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The Impact of Labour Laws on the Labour Share of National Income, Productivity, Unemployment and Employment:

First Results from the 2023 Update of the CBR Labour Regulation Index

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Abstract

This paper reports first results from the extension of the CBR Labour Regulation Index (CBR-LRI) to include changes in labour laws around the world over the last decade. The index, which previously went up to 2013, now codes for labour laws in 117 countries, equivalent to 95% of world GDP, for the period 1970 to 2022. The data show that the steady and incremental improvement of worker protections over time which was previously reported in studies of the index has been maintained. Findings specific to the 2023 update include data on the impact of Covid-19 and the rise of gig work. The Covid-19 emergency led numerous countries to impose controls over dismissals, some of which were temporary, while others have persisted. Efforts to normalize gig or platform work, by extending certain labour law protections to cover the new forms of employment associated with the platform economy, are also identified in the 2023 update. Taking advantage of the new dataset and its extensive year and country coverage, we conduct a time series analysis which aims to understand the dynamic interaction of labour laws with the labour share of national income, productivity, unemployment and employment at country level. In virtually all of the countries we analyse, worker-protective changes in labour laws are positively correlated with increases in the labour share, and in a majority of them they are also positively correlated with productivity. The positive productivity effect is evidence that labour laws have efficiency implications: by redressing asymmetries of information and resources between labour and capital, they help overcome barriers to coordination and promote cooperation, enabling the sharing of knowledge and risk between workers and employers. However, we also find that productivity improvements do not always translate into higher employment or reduced unemployment. Productivity is inversely related with employment in some systems, mostly liberal market and common law countries. In others, mostly coordinated market and civil law countries, productivity and employment are positively related, suggesting that firm-level improvements in efficiency have beneficial second-order effects, leading to employment gains and unemployment reductions. Our results suggest that labour law rules promoting distributional fairness and worker voice may need to operate alongside complementary institutions in capital markets and training systems if firm-level efficiencies are to translate into employment growth.

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▶ Introduction

The CBR Labour Regulation Index (CBR-LRI) is one of a number of leximetric datasets developed at the University of Cambridge for the purpose of enabling researchers and policy makers to track changes in labour, company and insolvency law in many countries over extended periods of time (Deakin et al., 2023). The CBR-LRI codes for changes in labour laws in over 100 countries since the early 1970s. It employs a 'leximetric' coding method which provides a statistical measure of the content of legal rules (Adams et al., 2017; Deakin, 2018). Specifically, it makes it possible to ascertain how far a given labour law protects workers, on the one hand, and regulates employers, on the other. It can be used to compare countries' labour laws and to benchmark changes in labour laws at country, region and global level over time. The index can also be deployed in econometric analysis to estimate the relationship between changes in the content of laws, on the one hand, and developments in the wider economy of a country, such as fluctuations in the levels of employment and unemployment, changes over time in productivity, and trends in income inequality, on the other (Adams et al., 2019).

The CBR-LRI dataset has recently been updated to the end of 2022 (Adams et al., 2023). The previous iteration coded laws up to 2013. Thus a further decade or so of codings are now available. The publication of the 2023 iteration of the index makes it possible to conduct a systematic review of changes in labour laws around the world over the last ten years. It also throws light on long-run trends in labour law, now going back over five decades. Additionally, the updated index opens up new possibilities for studying the impact of labour law changes on national economies.

The debate over the economic effects of labour laws is evolving, but is far from settled. Economic theory recognises that labour laws, rather than being the straightforward 'burden' or 'distortion' on employer decision making that had once been assumed, can have positive impacts on firm-level efficiencies. In protecting workers against the unmediated exercise of employer power, labour laws may enhance labour-management cooperation, thereby contributing to innovation and productivity. The shift in thinking was reflected in the World Bank's suggestion, in its 2015 *Doing Business* report, that in protecting workers against 'arbitrary and unfair treatment', labour regulations also 'increase job stability' and 'improve productivity'; it was not just regulations that were 'too strict' but those which were 'too loose' which ran the risk of being counterproductive, 'leading to losses of employment in an economy or to its missing out on job-supporting agglomeration effects and knowledge spillovers' (World Bank, 2014: 231).

The debate may have shifted but it is not resolved, in part because not enough is known about the conditions under which labour laws may produce beneficial economic effects. According to the World Bank, 'finding the right balance' between possible negative and positive impacts 'is essential'. This is in part a question of assessing the level of protection which labour laws confer on workers, and also of understanding the 'economic and political context' in which laws operate (World Bank, 2014: 231).

A first step to achieving an improved understanding of how labour laws work is to get better data on their regulatory content. It matters not just that labour laws protect workers, but *how far* they do so (Cazes et al., 2012). Although labour law systems around the world have a number of structural features in common, they also display a wide variation in the degree of protection they purport to confer on workers. The CBR-LRI aims to capture the extent of this diversity across labour law systems. It covers more detail on the types of labour laws, a lengthier time series by years included, and more extensive country coverage, than other, similarly constructed

datasets. As such it has the potential to be a useful resource for the social science community and for policy makers.

Section 2 outlines the theoretical framing of the issue of labour laws' economic effects, noting the growing influence of institutionalist theories of labour law and the labour market, and their implications. Section 3 outlines the methodology underlying the construction of the CBR dataset. Section 4 then describes some of the trends in labour laws around the world that the new dataset reveals or clarifies. Section 5 reviews the prior state of the art on empirical examination of the economic consequences of labour laws, including earlier studies using the CBR-LRI. Section 6 presents the methods and data used in the econometric analysis and section 7 sets out the results, detailing the impact of labour law changes on the labour share of national income, productivity, unemployment and employment in a cross section of countries from different regions and at different levels of economic development. Section 8 consists of an assessment of the results. Section 9 concludes.

▶ 1 Theorising the impact of labour laws on the economy

If labour markets were perfectly competitive, regulation aimed at protecting workers would have the effect of introducing distortions or rigidities, preventing the price mechanism from working to allocate resources to their most efficient use. This is the basis for believing that labour laws, while seeking to protect workers, 'often hurt them' (World Bank, 2007: 19). In practice, labour markets do not conform to textbook models of pure competition, a reality which, it is now widely accepted, economic theory should take on board (Manning 2003).

Institutionalist approaches of various kinds have identified a role for labour laws in offsetting asymmetries of information and power which are characteristic of labour contracting. 'New institutionalism' in economics, drawing on transaction cost theory, tends to emphasise the role of solutions which the parties themselves develop for building cooperation and trust (Williamson, Wachter and Harris, 1975). 'Legal institutionalist' approaches see the law as having a more foundational role: it is not so much a question of law *intervening* in the employment contract, as *constituting* it through a combination of property rights allocations, private law liability rules, and legislative norms with varying degrees of bindingness (Deakin et al., 2017). Underlying institutional analyses, whatever their exact provenance, is a critique of the idea of the market as natural or self-ordering; contracts, practices, norms and laws are intrinsic to the way labour (and other) markets operate, and can have multiple effects, sometimes trading off equity against efficiency and sometimes combining them, depending on context (Deakin and Wilkinson, 2000).

It may be profit-maximising for firms to contract with workers to offer job security and a premium over market-clearing wages in order to obtain greater effort and commitment, as recognised by efficiency wage theory (Bulow and Summers, 1986; Summers, 1989). Where that is the case, mandatory legal rules could be seen as unnecessary. If employers are not willing to offer job security and a wage premium, conversely, the law should not impose these benefits. However, it is recognised that adverse selection effects may deter firms from offering improved contractual terms and conditions (Levine, 1991). The standardisation of employment terms and conditions through collective bargaining and/or legislative compulsion (legal 'mandates') may then be efficiency enhancing.

Behavioural and experimental studies have examined the conditions under which employment contracts, offering workers a degree of security and stability in return for commitment loyalty, might be expected to emerge in place of independent contracting or self-employment, in which the parties contract for the delivery of a specific job of work or service without the expectation of a regular or continuing relationship. Bartling et al. (2014) propose a behavioural model in which the parties can realise a surplus by moving from self-employment to employment, the insight here being that enhanced cooperation allowed for by the employment contract generates relative gains compared to independent contracting. However, experimental evidence shows that this result holds only in the presence of binding fairness norms, which penalise cheating or (in a game-theoretical sense) 'defection' by the party with market power, which will generally be the employer. Thus where fairness in contracting is something that workers value but employers have a tendency to under-provide, legal mandates may have positive equity and efficiency effects at the same time (Adams et al., 2019).

A subset of the literature has focused on the innovative firm as one particular context in which to explore the properties of labour regulation. It is recognised here that employment protection legislation, for example, can lead to increased labour productivity (achieving a higher output for a given labour input) and innovation (transforming productive inputs into tradable outputs in the form of more highly valued goods and services). From this point of view, reducing dismissal protection and promoting so-called non-standard forms work in the interests of labour market flexibility, a position argued for the OECD in its *Jobs Study* of the 1990s (OECD, 1994), may make it more difficult for firms to innovate. This is for the following reasons, summarised by Kleinknecht (2017): with easier firing and reduced job tenures, the incentives of both employer and workers to invest in firm-specific training, the returns from which will take time to be realised, will be reduced; learning embedded in firm-level routines and practices will be lost as labour turnover increases; loyalty to the firm will be eroded, requiring more costly monitoring of workers by managers; and, knowledge sharing between firms and workers, particularly concerning tacit knowledge which may form an important part of a firm's competitive advantage, will be diminished. Counter arguments, also discussed by Kleinknecht (2017), include the following: dismissal protection will slow down the movement of labour from established and stable sectors to new and rapidly growing ones; higher firing costs will deter firms from making labour-saving innovations which could be expected to generate redundancies; stronger labour laws will enable workers to capture a higher proportion of the firm's profits, discouraging organisational change and deterring investment; and, laws requiring employers to justify dismissals will encourage workers to reduce their effort ('shirking').

The first set of arguments may have greater weight in the context of established firms with a longer time horizon for returns from innovation, while the second set may be relevant to firms seeking to innovate in more radical or disruptive ways and with a shorter time horizon, as could be the case whith venture-capital funded start-ups (Damiani and Pompeii, 2010; Vergeer and Kleinknecht, 2014). Whether innovation is centred around firm-specific human capital and tacit knowledge, or generic skills, may also be relevant. In either case, empirical evidence would seem to be needed to establish which of the different effects is observed in practice, which may vary according to the presence of other institutions including the degree of centralisation of wage bargaining (Kleinknecht, 2017) and the operations of corporate laws and financial regulations which can be expected to impact on investment (Adams and Deakin, 2024).

Labour laws might also have a number of macro-level effects. In so far as labour laws increase returns to labour, in form of wage and salaries, and reduce those to capital, in the form of dividends and rents, they would, all things being equal, lead to a decrease in the level of overall income equality in a country, as rents and dividends tend to accrue to higher earners and better-off income groups, while returns to wages are more evenly distributed across the working population. The fit is not exact since some returns to labour include the incomes received by some very high earners, but the incomes of those in the top 0.1% or 0.01% of the earnings distributions are mostly in the form of returns from capital, so all things being equal an increase in the labour share will reduce overall income inequality (Deakin, 2021). There may be wider benefits from reducing inequality: rising income inequality caused by shifts in the legal protection accorded to workers and investors respectively has been found to be associated with a number of negative health effects, including increases in child mortality and obesity, with resulting costs for public healthcare systems (Ferguson et al., 2017).

On the other hand, laws lowering the relative return to capital may, according to some analyses, depress productive investment, leading to reduced dynamism in the economy (Besley and Burgess, 2004, analysing the effects of divergences in labour regulation across states in India; see, however, Storm, 2019, for a critique of the data relied on in this paper). Additional macro-level

consequences of excessive labour regulation may include an increase in the size of the informal economy and higher youth unemployment, where labour laws focus protection on 'insiders' with core, well protected jobs, at the expense of job seekers and young workers entering the labour market for the first time (Botero et al., 2004).

The literature on 'legal origins' suggests that institutional factors may play a role in mediating the effects of labour laws at country level. Here the 'origin' of a country's legal system refers to whether its underlying legal institutions are derived from those of the English common law, on the one hand, or the French or German civil law, on the other hand. According to La Porta et al. (2008), civil law systems display a tendency towards public regulation of the economy, whereas those of the common law place greater emphasis on private property and contract rights. How far this is actually the case has been much debated (see Deakin and Pistor, 2012, for an overview of this literature), but there is evidence to suggest that the degree of protection conferred on workers by labour laws is, on average, higher in civil law systems than in common law ones (Adams et al., 2018).

The tendency of civil law systems to provide a higher degree of worker protection through law may not be the direct or sole result of any legal origin effect. It is possible that legal origin is correlated with other institutional factors which might be expected to influence both legal and economic outcomes, for example those captured by the 'varieties of capitalism' literature. In the varieties of capitalism approach, 'liberal market systems' (which tend to have a common law legal origin) are characterised by relatively liquid capital markets and flexible labour markets, in contrast to 'coordinated systems' (in practice, mostly of civil law legal origin), in which capital tends to be more concentrated and labour markets more highly regulated. Training is another point of difference, with coordinated market systems tending to place greater emphasis than liberal market ones on the role of formal institutions in regulating vocational and educational training and on providing firms with fiscal and regulatory incentives to invest in firm-specific human capital (Hall and Soskice, 2001).

Although some analyses making use of the legal origins approach have identified negative economic consequences of labour laws, suggesting that civil law systems may be at an economic disadvantage to common law ones (Botero et al., 2004), it is not the case that civil law systems on average demonstrate slower growth or less economic dynamism that common law ones (La Porta et al., 2008). Thus while legal origin may have some impact on approaches to law making, it does not seem to be a major explanatory factor in accounting for cross-national differences in economic performance. It may however the case that the social and economic impacts of labour laws are mediated by underlying characteristics of legal systems as well as by other institutions including the corporate governance regime, the framework of financial regulation and the training system of a given country (Adams et al., 2018).

In short, theory suggests a number of possible effects of labour regulation, the incidence of which may depend on a range of country-specific factors. The motivation for the construction of the CBR-LRI was the need for a measure of labour regulation which could be used to test for these various effects. With that goal in mind, we now turn to a closer examination of the methodology underlying the dataset.

▶ 2 Constructing the CBR-LRI dataset

The methodology underlying the CBR-LRI is that set out in the *Handbook on Constructing Composite Indicators*, published under the auspices of the OECD and European Commission in 2008 (OECD, 2008). The central idea is that of 'construct validity', which involves a series of elements (see Table 1).

▶ Table 1. Elements of a composite index

Concept
Construct
Indicators
Coding protocols
Measurement scale
Weights
Aggregation

Source: Deakin (2018)

A statistical 'construct' is a measure of the underlying reality (called a 'concept') which the index is seeking to measure. The concept in the case of the Cambridge index is 'labour regulation', meaning the regulatory content of a law: how far does it protect workers or, conversely, bind employers? Labour laws differ, for example, in the limits they set to a daily or weekly working time, the strictness of dismissal protection, the scope of the right to strike, and so on. The index aims to capture not just *whether* a law exists, but *how* protective it is.

A statistical 'construct' contains several elements. Firstly, there are the individual *indicators* or variables which express different aspects of the construct numerically. The CBR-LRI contains 40 such indicators, grouped into five sub-indices representing particular areas of labour regulation: laws on how far different forms of employment, including self-employment, part-time work, fixed-term employment and temporary agency work, are assimilated to the 'core' employment contract; laws on working time; laws governing unjust or unfair dismissal; the law on collective employee representation; and the law on strikes and other forms of industrial action. The summary indicators, and the sub-indices into which they are grouped, are set out in Table 2.

▶ Table 2: CBR-LRI sub-indices and indicators

A. Different forms of employment
1. The law, as opposed to the contracting parties, determines the legal status of the worker
2. Part-time workers have the right to equal treatment with full-time workers
3. Part time workers have proportionately equal dismissal rights to those of full-time workers
4. Fixed-term contracts are allowed only for work of limited duration
5. Fixed-term workers have the right to equal treatment with permanent workers
6. Maximum duration of fixed-term contracts
7. Agency work is prohibited or strictly controlled

8. Agency workers have the right to equal treatment with permanent workers of the user undertaking
B. Regulation of working time
9. Annual leave entitlements
10. Public holiday entitlements
11. Overtime premia
12. Weekend working
13. Limits to overtime working
14. Duration of the normal working week
15. Maximum daily working time
C. Regulation of dismissal
16. Legally mandated notice period (all dismissals)
17. Legally mandated redundancy compensation
18. Minimum qualifying period of service for normal case of unjust dismissal
19. Law imposes procedural constraints on dismissal
20. Law imposes substantive constraints on dismissal
21. Reinstatement normal remedy for unfair dismissal
22. Notification of dismissal
23. Redundancy selection
24. Priority in re-employment
D. Employee representation
25. Right to unionisation
26. Right to collective bargaining
27. Duty to bargain
28. Extension of collective agreements
29. Closed shops
30. Codetermination: board membership
31. Codetermination and information/consultation of workers
E. Industrial action
32. Unofficial industrial action
33. Political industrial action
34. Secondary industrial action
35. Lockouts
36. Right to industrial action
37. Waiting period prior to industrial action
38. Peace obligation
39. Compulsory conciliation or arbitration
40. Replacement of striking workers

In choosing these particular indicators and grouping them into the five sub-indices, a judgment had to be made on which elements of contemporary systems of the laws relating to work should be coded. The judgment was informed by the legal expertise of the index's authors. In terms of subject-matter, the sub-indices in the CBR-LRI overlap closely with the content of ILO conventions and recommendations. The individual indicators mostly cover the same issues as those proposed by Botero et al. (2004) and later developed by the World Bank in its *Doing Business* Reports (World Bank, various years), although those in the Cambridge index are somewhat more granular (for further explanation see Deakin, Lele and Siems, 2007).

Because of time and resource constraints it is not possible, when creating an index of this kind, to cover every aspect of labour laws, or to do so in the depth which would be applied, for example, to the doctrinal analysis of a legal text. Some selectivity is unavoidable. However, the methodology underlying the index could in future be applied to code other areas of labour law, such as health and safety law and discrimination law, which are not contained in the current index. It could also be used to deepen the analysis of a specific area of law, for example, the laws governing platform and gig work, which are partially captured by the current sub-index on different forms of employment, but are currently the focus of an additional sub-index which complements the existing codings (Bishop et al., 2025). Areas of law on which extensive data already exist, such as minimum wage levels and unemployment benefit replacement rates, are not coded, on the basis that there is less need to employ leximetric techniques where other measures of the protective contents of laws are available.

Once the indicators are identified, the next step is to define, for each individual variable, a *coding protocol* which is, in effect, a verbal algorithm. This instructs the coder on how to assign values to laws of different types in order to arrive at a score for a given indicator. Each of the coding protocols contains a *measurement scale* which describes the range of values to be applied. A 0-1 scale is used, with higher values indicating more protection.

The protocols used in the CBR-LRI are those set out initially in Deakin, Lele and Siems (2007). The original definitions have been retained with only small modifications in later iterations of the dataset. By way of illustration, Table 3 gives an example of a coding protocol which relates to the legal approach to employment status, and provides an example of how it was applied in a particular country (here, the UK).

▶ **Table 3. Example of coding (UK law, variable 1)**

Variable	Coding protocol	Score	Explanation
A. Different forms of employment			
1. The law, as opposed to the contracting parties, determines the legal status of the worker	Equals 0 if the parties are free to stipulate that the relationship is one of self-employment as opposed to employee (or equivalent) status; 0.5 if the law allows the issue of status to be determined by the nature of the contract made by the parties (as in the case of the English common law 'mutuality of obligation' test); and 1 if the law mandates employee status on the parties if certain specified criteria are met (such as form of payment, duration of hiring, etc.). Scope for scores between 0 and 1 to reflect changes in the strength of the law. A higher score is coded in jurisdictions in which judicial decisions and/or legislation relating to platform work have recognised the potential for this form of work to give rise to a regular employment or work relationship, if the normal conditions for such a relationship are present. The presence of laws protecting platform workers regardless of their employment status is also reflected in the coding.	1970: 0.5 2013: 0.33 2016: 0.5 2021: 0.75	The English courts do not allow the parties to choose the form of the employment relationship at will, but nor does employee status inevitably follow from the presence of indicia based on control, integration, etc. In practice the terms of the contract have determined to a large degree the classification of the employment relationship. This has been particularly the case since the early 1980s, a period during which the English law approach to classification clearly diverged in terms of its strictness to that in France or Germany, although it has historically been somewhat more flexible. From 2013 employees could formally contract out of certain employment protection rights in return for shares in the employing company (the 'employee shareholder' concept). In 2016 tax subsidies for this change of status were withdrawn. Cases involving platform work have not reached a clear conclusion. The UKSC decision in ***Uber*** (2021) suggests that drivers and couriers can be classed as workers, conferring minimum wage and working time protection, if they are economically dependent. This decision also emphasises the need for a purposive approach to the issue of classification, a significant departure from previous case law, with general application. The collective bargaining rights of platform workers remain unclear after litigation involving ***Deliveroo***.

The codings are reported by country and year, so that a unique score for each indicator by country-year unit is provided. For most countries, a continuous coding is provided for the period 1970-2022. Post-communist systems are coded from the point at which they ceased to operate as planned economies, which is generally taken to be the year in which legal and constitutional reforms led to the institution of a market-orientated economic system.

The final step is to *aggregate* the values of the individual indicators to arrive at an overall composite score. This involves the question of whether, and if so how, *weights* should be used when the individual scores are averaged or aggregated. To consider these issues in more detail, it will be helpful first to outline in some more detail how the primacy sources for the index were retrieved and analysed.

The primary sources relied on to construct the index consist of the laws on work passed in various countries from 1970 to the present day. The laws are sourced in the form of the original legal texts: statutes (legislation) and judgments (rulings of courts). These materials are, by virtue of their nature as legal texts, publicly available. The large majority can be retrieved from online sources including the ILO's NATLEX database of labour statutes and relevant country-level databases. Where the text of a law is not available online, which is sometimes the case with statutes from the early years covered by the index from 1970 onwards, the relevant laws were consulted in law libraries with extensive cross-national collections, including the library of the Institute of Advanced Legal Studies in London and the library of the Max Planck Institute of Comparative in Law in Hamburg. The texts were read in in their original languages. Where a text was only available in a language not familiar to one of the members of the project team, a national expert was consulted.

Once the texts were accessed, the coding protocols were applied to arrive at scores for the indicators, which are reported by country and year. The individual scores can be combined (aggregated or averaged) to produce a composite score (either by reference to the sub-indices or to the overall index) for a given country-year.

According to the OECD *Handbook*, composite indices such as the CBR-LRI 'are much like mathematical or computational models', the construction of which 'owes more to the craftsmanship of the modeller than to universally accepted scientific rules for encoding (OECD, 2008: 14). There is no one, unique way to code labour laws, and the approach taken in the case of the CBR-LRI is not, in itself, more or less correct than alternatives. Rather, 'the justification for a composite indicator lies in its fitness for the intended purpose and in peer acceptance' (OECD, 2008: 14).

The protocols that were developed for the Cambridge index were constructed for the specific purpose of generating a measure of labour regulation across countries and over time, which could be used to inform econometric analysis to estimate the social and economic effects of labour laws, as well as the wider political factors driving their adoption. Because of their extensive time and country coverage they should be useful to the wider social science community and to policy makers.

The coding is carried out by members of a relatively small project team (currently, five people), and final scores, based on the application of the relevant algorithm in each case, are arrived at by a process of discussion and deliberation between them. Because a detailed coding protocol is used, it is possible to arrive at an objective or 'externally valid' understanding of the 'correct' score for a given law. Although there is a danger of confirmation bias in this approach, steps can be taken to avoid or at least minimise that risk. The draft codings for the latest iteration were made available to the wider labour law community prior to the finalisation of the scores. This was done via early publication of a draft on the Centre for Business Research website in June 2023, and the circulation of a request for feedback via the Labour Law Research Network, which has a global reach. Since the dataset was first published in its current form in 2013, there has been a steady stream of correspondence with labour lawyers from the around the world, who have offered comments on it.

A high degree of transparency in the application of the coding protocols is one of the advantages of leximetric methodology, in contrast, for example to approaches which rely on machine learning, with respect to which the 'explainability' or 'interpretability' of a given result is a continuing issue (Markou and Deakin, 2020). In the case of the CBR-LRI, alongside a spreadsheet containing the scores, a book of codes and sources has been published which sets out in detail the basis for each of the values. The index is thereby able to meet the requirements of replicability and

external validity: a national expert coding a given law using the algorithm devised by the index's authors should arrive at the same score as that contained in the index, or at least, in the event of a difference of interpretation, be able to see how the index score was arrived at.

Even if it is possible to minimise the risk of bias or error in the coding process, an index of this kind inevitably has limitations. Because the primary sources are legal texts, the dataset does not track how laws are perceived to work by employers or workers. Nor does the index capture information about enforcement. It codes for 'jural' law, not law 'in practice'. This could be seen as a limitation.

However, the legal content of a rule cannot be dismissed as a matter of no relevance to its practical operation. While there may well be an enforcement gap in even in the most stable and well-functioning legal systems, data on enforcement are available from a number of other sources, and can be used in conjunction with our dataset to get a more fully rounded picture of the law's operation in practice.

For example, there are lengthy time series, matching that of the Cambridge index in terms of year by year coverage, for data on the 'rule of law', in the form of the World Bank's Governance Indicators, and the Freedom House indicator of human rights violations. The ILO collects country-level data on labour inspection, and several countries report on the volume and type of employment disputes going before courts and tribunals. It may in future be possible to devise a systematic index of labour law enforcement practices around the world.

This leads us on to a discussion of weights. It is unlikely that the forty indicators in the index have equal significance in shaping the law of a given country; yet the effect of simply averaging or aggregating them to arrive at a composite country score is to treat them as equally important in a specific country context. There is however no immediately obvious way to assign weights *a priori*. The weighting issue may be partly overcome through the use of a statistical method for identifying clusters of variables, such as factor analysis or principal component analysis. The CBR-LRI is reported without weights so that researchers can make their own decisions on which weighting methods to use, if any; there is an argument to the effect that default of equal weighting may work well enough for a dataset of this scale and scope, containing, as it does over 200,000 individual observations covering between them over 50 years, in the case of the majority of legal systems, and more than 100 countries.

▶ 3 Trends in labour protection around the world

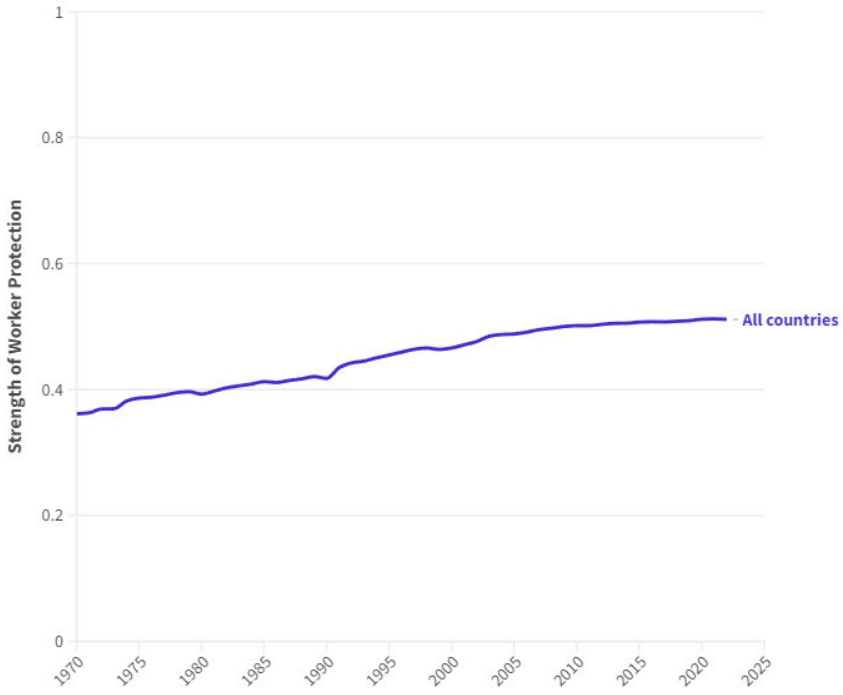
In this part we report first descriptive findings from the new dataset.

