the strength of worker protection. The reduced time frame does not allow us to disentangle long-run and short-run effects.

Limitations inherent in our approach need to be acknowledged. We should be (and have been) cautious, firstly, in ascribing causal effects to correlations or associations. The PMG estimator treats the independent variable (here, the legal indicator) as exogenous for the purpose of estimating its relationship with the outcome variable (here, the economic or labour market performance variables). Causality is assumed rather than shown empirically. Thus the associations we have identified are best interpreted as showing *potential* causation running from law to the economy.

A second caveat concerns the issue of non-linearity. As we saw earlier (section 2), research has suggested that EPL has a non-linear relationship with economic variables including employment, unemployment, and growth more generally (Cazes, Khatiwala and Malo, 2012). Because it allows for short-run relationships to be different for each country (while constraining long-run relationships to be the same), the PMG estimator should capture the effects of cross-national differences in the initial level of EPL. Thus it can accommodate the possibility that a country with 'higher' EPL responds differently to a given regulatory change than a country with a 'lower' EPL, at least in the initial stages of adjustment to that change. The possible consequences of non-linearity could be explored more deeply through the use of simulations, as suggested by Cazes et al. (2012); this again is an issue for future work.

Finally, the limitations of using leximetric data coding for the de jure content of laws need to be constantly borne in mind. In the absence of reliable measures of how labour laws operate in practice in particular country contexts, or of the degree to which they are more or less effective according to the industrial sector or size of type of enterprise concerned, measures of de jure regulation are only a second-best approximation of regulatory impacts, and may be seriously biased if used in isolation from other indicators (for discussion of this issue see Deakin, 2018). We can, nevertheless, try to control for cross-national differences in the likely effectiveness and legitimacy of the laws, by introducing into the analysis variables which proxy for the nature of the legal environment in this sense. In the analysis presented here we have used the Freedom House indicator of human rights violations as a relevant control. Future research may suggest

alternative controls or better ways of capturing the gap between de jure and de facto regulation.

6. Conclusion

There is a growing recognition that labour regulation is necessary 'to protect workers from arbitrary or unfair treatment and to ensure efficient contracting between employers and workers' (World Bank, 2015: 231). Labour laws are not simply imposed on economies from outside, by governments or international labour conventions. The need for regulation is internal to the way labour markets work and is endogenous to the developmental growth paths of countries. Labour laws respond to changing circumstances (Adams and Deakin, 2015).

Quantifying changes in the content of labour law rules over time is an important step in understanding how labour regulation and labour markets coevolve, that is, mutually adjust, over time, to changing economic and political circumstances. However, measuring labour law in a longitudinal or historical setting is not at all a straightforward process from a methodological point of view. Difficult issues of variable selection and definition inevitably arise, along with choices concerning weighting and aggregation. In this paper we have presented first findings from the extended version of the CBR-LRI index, which provides one particular approach to coding labour law rules which, uniquely, makes it possible to track changes in the content of de jure labour regulations over several decades. The CBR-LRI index thereby clarifies certain trends in the development of labour law over time, which would otherwise be obscured by the sheer detail and complexity of legal regulation in this area.

One of the most important changes in labour markets in recent decades is the rise in forms of work relationships which depart from the model of full-time, indefinite-duration employment on which many labour law regulations are premised. These include part-time work, temporary work and fixed-term employment (ILO, 2015a, 2016). As we have seen, while the incidences of these forms have increased, countries have also been passing laws aimed at protecting workers in these relationships, in particular by enacting requirements of equal treatment for part-time workers with full-time workers, and for fixed-term and agency workers with permanent and regular workers. This is a global trend although most marked in Europe.

We have also seen that employment protection laws have been very gradually strengthening over time, a trend which is common across countries and regions.

In Europe, but not elsewhere, there has been a recent dip in protection following the onset of the financial crisis of 2008, but the changes made are not very large particularly when put in the context of the increase in protection over the preceding decades.

Econometric analysis using panel data and time series techniques is another area in which there have recently been methodological advances which are helpful for understanding the relationship between labour regulation and the labour market. These techniques enable us to study short-term and long-term relationships between legal and economic changes.