(i) There has been a steady, if incremental, improvement in the protective content of labour laws across all countries since the 1970s

The rate of change in labour laws has been fairly steady, and has been generally in the direction of regulation favouring workers over employers (see Figure 1): in other words, shorter working weeks, tighter controls over dismissal, expanded collective bargaining and codetermination rights, and greater protection for the right to strike.

This observation should, however, be seen in the context of larger changes in labour market regulation and in economic policy over the period since 1970. Not captured by Figure 1, for example, are trends in corporate governance which have strengthened capital rights, potentially at the expense of labour (Sjoberg, 2009; Ferguson et al., 2017). It should also be borne in mind that Figure 1 only describes trends in jural law, not the application or observance of the law in practice. There will be countries in which labour law rules, while formally enacted, have little effect in workplaces, thanks to a lack of enforcement, or a large informal economy (Ronconi and Raphael, 2024). With these caveats, Figure 1 nonetheless indicates that there has been a steady and incremental enactment of worker-protective labour law around the world since the early 1970s. There is no evidence here of the 'end' of labour law or of its desuetude.

▶ **Figure 1. Strength of worker protection, all countries, all years**



(ii) Prolonged deregulatory episodes are rare

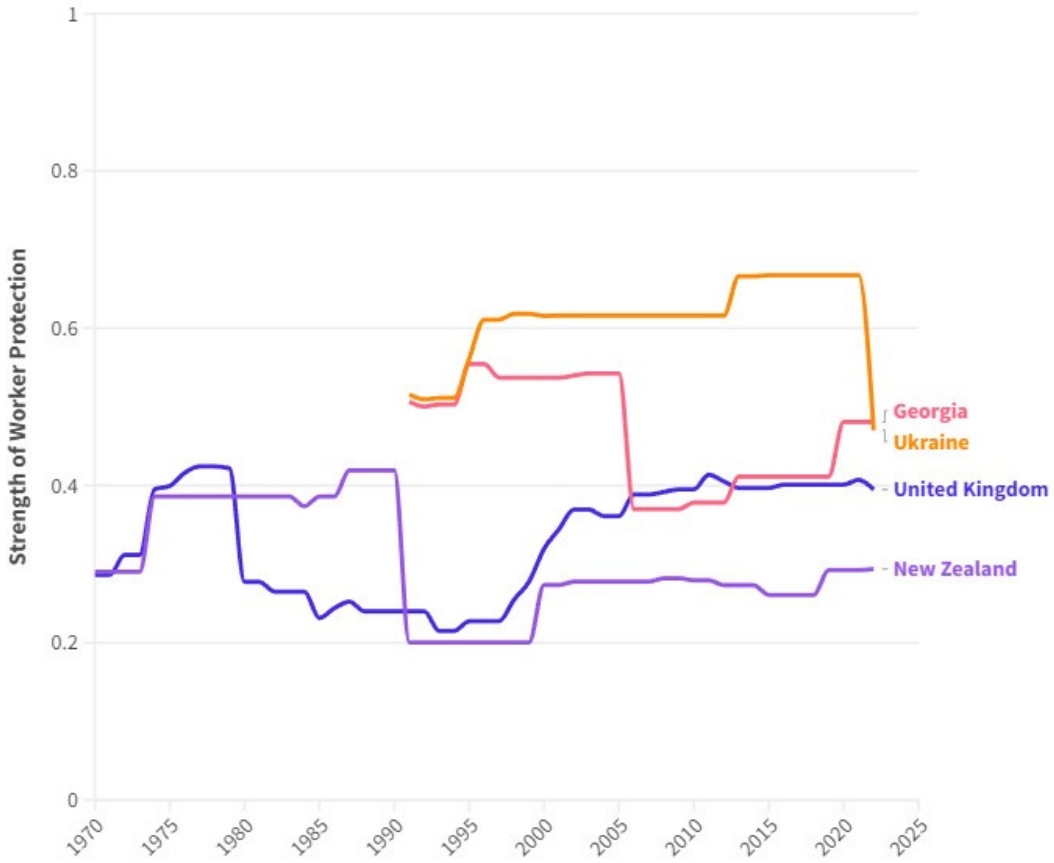
At the same time, the image of a steady improvement across all countries and all years is something of a mirage; not just a bird's eye view but more like that of a distant satellite. By diving down to the level of individual countries, it is possible to see not just constant change, but sharp reversals, with periods of deregulation (or weakening of labour rights) followed by improvements in labour rights, and vice versa. We also see different trends by areas of law.

Deregulatory episodes are not unknown, but only four countries – the UK in the 1980s, New Zealand in the early 1990s, Georgia in the mid-2000s, and Ukraine since 2022 – show steep declines (see Figure 2). Deregulatory episodes have lasting effects: the UK score rebounded only slowly in the 1990s and 2000s and is still below where it stood in the 1970s. In New Zealand and Georgia, the level of protection revived after a few years had passed, but again did not reach its previous level. It remains to be seen what will happen in Ukraine. Its recent programme of labour law reforms, while introduced under the auspices of the wartime emergency, was planned before the current conflict there began.

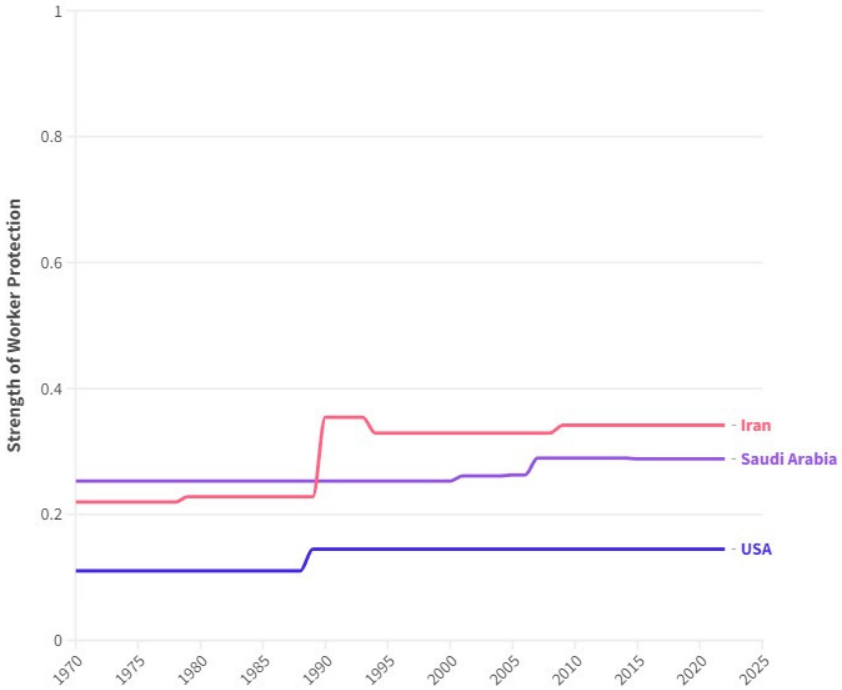
(iii) The USA is an outlier not just among liberal democracies, but across all countries

Another small subset of countries have had weak labour laws throughout the period covered by the dataset: as Figure 3 shows, Iran, Saudi Arabia and the USA fall into this category. In terms of the low level of protection conferred by law on workers, the United States is not just an outlier among liberal democracies, but across all countries. The causes and consequences of US exceptionalism, and in particular its distinctive 'ossification' (Estlund, 2002), would repay further study.

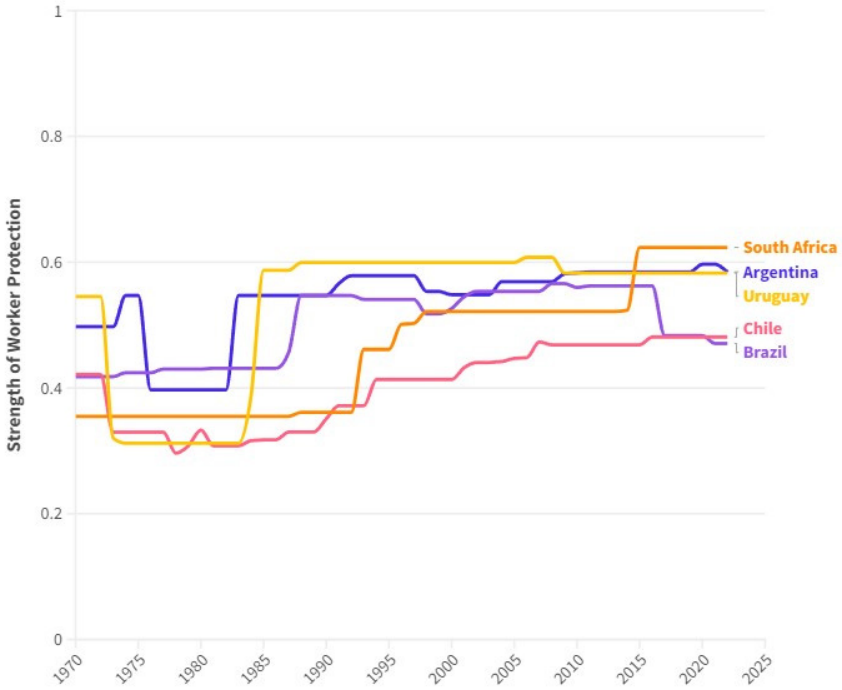
▶ **Figure 2. Neoliberal experiments**



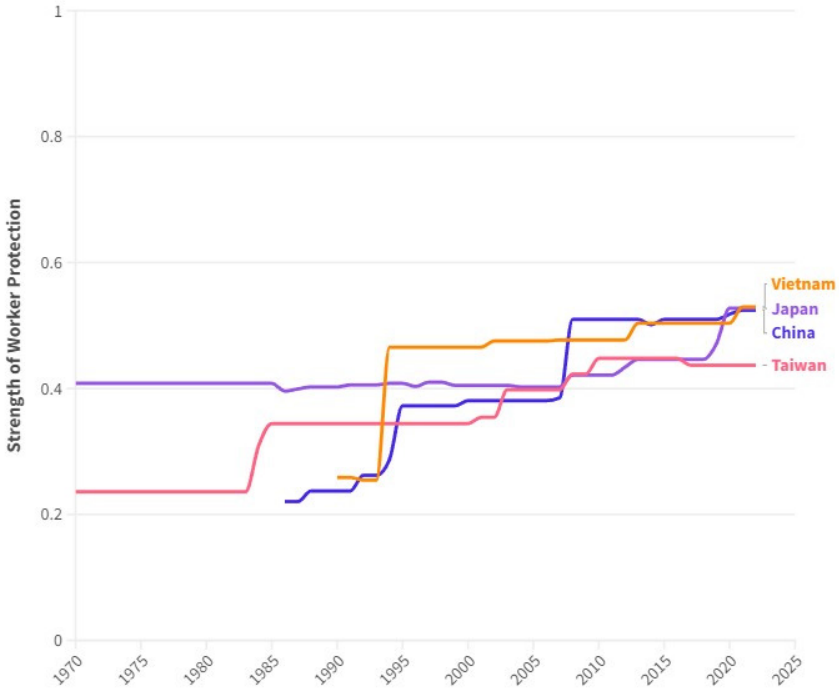
▶ **Figure 3. Outliers**



▶ **Figure 4. Democratic transitions**



▶ **Figure 5. East Asian Countries**



(iv) Labour laws are positively related with democracy and inversely related with authoritarian rule

In certain regions of the world, stronger labour protections are associated with periods of democratic rule, and weaker labour laws with dictatorships. As we can see from Figure 4, labour law protections declined sharply during periods of authoritarian rule across South America in the 1970s, but this trend was reversed when military dictatorships were ended and labour rights restored, a pattern common to Argentina, Brazil, Chile and Uruguay in this period. The ending of apartheid in South Africa in the 1990s was similarly associated with a strengthening of labour rights.

(v) Labour protections are strengthening in East Asia

In other regions, a rising trend of labour regulation can be observed independently of the nature of the political regime, liberal-democratic or otherwise. Across East Asia, we see marked improvements in worker protection since the 1990s (Figure 5): for example in Vietnam, following its adoption of a labour code in 1994 and more recently via amendments to its laws on freedom of association, and in China, thanks to its 2007 Labour Contracts Act. Japan's labour laws, which have been in the middle to upper range of protection for several decades and changes little between the 1990s and the 2010s, have seen a recent strengthening.

(vi) There are signs of a recent overall strengthening in labour protection

Updating to 2023 has also revealed some more recent trends. After a period of some weakening of labour protections in Europe, following the sovereign debt crisis of 2009, labour rights have seen a rebound, driven by two factors.

One is the Covid 19 pandemic, which prompted several countries to tighten controls over dismissals. In some cases these changes were combined with a loosening of rules on overtime and the use of fixed-term contracts. A smaller number of countries loosened dismissal controls and

introduced restrictions on the right to strike in response to Covid. Most of these Covid emergency measures have since been reversed following the end of the Covid emergency, but the dismissal law changes indicate a perception that labour law can play a role in stabilising the employment relationship, particularly in times of crisis, which is markedly different from the more sceptical attitude to labour regulation which characterised policy making immediately following the global financial crisis.

A second trend is the tightening of rules governing the ease with which employers can escape labour law regulations through the use of different employment forms. As platform work has become more salient, not just in practice but as an issue on the agenda for legislators and also for courts via litigation, there has been a tendency to implement interventions. These interventions set basic protections for platform workers regardless of their status, or create a presumption of employee or worker status, granting them access to the protections generally made available by labour laws.

This 'normalisation' of platform work follows the pattern established in the 1990s and 2000s with respect to 'flexible' or 'precarious' forms work: on the one hand, acknowledgement of the legitimacy of these employment forms; on the other hand, a move to align some of the rules governing such flexible forms with the more 'standard' forms of employment. Both trends are most clearly visible in EU member states, but if the experience of the 2000s is repeated, the European model may well be diffused to other parts of the world over time, an instance of the 'Brussels effect' which occurs when countries beyond Europe adopt EU standards. The EU has proved highly active in exporting its laws, including on worker protection through foreign trade agreements, while companies in third countries increasingly follow EU standards in order to access European markets (Bradford, 2020); the worldwide diffusion of norms protecting workers in different forms of employment in the first decade and a half of the current century is an illustration of this effect (Adams et al., 2019).

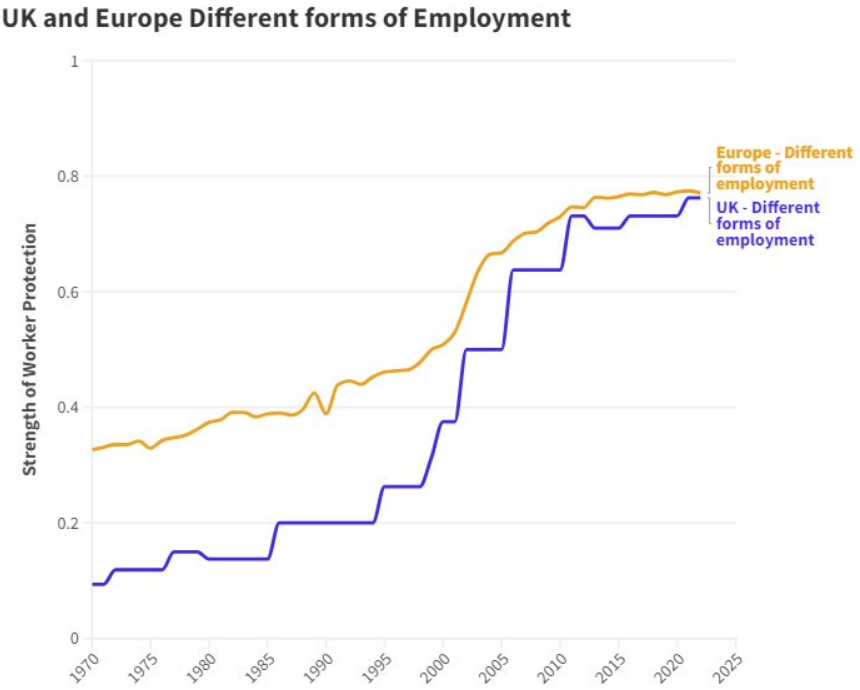
(vii) A closer look at a country case: the UK

The decomposition of the overall labour law score for a country into the five sub-indices makes it possible to do a deep dive into the detail of labour law changes at national level. By way of illustration, Figure 6 charts changes in the UK since 1970. The protective content of the law on industrial action has not recovered from its precipitous fall in the early 1980s, while working time protection, from an even more pronounced decline, has rebounded since the late 1990s, although not to its previous level. The law governing flexible forms of work has shown a marked rise in protection over the same period. In each of the charts the average for all European countries is included as a benchmark. This clarifies the influence of European standards on British labour law: the implementation in the UK of the EU's directives on working time and different forms of employment (part-time, fixed-term and temporary agency work) are largely responsible for the increase in the overall score during the 1990s and 2000s.

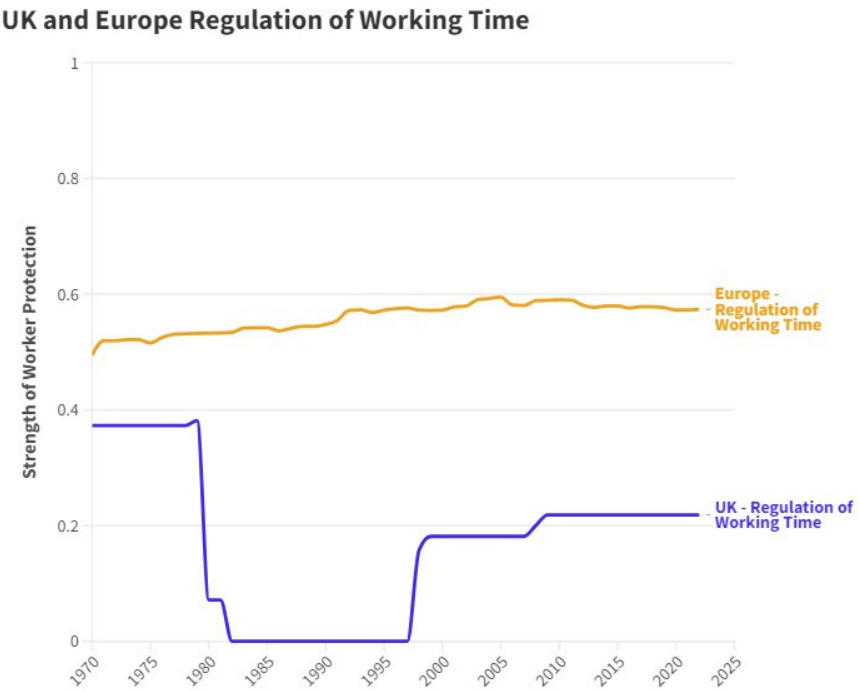
Dismissal protection in the UK, which has been little influenced by the European Union as there is no common EU standard for unfair dismissal law, is below the European country average, but not markedly so. It can be seen from Figure 6c that in the 1970s the UK had some of the most protective unfair dismissal laws in Europe, and that while the UK has not kept pace since with some of the developments which occurred later on the European mainland, nor has it experienced substantial and lasting declines in the level of dismissal protection its law confers on employees. One reason for the very low US score (see Figure 3) is the prevailing rule of employment at will, signifying the employer's right to dismiss without having or demonstrating a justifiable reason, and the absence of dismissal statutes at both federal and (with one or two exceptions)

state level. In this respect UK's dismissal law does not closely resemble that in the US; it is closer to that in, for example, Germany.

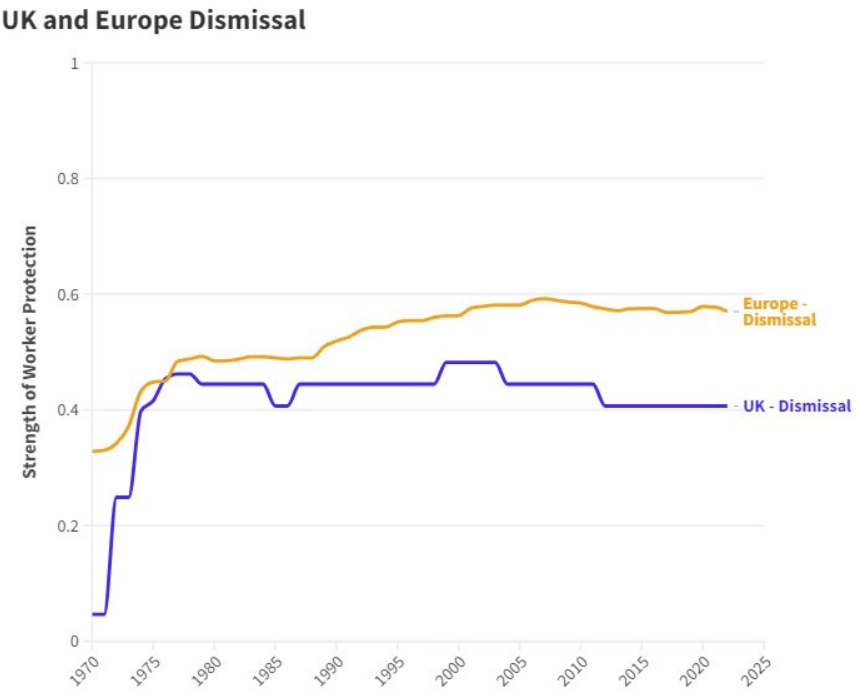
▶ **Figure 6a. Laws on different forms of employment, UK and Europe**



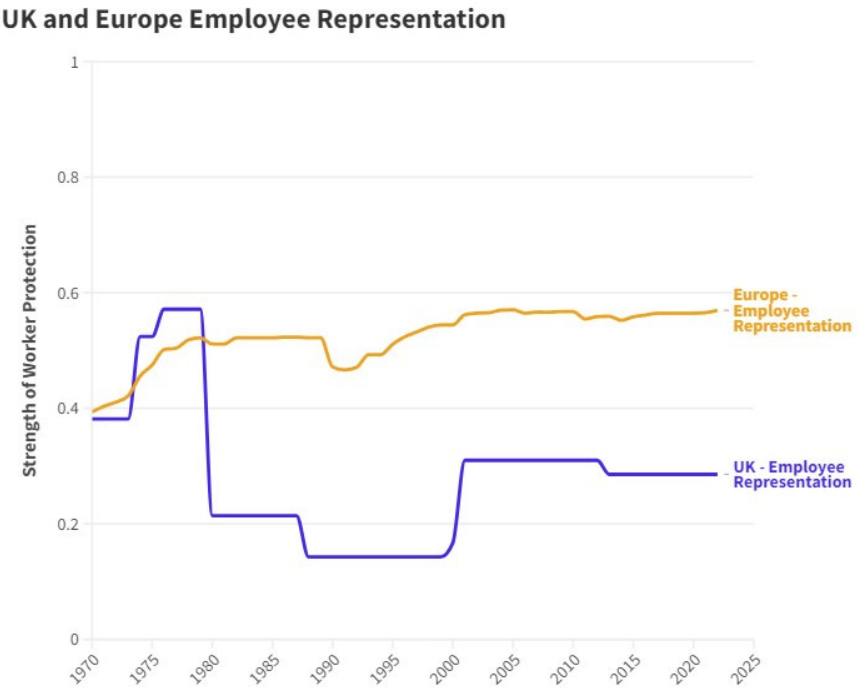
▶ **Figure 6b. Laws on working time, UK and Europe**



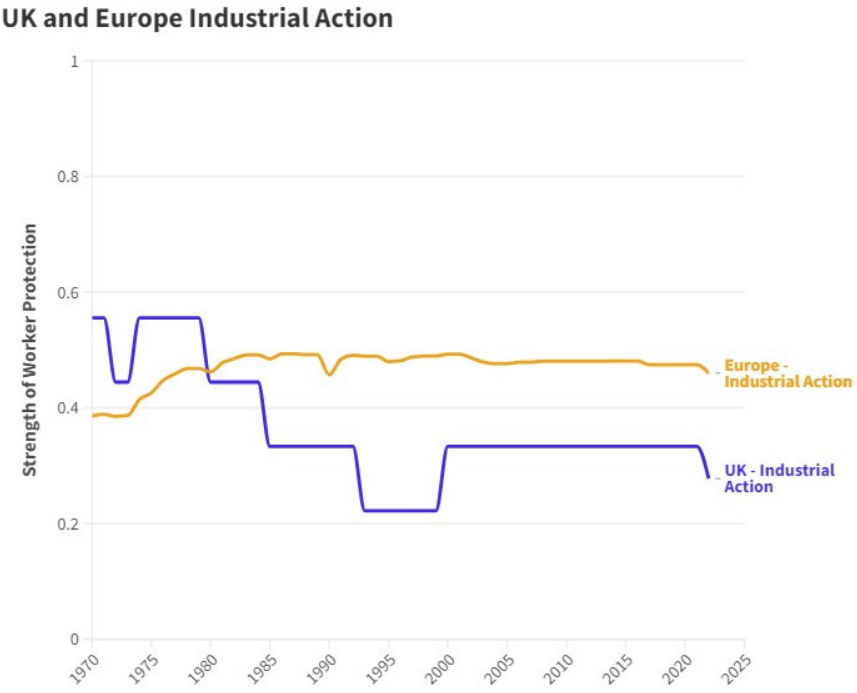
▶ **Figure 6c. Laws on dismissal, UK and Europe**



▶ **Figure 6d. Laws on employee representation, UK and Europe**



▶ **Figure 6e. Laws on industrial action, UK and Europe**



▶ 4 The economic impacts of labour laws: a review of recent studies using leximetric data

A feature of the Cambridge index is its comprehensiveness. It has a more extensive country coverage (117 countries representing over 95% of world GDP) and year coverage (1970-2022) than alternative indices such as the OECD Employment Protection Indicators (OECD and selected other countries between 1985 and 2019) and the World Bank's Employing Workers Index (which had global coverage but began only in 2004 and was discontinued in 2021). The World Bank's B-Ready Index, when first published in 2024, covered 50 countries and selected aspects of labour law and practice for one calendar year only (2023) (World Bank, 2024).

The Cambridge index covers a wider range of labour laws by topic, including laws governing collective bargaining and the right to strike. The OECD index is restricted to employment protection laws, with collective labour laws only covered to the extent that there is coding of norms governing collective dismissals. The B-Ready index covers a selection of labour laws (its overlap with the CBR-LRI is confined to around a quarter of the variables in the latter) and has information on social security laws, enforcement and institutions which is not covered by the CBR-LRI (Deakin and Pourkermani, 2025).

Given its comprehensiveness, the Cambridge index is well suited for use in panel and time series econometric analysis to study the effects of legal change and to identify the direction of causality in the law-economy relationship. As previously noted (see section 2 above), control variables may include indices that measure the de facto implementation of laws in a given country, such as the World Bank Rule of Law Index and the Freedom House indicator, and others that serve as benchmarks for gross domestic product at the country level, which will take into account cyclical economic effects. To the extent that the relationship between the law and the economy is one of co-evolution, statistical methods should be able to identify two-way causal flows, and to indicate when a change in the law induces a long-term change in the evolutionary path of the economy or only a temporary adjustment after which the economy resumes its previous path.

Vector autoregression (VAR) and vector error correction (VEC) models, which can distinguish between short-run and long-run effects of a change in legal rules and identify the direction of causal flows, are particularly appropriate in this case and are well suited to the statistical properties of the Cambridge datasets. Difference-in-difference approaches to panel data analysis can also be used in conjunction with the CBR-LRI. Appendix 1 summarises the results of 20 recent studies using the CBR-LRI in econometric analysis.

A subset of studies examines the relationship between employment protection laws and innovation. Acharya, Baghai-Wadji and Subramanian (2014) use the dismissal law variables in the CBR-LRI to examine the effects of changes over time in employment protection law on patenting activity and patent citations in four industrialised countries (France, Germany, the United Kingdom and the United States). Using a difference-in-difference approach, they find a positive correlation that can be interpreted as a causal relationship, whereby higher employment protection legislation stimulates greater innovation based on employees' contributions to new products and processes.

Labour laws can have a number of impacts on productivity. By raising employer's hiring costs, labour laws may induce firms to recruit more selectively, and to invest in training and skills

formation. Laws which enhance worker voice may encourage employees to invest in firm-specific human capital, and may induce long-run cooperation and resulting mutual gains. As productivity rises, however, firms may respond by substituting capital for labour, or by substituting less highly skilled workers for those who are more highly skilled, so leading to a net increase in unemployment. Alternatively, productivity gains may lead to a second-order effect of competitively successful firms taking on additional labour over time. This may however depend on the willingness of investors to take a long-term view of their interests, and on the capacity of managers to resist pressures for immediate shareholder returns. The business cycle may also determine whether productivity gains have an overall positive or negative effect on employment.

A number of studies find a positive relationship between labour law and productivity, and some report positive effects on employment. Deakin and Sarkar (2008) reported a positive impact of labour law protections on both productivity and employment in France and Germany. They also looked at the enactment of the US WARN law in 1988, a rare example of US federal law regulating the decision to dismiss, which introduced notice and severance pay requirements for collective dismissals. In this case, there was a rise in productivity but a fall in employment. In a study using a different dataset which uses leximetric methods to code US state-level labour laws, Acharya, Baghai-Wadji and Subramanian (2013) found that the states with the highest concentration of high-tech firms, namely California and Massachusetts, are among those to have made exceptions to the normal rules of at-will employment rule (in particular via the 'implied good faith exception'). The study also reports positive effects on patenting activity in California following the adoption of the federal WARN law. While the Deakin-Sarkar study suggests a general trade-off between productivity and employment as a result of WARN, the Acharya et al. analysis suggests that this may not hold for the high-tech sector: the tightening of wrongful dismissal laws in California and Massachusetts was followed by an increase not just in patenting activity and in the number of high-tech start-ups, but also in the number of employees working in high-tech, innovative firms. This suggests that the effect of labour laws may often be sector-specific, implying a need to complement analysis at the level of a country as a whole with one that can capture trends in particular industries.

Belloc (2016) extended the study of the relationship between labour law and productivity to the impact of laws providing for collective employee representation. These include legislation providing for codetermination at the level of the workplace (works councils) and board (worker directors). In a panel data analysis of five countries (the USA, UK, France, Germany and India), Belloc finds a positive relationship between labour law and patenting activity, where collective employment representation rights were combined with stricter dismissal protection. Jäger, Noy and Schoefer (2021) find that European codetermination laws have a moderately positive impact on productivity, as well as on wages and the stability of employment. Presidente (2023), in a panel data analysis of a number of developed and developing countries, finds that stricter labour laws are associated with a faster rate of adoption of automotive technologies including the use of industrial robots, although without significant employment gains, as firms substitute capital for labour.

A further strand of research examines the impact of labour legislation on the labour share of national income, which, represents the proportion of national income taken by wages and salaries as opposed to dividends, profits and rents, and possible trade-offs between equality and unemployment. Deakin, Malmberg and Sarkar (2014) conducted a dynamic panel data analysis of the Cambridge index for six OECD countries (France, Germany, Japan, Sweden, the United Kingdom and the United States), using a number of different approaches to deal with unobserved cross-country heterogeneity. This study shows that higher scores on the sub-indices on different forms of employment, working time protection and worker representation are correlated

with a higher labour share. Adams et al (2019), using the 2017 iteration of the dataset covering more than 100 countries over the period 1990 to the early 2010s, find that stricter employment protection laws are correlated with a rising labour share, rising employment and falling unemployment. They also find a positive but non-statistically significant impact on productivity.

The impact of labour protection in middle income countries is an additional focus of the literature. Deakin, Fenwick and Sarkar (2014) use the CBR-LRI to study the impact of collective labour laws on social and economic development in Brazil, Russia, India, China and South Africa, using a panel data approach with fixed and random effects models to deal with cross-country heterogeneity and changes over time. They find that higher scores on the employee representation sub-index of the CBR-LRI are correlated with greater income equality, as indicated by a lower Gini coefficient, without raising unemployment. Deakin and Sarkar (2011), in a time-series study of India, find no long-run unemployment effect from the adoption of worker-protective labour law, and some evidence of short-term reductions in unemployment. For the most part, this study suggests, labour laws in India have responded to fluctuations in the economy, rather than actively shaping them.

Blanton and Peksen (2019) look at the relationship between labour laws and informality. Contrary to the result obtained by Botero et al. (2004), they find that more protective labour laws are correlated with a smaller informal sector at country level. Testing the interactive effect of labour laws with three measures of institutional strength, namely the rule of law, bureaucratic capacity and control over corruption, they find that stronger institutions amplify the impact of labour rights on the size of the shadow sector.

The emerging empirical evidence suggests, therefore, that labour laws can have a number of positive economic effects. They do not always or inevitably give rise to a trade-off between efficiency and equity. Rather, labour laws can contribute positively to productivity and sustainable development, as well as to greater equality and dignity at work.

Empirical evidence of these complex economic effects of labour laws highlights the need for realism in model building. A realistic approach to modelling would be one in which the labour market is characterised not by the perfect competition of certain textbook models, but by structural imperfections (incomplete information, power asymmetries and transaction costs) of various kinds. In this 'institutionalist' approach, labour law rules are capable of combining equity and efficiency. They provide workers with insurance against risks inherent to wage-dependence. Labour protections may be compatible with co-investment by workers and employers in the skills and capabilities needed for sustainable and innovative enterprise. Thus labour laws can, in principle, improve economic performance at firm and country level, and contribute to sustainable growth. In practice, this beneficial effect may be mediated by country-specific factors, and so may not be observed in all cases. A country-specific approach to econometric analysis should help to identify more precisely the range of possible outcomes from labour law changes.

▶ 5 Econometric analysis: methods and data

Most of the studies reported in the previous section use panel-data techniques. Panel data methods enable general trends to be identified but, by their nature, do not always allow clear conclusions to be drawn about individual country experiences. Even when a panel data study reveals a clear trend across a range of countries, one of those countries may be a statistical outlier, diverging from the trend; this will not immediately be apparent from a panel data study. Time series analyses, by contrast, can be used in a way which makes it possible to examine countries one at a time. Such studies are difficult to generalize from, since they do not straightforwardly allow for cross-country comparisons, but they provide more specific and granular information on national trajectories.

In this paper we use a *vector autoregressive analysis* (VAR) to represent the dynamic behaviour of a country's economy, and to estimate the impact of changes in labour laws on a range of economic indicators in that country. Among the benefits of VAR models are their flexibility and neutrality with respect to core hypotheses, since they do not depend on making strong a priori assumptions about the endogeneity (or degree of interrelatedness) of the variables.

VAR models can be used to analysis the effects of institutional changes as 'shocks', capable of impacting on the economy in a number of ways. Within the overall VAR approach, *impulse response functions* and *variance decomposition analysis* can be deployed to denote the contribution of a specific variable on in other variables.

The impulse response function determines the qualitative response of the variables to shocks (Farzanegan and Markwardt, 2008). Impulse response functions can be used to illustrate how different variables interact and how they react to economic shocks. Variance decomposition shows how far changes or variations of the variables in the model are explained by different shocks. Variance decomposition is used to evaluate the impacts of shocks, in the sense of determining their relative importance in describing the variation in variables.

In the present paper we estimate the impact of changes in the CBR-LRI on labour share, productivity, unemployment and employment in a number of countries. Our data on the labour share of national income are drawn from the International Labour Organization's ILOSTAT database, and data on productivity, unemployment and employment are taken from the World Bank's World Development Indicators and the IMF's World Economic Outlook Database. We use yearly data for the period 1970 to 2022, although for some countries a shorter time period is used because of data availability issues.

Using a range of economic outcome variables should help to give us a more fully rounded picture than relying on a single measure. We would expect employment and unemployment trends to be inversely related, but this relationship does not always hold, or at least not very strongly, in countries with limited social protection systems and a higher degree of informality. In such countries, registered unemployment may not capture the full extent of joblessness. Labour force survey data of the kind widely relied on to construct international measures of unemployment may help to address this problem, but cannot entirely obviate it. There is evidence that 'Okun's law', predicting a negative relationship between unemployment and growth, is less pronounced in developing countries than in developed ones (Lee at al., 2020), and unemployment may also be a somewhat noisy variable for our purpose of identifying the effect of regulatory changes.

As Lee et al. (2020) suggest, in addition to looking at the impact on unemployment, 'other policy targets such as formal employment and labour income need to be considered along with aggregate employment figures in order to secure a more accurate understanding of how macro policy decisions, with the aim to boost the economy, would improve the labour market under different circumstances'.

We use an unrestricted VAR model to examine the relation between and responses of the variables. This approach entails a multivariate framework in which changes in one variable are related to both changes in its own lags (that is, its previous values), and to changes in other variables and their lags. After the VAR has been estimated, we use variance decomposition to determine the relative importance of a variable in producing variations in its own value and in the value of other variables. Then we use the impulse response function to determine the dynamic response of variables to change in a particular variable. More details on the model used are provided in Appendix 2.

▶ 6 Results

6.1 Summary of trends

We firstly report results in a summary form which indicates the impact of changes in the aggregate CBR-LRI score on the four outcome variables in which we are interested: the labour share, productivity, unemployment and employment. We present reports for a cross-section of countries intended to illustrate trends across different regions and encompassing countries at different levels of development. Table 4 sets out the results for each country, indicating whether the direction of the change was positive or negative and whether it varied over time. If there was no discernible change other than a minor or trivial one, this is indicated by 'no effect', and if no result could be obtained because of multicollinearity or lack of data, this is indicated by 'no result'.

▶ **Table 4. The impact of aggregate labour law changes on the labour share, productivity, unemployment and employment in selected countries**

	Labour share	Productivity	Unemployment	Employment
Argentina	+	+	-	+
Australia	No effect	-/+	-	+/-
Brazil	No effect	No effect	+	No result
Canada	+	-/+/-	+/-	-
Chile	+	+	-	+/-
China	+	+	+/-	No effect
Ecuador	+	-	+/-	-
Finland	+	+	+	+
France	-	-	+/-	+
Germany	No effect	-	+	No effect
India	+/-	-	No effect	No effect
Indonesia	-/+	-	+	-
Ireland	+	-	-	+
Italy	+	-	+	-
Japan	+/-	-/+	+/-	-/+
Kenya	-	-	No effect	No effect
Korea	-	+	+/-	-/+
Malaysia	+/-	-/+	+/-	-/+
Netherlands	+/-	-/+	-	+
New Zealand	+	-	+	-
Nigeria	No effect	-	+	-
Peru	No effect	+	-/+/-/+	+
Philippines	+	+	+/-	+/-

	Labour share	Productivity	Unemployment	Employment
Portugal	+	-/+	+	+
Romania	-/+/-/+	+	+	+
South Africa	+	-/+	-	+
Spain	+	+	-	+
Sweden	+	+	+	+
UK	+	-/+	-	+
Uruguay	No effect	+	No effect	+/-
USA	+	+	+/-	-/+
Vietnam	No result	-/+	+	-

Key: + = a positive impact of labour law on the dependent variable; - = a negative impact of labour law on the dependent variable; +/- indicates a positive impact in the short term and a negative impact in the medium term (1-2 years); -/+ indicates a negative impact in the short term and a positive impact in the medium term (1-2 years); no effect = a trivial impact; no result = data either not available or analysis affected by multicollinearity issues.

As Table 4 indicates, nearly all countries indicate a positive impact of worker-protective labour laws on the labour share of national income, and a majority of them indicate an increase in productivity which is matched by an increase in employment, and decrease in unemployment, in either the first or second period. A minority of countries show productivity declines. In most of these, employment also declines, suggesting complementarities between productivity and employment. In a few countries, declining productivity is matched by rising employment, indicating a productivity/employment trade off.

6.2 Country level analysis

We next present our results in the form of charts which visualise the impacts of labour laws on other variables as impulse response factors. For each country, four charts are shown, indicating the relationship between changes in the CBR-LRI in the country in question and, respectively, labour share, productivity, unemployment and employment. As there were multiple changes in the CBR-LRI in the period covered (1970-2022) for virtually all countries, what we present here is not the impact of any single change, but the average change over the whole period. Where the line rises above zero, we can infer that the impact of an improvement in labour rights, on average, is to induce an increase in the other variable; and, conversely, that a decrease in labour protection has, on average, the opposite effect.

Each chart shows the impact of a change in the law over a series of successive periods, which in this case are equivalent to yearly intervals (since our data are year-specific). Eight successive periods are shown, equivalent to eight years from the date of the legal change. It is inherent in the model we are using that the impact of the 'shock' dissipates over time, so that, at some point, the line will converge back to a stable path. This is an aspect of the model rather than an indication that labour laws have no lasting effects. What the chart shows is the trend over time and whether it is, in overall terms, positive or negative with respect to the variable in question.

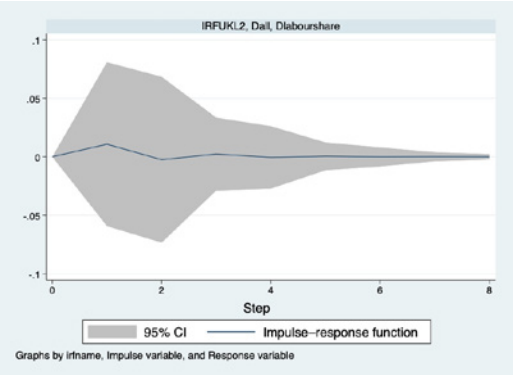
95% confidence intervals are reported in the shaded part of the chart. Where the confidence interval includes the horizontal zero line for the whole of the period, the impact of the change in the law is not significantly different (in a statistical sense) from zero. This means that the 'null hypothesis' of no effect cannot be rejected. Most of our country results show low levels of statistical significance, which may be an indication of other factors at work, not recorded in our analysis. The presence of wide confidence intervals indicates that results, while still informative, should be treated with caution. It should also be borne in mind that past trends, reported, here, are not necessarily a good guide to future impacts; we are not here predicting the effects of proposed labour law changes in any country.

In the subsections that follow we present a selection of countries categorized by the nature of their economies (liberal market or coordinated market), legal origin (common law or civil law), and region (EU, Latin America, Africa, South Asia, East Asia).

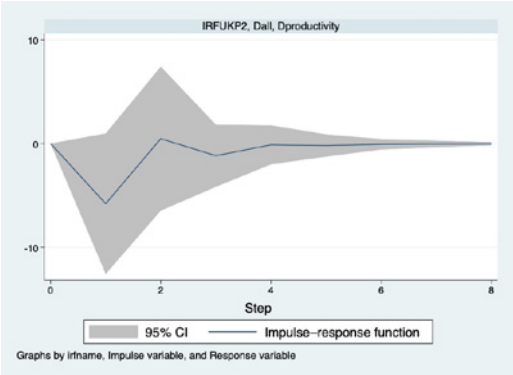
6.2.1 Liberal market/common law origin economies

We begin by showing the results for six 'liberal market' economies, defined as such by their having a relatively large financial sector, limited coverage of collective bargaining, decentralized and relatively voluntaristic training systems, and an absence of codetermination or similar formalised mechanisms of labour-management cooperation (on the liberal-coordinated market distinction seen Hall and Soskice, 1997). They are also countries with a common law legal origin (in the sense identified by La Porta et al., 2008).

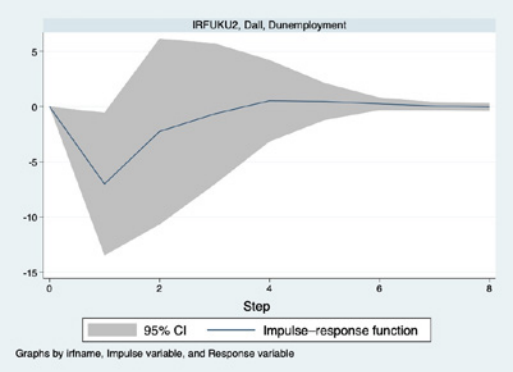
▶ **Figure 7. Impacts of changes in labour law in the United Kingdom**



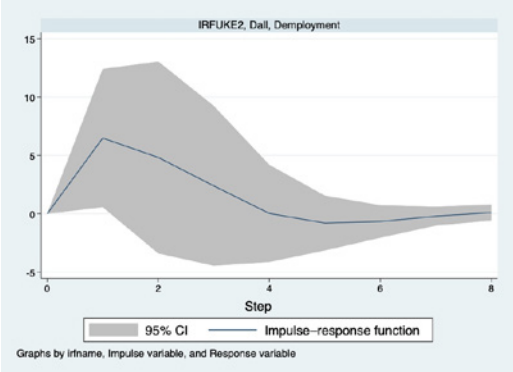
UK: labour law (aggregate) on labour share



UK: labour law (aggregate) on productivity



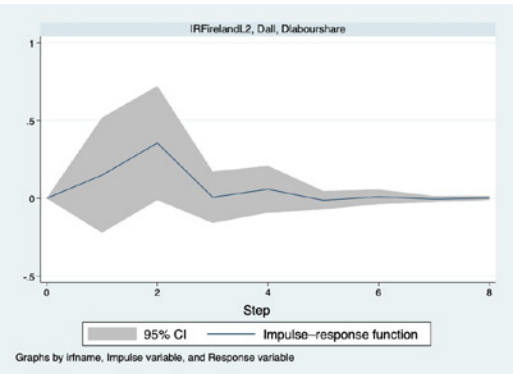
UK: labour law (aggregate) on unemployment



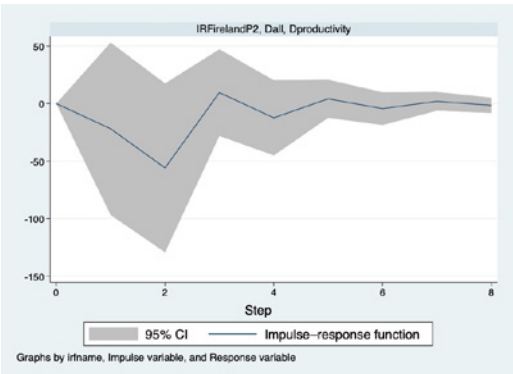
UK: labour law (aggregate) on employment

In the UK, increases in labour regulation are associated with a small increase in the labour share in the first period. Productivity falls in the first period and increases in the second one. Unemployment falls in the first period and then converges back to zero. Employment rises in the first period. Overall, a small positive impact on the labour share is associated with a productivity decline in the first period followed by a recovery, falling unemployment, and rising employment. The productivity and employment trends are inversely related.

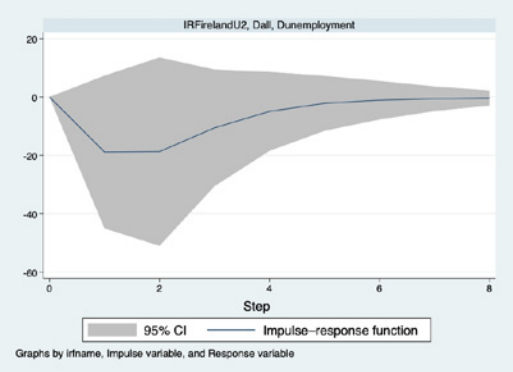
▶ **Figure 8. Impacts of changes in labour laws in Ireland**



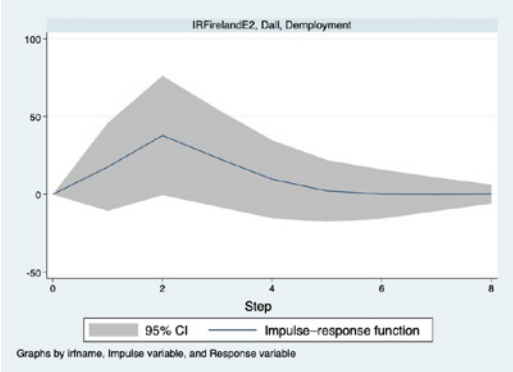
Ireland: labour law (aggregate) on labour share



Ireland: labour law (aggregate) on productivity



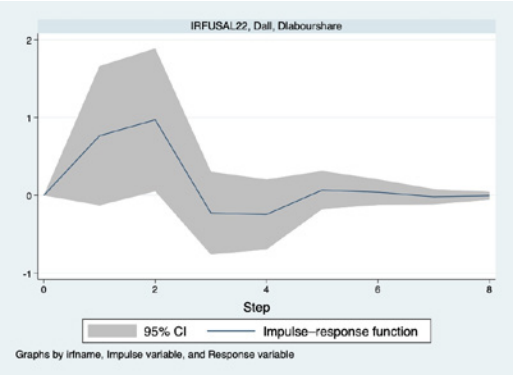
Ireland: labour law (aggregate) on unemployment



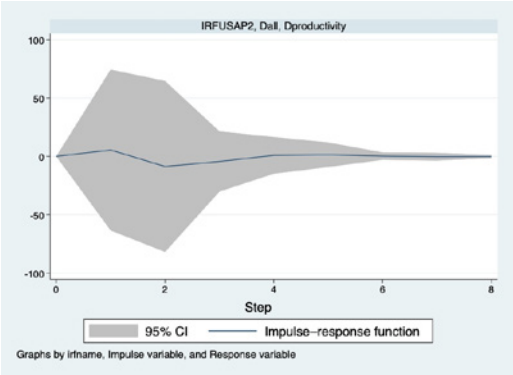
Ireland: labour law (aggregate) on employment

In Ireland, increasing labour regulation is associated with a short-term rise in the labour share, up to the second period, followed by a return to trend. Productivity falls in the first two periods. Unemployment falls in the first period. Employment rises in the first two periods. The overall picture is one of an increase in the labour share which is correlated with falling productivity, falling unemployment, and rising employment. Productivity and employment are inversely related.

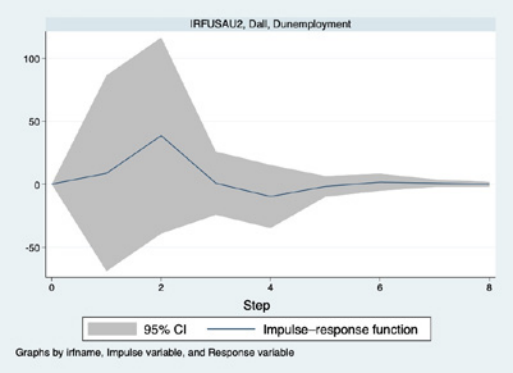
▶ **Figure 9. Impacts of changes in labour law in the USA**

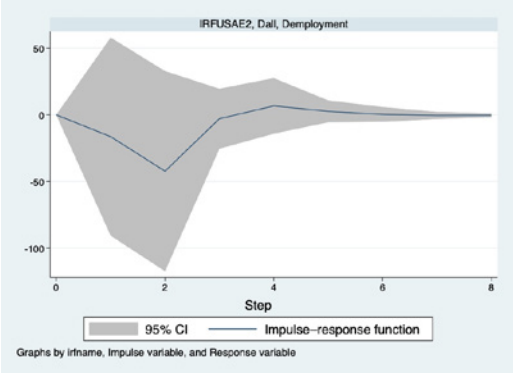


USA: labour law (aggregate) on labour share



USA: labour law (aggregate) on productivity



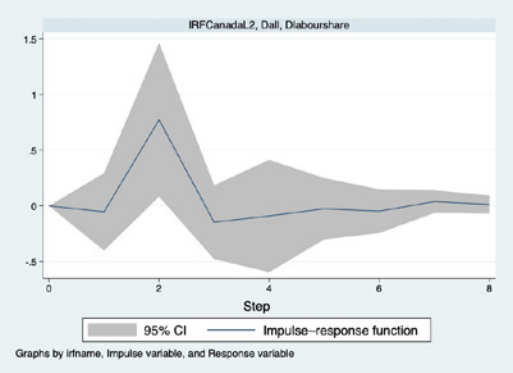


USA: labour law (aggregate) on unemployment

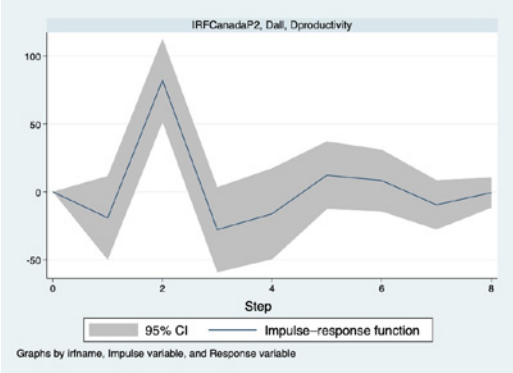
USA: labour law (aggregate) on employment

In the US, an increase in labour regulation is associated with an increase in the labour share in the first and second periods. Productivity shows a small rise in the first period. Unemployment rises, and employment falls, in the first two periods. Overall, labour regulation impacts positively on the labour share and on productivity, but productivity increases coincide with rising unemployment and falling employment. Productivity and employment are inversely related.

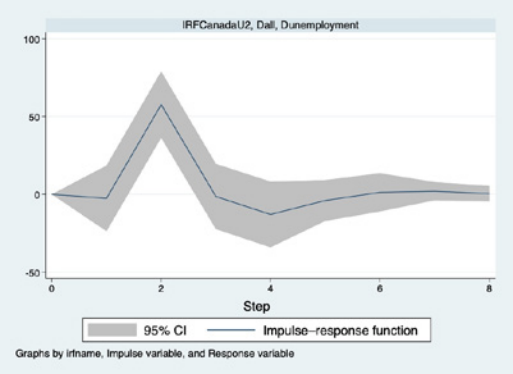
▶ **Figure 10. Impacts of changes in labour law in Canada**



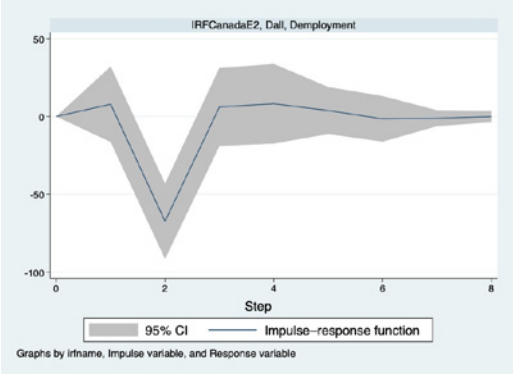
Canada: labour law (aggregate) on labour share



Canada: labour law (aggregate) on productivity



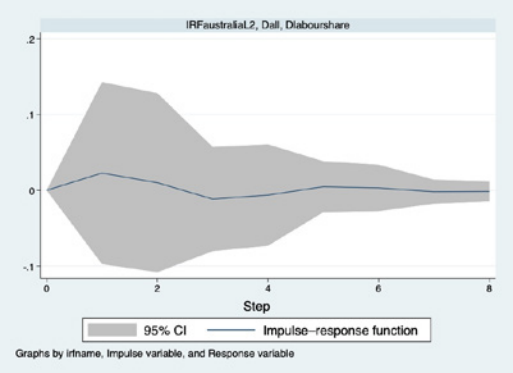
Canada: labour law (aggregate) on unemployment



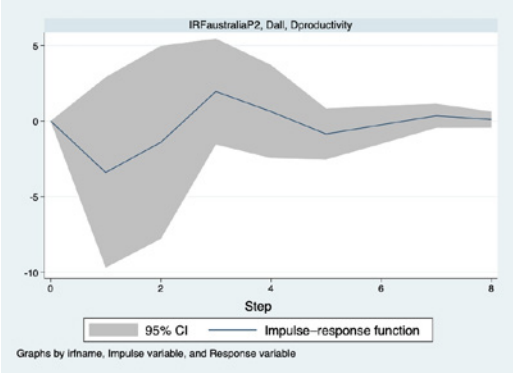
Canada: labour law (aggregate) on employment

In Canada, the impact of labour regulation on the labour share is positive by the end of the second period. Productivity falls initially before showing a sharp increase by the second period before rising again in the fourth period. Unemployment tracks productivity, rising in the second period. Employment, conversely, falls as productivity rises. Overall, there is evidence of short-term gains in the labour share and of a lasting positive impact on productivity. However, productivity gains appear to translate into rising unemployment, indicating an employment-productivity trade off.