Applying these techniques, the analysis presented in this paper finds that increases in protection for workers employed in different forms of employment (part-time, fixed-term and temporary agency work) are correlated with rising employment and falling unemployment over the long run. A small but positive association between these legal changes and labour's share of national income can also be identified. Similar results are found for employment protection laws in general. We do not get clear results for productivity and this is a matter to which we will have to return in future work.

It has not been possible in this paper to present more than a preliminary analysis of findings from the extended version of the CBR-LRI, and much more work will have to be done in order to better understand the fit between labour regulation and labour market outcomes in different countries and regions, to extend the analysis to cover individual sectors, and to take into account the gap between the formal law and the law in practice. Three tentative conclusions, however, may be suggested: firstly, there is a high degree of regional and global convergence in the formal content of laws governing different employment forms and employment protection, with the overall trend for these laws to become more protective over time; secondly, increases in worker protection through laws of this kind are generally associated with rising employment, falling unemployment, and an increase in the labour share; and thirdly, these associations are relatively small when set against wider economic trends.

Notes

To tackle the non-stationarity issue, we also carried out regression analysis using first-differences. This revealed no significant change in the results.

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Appendix: Methodological approach to the econometric analysis

Direct cross-country comparisons are not appropriate in our setting, since unobserved country-specificities are likely to play a significant role in shaping the content and strength of national labour regulation. Looking at a panel of countries over time allows for an analysis of relevant relationships while accounting for unobserved time-invariant country-effects.

Classical econometric panel-data analysis has been developed for cases in which the number of individuals (countries) is large and the number of time periods is fixed. The theory proposes various methods to estimate panel regressions where fixed effects and random effects estimations are the usual starting point (Baltagi, 2013).

The choice between random effects and fixed effects models is driven by considerations about the unobserved individual effects. In our case, country specificities are expected to relate to the labour market performance indicators (the dependent variables), meaning that the individual effects are correlated with the CBR-LRI sub-indices (the explanatory variables). This would suggest a fixed effect framework, since the random effect model assumes the individual effects to be random, not correlated with the labour regulation index.

Another important point concerns the evolution of the dependent variables over time. The labour market performance indicators we use here vary only slowly over time, suggesting that the value taken in the previous period is of importance for the determination of the value for the current period. Including this in our model means working with a dynamic framework. If adequate, the dynamic framework might significantly change the estimation results, since OLS and fixed effects estimations are biased in a dynamic setting (Baltagi, 2013). An interesting feature of OLS and fixed effects estimations is that their different biases go in opposite directions, and so can be used to determine the range of the lagged dependent variable. An adequate dynamic model estimate should therefore lie between the fixed effects (negative bias) and the OLS (positive bias) estimate. Note that the negative bias of the fixed effect estimates is of order (1/T) and therefore becomes negligible for datasets with a long time dimension (see Nickell, 1981). However, as shown by Judson and Owen (1999), this bias is still considerable for panels of sizes comparable to our data.

A widely used estimation technique for dynamic panels is system GMM as presented by Arellano and Bover (1995) and Blundell and Bond (1998), using first differences as well as levels of the dependent and explanatory variables to address endogeneity issues. Different parameters can be adjusted to reduce the

number of instruments and to correct for inefficient standard errors (see Baltagi, 2013 and Roodman, 2009). Various tests are provided to assess if the underlying assumptions are violated. The test for the absence of first order serial correlation should be rejected since the residuals in first difference follow an MA(1) process with unit root if the original residuals are independent and identically distributed. Testing for absence of second order correlation should not be rejected. Panels with long time dimensions can be also be analysed through non-stationary panel analysis as presented in Pesaran et al. (1999). As data covering longer time series become available, assumptions of fixed and small T, and N going to infinity, are no longer appropriate in certain settings. Pesaran et al. (1999) argue that standard pooled estimators such as fixed effects are not adequate to estimate dynamic panels, because of their potentially large bias in case of heterogeneous parameters across countries and serially correlated regressors.

Two main estimators are presented by Pesaran et al. (1999) which are then are compared to a dynamic fixed effect framework. In the dynamic fixed effect framework (DFEF), short-run and long-run effects are assumed to be homogenous across countries. The Pooled Mean Group (PMG) estimator still assumes that that in the long-run the relationship between the estimated variables is homogenous across countries, whereas the short-run effects are allowed to be country-specific. The Mean Group estimator (MG) estimates country-specific effects for the long-run and short-run relationship. The more heterogeneity is allowed in the estimation, the longer the required time dimension. The PMG and MG estimators have properties which make it possible to use a Hausman test to assess the most appropriate estimator given the available data (Hausman, 1978). The time dimension available in our dataset is too short to attempt an MG estimator. We therefore estimate PMG and DFE and perform a Hausman test. The Hausman test rejects the hypothesis of homogenous short-run effects in all cases, pointing towards the Pooled Mean Group as the appropriate estimation method. Further tests on cointegration and unit-roots are performed as part of the analysis.