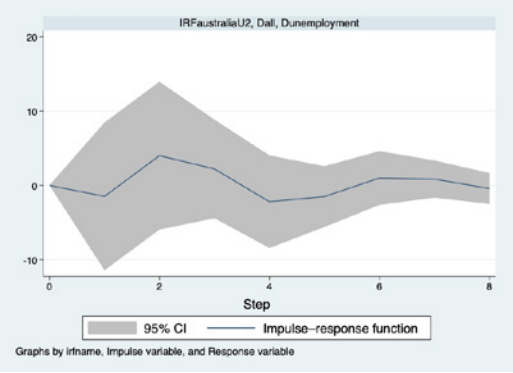
▶ **Figure 11. Impacts of changes in labour laws in Australia**



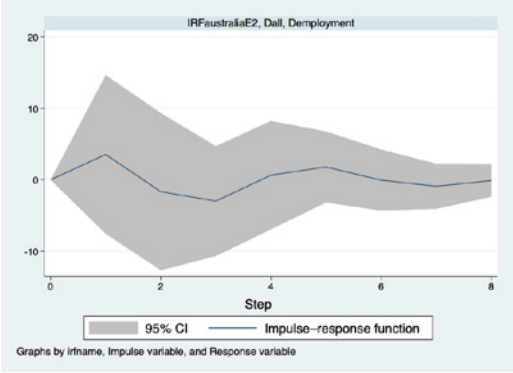
Australia: labour law (aggregate) on labour share



Australia: labour law (aggregate) on productivity



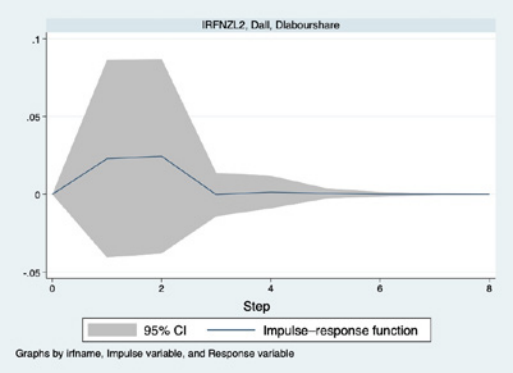
Australia: labour law (aggregate) on unemployment



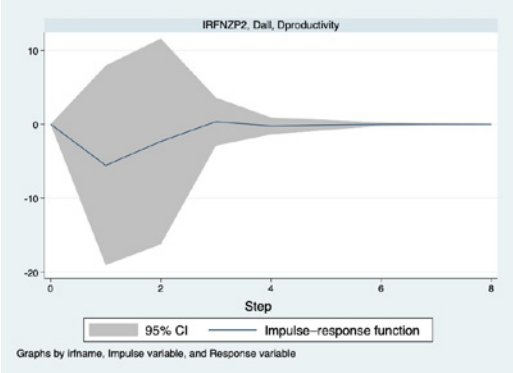
Australia: labour law (aggregate) on employment

In Australia there is a small rise in the labour share in the first period and a slower decline in the second and third period. Productivity falls sharply in the first period and then recovers quickly in the second period to show an overall gain. Unemployment falls in the first period and then rises in the second period before falling again. Employment rises in the first period before falling back in the second and third periods then rising again. Overall, there is evidence of a small positive impact of labour regulation on the labour share and on productivity. Productivity falls are however correlated with employment gains and vice versa, indicating a productivity-employment trade off.

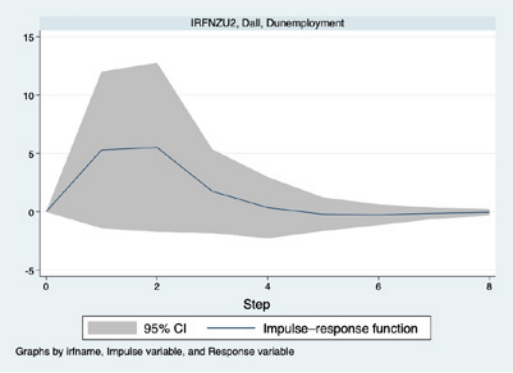
▶ **Figure 12. Impacts of changes in labour law in New Zealand**



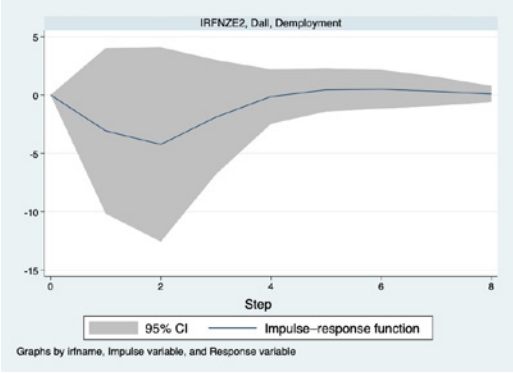
New Zealand: labour law (aggregate) on labour share



New Zealand: labour law (aggregate) on productivity



New Zealand: labour law (aggregate) on unemployment



New Zealand: labour law (aggregate) on employment

In New Zealand, an increase in labour regulation is correlated with a rising labour share in the first two periods and a subsequent decline. Productivity falls in the first period before rebounding. Unemployment rises in the first period before falling from the start the second period. Employment falls in the first two periods before rising to the fourth period. Overall, labour regulation triggers short-run improvements in the labour share and medium term increases in productivity, leading to falls in unemployment and increases in employment. The relationship between employment and productivity is positive.

Summary

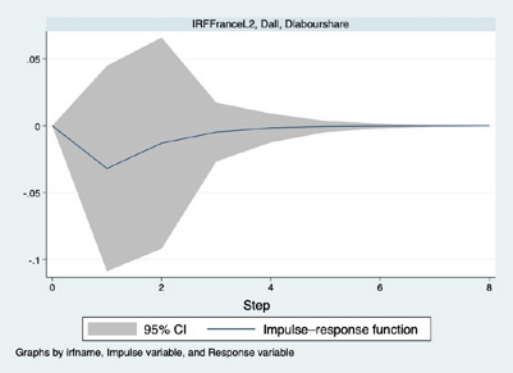
The picture across these six economies is broadly the same. Labour laws positively impact the labour share and productivity. However, with the exception of New Zealand, changes in productivity and employment are inversely related. This suggests a tendency for firms to respond to labour law 'shocks' by labour shedding, without a second-order effect of the kind that might be observed if increases in productivity were feeding through into employment increases.

6.2.2 Coordinated market/EU economies

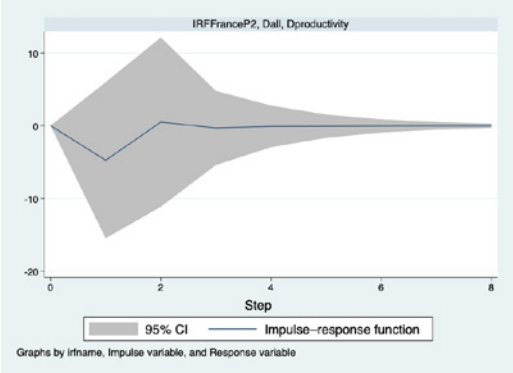
We next present the results for economies which have been members of the European Union for all or most of the period in question. These economies are characterized by the cluster of

institutions associated with the concept of 'coordinated market' economies: stable capital (and hence relatively illiquid financial markets), extensive coverage of collective bargaining, formal and centralized training systems, and codetermination at workplace and/or board level. They are all systems with a civil law origin.

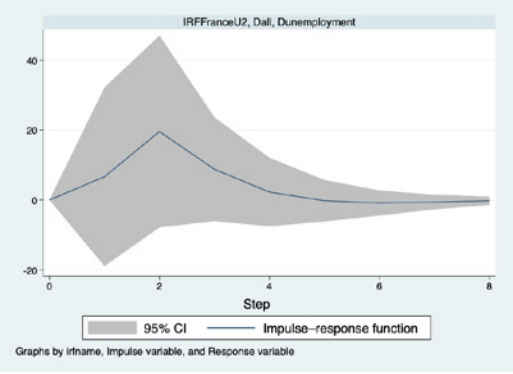
▶ Figure 13. Impact of changes in labour law in France



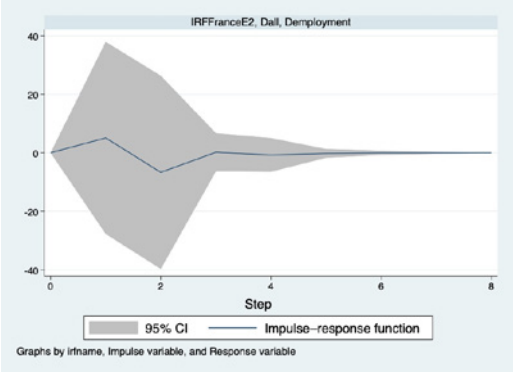
France: labour law (aggregate) on labour share



France: labour law (aggregate) on productivity



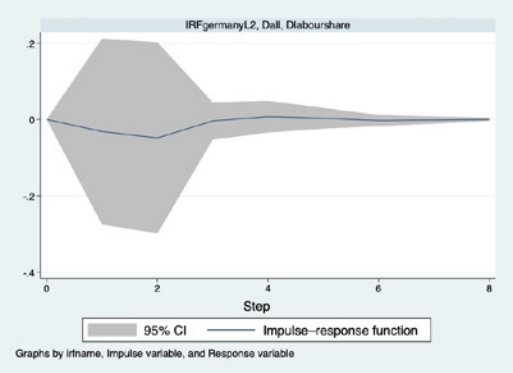
France: labour law (aggregate) on unemployment



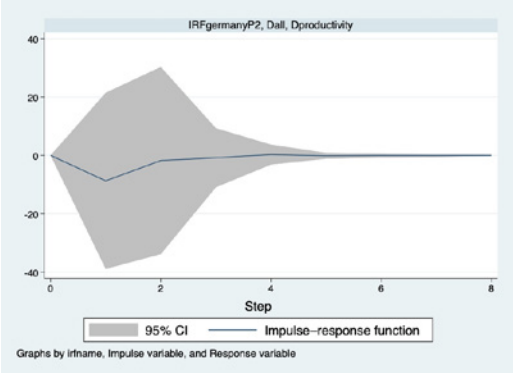
France: labour law (aggregate) on employment

In France, increasing labour regulation is associated with small falls in the labour share and productivity. Unemployment rises in the first and second periods before falling in the third and fourth. Employment rises in the first period, falls in the second, and rises again in the third. Overall the evidence is of a minimal impact on both labour share and productivity. Falling productivity is correlated with rising unemployment.

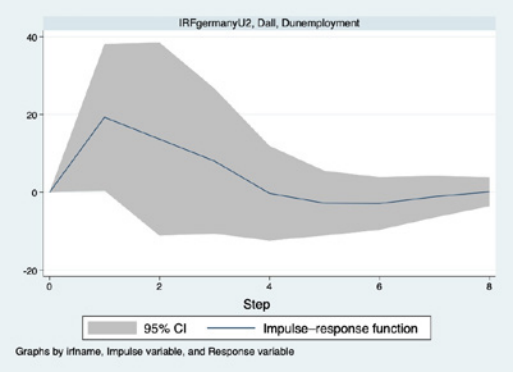
▶ **Figure 14. Impacts of changes in labour law in Germany**



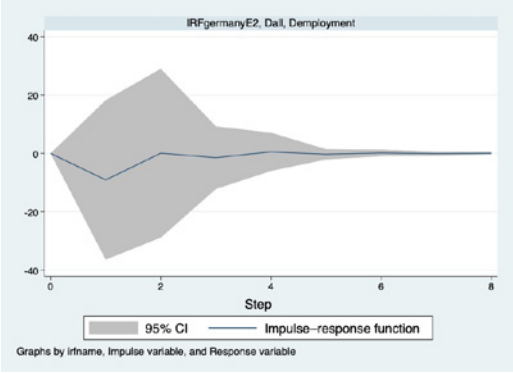
Germany: labour law (aggregate) on labour share



Germany: labour law (aggregate) on productivity



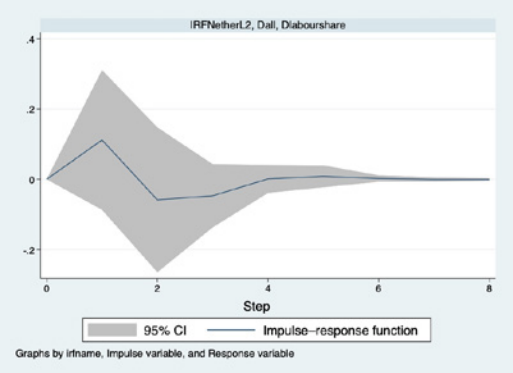
Germany: labour law (aggregate) on unemployment



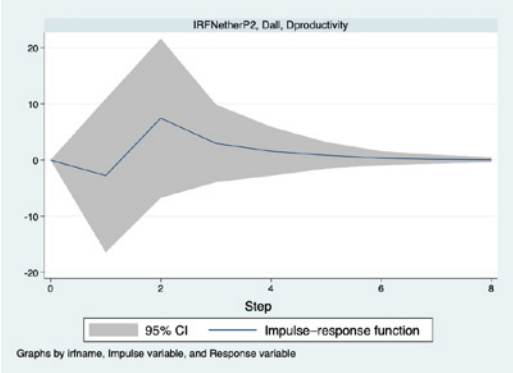
Germany: labour law (aggregate) on employment

In Germany, increasing labour protection is correlated with a small fall in the labour share in the first two periods, although this effect is barely noticeable. Productivity also falls in the first period. Unemployment rises in the first period. Employment falls in the first period and then rises before stabilizing by the fourth period, although these changes are not significant. Productivity and employment are positively correlated.

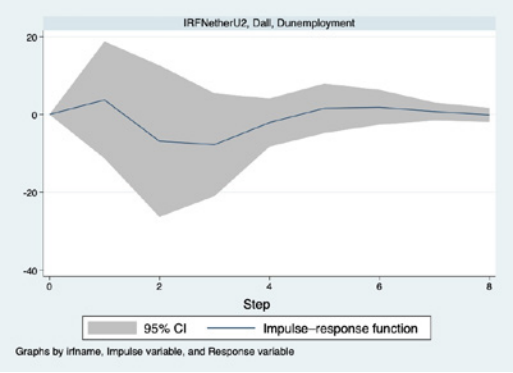
▶ **Figure 15. Impact of changes in labour law in the Netherlands**



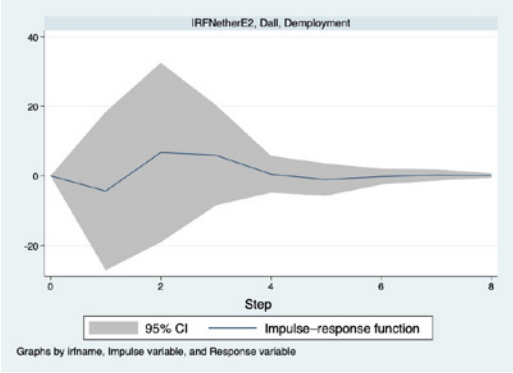
Netherlands: labour law (aggregate) on labour share



Netherlands: labour law (aggregate) on productivity



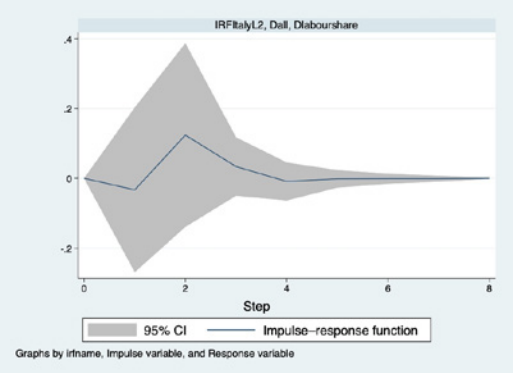
Netherlands: labour law (aggregate) on unemployment



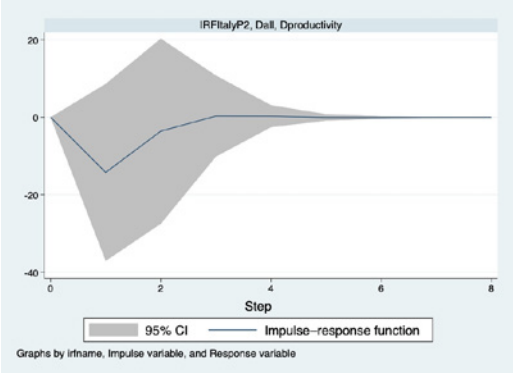
Netherlands: labour law (aggregate) on employment

In the Netherlands, increasing labour regulation is associated with a rise in the labour share in the first period, following a fall in the second period, and a further small rise and stabilization in the third and fourth periods. Productivity falls initially before rising. Unemployment rises in the first period, then falls in the second and third periods, and then rises again. Employment falls in the first period before reviving and then falling again. Overall, there is evidence of short-term gains in the labour share and medium-term gains in productivity. In the immediate term, unemployment rises and employment falls; over the medium term, unemployment falls and employment rises. The relationship between employment and productivity is positive.

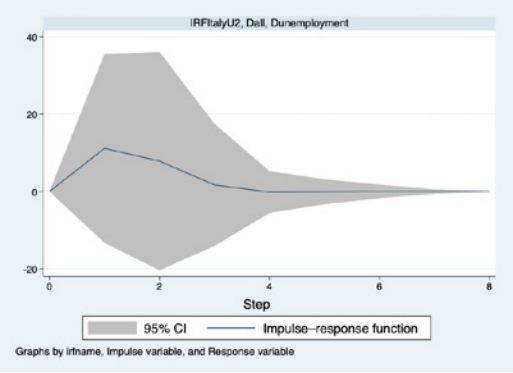
▶ Figure 16. Impacts of changes in labour law in Italy



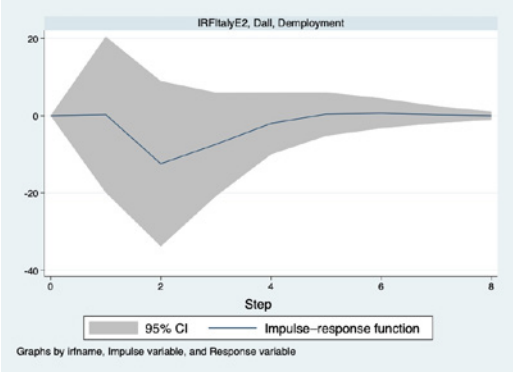
Italy: labour law (aggregate) on labour share



Italy: labour law (aggregate) on productivity



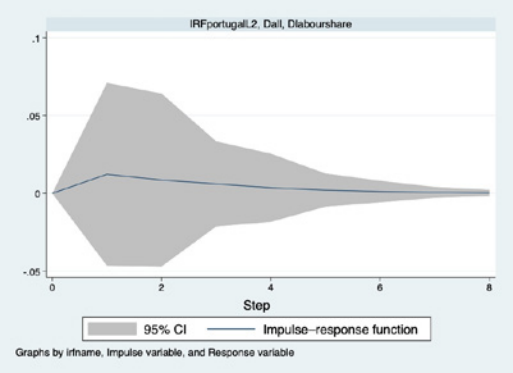
Italy: labour law (aggregate) on unemployment

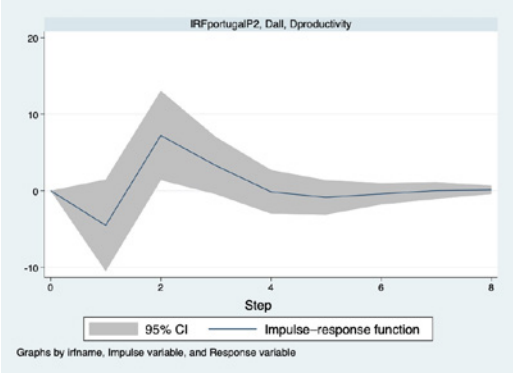


Italy: labour law (aggregate) on employment

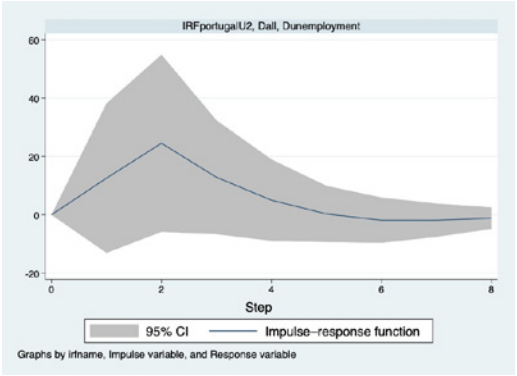
In Italy, increases in labour regulation are correlated with a rise in the labour share in the second period, and a subsequent fall. Productivity falls in the first period, unemployment increases and employment falls in the second period. Productivity and employment are positively correlated.

▶ Figure 17. Impact of changes in labour law in Portugal

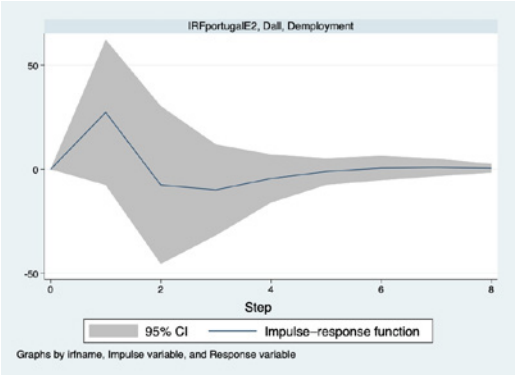




Portugal: labour law (aggregate) on labour share



Portugal: labour law (aggregate) on productivity

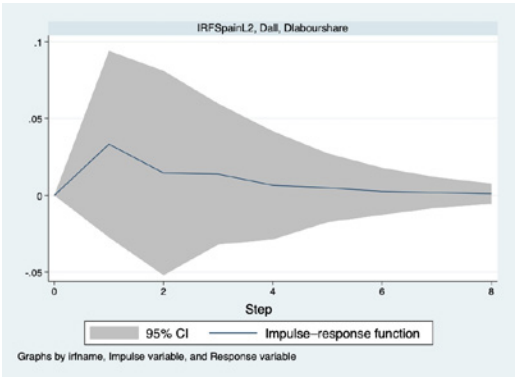


Portugal : labour law (aggregate) on unemployment

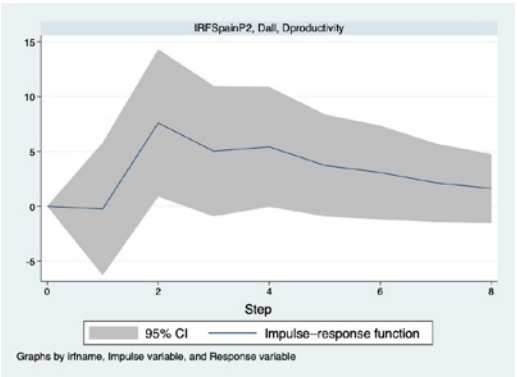
Portugal: labour law (aggregate) on employment

In Portugal, the impact of labour regulation on the labour share is initially positive, in the first period, although this result is very small. Productivity falls in the first period before increasing. Unemployment shows an initial rise. Employment rises in the first period. Overall, there is a positive impact on the labour share in the short run and a positive impact on productivity in the medium term. Rising productivity in the second period is followed by a fall in unemployment and a slow rise in employment. Unemployment and productivity are inversely related.

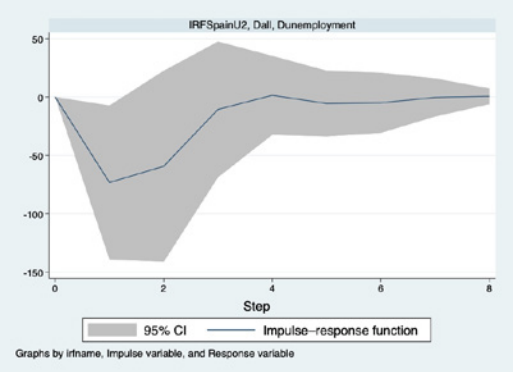
▶ **Figure 18: Impacts of changes in labour laws in Spain**



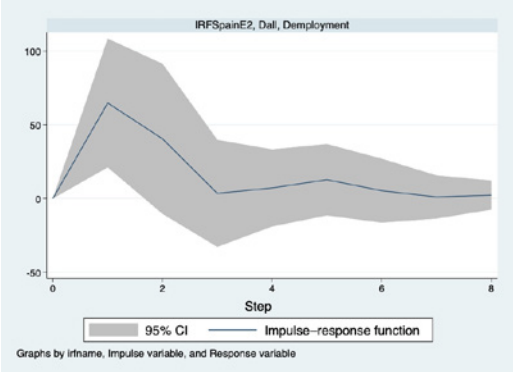
Spain: labour law (aggregate) on labour share



Spain: labour law (aggregate) on productivity



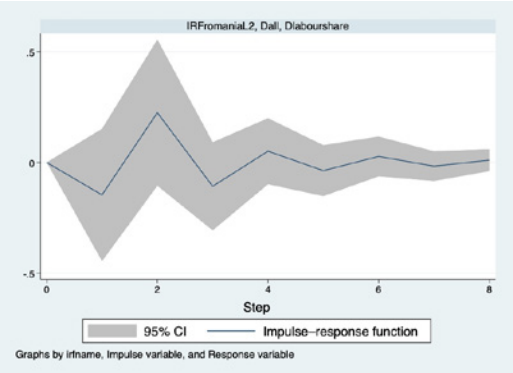
Spain: labour law (aggregate) on unemployment



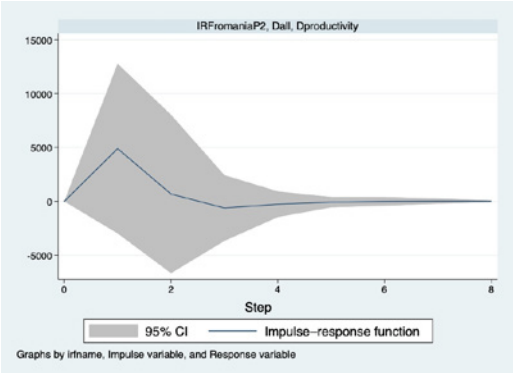
Spain: labour law (aggregate) on employment

In Spain, there is an initial positive impact of labour regulation on the labour share. Productivity rises in the second period. Unemployment shows an immediate sharp fall and then slowly returns to trend. Employment shows the converse trend. Overall, a positive initial impact on the labour share is correlated with a decrease in unemployment and rise in employment, and with a subsequent increase in productivity. After the initial period, productivity and employment are positively related.

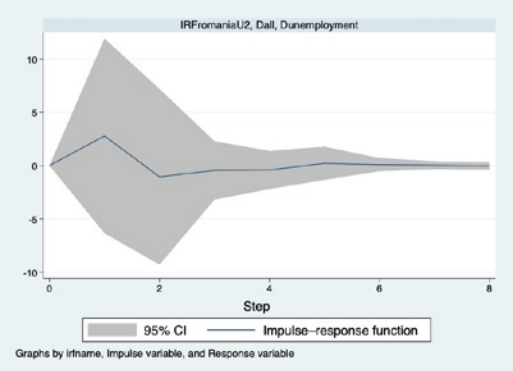
▶ **Figure 19. Impacts of changes in labour laws in Romania**

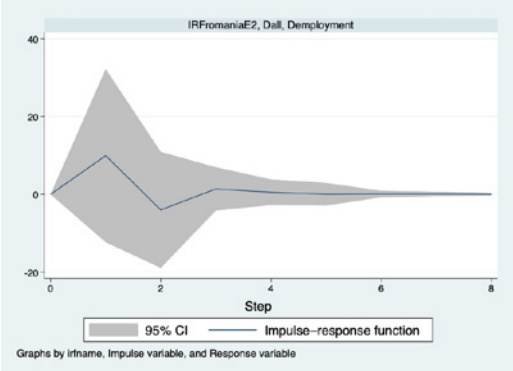


Romania: labour law (aggregate) on labour share



Romania: labour law (aggregate) on productivity



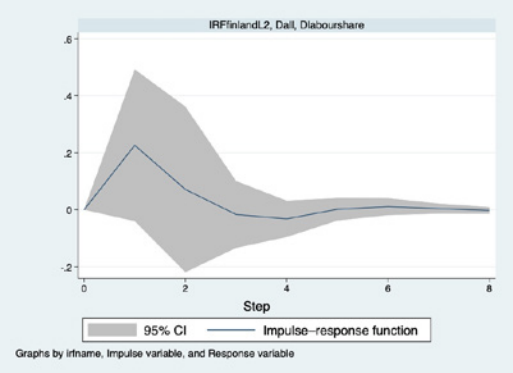


Romania: labour law (aggregate) on unemployment

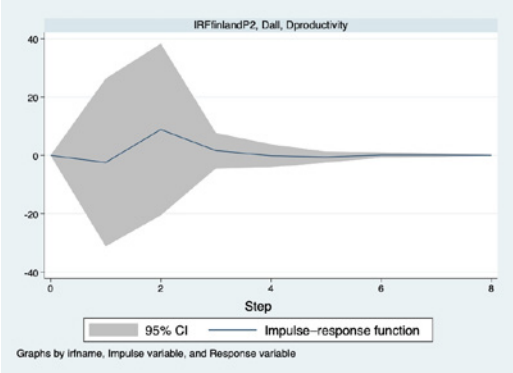
Romania: labour law (aggregate) on employment

In Romania, the impact of labour regulation on the labour share is initially negative before rising in the second period, falling in the third, and then rising again. There is a positive impact on productivity in the first period. Both unemployment and employment show rises. Overall, there is an initial positive impact on productivity which is related to a rise in employment, while labour share rises in the medium term. Productivity and employment are positively related.

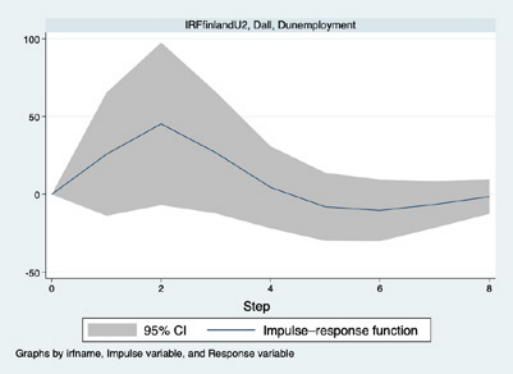
▶ **Figure 20. Impacts of changes in labour law in Finland**



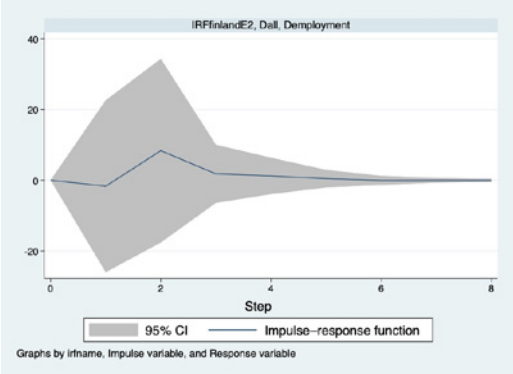
Finland: labour law (aggregate) on labour share



Finland: labour law (aggregate) on productivity



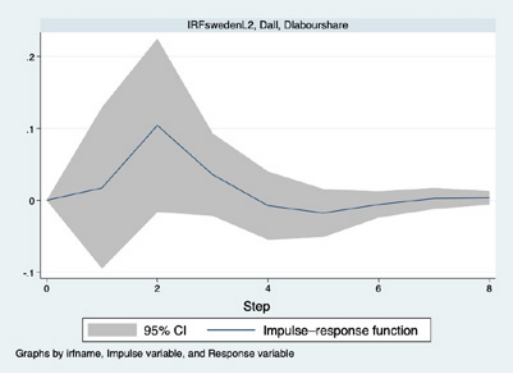
Finland: labour law (aggregate) on unemployment



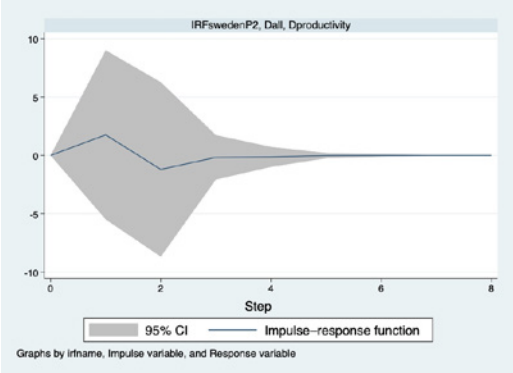
Finland: labour law (aggregate) on employment

In Finland, increasing labour regulation leads to a rise in the labour share in the first period. Productivity, after a small fall in the first period, increases in the second period. Unemployment rises in the first and second period. Employment rises in the second period and shows a small overall gain by the third period. Overall, labour protection in Finland is consistent with a rising labour share in the short run and with productivity and employment gains over the medium term. The relationship between productivity and employment is positive.

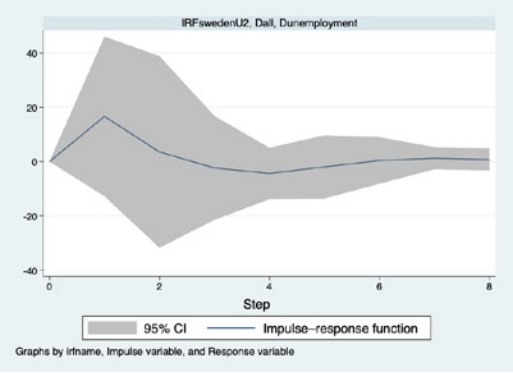
▶ **Figure 21. Impacts of changes in labour law in Sweden**



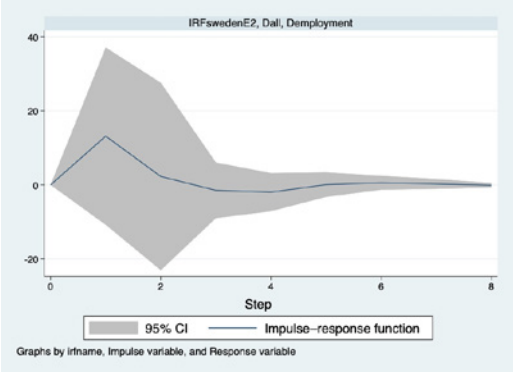
Sweden: labour law (aggregate) on labour share



Sweden: labour law (aggregate) on productivity



Sweden: labour law (aggregate) on unemployment



Sweden: labour law (aggregate) on employment

In Sweden, labour regulation has a positive impact on the labour share in the first two periods. Productivity also rises in the first and third periods. Unemployment rises initially before falling. Employment shows a similar pattern. Overall, rises in the labour share and in productivity are consistent with employment gains although unemployment also rises with productivity initially.

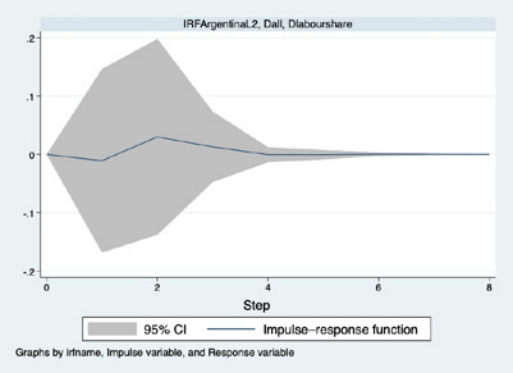
Summary

Across these eight EU economies, increasing labour law protection is correlated with rises in the labour share in most cases, and with increases in productivity in all cases. Moreover, productivity and employment rise together. This is consistent with productivity increases feeding through into second-order positive impacts on employment. Although our analysis does not specifically study the impact of labour laws on measures of innovation such as patenting activity, the results obtained broadly confirm the suggestion that labour protections have a role to play in maintaining the conditions for firm-level innovation in coordinated market economies, and in that context reinforce the findings of a number of earlier empirical studies (Damiani and Pompeii, 2010; Vergeer and Kleinknecht, 2014; Kleinknecht, 2017).

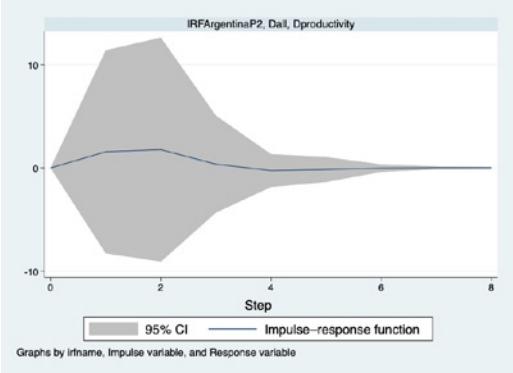
6.2.3 Latin American countries

We now examine changes in a number of South American countries. Countries in this region were among in the first in the world to adopt labour standards legislation in the early twentieth century and there continues to be a strong tradition of protective worker laws and a tendency to treat labour rights as binding and unconditional. Countries in the region also tend to have larger informal sectors than would be the case in Europe or North America.

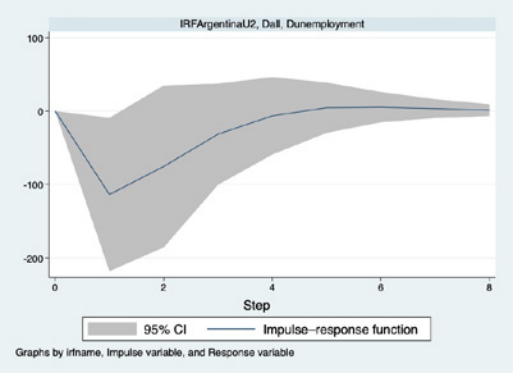
▶ **Figure 22. Impacts of changes in labour law in Argentina**



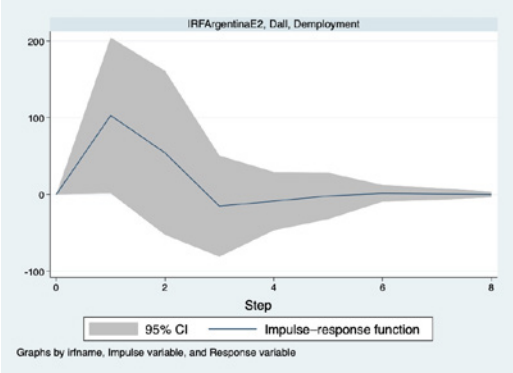
Argentina: labour law (aggregate) on labour share



Argentina: labour law (aggregate) on productivity



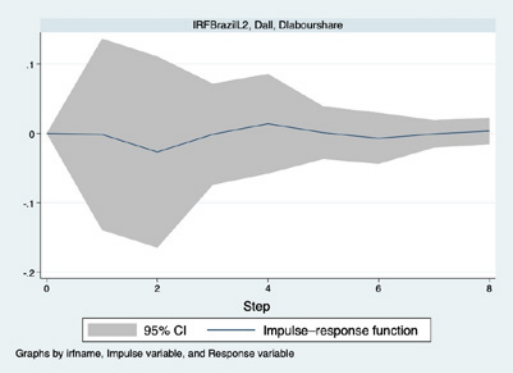
Argentina: labour law (aggregate) on unemployment



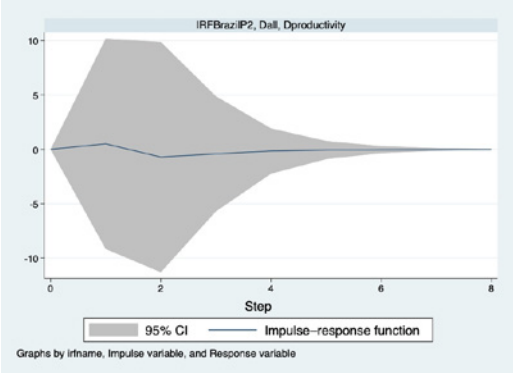
Argentina: labour law (aggregate) on employment

In Argentina there is a small fall in the labour share the end of the first period, and then a rise by the end of the second period, neither of which is large in magnitude. Productivity rises slowly in both the first and second periods before converging back to zero. Unemployment falls sharply in the first period. Employment rises quickly in the first period. Overall, increases in the protective content of labour regulation lead to improvements in both productivity and employment, and are consistent with a rise in the labour share.

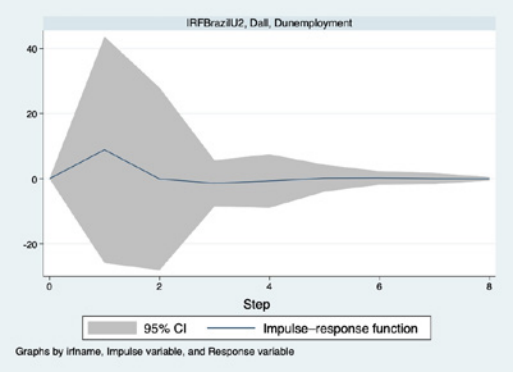
▶ **Figure 23. Impacts of changes in labour law in Brazil**



Brazil: labour law (aggregate) on labour share



Brazil: labour law (aggregate) on productivity

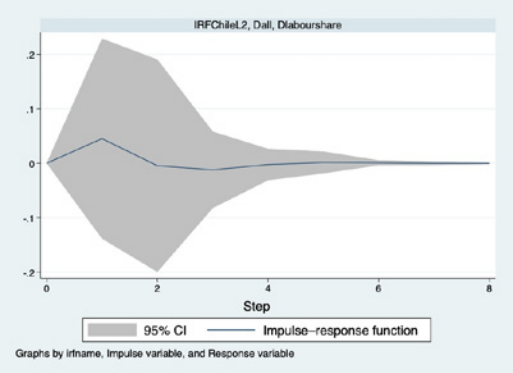


Brazil: labour law (aggregate) on unemployment

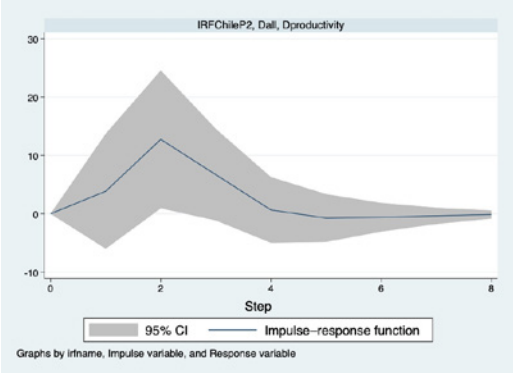
Brazil

In Brazil, the impact of labour regulation on the labour share is negative in the first and second periods, followed by small overall gain in the third period. Productivity is positively impacted in the first period after there is then a fall in the second period. Neither of these effects if significant. Unemployment rises in the first period when productivity is also rising, and then falls back as productivity falls. No result could be obtained for employment.

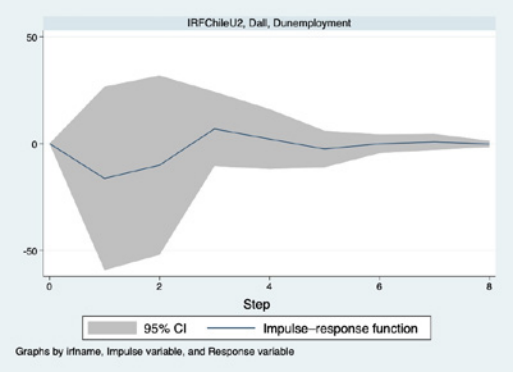
▶ **Figure 24. Impacts of changes in labour law in Chile**



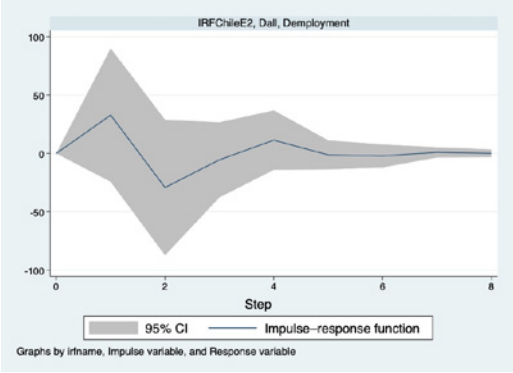
Chile: labour law (aggregate) on labour share



Chile: labour law (aggregate) on productivity



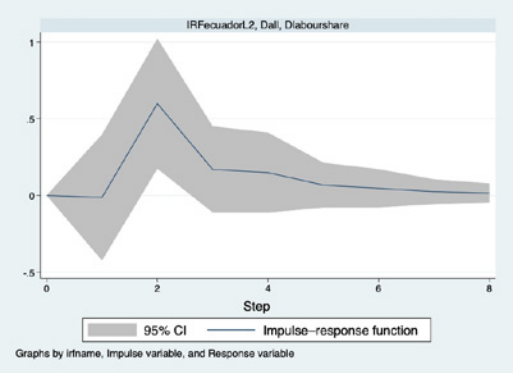
Chile: labour law (aggregate) on unemployment



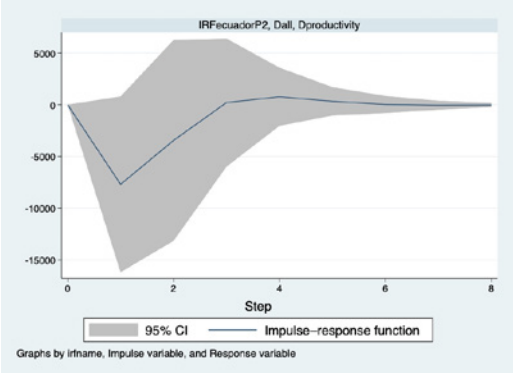
Chile: labour law (aggregate) on employment

In Chile, the impact of labour regulation on the labour share is positive in the first period before converging back to zero in the second period. Productivity rises in the first and second periods. The impact on unemployment is negative in the first period. Employment rises in the first period before falling and then rising again by the fourth period. Overall the evidence is of a short-run positive impact on the labour share and on productivity, with lasting positive effects on employment. Productivity and employment are positively related.

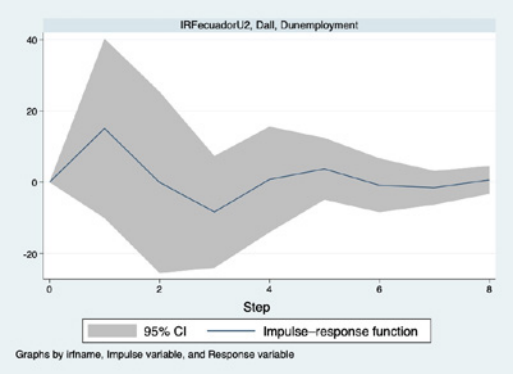
▶ **Figure 25. Impacts of changes in labour law in Ecuador**



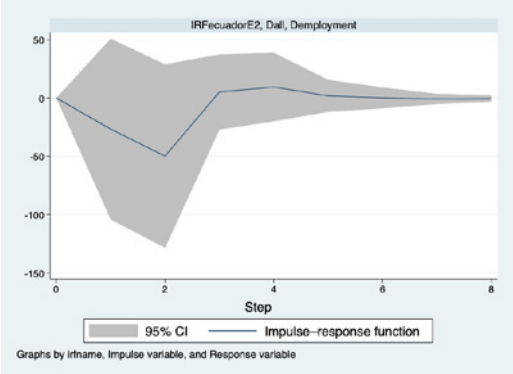
Ecuador: labour law (aggregate) on labour share



Ecuador: labour law (aggregate) on productivity



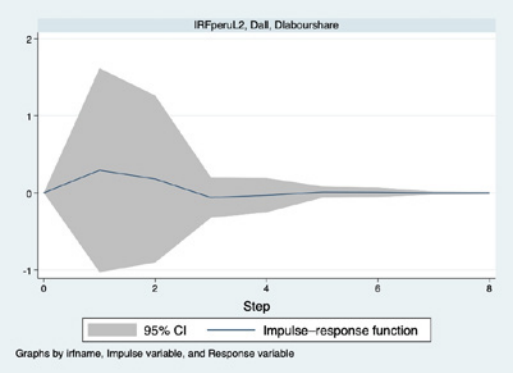
Ecuador: labour law (aggregate) on unemployment



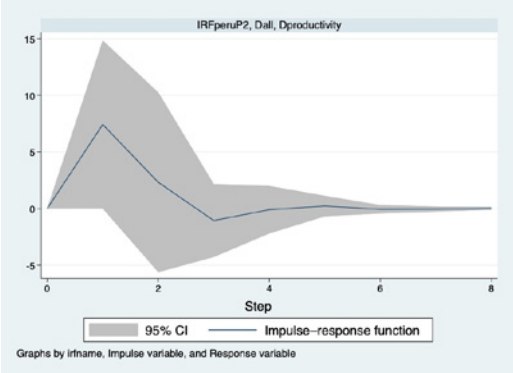
Ecuador: labour law (aggregate) on employment

In Ecuador, the labour share rises in the second period following an increase in labour regulation, before falling back in the third and showing an overall gain by the fourth. Productivity falls in the first period before converging back to zero. Unemployment rises in the first period and fall in the third before rising again. Employment falls in the first two periods before showing a recovery in the third and fourth. The overall picture is one of an increase in the labour share with an initially negative impact on productivity followed by a recovery. Productivity and employment are positively related.

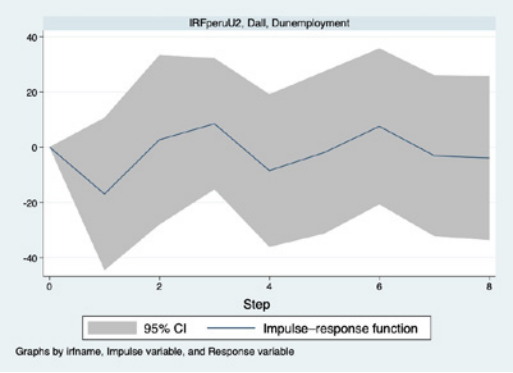
▶ **Figure 26. Impacts of changes in labour law in Peru**



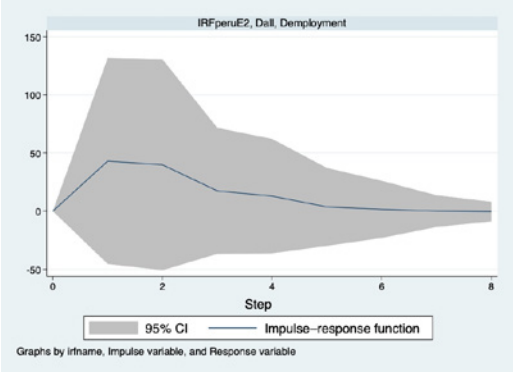
Peru: labour law (aggregate) on labour share



Peru: labour law (aggregate) on productivity



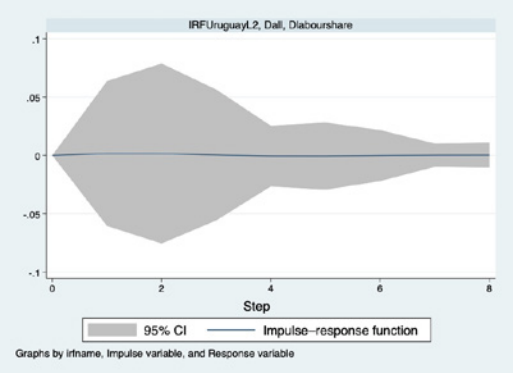
Peru: labour law (aggregate) on unemployment



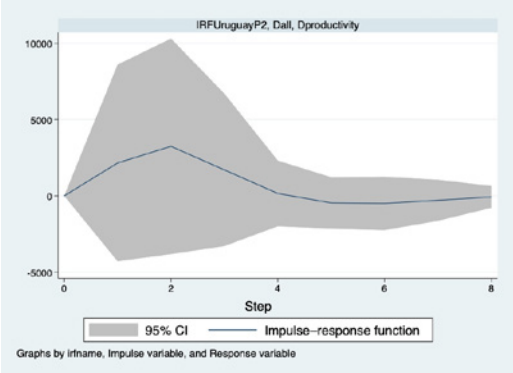
Peru: labour law (aggregate) on employment

In Peru, the impact of labour regulation on the labour share is positive in the first period but is small. Productivity rises in the first period before converging back to zero. Unemployment fluctuates over time, falls in the first period before rising up to the third period, falling to the fourth period, and then rising again. Employment rises in the first period. Overall there is evidence of a positive impact of labour regulation on the labour share and on productivity. The relationship between employment and productivity is positive.

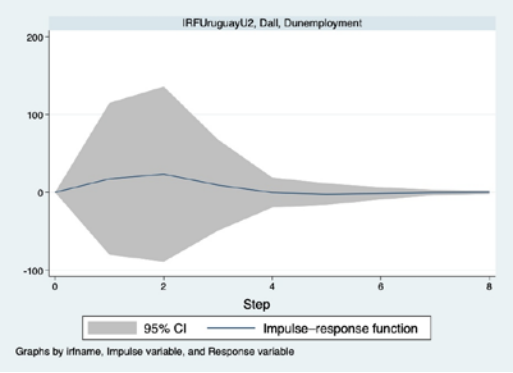
▶ **Figure 27. Impacts of changes in labour law in Uruguay**



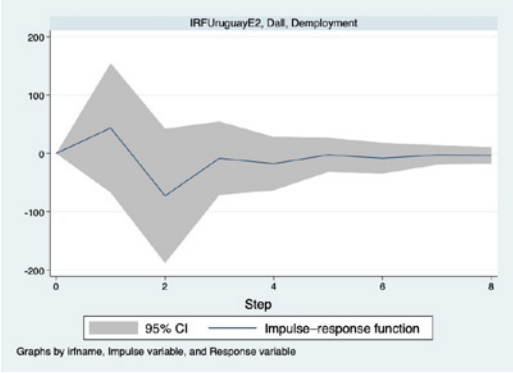
Uruguay: labour law (aggregate) on labour share



Uruguay: labour law (aggregate) on productivity



Uruguay: labour law (aggregate on unemployment



Uruguay: labour law (aggregate) on employment

In Uruguay, there is no impact of labour regulation on the labour share. Productivity rises in the first two periods. Unemployment shows a very small increase in the first two periods, but this result is very small. Employment rises in the first period, falls in the second, and then rebounds. Overall, there is no impact on the labour share, but positive impacts on productivity and employment. Productivity and employment are positively correlated in the initial period.

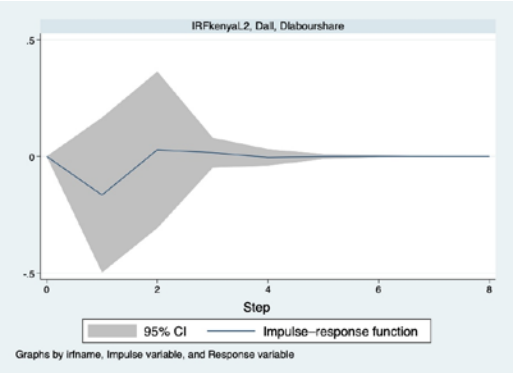
Summary

The impacts of labour law changes in the Latin American countries reported here are limited, with most of them showing only insignificant effects on the labour share. On the other hand, most of them show a positive and significant impact on employment, and these employment effects are positively related with productivity improvements. While Latin American countries have relatively large informal economies compared to those in mainland Europe, the positive correlation between productivity and employment growth suggests that they have scope to develop a strategy of using labour regulation to promote innovation.

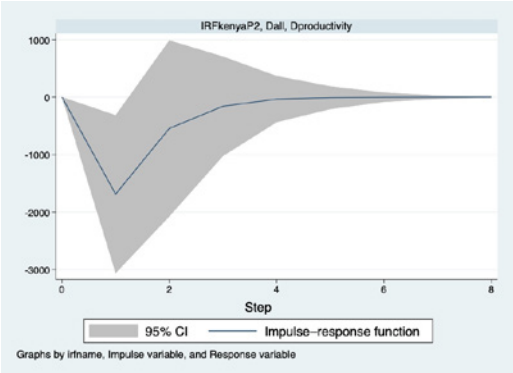
6.2.4 African countries

We next report results for three large and fast-growing African economies: Kenya, Nigeria and South Africa.