In all regressions we introduce additional covariates to account for the economic situation (GDP growth) and the size of the working-age population in the country, as well as binary indicator variables to capture yearly effects. We also introduce the Freedom House indicator, which estimates the extent of political and civil rights in given country and can be regarded as a proxy for the effectiveness of labour law rules in practice. Note however that the contribution of this indicator is limited to countries where the political and civil rights change over the sample period. As mentioned above, all time-invariant effects are cancelled out through the use of the dynamic framework. Average

educational attainment could be used as a variable giving an indication of the basic skills of the average workforce. This may be pursued in future research.

The labour market performance outcomes in this paper are taken from the *Key Indicators of the Labour Market* compiled by the International Labour Office. Not all countries report indicators on a yearly basis, and missing variables are imputed. To assess the impact of these missing variables on our model, all estimations were rerun using only reported values. The loss of observations is small compared to the sample size and the impact on the estimated coefficients negligible. However, some countries are excluded from the analysis because a minimum of 10 reported observations per country is set as a requirement. Also, non-stationary panel analysis can only be performed taking into account all available observations. Therefore, we use the reported and estimated outcome variables in our estimations.

Table A.1 Pooled mean group estimation with different forms of employment

	Labour force participation	Employment to population	Self-employment	Productivity per worker	Labour share	Unemployment rate
	(1)	(2)	(3)	(4)	(5)	(6)
Long run						
DFE	0.0120**	0.2393***	-0.0471***	-0.3886	0.0274***	-0.0763***
GDP growth	0.0020***	0.0399***	-0.0025***	0.6572***	-0.0026***	-0.0208***
Population	0.0003***	0.0006**	-0.0008***	0.0089***	-0.0002***	-0.0059***
Freedom House	-0.0011	-0.0238**	-0.0037**	-0.0531	-0.0014	-0.0177***
Short run						
Error correction	-0.1417***	-0.0360***	-0.2406***	-0.0116***	-0.4071***	-0.0986***
Δ DFE	-0.0008	-0.0210**	0.0592	0.0162	-0.0369	0.0210**
Δ GDP growth	-0.0003***	-0.0006***	0.0005**	0.0003	-0.0001	0.0008***
Δ Population	-0.0439	-0.0758	0.0626	-0.0649	-0.4559**	0.0176
Δ Freedom House	0.0008	0.0016*	0.0006	-0.0041*	0.0004	-0.0015
Constant	0.0841***	0.0150***	0.1136***	0.0949***	0.2003***	0.0321***
Observations	2386	2386	2386	2386	1336	2386

Notes: * 10% significance, ** 5% significance, *** 1% significance. The short-run and long-run coefficients are estimated through Pooled Mean Group Estimation as in Pesaran et al., (1999).

Table A.2 Pooled mean group estimation with employment protection legislation

	Labour force participation	Employment to population	Self-employment	Productivity per worker	Labour share	Unemployment rate
	(1)	(2)	(3)	(4)	(5)	(6)
Long run						
EPL	0.0572***	0.3468***	0.0349***	0.3733	0.0374***	-0.2281***
GDP growth	0.0020***	0.0195***	-0.0020***	0.5588***	-0.0026***	-0.0239***
Population	0.0003***	0.0076***	-0.0008***	0.0080***	-0.0002***	-0.0006***
Freedom House	-0.0019*	0.0091*	0.0056**	-0.0517	-0.0009	-0.0144***
Short run						
Error correction	-0.1428***	-0.0714***	-0.2354***	-0.0138***	-0.3789***	-0.0864***
Δ EPL	-0.0336	-0.0815	0.0402	0.1156	0.0032	0.0405
Δ GDP growth	-0.0002***	-0.0006***	0.0004	0.0002	-0.0002	0.0007***
Δ Population	-0.0493	-0.0495	0.1364	-0.0836	-0.4575**	-0.0267
Δ Freedom House	0.0008	0.001	-0.0002	-0.0036*	0.0015	-0.0012
Constant	0.0812***	0.0166***	0.0964***	0.1068***	0.1861***	0.0283***
Observations	2386	2386	2386	2386	1336	2386

Notes: * 10% significance, ** 5% significance, *** 1% significance. The short-run and long-run coefficients are estimated through Pooled Mean Group Estimation as in Pesaran et al., (1999).