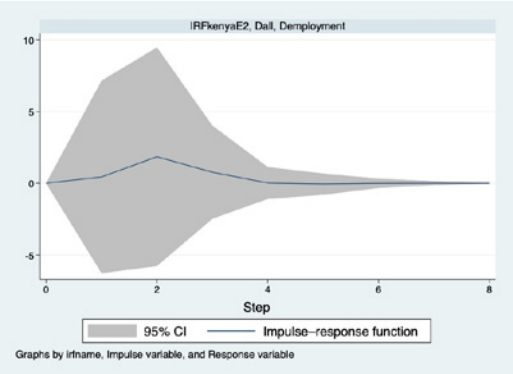
▶ **Figure 28. Impact of changes in labour law in Kenya**



Kenya: labour law (aggregate) on labour share



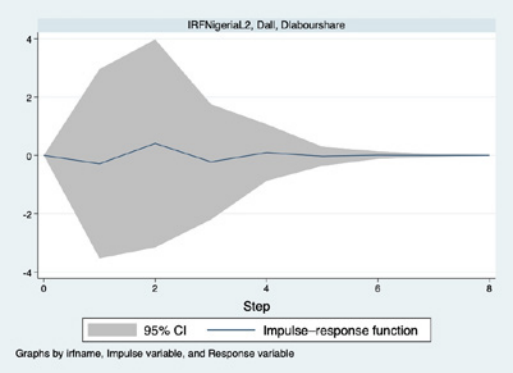
Kenya: labour law (aggregate) on productivity



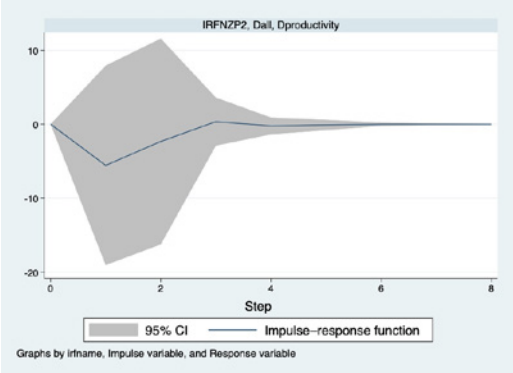
Kenya: labour law (aggregate) on employment

In Kenya, an increase in labour regulation leads to a fall in the labour share in the first period, followed by a recovery in the second period. Productivity shows an initial steep fall followed by a rebound. Employment rises in the first two periods insignificantly. Data on unemployment were not available. Overall, the impact of labour regulation is initially negative for the labour share but is positive from the second period, with productivity also increasing after an initial fall. Employment increases over the short term and declines over the medium term. Employment and productivity are inversely related.

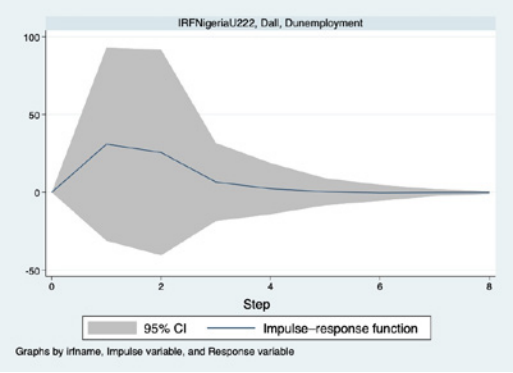
▶ **Figure 29. Impact of changes in labour law in Nigeria**



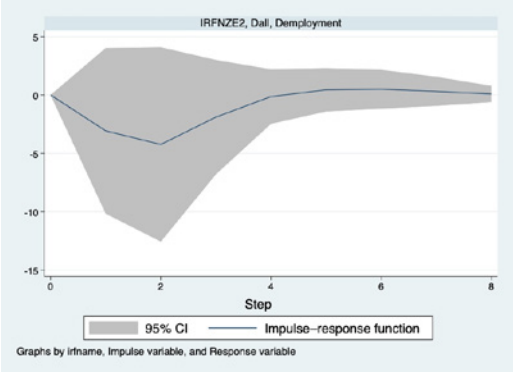
Nigeria: labour law (aggregate) on labour share



Nigeria: labour law (aggregate) on productivity



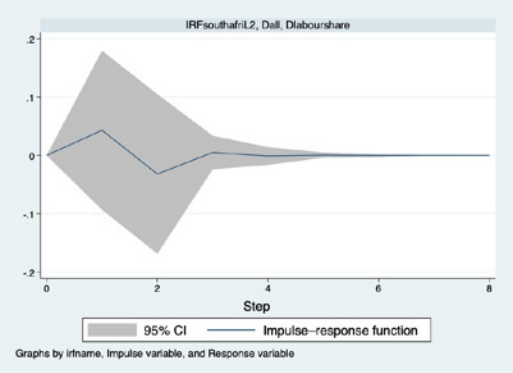
Nigeria: labour law (aggregate) on unemployment



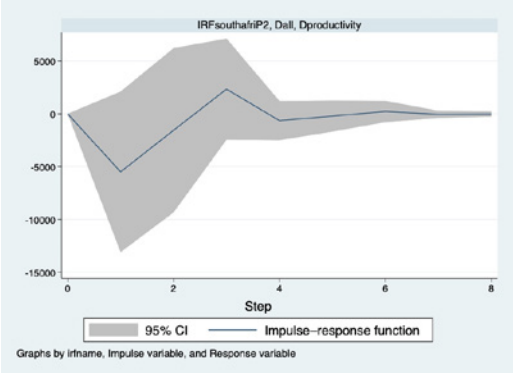
Nigeria: labour law (aggregate) on employment

In Nigeria, an increase in labour regulation is correlated with an initial decline in the labour share, followed by a rise; however, each impact is very small. Productivity falls in the first period and rises in the second. Unemployment rises in the first period before falling. Employment falls in the first two periods before rising. Overall there is evidence of a positive impact on the labour share over the medium term, with some longer term positive impact also on productivity and employment. Employment and productivity are positively related.

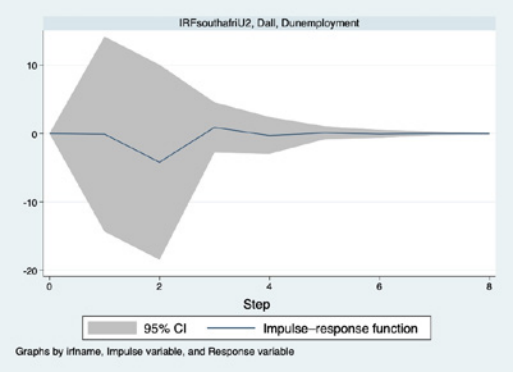
▶ **Figure 30. Impacts of changes in labour law in South Africa**



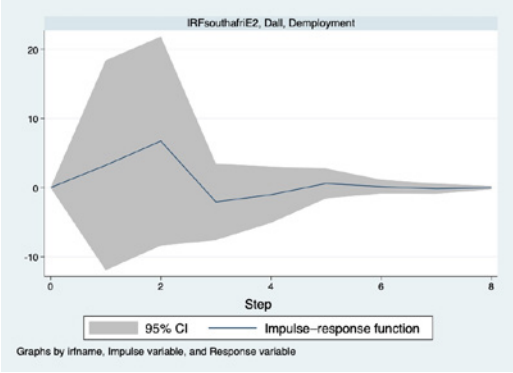
South Africa: labour law (aggregate) on labour share



South Africa: labour law (aggregate) on productivity



South Africa: labour law (aggregate) on unemployment



South Africa: labour law (aggregate) on employment

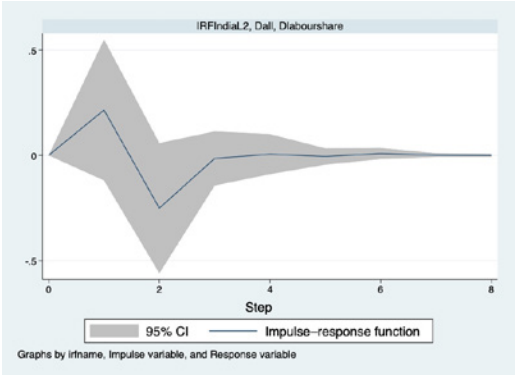
In South Africa, there is an initial positive impact of labour regulation on the labour share, then a fall. Productivity falls in the first period before a rebound up to the third period. Unemployment falls in the second period before converging back to zero. Employment rises in the first two periods and then falls before returning to trend. Overall, positive impacts on the labour share are correlated with rising productivity and employment. Productivity and employment are positively related.

Summary

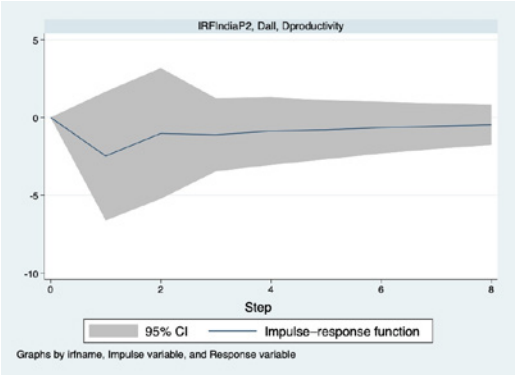
It is difficult to draw wider conclusions from the experiences of these three African countries because of their heterogeneity. Nigeria and Kenya do not have strongly protective labour law systems by global standards, while South Africa has a longer tradition of regulation in this field and has significantly added to worker protections in the post-Apartheid era. In Kenya the relationship between employment and productivity is a negative one, indicating the absence of beneficial second-order effects of productivity increases, but in Nigeria and South Africa there is a positive relationship. This results for two of Africa's largest and fastest growing economies suggests that there is scope to combine equity and efficiency gains in the African context.

6.2.5 Countries in South Asia

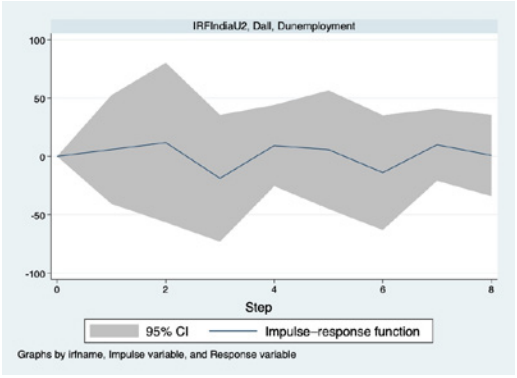
▶ **Figure 31. Impacts of changes in labour law in India**



India: labour law (aggregate) on labour share



India: labour law (aggregate) on productivity

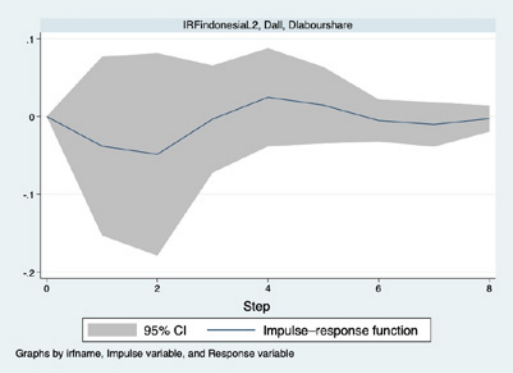


India: labour law (aggregate) on unemployment

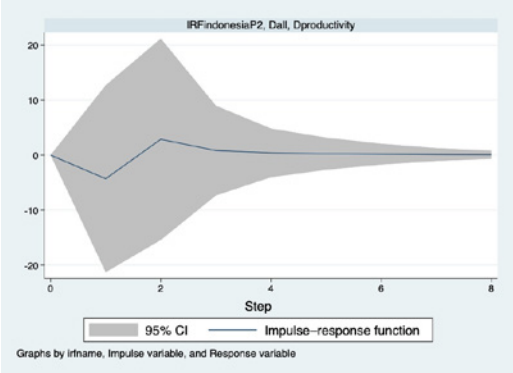
India: labour law (aggregate) on employment

In India, increases in labour regulation lead to an increase in the labour share in the first period, following which there is a decline. Productivity shows a fall, followed by a recovery, but this result is small in terms of magnitude. Unemployment rises in the first two periods before falling between the second and third periods, and rising again in the fourth. Employment shows an initial fall before rising between the second and third periods, but this result too is small. The overall picture is one of an initially positive increase in the labour share which is correlated with rising unemployment. In the absence of clear results for productivity and employment it is difficult to draw wider conclusions for the Indian case.

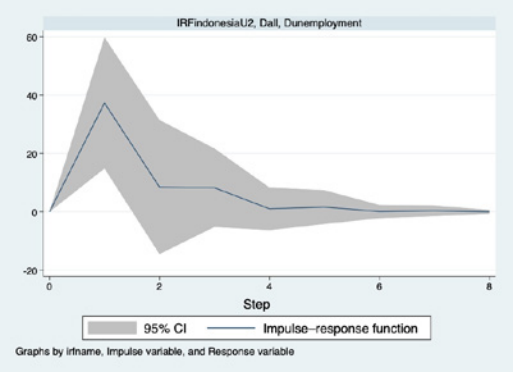
▶ **Figure 32. Impacts of changes in labour laws in Indonesia**



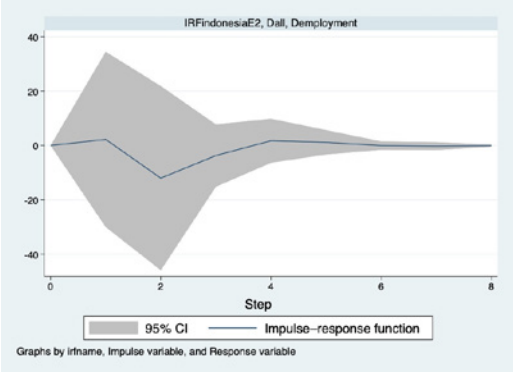
Indonesia: labour law (aggregate) on labour share



Indonesia: labour law (aggregate) on productivity



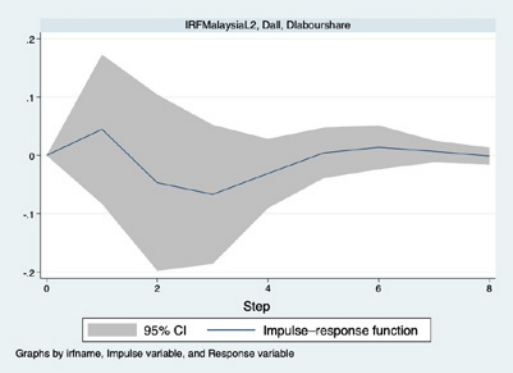
Indonesia: labour law (aggregate) on unemployment



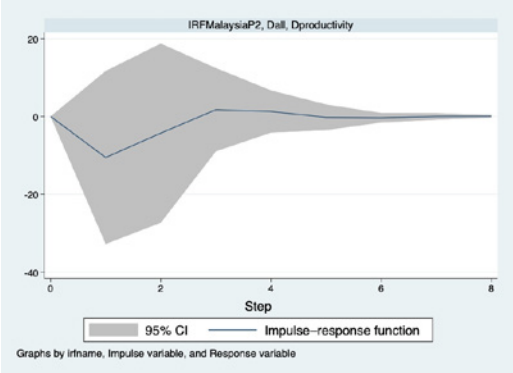
Indonesia: labour law (aggregate) on employment

In Indonesia, the initial impact of labour regulation on the labour share is negative, to the second period, followed by a recovery and an overall positive impact by the fourth period. There is a fall in productivity in the first period followed by a recovery and overall increase by the second period. Unemployment shows an initial increase followed by a return to trend. Employment falls sharply between the second and third periods. Overall the impact of labour laws on the labour share is positive in the medium term; the impact on productivity and employment is negative.

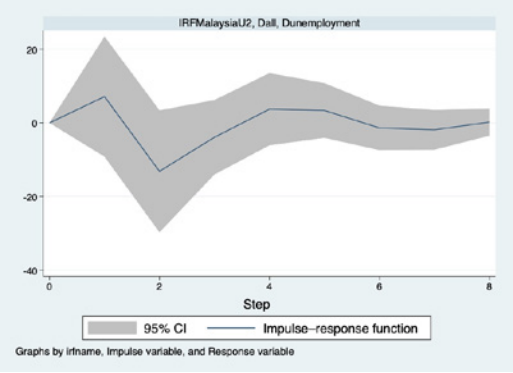
▶ **Figure 33. Impacts of changes in labour law in Malaysia**



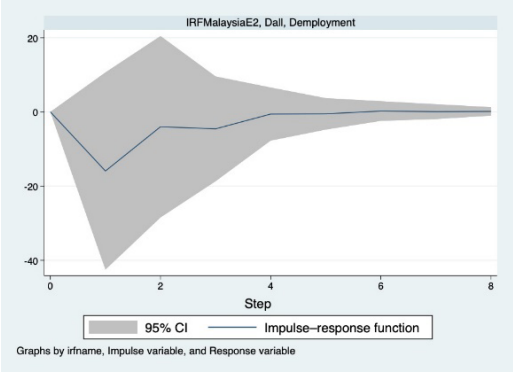
Malaysia: labour law (aggregate) on labour share



Malaysia: labour law (aggregate) on productivity



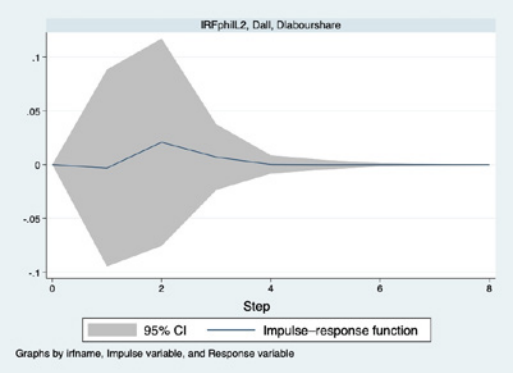
Malaysia: labour law (aggregate) on unemployment



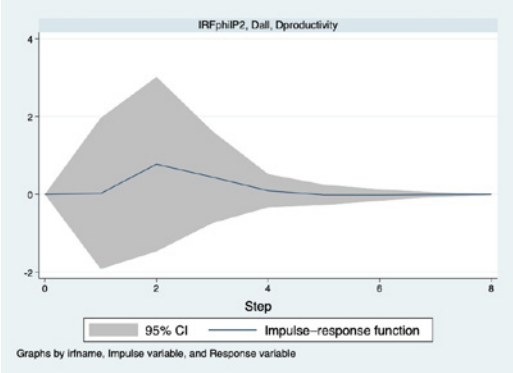
Malaysia: labour law (aggregate) on employment

In Malaysia, increasing labour regulation is correlated with a rise in the labour share in the first period, a fall in the second period, and a rise from the third period. Productivity falls in the first period before converging back to zero. Unemployment rises initially before falling and converging back, while employment falls. Overall, there is evidence of a short-run positive effect of labour regulation on the labour share and longer-term positive impacts on productivity. Employment and productivity are inversely related.

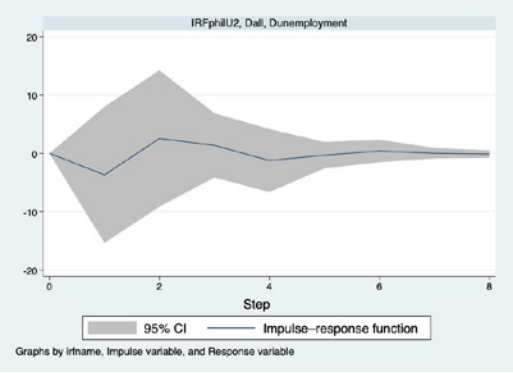
▶ **Figure 34. Impacts of change in labour law in the Philippines**



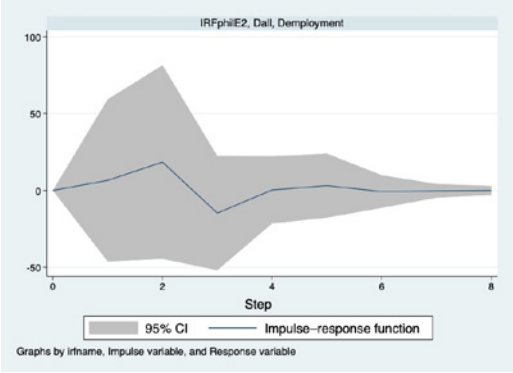
Philippines: labour law (aggregate) on labour share



Philippines: labour law (aggregate) on productivity



Philippines: labour law (aggregate) on unemployment



Philippines: labour law (aggregate) on employment

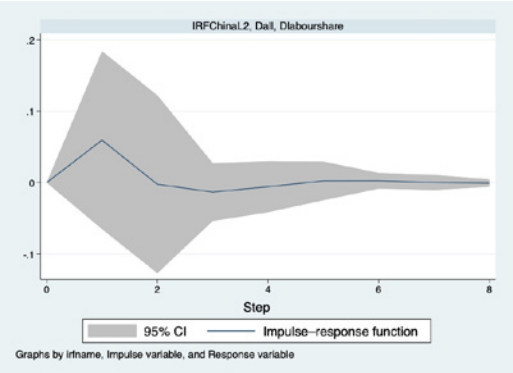
In the Philippines, the impact of labour regulation on both the labour share and productivity is positive in the second period. Unemployment records an initial fall followed by a small rise. Employment rises in the first and second periods and then falls. Overall, there is evidence of a rise in the labour share which is correlated with rising productivity and rising employment. Employment and productivity are positively related.

Summary

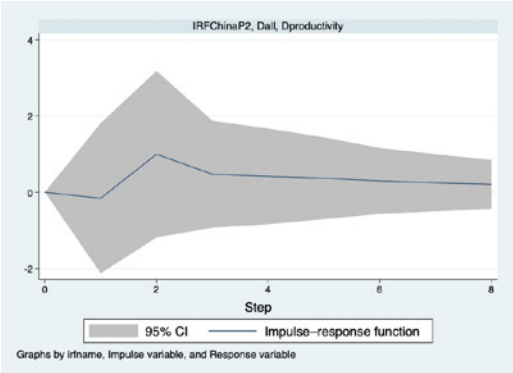
The results for South Asian economies suggest the scope for positive impacts of labour laws on the labour share and also on productivity. Rises in productivity are mostly correlated with falls in unemployment. Results for employment are not clear cut. This may reflect differences across countries in the way that employment and unemployment are counted. In general, however, the finding that productivity improvements may flow through to unemployment reductions suggests that there is scope for labour laws to contribute to sustainable growth in the region.

6.2.6 Countries in East Asia

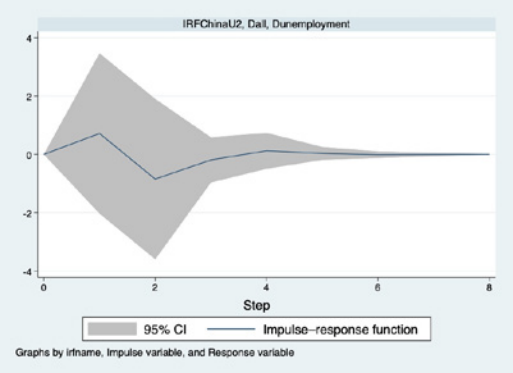
▶ **Figure 35. Impacts of changes in labour law in China**



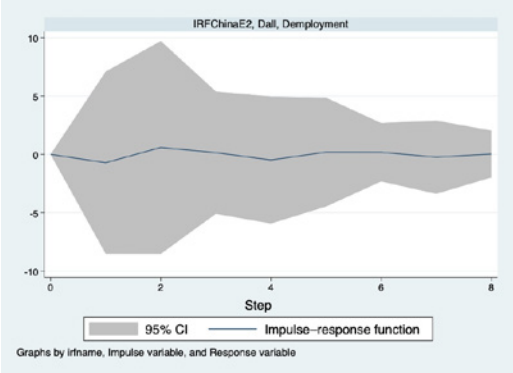
China: labour law (aggregate) on labour share



China: labour law (aggregate) on productivity



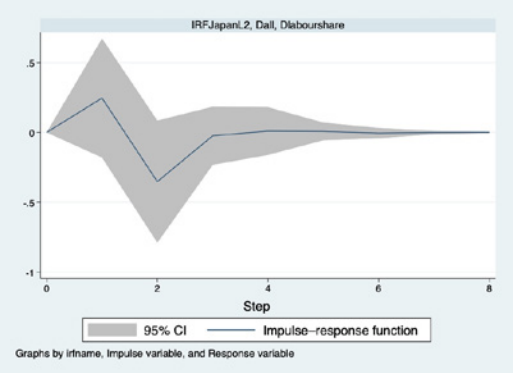
China: labour law (aggregate) on unemployment



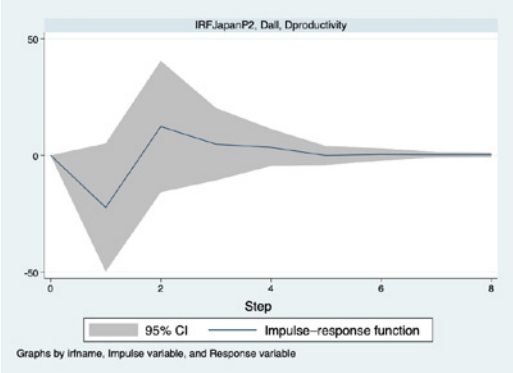
China: labour law (aggregate) on employment

In China, there is a short-term positive impact on the labour share, which rises in the first period before converging back to zero. Productivity rises in the second period. Unemployment initially rises before falling back. Employment shows a small fall in the first period before rising in the second period and then stabilizing, although this result is small in terms of magnitude. There is evidence therefore of a positive impact on the labour share in the short run and of longer-term positive effects on productivity. Productivity and employment are positively related.

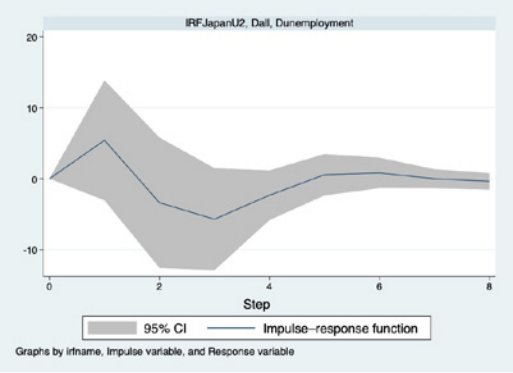
▶ **Figure 36. Impacts of changes in labour laws in Japan**



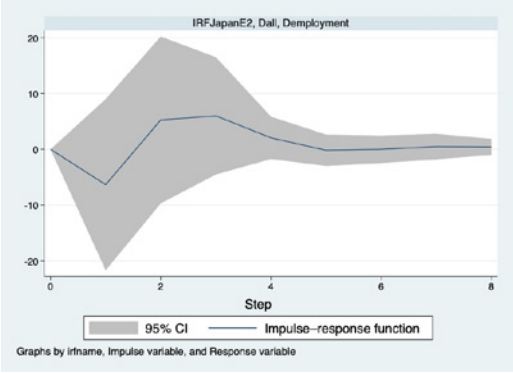
Japan: labour law (aggregate) on labour share



Japan: labour law (aggregate) on productivity



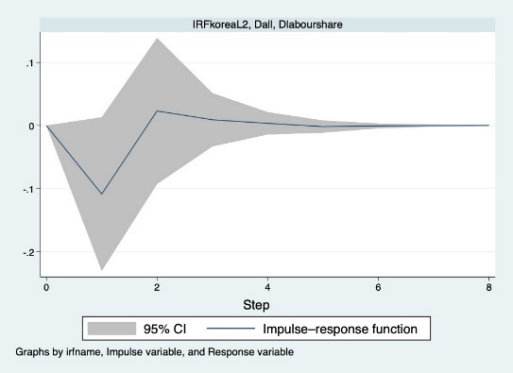
Japan: labour law (aggregate) on unemployment



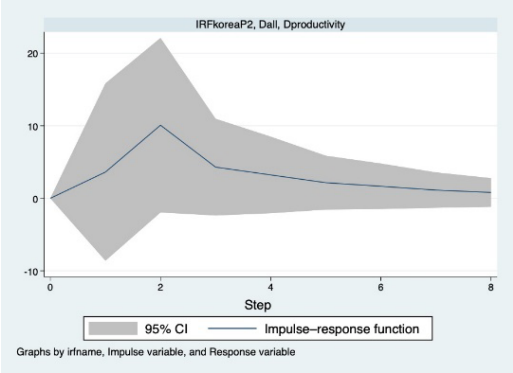
Japan: labour law (aggregate) on employment

In Japan, the impact of labour regulation on labour share is positive in the first period, followed by a decline in the second one before converging back to zero. Productivity falls in the first period before rising in the second. Unemployment rises in the first period when productivity is falling and subsequently falls; while employment falls in the first period and then rises up to the third period. The evidence is consistent with initial gains in the labour share, an initial productivity decline followed by a rise, a medium term fall in unemployment, and medium term rise in employment. Productivity and employment are positively related.