Table A.3 Other estimated models for labour force participation

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(4)	(5)	(6)
LFP_{t-1}	1.2596***	1.1133***	1.4862***		1.2613***	1.1134***	1.5243***
$CI(LFP_{t-1})$	1.1719,1.3473	1.0726,1.1539	1.3030,1.6693		1.1744,1.3483	1.0727,1.1541	1.3610,1.6877
LFP_{t-2}	-0.2628***	-0.2014***	-0.5017***		-0.2651***	-0.2017***	-0.5441***
$CI(LFP_{t-2})$	-0.3504,-0.1753	-0.2413,- 0.1615	-0.6857,-0.3176		-0.3519,-0.1782	-0.2415,-0.1618	-0.7099,-0.3784
DFE	0.0014**	0.0011	0.0022	EPL	-0.0004	0.0007	0.0045
GDP growth	0.0001**	0	0		0.0001**	0	0
Population	-0.0000***	-0.0000***	0		-0.0000***	-0.0000***	0
Freedom House	-0.0001	0.0002	-0.0004		-0.0001	0.0002	-0.001
Constant	0.0021*	0.0559***	0.0108		0.0016	0.0562***	0
Observations	2303	2303	2303		2303	2303	2303
F	25077.1	723.8516			24187.35	723.7052	
Countries		111	111			111	111
Instruments			194				194
AR1			-4.8841				-5.0444
AR2			2.0554				2.2411
Sargan			116.3417				108.4631
Hansen			89.5414				94.8129

Notes: CI denotes the confidence interval. LFP stands for labour force participation. * 10% significance, ** 5% significance, *** 1% significance. Columns 1 and 4 show the estimated coefficient obtained through Ordinary Least Squares estimation, including a lagged dependent variable. Standard errors are clustered at the country-level. Columns 2 and 5 display estimated coefficients in a fixed effects framework. Estimates in columns 3 and 6 are dynamic panel estimates making use of system GMM as presented by Arellano and Bover (1995) and Blundell and Bond (1998), using first differences as well as levels of the dependent and explanatory variables. The additional covariates GDP growth, size of working age population, the Freedom House indicator and year fixed effects are included.

Table A.4 Other estimated models for employment-to-population ratio

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(4)	(5)	(6)
EMP_{t-1}	1.0593***	0.9485***	1.1873***		1.0587***	0.9485***	1.2297***
$CI(EMP_{t-1})$	1.0197,1.0989	0.9075,0.9894	1.0175,1.3572		1.0191,1.0984	0.9075,0.9894	1.0527,1.4066
EMP_{t-2}	-0.0655***	-0.0821***	-0.2041**		-0.0656***	-0.0819***	-0.2500***
$CI(EMP_{t-2})$	-0.1052,-0.0259	-0.1226,-0.0417	-0.3915,-0.0166		-0.1052,-0.0259	-0.1224,-0.0415	-0.4390,-0.0611
DFE	0.0007	-0.0011	0.0101	EPL	-0.0016	-0.003	0.012
GDP growth	0.0005***	0.0003***	0.0004***		0.0005***	0.0003***	0.0004***
Population	-0.0000***	-0.0001***	-0.0000*		-0.0000***	-0.0000***	-0.0000*
Freedom House	-0.0002	0.0005	0.0017		-0.0002	0.0005	0.0016
Constant	0.0059***	0.0777***	-0.0021		0.0001	0.0786***	0
Observations	2303	2303	2303		2303	2303	2303
F	7425.496	316.4007			7427.314	316.4305	
Countries		111	111			111	111
Instruments			194				194
ar1			-3.17				-3.1788
ar2			1.084				1.2168
Sargan			146.7517				139.968
Hansen			92.7552				91.498

Notes: for definitions see Table A.3.