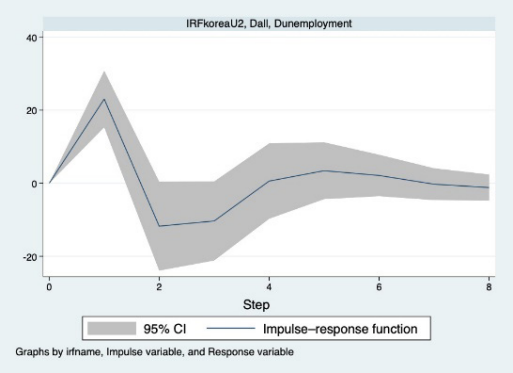
▶ **Figure 37. Impacts of changes in labour laws in Korea**



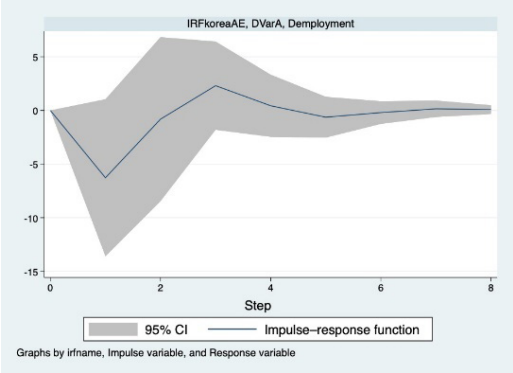
Korea: labour law (aggregate) on labour share



Korea: labour law (aggregate) on productivity



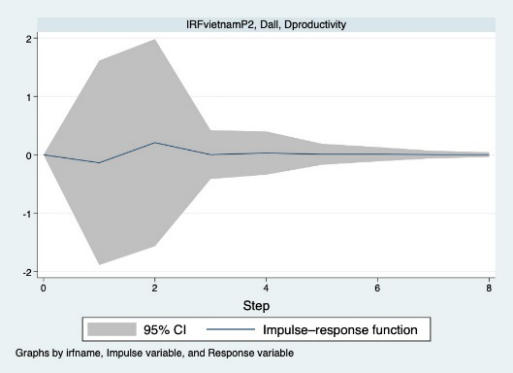
Korea: labour law (aggregate) on unemployment



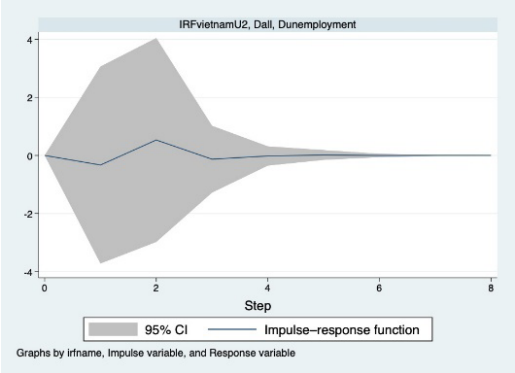
Korea: labour law (aggregate) on employment

In Korea, the impact of the aggregate labour law variable is negative in the first period and slightly positive (non-significant) in the second one. Productivity rises in the first two periods before returning to trend. Unemployment at first rises and then falls, while employment follows the inverse pattern. The Korean data suggest, therefore, a delayed productivity effect of increases in labour protection, flowing through to unemployment declines and employment gains. There is minimal impact on the labour share.

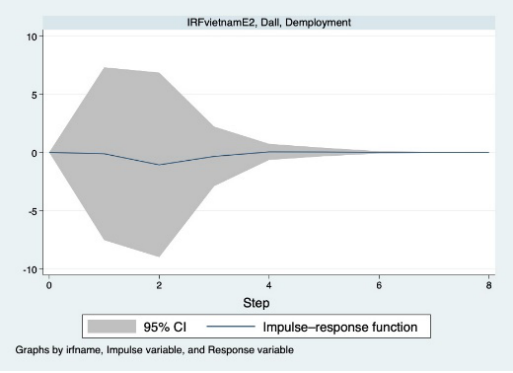
▶ **Figure 38. Impacts of changes in labour laws in Vietnam**



Vietnam: labour law (aggregate) on productivity



Vietnam: labour (aggregate) on unemployment



Vietnam: labour law (aggregate) on employment.

In Vietnam there is a positive impact on productivity in the second period which corresponds to a rise in unemployment and a fall in employment. These effects are small in each case. Data for labour share were not available.

Summary

East Asia is a region which has seen increases in worker-protective labour regulation since the 1990s. Steps to put a statutory floor of rights in place as economies were transitioning away from a command economy include Vietnam's labour codes of 1994 and 2012 and China's Labour Contracts Act of 2007. In both of these countries and also in Japan and Korea, a notable trend has been the enactment of laws protecting part-time, fixed-term and temporary agency work, requiring employees in these categories to be treated proportionately with those in full-time and regular employment. In each of these countries, there is evidence of labour protections positively impacting the labour share of national income, and of productivity increases feeding through to employment rises in the medium term.

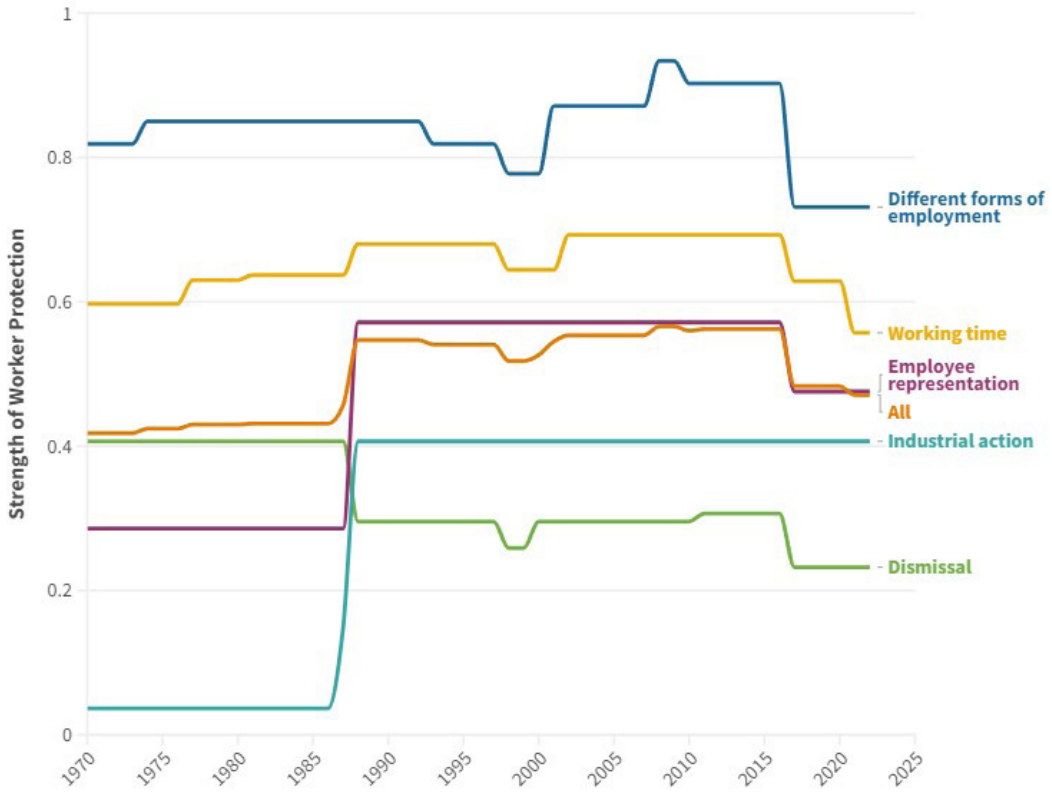
6.3 A closer look at country trends by sub-categories of labour law rules

The structure of the CBR-LRI makes it possible to decompose the aggregate labour law score into scores for the individual subindices. As we have seen, these code for, respectively, the laws governing the definition of the employment relationship and the extent to which the treatment of different forms of employment (part-time work, fixed-term employment and temporary agency work) must be proportionate to that of the standard, full-time and indeterminate contract of employment; laws on working time; dismissal protection; laws on employee representation; and laws on industrial action. By way of illustration, we will present this more detailed analysis for six countries from different regions, which also display, as a group, a range of levels of economic development, and divergences of legal origin: Brazil, China, South Africa, Spain, Sweden and the UK.

Figure 39 presents trends in the scores for each of the five sub-indices in Brazil and Table 5 sets out results for a time series analysis of their impacts, using the same methodology as that applied to the aggregate labour law scores in section 7.2.

The DFE variable is positively correlated with productivity and labour share over the longer term. Working time and dismissal protection are also positively correlated with productivity and, with the labour share. Although employment fluctuates, there is evidence of positive impacts for most of the variables. There is no significant impact in terms of rising unemployment, except for the working time variable.

▶ **Figure 39. Changes in labour laws in Brazil, 1970-2022**

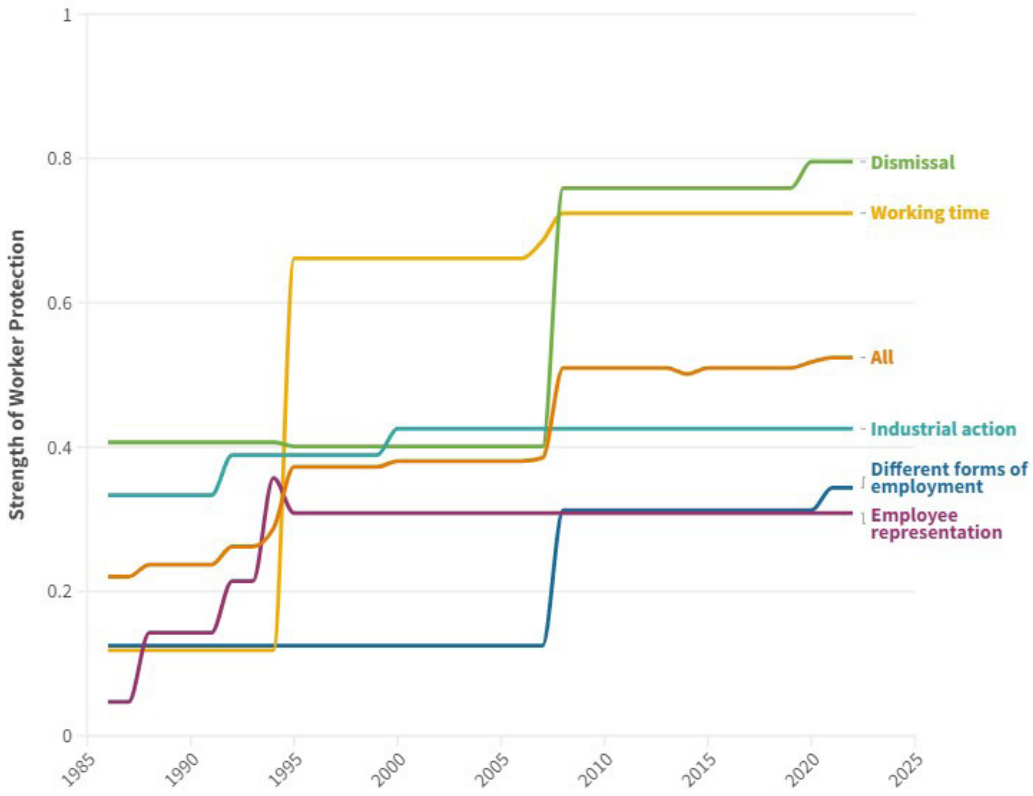


▶ **Table 5. Impacts of changes of labour laws in Brazil**

Brazil	Labour share	Productivity	Unemployment	Employment
DFE	-/+	-/+	No effect	+/-/+
Working time	+/-	+	+	No effect
Dismissal	+/-/+	+	No effect	+/-+/-
Employee representation	No effect	-	+/-	+/-/+/-
Industrial action	No effect	+/-	No result	No result

Figure 40 and Table 6 present the same data for China. The DFE and dismissal variables are associated with productivity improvements and unemployment falls. The employee representation and industrial action variables are associated with falls in productivity and no clear effects on employment or unemployment. The working time and employee representation variables are associated with an increase in labour share, the industrial action variable with a fall. Overall, positive productivity effects are associated most strongly with the laws on different forms of employment and on dismissal protection, whereas the labour share effects are associated with working time and employee representation laws. Productivity improvements are mostly correlated with rising employment and falling unemployment.

▶ **Figure 39. Changes in labour laws in China, 1986-2022**

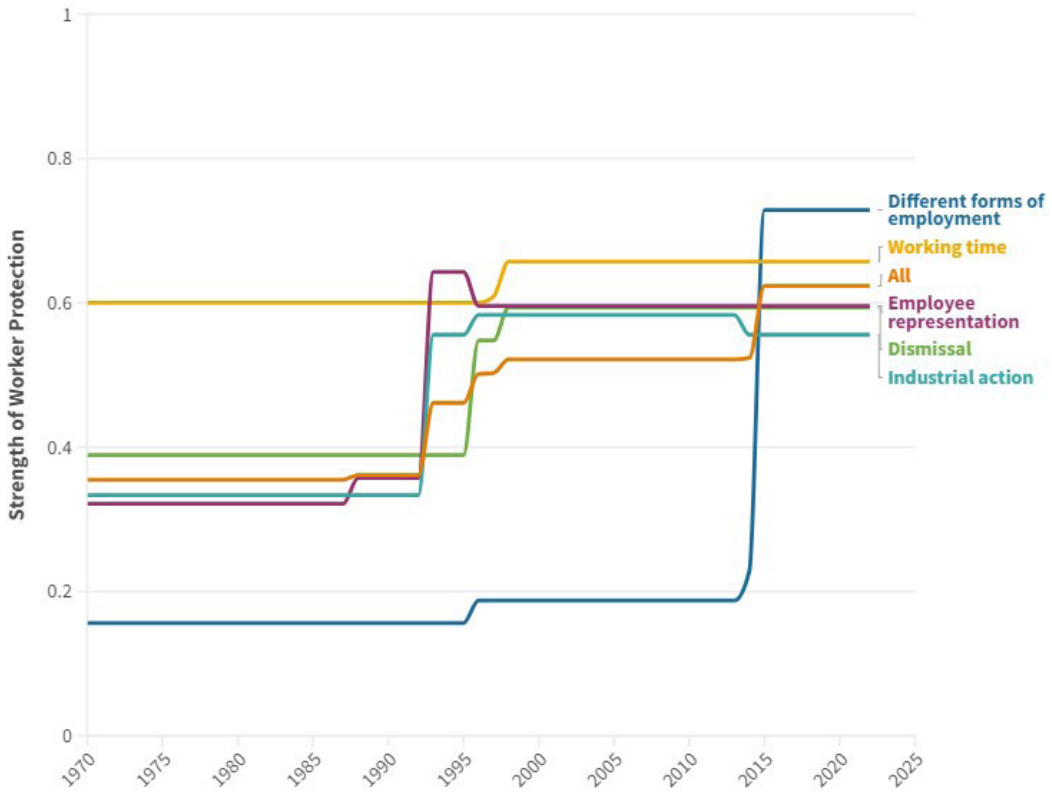


▶ **Table 6. Impacts of changes of labour laws in China**

China	Labour share	Productivity	Unemployment	Employment
DFE	No effect	+	-	-/+/-/+
Working time	+	-	No effect	+/-/+/-
Dismissal	No effect	+	-	-/+/-/+
Employee rep-resentation	-/+	-	No effect	No effect
Industrial action	-	No effect	+	No effect

Figure 40 and Table 7 report the results for South Africa. The DFE indicator is positively correlated with productivity over the medium term and with the labour share. It is associated with employment rises and unemployment falls in the medium term. The working time indicator is associated with falling productivity, while the dismissal indicator shows an initial fall followed by a rise in productivity. The collective labour law variables mostly do not show sizable impacts.

▶ **Figure 40. Changes in labour laws in South Africa, 1970-2022**

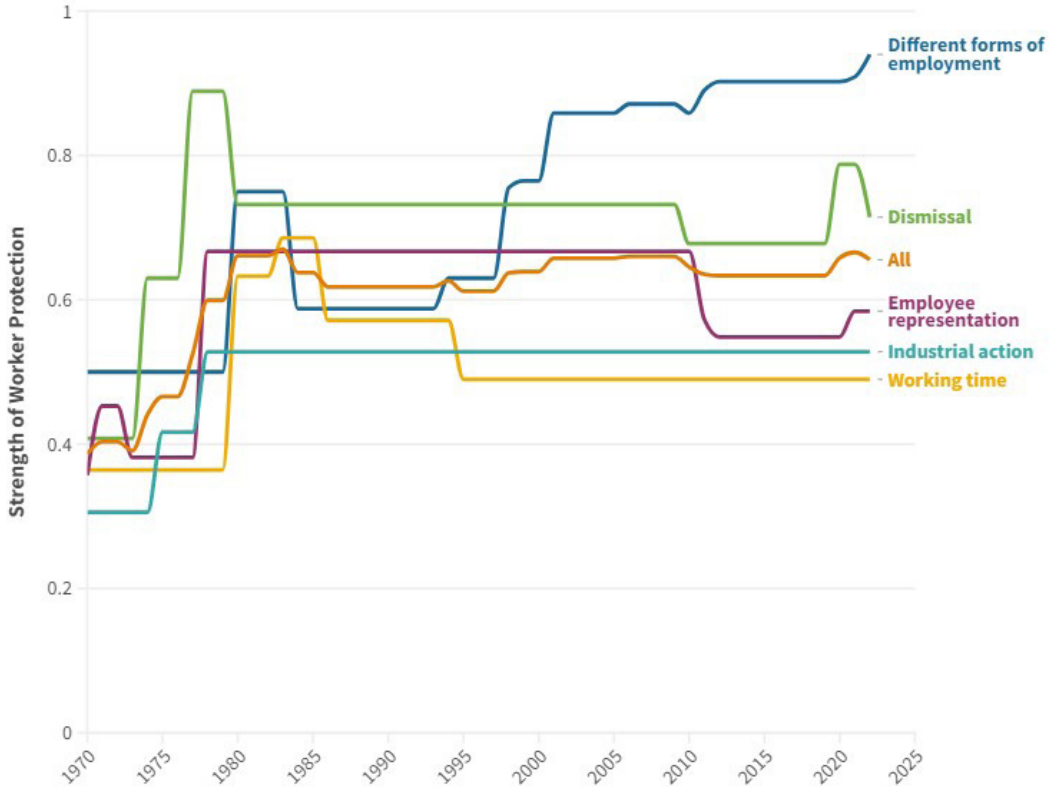


▶ **Table 7. Impacts of changes of labour laws in South Africa**

South Africa	Labour share	Productivity	Unemployment	Employment
DFE	+	-/+	+/-/+	+
Working time	+/-	-	No effect	No effect
Dismissal	+/-/+	-/+	No effect	No effect
Employee representation	-	No effect	No effect	No effect
Industrial action	-/+	No effect	-	No effect

In Spain, as indicated in Figure 41 and Table 8, the impact of the working time, dismissal, employee representation and industrial action variables on productivity is in each case positive; the DFE variable does not report a significant result. There are mostly positive effects on the labour share and on employment, and reductions in unemployment.

▶ **Figure 41. Changes in labour laws in Spain, 1970-2022**

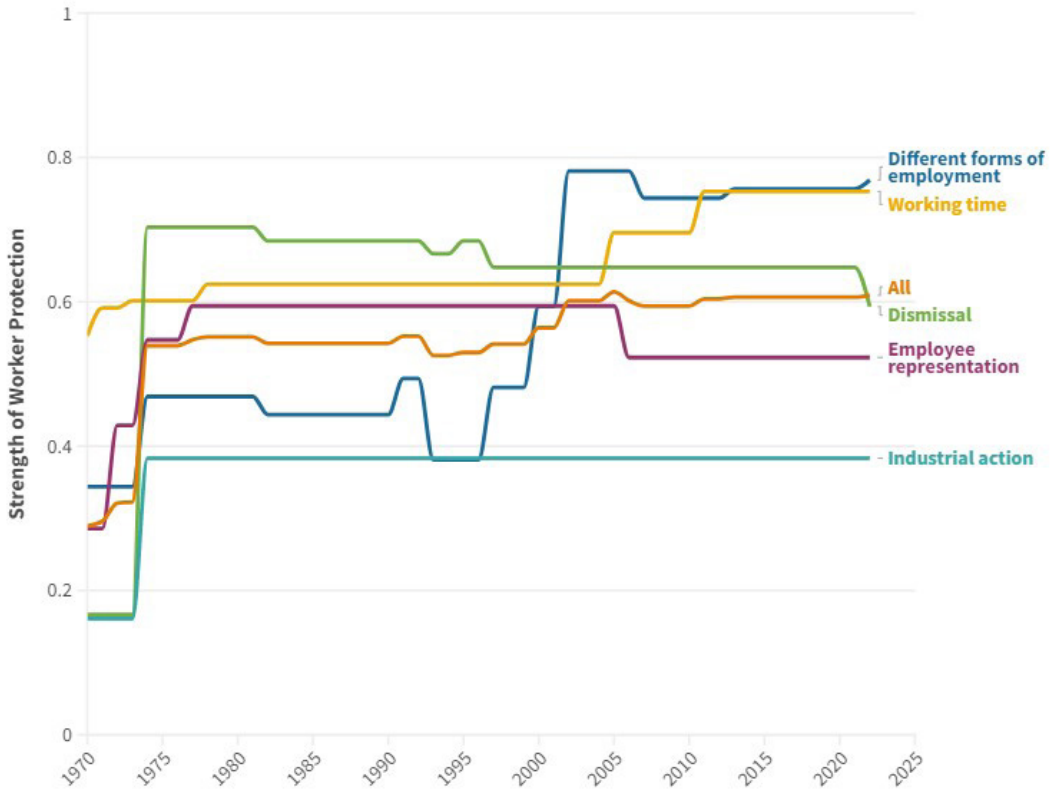


▶ **Table 8. Impacts of changes of labour laws in Spain**

Spain	Labour share	Productivity	Unemployment	Employment
DFE	No effect	-/+	-	+
Working time	-	+	-	No effect
Dismissal	+	-/+	-	+
Employee representation	+	+	-	+
Industrial action	No effect	+	No effect	No effect

The results for Sweden are shown in Figure 42 and Table 9. The impact of the DFE, working time and employee representation variables on productivity is positive, although dismissal and industrial action show initial falls. The labour share shows increases brought about through the DFE, dismissal and industrial action variables, but declines for working time and employee representation. There are mostly employment gains, and productivity and employment are positively correlated.

▶ **Figure 42. Changes in labour laws in Sweden, 1970-2022**



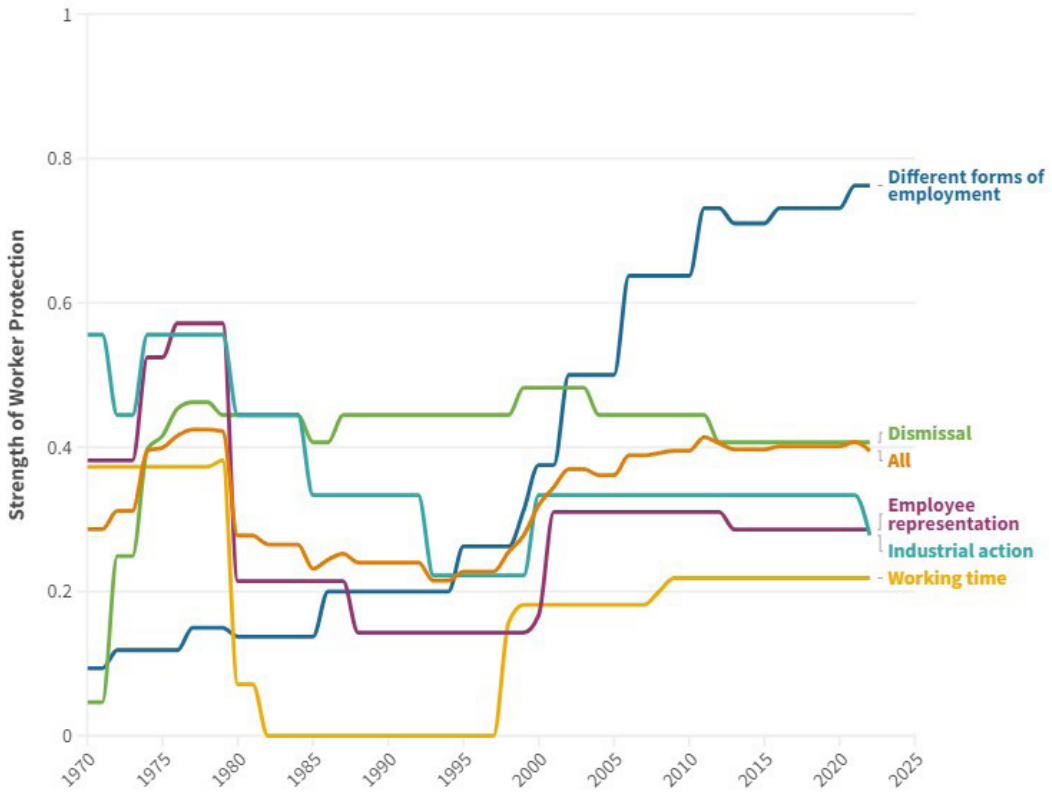
▶ **Table 9. Impacts of changes of labour laws in Sweden**

Sweden	Labour share	Productivity	Unemployment	Employment
DFE	+	+	+	+
Working time	-	+	-	+
Dismissal	+	-/+	+/-	-/+
Employee representation	-/+	+	+/-	-/+
Industrial action	+	-/+	No effect	No effect

Finally, we report the results for the UK. As Figure 43 shows, the UK has seen numerous changes in its labour laws since the 1970s, with alternating periods of increasing and falling labour protection. Table 10 indicates that all the variables except dismissal show a positive relationship with productivity in either the first or second period, and that all variables except industrial action show a positive effect on employment. The DFE, working time and industrial action variables are associated with a rising labour share. In the case of working time, employee representation and industrial action, an initial fall in productivity is followed by a rise. This is evidence of a delayed positive productivity effect, as firms adjust to regulation through a combination of investment in capital goods and additional training. There is no evidence of higher unemployment resulting from increases in labour protection except in the case of industrial action. Employment rises overall for all variables, except again for industrial action.

The UK results are particularly relevant for illustrating the value of decomposing the index. The aggregate results for the UK (see section 7.2) suggest that the strengthening of labour laws may lead to employment gains, but also to productivity losses. The more granular analysis just presented, however, suggests that the trade off between employment and productivity is not present for all of the sub-indices, or over all time periods. In the case of the DFE variable, productivity and employment are positively related in the first period. In the case of the working time and employee representation variables, rising productivity in the medium term is correlated with an overall positive effect on employment. The industrial action indicator, while associated with rising unemployment, has a medium term positive relationship with productivity, as well as having a positive impact on the labour share.

▶ **Figure 43. Changes in labour laws in the UK, 1970-2022**



▶ **Table 10. Impacts of changes of labour laws in the UK**

UK	Labour share	Productivity	Unemployment	Employment
DFE	-/+	+/-	-	+
Working time	+	-/+	-	+
Dismissal	No effect	No effect	No effect	+/-
Employee rep-resentation	-	-/+	-	+
Industrial action	+	-/+	+	No effect

Summary

Analysis of the impacts of labour laws in these six countries illustrates the potential value of decomposing the main index. According to country context, certain variables are more clearly identified with productivity gains and others with a labour share effect. This is information which may help inform policy debates, given the variety of types of labour law which exist at country level, and the diverse impacts they appear to have.

▶ 7 Assessment

We have estimated the impacts of labour law changes on a number of economic variables (labour share of national income, productivity, employment and unemployment) using a time-series econometric method and taking a country-by-country approach. The merit of this approach is that we take a granular look at the experience of individual countries, of the kind that is difficult when conducting a large-scale panel data analysis. As might be expected, we can see a range of country experiences. However, some general trends stand out.

The first is that, in a majority of country contexts, labour laws have a positive impact on the labour share of national income. This is to be expected: labour laws, by strengthening workers' rights, can be expected to enhance their bargaining power with respect to management, and to help tilt the balance of power between labour and capital in favour of the former.

Secondly, we see a positive impact of labour laws on productivity in most countries. This is evidence that labour laws can induce firms to take steps to improve their organizational and technological capacities. It is noteworthy that this positive productivity effect is common to all the regions studied (Europe, North America, South America, Africa and Asia) and to middle income and developing countries as well those which have a long history of industrialisation.

Thirdly, the positive productivity effect of labour mostly translates into employment growth, but does not always do so. There are some countries in which productivity increases induced by labour law changes translated into employment falls, indicating labour shedding by firms in response to efficiency improvements. The implication is that firms in these countries tend to replace labour with capital, or low skilled labour with high skilled labour, in response to a regulatory shock, but without increasing overall employment. As we saw in the specific case of the UK, however, this effect may not hold for all variables, or over all time periods.

In most of the countries in our study, there is a positive correlation between employment and productivity, and, conversely, a negative one between unemployment and productivity. This is strong evidence of a beneficial second order effect of worker protective labour laws: improvements in productivity feed through into employment growth via the improvements to firm-level efficiency and competitiveness.

There is a close match between the category of countries experiencing low or negative employment growth following a regulatory shock, and the category of countries with 'liberal market' institutions: liquid capital markets, decentralised and voluntaristic training systems, incomplete collective bargaining coverage, and an absence of codetermination in the workplace and at board level. There is also a close fit with common law legal origin. Future research may throw further light on the interaction between these different variables. However, there is at least preliminary evidence to suggest that the full benefits of labour laws for productivity and employment may be hard to capture in the absence of certain corporate governance institutions and training systems.

▶ Conclusions

In this paper we have presented evidence from the 2023 update of the CBR Labour Regulation Index. The index codes for changes in labour laws in 117 countries between 1970 and 2022. In terms of its year and country coverage, and also in terms of the types of labour law rules it covers, it is the most comprehensive index of its kind currently available.

The 2023 update clarifies some long-term trends in labour laws. Since the 1970s, the worker-protective content of labour laws around the world has steadily and incrementally increased. The rate of progress has not markedly changed over time, nor has its direction. This picture of steady improvement is not matched in all countries. A few (less than 5% of the total) have experienced periods of deregulation, but they are the exception. Some countries have consistently provided very little protection to workers throughout the whole period covered but these are again very few, less than 3% of the whole.

Some regions have seen a particularly clear strengthening in the worker-protective content of labour laws. This is true of East Asia since the 1990s. There is also evidence of a more recent and general strengthening of labour rights across all regions, a finding new to the 2023 update of the index. A number of countries introduced new controls over dismissals during the Covid-19 emergency. There is also an emerging tendency to extend certain labour law protections to gig or platform workers, implying a dual strategy for normalizing this form of labour: accepting its legitimacy while regulating its use. The standard employment relationship of full-time and indeterminate-duration work remains a point of reference in virtually all systems, in the sense of providing a benchmark against which other forms of work, including platform work, are evaluated.

A review of recent studies making use of earlier iterations of the CBR-LRI in empirical analysis shows a number of things. One is that there is a clear and consistent positive correlation between worker-protective labour laws and labour productivity in most countries. This is consistent with the argument that labour laws help foster innovation of the kind which requires workers to share knowledge with employers, which they are more likely to do when the law protects employees against arbitrary dismissal and protects worker voice in the workplace and boardroom. In part through this productivity effect, worker-protective labour laws can have positive effects on employment, and help reduce unemployment. Labour laws, when coupled with institutions which support state capacity and the rule of law, can help reduced the size of the informal sector. Higher labour protection is generally correlated with a higher labour share of national income and with a lower Gini coefficient.

We then reported the results of an exploratory econometric analysis, using the 2023 iteration on the index. Since most of the preexisting studies have used panel data methods, which can identify general trends across countries but do not easily allow conclusions to be drawn about individual countries, we conducted a series of country-specific time series analyses. In most cases we found evidence that stronger labour laws contributed to a rise in the labour share of national income. Our time series analyses also mostly confirmed the positive correlation between labour laws and productivity.

In addition, our analysis clarified the relationship between labour laws, productivity and employment. We found a divergence between countries in which productivity improvements triggered by stricter labour laws led to lower employment and higher unemployment, which we infer is the result of more efficient firms substituting capital for labour, and those in which a productivity improvement feeds into higher employment and lower unemployment, which we infer is the

result of a second-order effect according to which efficiency improvements enable firms take on additional employees. Most of the countries in the first group are 'liberal market' economies with liquid capital markets, partial collective bargaining coverage, decentralized and voluntaristic training systems and an absence of institutions for codetermination. Countries in the second category are mostly 'coordinated market systems' with less liquid capital markets, centralized and regulated training systems, extensive collective bargaining coverage, and laws supportive of codetermination in the workplace and boardroom. This finding suggests that whether worker-protective labour laws increase employment through their effect on productivity depends on factors in the wider institutional and economic environment of a country. This is a matter to be explored further in future research.

Appendix 1. Summary of empirical papers using the CBR-LRI

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
1.	Presidente 'Institutions, holdup, and automation' (January 2023)	What drives investment in automation technologies? The paper studies the relationship between labour-friendly institutions and investment in industrial robots in a sample of advanced and developing economies.	The relationship between institutions and robots is stronger in sunk cost-intensive industries, where producers are vulnerable to holdup. The result suggests that one reason for producers to invest in automation is to thwart rent appropriation by labour. In countries with labour-friendly institutions, the cost of labour should be higher for firms. Therefore, due to the high degree of substitution with labour emphasized in the definition of industrial robot, incentives to automating production should be higher in countries with labour-friendly institutions. The paper provides robust evidence that industries characterized by a high incidence of sunk costs are indeed disproportionately automated in countries with labour-friendly institutions. The second key contribution of the paper is providing evidence that while labour-friendly institutions increase investment in labour-substituting capital—such as robots—it also ***discourages*** the use of labour-complementing capital. This finding is rationalized by the model predicting an opposite relationship among institutions, sunk costs, and investment when capital complements labour.	Motivated by the wide cross-country heterogeneity in labour market institutions, this paper investigates whether they can explain the differences in robots' adoption. Data on institutions are taken from Adams ***et al.*** (2017), Visser (2015), and Armingeon ***et al.*** (2013). The data show that institutions are much more 'labour-friendly' in some countries than in others. For instance, the constitutional protection of labour rights and the strength of employee representation tend to be lower in Anglo-Saxon countries than in most countries in Continental Europe. Collective bargaining coverage is above 50% in most European countries—almost 100% in Spain, France, and Italy, while in the United States and Japan coverage is well below 20%.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
2.	Batut, Garnero, Tondini 'The employment effects of working time reductions: sector-level evidence from European reforms' (Dec 2022)	Aims to study the economic impact of national reductions in usual weekly working hours between 1995 and 2007. The paper provides new evidence on the impact of reductions in standard working time on employment by jointly analyzing several reforms that took place in Europe between 1995 and 2007 under the umbrella of the European Union's Working Time Directive and upon the impulse of the French debate on the 35 hours law.	On average, the number of hours worked in more affected sectors fell, hourly wages rose, while employment did not increase. The effect on value added per hour worked appears to be positive but non-significant. In particular, these estimates do not provide support for a 'work-sharing' scenario, where lower hours are fully substituted by more workers. However, the results also do not support the view that reforms of standard working hours, which do not also entail a cut in monthly/weekly wages, have a significant negative effect on employment as a classical model of labour demand and supply would suggest.	The CBR-LRI was used to collect data on reforms of working time legislation (1995-2007). The data was then complemented and cross-checked with information available in the ILO Travail Database and the EU Commission LABour market REForm (LABREF) database.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
3.	Dingeldey, Gerlitz 'Not just black and white but different shades of grey: legal segmentation and its effect on labour market segmentation in Europe' (Dec 2022)	Studies the impact of employment law on de facto labour market segmentation for 22 European countries from 1991 to 2014. While distinguishing between the standard-setting (protective), privileging and equalizing functions of employment law, the article uses descriptive and multivariate statistics to indicate their effects on overall employment, and male and female standard and non-standard employment.	High privileging, in combination with high standard-setting, is found to favour male standard employment and female non-standard employment, while the equalizing function, aimed at improving the protection of women and other marginalized groups, actually increases male non-standard employment.	Uses the Worlds of Labour Dataset (which is partly based on the indicators from the CBR-LRI) to determine whether and how different functions of labour law influence de facto market segmentation in Greater Europe, and whether this influence differs by gender. The three functions (standard-setting, privileging, and equalizing) were measured based on a total of 35 indicators, 23 of which were from CBR-LRI.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
4.	Roberts, Tran 'The globalization of production, national labour regulations and income inequality in the global North and South, 1980-2013 (July 2022)	Drawing on panel data from 96 countries between 1980 and 2013, the paper examines the effects of Global Value Chain (GVC) integration on market income inequality and whether national labour regulations moderate these effects. The focus is on asymmetrical bargaining power within the employment relations of GVCs to explain the distributional consequences of economic globalization.	Integration increases inequality in the global North and South. Labour regulations amplify the inequality effects of integration in Southern countries by expanding the size of the informal sector while suppressing these effects in Northern countries by promoting unionization. Institutional power from national labour regulations may enhance the bargaining power of labour in the North through increasing collective resources while disempowering labour in the South through reinforcing labour market segmentation between formal and informal sectors. A core feature of labour markets in the Global South is the high degree of segmentation between the formal and informal sectors where global firms may circumvent the impositions of national labour regulations by utilizing informal labour to maintain low labour costs for greater international competitiveness.	The CBR-LRI is used to directly measure the ***de jure*** labour regulations across a wide range of countries.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
5.	Jager, Noy, Schoefer 'What does codetermination do?' (Dec, 2021)	Effects of the European model of codetermination where control of firms is shared between shareholders and workers (i.e. workers' representation in firms' governance and management), with a focus on economic consequences of codetermination.	Moderate positive effects on productivity, wages, and job stability. No effects on aggregate economic outcomes or the quality of industrial relations. 3 explanations for labour laws limited impact: i. Existing codetermination laws give little authority to workers ii. Countries with codetermination laws have higher baseline levels for informal worker voice iii. Codetermination laws may interact with other labour market institutions	Using data from the CBR-LRI, the article finds that board-level representation laws are mostly found in to Europe. Uses the CBR-LRI to map institutional differences between codetermined and non-codetermined countries (collective bargaining, union density, labour market regulation intensity, union density over time, collective bargaining coverage) Using the index, Figure 5 scatterplots 'codetermination laws v. involvement' from a regression of the percentage of firms in a country that involved workers in their last major decision on a measure of the strength of board-level and shop-floor representation laws.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
6.	Levai, Turati 'The impact of immigration on worker's protection' (November 2021)	Examines the link between labour market regulation and immigration. To examine this link, the paper builds a novel workers' protection measure based on 36 labour law variables over a sample of 70 developed and developing countries from 1970 to 2010.	Exploiting a dynamic panel setting using both internal and external instruments, the paper establishes a new result: immigration impacts workers' protection in the direction of the origin country workers' protection (composition channel). The analysis finds a small negative or null effect for the immigrant population (size channel). The composition channel ('law transfer effect') is particularly strong for two components of the workers' protection measure: worker representation laws and employment forms laws. There is suggestive evidence on one mechanism: the law transfer effect materialises through immigrants' distinctive unionization rate (which influences the union's bargaining power and in turn, the parties' political preference towards labour groups). Calculations based on estimated coefficients suggest that immigration, on average, contributes to a reduction in workers' protection, particularly in OECD-high income countries.	To construct a novel workers' protection index, the authors use the CBR-LRI. The variables associated with each area are aggregated through factor analysis and standardised mean zero and a standard deviation equal to one. In the next step, a second-factor analysis is performed over the 5 aggregated indicators to build one synthetic indicator, resulting in the workers' protection index (WPI).

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
7.	Traverso, Vatiero, Zaninotto 'Robots and labour regulation: a cross country/cross-industry analysis' (Sept 2021)	Discusses and empirically investigates the relationship between labour regulation and robotization. In particular, the empirical analysis focuses on the relationship between the discipline of workers' dismissal and the adoption of industrial robots in nineteen Western countries over the 2006–2016 period.	High levels of statutory employment protection have been negatively associated with robot adoption, suggesting that labour-friendly national legislations, by increasing adjustment costs (such as firing costs), and thus making investment riskier, provide less favourable environments for firms to invest in industrial robots. However, the correlation is positively mediated by the sectoral levels of capital intensity, a hint that firms do resort to industrial robots as potential substitutes for workers to reduce employees' bargaining power and to limit their hold-up opportunities, which tend to be larger in sectors characterized by high levels of operating leverage.	The CBR-LRI was used for estimating statutory protection against dismissal, calculated as a simple arithmetic average of the individual indices associated with the nine dimensions of dismissal laws identified by Deakin, Lele, and Siems (2007) and Adams, Bishop, and Deakin (2016).
8.	Adascalitei, Heyes, Mendonca 'The intensification of work in Europe: a multilevel analysis' (May 2021)	Using the two waves of the European Working Conditions Survey (2010, 2015) in a multilevel setting, the paper argues that national institutions have a significant effect on shifts in work intensity.	Work has intensified in the aftermath of the economic crisis, but that intensification is restricted by labour market regulation and collective bargaining institutions. The effect of working time regulations varies across employment groups, with intensity levels for temporary agency workers increasing as regulations become more stringent. Higher levels of unemployment intensify work for agency workers but not for workers on a fixed-term contract relative to workers on a permanent contract.	Uses the CBR-LRI for the variables that operationalize the dimensions of employment protection legislation (EPL). Compared to traditional measures of EPL (such as OECD), CBR has better temporal and geographical coverage.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
9.	Rovo 'Structural reforms to set growth ambition' (March 2020)	The paper assesses the effect of structural reforms on growth in Europe and Central Asia by looking separately at each supply-side channel: capital, labour, and productivity, with the last estimated using the stochastic frontier approach. By controlling for the interaction with the economic cycle, the paper also investigates whether timing matters.	Improvements in human capital, regulatory quality, and government effectiveness have the most impact on potential growth, along with financial development. European Union accession may also boost growth, mainly by encouraging capital deepening. However, changes in labour market regulation and tariffs may have ambiguous effects. Applying these results to Serbia, the analysis shows that if the country were to close certain structural gaps with Germany, it would significantly boost its potential. Measures that would contribute the most are those that would enhance regulatory quality, government effectiveness, financial development, and human capital.	The structural reform indicators are classifies using WEF-GCI 2018 pillars. One of the pillars (Pillar 8) being the labour market, was based on CBR-LRI- calculated as the average of sub indicators pertaining to laws and regulations related to work time.
10.	Brancaccio, Cristofaro, Giammetti 'A meta-analysis on labour market deregulations and employment performance: no consensus around the IMF-OECD consensus' (Sept, 2019)	Examines the relation between employment protection legislation indexes and employment/ unemployment.	Among 53 academic papers published between 1990 and 2019, only 28 per cent support the consensus view: labour market deregulation is a policy solution to stimulate the growth of employment, production and incomes, while the remaining 72 per cent report results that are ambiguous (21 per cent) or contrary to the consensus (51 per cent). The decline in support for the consensus view is particularly evident in the last decade.	Notes proliferation of new theses regarding the effects of labour deregulation i.e. it can create inequality rather than employment and growth (based on various indices including CBR-LRI).

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
11.	Blanton, Peksen 'Labour laws and shadow economies: a cross-national assessment' (June 2019)	Examines the impact that labour laws have on illicit economic activity. More specifically, authors posit that labour regulations are one of the key prospective benefits associated with formal work, and thus incentivize firms and individuals to participate in the formal, rather than illicit, sector. The paper argues that the possible negative effect of labour laws on shadow economies is conditioned by countries' institutional strength.	Labour regulations are negatively related to shadow economic activity and the suggested impact of labour laws is particularly germane to countries with stronger institutional capacity. Labour regulations are a significant and robust predictor of the size of the informal sector, with a stronger legal regime for labour linked to a smaller informal sector. These findings are robust across multiple model specifications and methods. Authors also test the interactive effect of labour rights and three measures of institutional strength—rule of law, bureaucratic capacity, and control over corruption—on the shadow economy. In each case, stronger institutions serve to amplify the impact of labour rights on the shadow sector. These findings challenge the notion that regulations, particularly labour-related regulations, induce more illicit economic exchanges.	CBR-LRI is used for analysing time-series, cross-national data for over 100 countries from 1984 to 2012. The authors produce their own data set using the additive ***labour laws*** index, which is the sum of all 40 variables in the five major areas of labour law in CBR-LRI. The data set is then used to account for all major labour regulations. To consider the possible negative effects of institutional strength and governance quality on illicit economies, the authors incorporate three measures of institutional strength: ***rule of law, bureaucratic capacity***, and ***control of corruption,*** derived from International Crisis Research Group (ICRG) data set and are available for the years since 1983 (Knack and Keefer, 1998).

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
12.	Delautre, Abriata 'Corporate social responsibility: exploring determinants and complementarities.' (December 2018)	Why do forms and practices of CSR differ so much between firms? What are the determinants of firms' engagement in labour related issues? Is it possible to identify complementarity or substitutability between the different dimensions of CSR?	CSR should be seen as complementary to strong social regulations: the more a company is visible, the more it tends to take public commitment with regards to labour and social issues. This relation is not linear and the effect decreases with size and the level of internalization. Freedom of association and corporate governance might have a crosscutting positive influence on other dimensions of CSR. CSR dimensions related to internal employees have a positive effect, but there's little evidence about different dimensions complementing or substituting each other. The quality of labour rights and labour institutions seems to influence significantly the level of commitments and measures. In the last decade, the expansion of labour-related CSR policies seems to be more related to stronger social regulations and capacity of workers to use their voice collectively.	The article uses multiple sources for data and descriptive statistics. It uses other datasets to measure the level of engagement (using labour indicators such as freedom of association, non-discrimination at the workplace, promotion of social and economic development etc), and to determine firms' characteristics and total factor productivity as performance indicator. The analysis uses 2 indicators from CBR-LRI (right of workers to nominate board-level directors, and obligation regarding information and consultation of workers)

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
13.	Bang, Mandal, Mitra 'Does a free media protect labour rights?' (July 2018)	Investigates the role of an autonomous media in protecting the rights of labour.	Based on a sample of 47 developing economies considered over the period 1992–2012, the paper finds that a free media reduces the legal protection of labour, taken as a whole. However, the impact differs over various aspects of labour regulation: while media freedom correlates with less stringent regulation of work time, less constraints on dismissal, and lower protection of employee representation rights, it also correlates with greater legal parity of part-time and fixed-term labour with full-time and permanent workers.	While the the variable of interest ***Media Freedom Index (MFI)*** is a rescaled version of the Global Media Freedom Index (Whitten-Woodring and Van Belle 2014, the paper identifies the protection of labour rights with the ***de jure*** Labour Regulation Index developed by CBR-LRI. The level of protection in each of the five general domains is measured as the sum of the sub-indices quantifying different aspects of labour law pertaining to that domain.
14.	Dimick, Meyer 'Trade unions and the minimum wage' (May 2018)	Why do labour unions and left/labour parties support the statutory minimum wage in some countries (such is US) and oppose it in others (such as Denmark, Sweden)? This paper presents a formal model of trade union preferences for the statutory minimum wage.	The paper documents a robust, cross-national correlation between several key variables in the model and the type of minimum wage setting institution and illustrates the model mechanism using case studies of union preferences in the US, UK, Germany and Sweden, and party preferences in UK and Germany. The key conclusions are: – Important collective wage bargaining characteristics are plausibly related to the extent of a govt's involvement in minimum wage setting. – The model developed in the paper reveals both benefits and drawbacks of the minimum wage to trade unions. – The case-study evidence is consistent with the model. –	The regressions include several control variables: log GDP, trade openness, unemployment rate, employment protection legislation, and the degree of pre-tax inequality. Data on legal status of secondary industrial action was taken from CBR-LRI (Table 1).

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
15.	Haw, Hu, Wu, Zhang 'Having a finger in the pie: labour power and corporate payout policy' (January 2018)	Exploiting time-series data on labour laws from 39 countries, the paper investigates how labour power influences firms' payouts.	Legislative changes that strengthen labour power reduce firms' dividend payments and total payouts. The payout restriction effect of labour power is more pronounced in firms with greater labour intensity and in firms operating in countries with broader collective bargaining coverage and more effective law enforcement. Tightened operating flexibility and excess wage extraction are two plausible channels through which labour power affects payouts. Firms undergoing a change in labour legislation that strengthens labour power reduce their dividend payments and total payouts relative to a set of control firms operating in the same industry and year, but located in countries without a change in labour legislation. These findings indicate that labour power is another important country-wide institution that shapes corporate payout policy.	Since a time dimension is critical for establishing the causal relation between labour power and payouts, the authors employ a longitudinal CBR-LRI that covers a wide range of countries over a long period of time.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
16.	Belloc 'Employee representation legislation & innovation: evidence from manufacturing sectors' (March 2016)	Explores the role played by Employee Representation Legislation (ERL) in innovation output of firms. The objective is to provide empirical evidence on incentive effects of ERL on innovation.	ERL is defined as the sphere of labour law concerning the worker rights to participate in business management. Countries that combine a strict ERL with high dismissal costs are shown to have a relatively larger number of patents per-capita. The paper develops a model of ERL and innovation in the presence of incomplete labour contracts and predicts heterogenous effects across different systems of regulation of dismissal. The paper also performs a panel country-sector-year regression analysis. Only where dismissal law is sufficiently stringent, ERL effects can be expected to reduce hold-up risks for the employees and to stimulate innovative working effort.	ERL is estimated by measuring labour law protection using CBR-LRI (2007), that covers data from UK, US, France, Germany, and India from 1950-2005. The specific indicators used include a set of 7 indicators (trade unions, collective bargaining, co-decision making etc.) that indicate the participation rights of employees. Economy-wide innovation is measured by the yearly number of successful patent applications.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
17.	Deakin, Malmerg, Sarkar 'How do labour laws affect unemployment and the labour share of national income? The experience of 6 OECD countries, 1970-2010 (April 2014)	This paper reports new evidence on the impact of labour laws on the labour share of national income and unemployment in 6 developed market economies (France, Germany, Japan, Sweden, UK, US) between 1970 and 2010.	A dynamic panel data analysis shows that labour laws across the board had no clear long-term or short-term effect on unemployment over this time span. The paper finds strong evidence to show that laws providing for working time reductions have the effect of reducing unemployment, and weaker evidence of the same effect on the part of laws protecting worker representation. Regarding the impact of labour laws on labour's share in national income: worker-protective labour laws are associated with a higher labour share and therefore, in broad terms, with improved income distribution.	Findings are reported from data coding exercises covering France, Germany, Sweden, Japan, the United Kingdom and the United States from the early 1970s to the time of publication.
18.	Deakin, Fenwick, Sarkar 'Labour law and inclusive development: the economic effects of industrial relation laws in middle-income countries (February 2014)	This paper reports findings from a 'leximetric' study of the effects of changes in collective labour law from the early 1970s in five large middle-income economies, namely Brazil, China, India, Russia and South Africa.	More worker-protective laws on employee representation tend to be correlated with higher scores on the Human Development Index: reforms which promoted collective employee representation in the workplace and strengthened the institutions of collective bargaining reduced inequality. By contrast, in the case of laws on industrial action, some negative effects on human development indicators are reported. Laws supporting employee voice and collective bargaining may have beneficial social effects in middle-income countries. No rise in unemployment due to more protective labour laws was found.	The method used in the paper is leximetric coding borrowed from CBR-LRI. Based on the indicators, the paper extends the index by testing for possible correlations between labour regulation (the causal variable) and a number of measures of economic performance (the outcome variables).

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
19.	Acharya, Baghai, Subramanian 'Labour law and innovation' (November 2013), Also (October 2010)	Whether the legal framework governing the relationships between employers and employees affects the extent of innovation in the economy.	Dismissal laws (laws that make it difficult for firms to discharge employees) appear to have ex-ante positive incentive effect by encouraging firms and their employees to engage in more successful and more significantly innovative activities. . Using patents and citations as proxies for innovation and a time-varying index of dismissal law, the paper finds that both in a cross-country and within U.S. setting, stringent dismissal laws seem to foster innovation. Since laws are more difficult for private parties to alter than contracts, legal protection of employees in the form of ore stringent laws can introduce time-consistency in firm behaviour absent with only private contracts. Another reason why law might be necessary to protect employee dismissals and innovation is that firms may be run by short-termist or myopic top management. In these cases, the law can improve the so-called 'internal governance' of firms by effectively extending the time horizon of employees.	To measure legal protection, the paper uses CBR-LRI (2007), especially the dismissal law sub-index, that measures employment protection in 5 countries from 1970-2006. Innovation in an industry was measured by the number of patents applied for (subsequently granted). Number of subsequent citations to these patents, and the number of firms filing for patents in that year in that industry.

NO.	AUTHOR(S), TITLE, YEAR	KEY QUESTIONS/ OBJECTIVES	KEY CONCLUSIONS/ FINDINGS	HOW THE INDEX WAS USED
20.	Deakin, Sarkar 'Assessing the long-run economic impact of labour law systems: a theoretical reappraisal and analysis of new time series data' (October 2008)	Aims to show how re-theorising law as an embedded institutional phenomenon, at least partly endogenous to the process of economic development within market economies, results in new perspectives on the economic impact of labour law rules. Addresses the empirical question of how changes to labour law impact on the economy by introducing new evidence in the form of time-series data on legal change.	Time-series analysis using an early version of the CBR-LRI shows evidence of positive correlations between regulation and growth in employment and productivity, at least for France and Germany. No relationship, either positive or negative, is found for the UK. Although the United States shows a weak negative relationship between regulation and employment growth, this is offset by productivity gains.	The paper presents first results from the CBR-LRI (2007) examining changes in labour law in three major European countries, as well as the United States, since the early 1970s.

Appendix 2. Econometric model

We use an unrestricted vector autoregressive model which is presented as:

where c is the intercept vector of the VAR, A_i is the matrix of autoregressive coefficients (K x K), ε_t is the error term ('white noise'), and y_t is the vector of K observed variables

The time series properties of the variables can be checked to demonstrate the appropriate specification for the VAR estimation. The order of integration for each variable is determined using the Augmented Dickey-Fuller (1979) test to denote the stationarity of the variables and as a result the variables are first differenced. the Akaike Information Criterion (AIC) and autocorrelation test are then used to determine the lag order.

The method we are using makes it possible, in principle, to determine the direction of causal effects in a correlation between variables. We employ here the concept of Granger causality. If variable X_1 'Granger causes' variable X_2, this means that previous values of X_1 should help predict X_2 in addition to the information included in past values of X_2 alone. The mathematical formulation of the Granger causality y concept is based on linear regression modelling of stochastic processes (Granger 1969).

A bivariate linear autoregressive model of two variables *X*1and *X*2 takes the following form:

where *p* is the maximum number of lagged observations, the matrix *A* contains the coefficients of the model, and *E*1 and *E*2 are residuals.

If the variance of *E*1 (or *E*2) is reduced by the inclusion of the *X*2 (or *X*1) in the first (or second) equation, we can conclude that *X*2 (or *X*1) Granger causes *X*1 (or *X*2) (Pesaran and Shin, 1998). In other words, *X*2 causes *X*1 if the coefficients in $A_{12}$are jointly significantly different from zero, which can be tested by an F-test of the null hypothesis that $A_{12} = 0$.

Impulse response functions specify how a variable reaction over time in response to a shock in another. The use of generalized impulse response function makes it possible to avoid the problem of ordering of the variables.

Considering the previous equations $A(L)y_t = \varepsilon_t$, where L is the lag and defined as $Ly_t = y_{t-1}$ and $A(L) = I_k - A_1L - ... - A_pL^p$ is a matrix polynomial, in this framework the impulse response function defines the response of y_t to this impulse by setting one factor of ε_t to 1 and all other factors to zero. The impulse response function can be illustrated graphically by a central line, with bands either side showing the confidence intervals. In this regard, the null hypothesis is that there is no influence of the hypothesised causal variable (here, the CBR-LRI) on the economic variables; or other words, its impact is not significantly different from zero. The null hypothesis cannot be rejected when the horizontal line falls into the confidence interval.

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