Table A.5 Other estimated models for self-employment rate

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(4)	(5)	(6)
SE_{t-1}	0.9932***	0.8589***	0.9361***		0.9932***	0.8592***	0.9270***
$CI(SE_{t-1})$	0.9890,0.9973	0.8393,0.8786	0.8939,0.9783		0.9891,0.9974	0.8395,0.8788	0.8771,0.9770
DFE	-0.0011	-0.0013	-0.0024	EPL	0.0001	0.0059	-0.0082
GDP growth	-0.0005***	-0.0004***	-0.0002		-0.0005***	-0.0004***	-0.0002
Population	0	-0.0001	0		0	0	0
Freedom House	0.0001	-0.0008	0.0064***		0.0001	-0.0007	0.0055**
Constant	-0.0011	0.0554***	0.006		0.0027	0.0513***	0.0151
Observations	2408	2408	2408		2408	2408	2408
F	24730.89	385.1083			24202.31	385.1698	
Countries		111	111			111	111
Instruments			196				196
ar1			-3.3763				-3.3714
ar2			-1.0149				-1.0107
Sargan			188.7607				196.2229
Hansen			99.6926				96.9644

Notes: for definitions see Table A.3.

Table A.6 Other estimated models for labour productivity per worker

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(4)	(5)	(6)
PRD_{t-1}	0.9984***	1.0134***	0.9959***		0.9987***	1.0136***	0.9892***
$CI(PRD_{t-1})$	0.9955,1.0014	0.9877,1.0390	0.9817,1.0101		0.9959,1.0015	0.9879,1.0393	0.9687,1.0098
PRD_{t-2}		-0.0559***				-0.0564***	
$CI(PRD_{t-2})$		-0.0819,-0.0298				-0.0824,-0.0303	
DFE	0.0102**	-0.0051	-0.0437	EPL	0.0238***	-0.0028	-0.1281
GDP growth	0.0079***	0.0075***	0.0088***		0.0080***	0.0075***	0.0088***
Population	0.0000**	0.0001***	0		0.0000**	0.0001***	0
Freedom House	-0.0048***	-0.0008	-0.0122***		-0.0048***	-0.0008	-0.0104**
Constant	0.0001	0.3912***	0		-0.0094	0.3920***	0
Observations	2408	2303	2408		2408	2303	2408
F	155776.3	3641.608			164701.9	3640.813	
Countries		111	111			111	111
Instruments			196				196
ar1			-3.6324				-3.6401
ar2			0.0442				0.1219
Sargan			221.1706				248.8653
Hansen			87.3418				87.6596

Notes: for definitions see Table A.3.

Table A.7 Other estimated models for labour share

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(4)	(5)	(6)
LS_{t-1}	0.9823***	0.6903***	0.8691***		0.9823***	0.6906***	0.8719***
$CI(LS_{t-1})$	0.9668,0.9979	0.6546,0.7261	0.7505,0.9876		0.9664,0.9983	0.6549,0.7264	0.7491,0.9946
DFE	0.0021	0.004	0.0042	EPL	-0.0022	-0.0141	0.0139
GDP growth	-0.0002	-0.0006***	-0.0012**		-0.0002	-0.0006***	-0.0012**
Population	0	-0.0001	0		0	-0.0001*	0
Freedom House	-0.0008	0.0027**	-0.0058		-0.0009	0.0025**	-0.0054
Constant	0.0118*	0.1411***	0.0764**		0.0147**	0.1518***	0.0689
Observations	1389	1389	1389		1389	1389	1389
F	4343.382	69.8258			4231.719	69.9041	
Countries		82	82			82	82
Instruments			213				213
ar1			-3.6191				-3.6434
ar2			-1.692				-1.702
Sargan			320.3525				325.6775
Hansen			68.7571				68.0457

Notes: for definitions see Table A.3.

Table A.8 Other estimated models for unemployment rate

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(5)	(6)	(7)
U_{t-1}	0.9404***	0.8382***	0.8908***		0.9402***	0.8385***	0.8772***
CI(U_{t-1})	0.8133,1.0674	0.7976,0.8789	0.6838,1.0977		0.8129,1.0675	0.7978,0.8792	0.6698,1.0847
U_{t-2}	0.0267	-0.0684***	-0.0052		0.0265	-0.0688***	-0.0126
CI(U_{t-2})	-0.0984,0.1519	-0.1099,-0.0269	-0.1985,0.1882		-0.0988,0.1519	-0.1104,-0.0272	-0.1989,0.1738
DFE	0.0011	0.0025	-0.0115	EPL	0.0017	0.0007	-0.0272
GDP growth	-0.0006***	-0.0006***	-0.0005***		-0.0006***	-0.0006***	-0.0005***
Population	0	0	0		0	0	0
Freedom House	0.0001	-0.0004	-0.0019		0.0001	-0.0004	-0.0025
Constant	-0.0003	0.0212***	0.0274**		0.0082***	0.0223***	0
Observations	2303	2303	2303		2303	2303	2303
F	3250.213	135.8456			2886.364	135.7936	
Countries		111	111			111	111
Instruments			194				194
ar1			-2.4357				-2.4532
ar2			0.216				0.2756
Sargan			245.7158				255.6257
Hansen			96.063				97.6714

Notes: for definitions see Table A.3.

Table A.9 Other estimated models for unemployment rate

	OLS	FE		OLS	FE
	(1)	(2)		(3)	(4)
U_{t-1}	0.7691***	-0.5756***		0.7646***	-0.5748***
CI(U_{t-1})	0.6780,0.8602	-0.7919,-0.3592		0.6727,0.8565	-0.7915,-0.3582
DFE	0.0132	0.014	EPL	0.0206	-0.0256
Unemployment coverage	-0.0001	-0.0004**		-0.0001	-0.0004**
GDP growth	-0.0025**	-0.0022***		-0.0026**	-0.0024***
Population	0	0		0	0
Freedom House	-0.001	0.0014		-0.0013	0.0007
Constant	0.0289***	0.1589***		0.0270***	0.1798***
Observations	216	216		216	216
F	59.1429	7.8194		59.8775	7.7492
Countries		109			109

Notes: CI denotes the confidence interval. U stands for unemployment rate. * 10% significance, ** 5% significance, *** 1% significance. Columns 1 and 3 show the estimated coefficient obtained through Ordinary Least Squares estimation, including a lagged dependent variable. Standard errors are clustered at the country-level. Columns 2 and 4 display estimated coefficients in a fixed effects framework. Regressions include unemployment coverage as additional covariate.

Table A.10 Other estimated models for Gini index

Market Gini			Net Gini	
	FE	FE	FE	FE
	(1)	(2)	(3)	(4)
DFE	-0.0524		-0.0735*	
EPL		-0.0503		-0.0989
GDP growth	-0.0223	-0.0205	-0.0253	-0.0239
Population	0.0004	0.0016	-0.0071***	-0.0057**
Constant	-0.0004	-0.0003	0.0005	0.0006
Freedom House	0.4163***	0.4015***	0.6279***	0.6210***
Observations	71	71	71	71
F	2.4469	1.7895	2.585	1.7601
Countries	36	36	36	36

Notes: Coefficients are obtain through fixed effects estimation. Market Gini values are based on income before taxes, whereas the Net Gini is calculated on after tax income. * 10% significance, ** 5% significance, *** 1% significance.

Table A.11 Other estimated models for Human Development Index

	OLS	FE	System GMM		OLS	FE	System GMM
	(1)	(2)	(3)		(5)	(6)	(7)
HDI_{t-1}	0.9908***	0.8543***	0.9705***		0.9910***	0.8588***	0.9798***
$CI(HDI_{t-1})$	0.9866,0.9950	0.8238,0.8849	0.9520,0.9890		0.9869,0.9951	0.8286,0.8890	0.9578,1.0017
DFE	0.0005	-0.0051*	0.0148***	EPL	0.0002	-0.0074	0.0041
GDP growth	0.0004***	0.0004***	0.0004***		0.0004***	0.0004***	0.0004***
Population	0.0000**	0	0		0.0000**	0	0
Freedom House	-0.0001	0.0004	0.0007		-0.0001	0.0005	0.0003
Constant	0.0098***	0.1080***	0		0.0099***	0.1056***	0.015
Observations	878	878	878		878	878	878
F	94160.4908	893.6843			93428.667	891.7004	
Countries		110	110			110	110
Instruments			173				173
ar1			-3.7879				-3.8114
ar2			-0.9173				-0.6715
Sargan			150.0972				164.846
Hansen			94.7901				97.0376

Notes: for definitions see Table A.3.

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about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities.*

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