



**WP/17/277**

# IMF Working Paper

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## Job Protection Deregulation in Good and Bad Times

by Romain Duval, Davide Furceri and Joao Jalles

*IMF Working Papers* describe research in progress by the author(s) and are published to elicit comments and to encourage debate. The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

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**IMF Working Paper**

Research Department

**Job Protection Deregulation in Good and Bad Times**Prepared by **Romain Duval, Davide Furceri and Joao Jalles<sup>1</sup>**

Authorized for distribution by Romain Duval

December 2017

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## Abstract

This paper explores the short-term employment effect of deregulating job protection for regular workers and how it varies with prevailing business cycle conditions. We apply a local projection method to a newly constructed “narrative” dataset of major regular job protection reforms covering 26 advanced economies over the past four decades. The analysis relies on country-sector-level data, using as an identifying assumption the fact that stringent dismissal regulations are more binding in sectors that are characterized by a higher “natural” propensity to regularly adjust their workforce. We find that the responses of sectoral employment to large job protection deregulation shocks depend crucially on the state of the economy at the time of reform—they are positive in an expansion, but become negative in a recession. These findings are consistent with theory, and are robust to a broad range of robustness checks including an Instrumental Variable approach using political economy drivers of reforms as instruments. Our results provide a case for undertaking job protection reform in good times, or for designing it in ways that enhance its short-term impact.

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<sup>1</sup> The authors participated to various seminars and conferences at Banca d'Italia, Banco de Espana, Banco de Portugal, Bank of England, Bank of Korea, Banque de France, European Central Bank, European Commission, ILO, IMF and OECD, as well as staff from Banca d'Italia, Banco de Espana and National Bank of Belgium, for valuable comments.

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## I. INTRODUCTION

Job protection regulation matters for productivity, employment, and other important economic and social outcomes such as informality or inequality. However, virtually nothing is known about the short-term impact of deregulation, and even less so about how this impact may vary depending on prevailing business conditions at the time of a given reform. Some have argued that labor market and other reforms could raise output immediately by boosting aggregate demand through expectation effects (Draghi 2015), while others have stressed that deregulation may pay off only very slowly (Rodrik 2015) or even entail short-term costs in the presence of economic slack and constrained macroeconomic policies (Eggertsson, Ferrero, and Raffo 2014; Krugman 2014). In particular, the latter concerns have been expressed against the background of weak labor markets and broader (subdued) economic performance in the aftermath of job protection reforms in Southern European countries.

Theory also points to potential short-term macroeconomic costs from job protection deregulation. In a partial equilibrium framework, Bentolila and Bertola (1990) showed that high firing costs reduce the responsiveness of firms' lay-offs and employment to business conditions. When facing high (low) costs of dismissing workers, firms will optimally choose to lay off less (more) workers, and adjust their workforce more (less) gradually through attrition, in bad times. More recently, and more closely related to the topic of our paper, in a dynamic stochastic general equilibrium model featuring sticky prices, endogenous firm entry in product markets and search-and-matching frictions in labor markets, Cacciatore and Fiori (2016) and Cacciatore et al. (2016a) show that lowering firing costs triggers immediate layoffs of less productive workers, while their re-employment takes time, resulting in transitory declines in employment and output. Cacciatore et al. (2016b) find that such transitory costs are larger when reform is carried out in a recession, as the adverse impact of relaxing a constraint on layoffs is larger in a depressed economy—in line with Bertola and Bentolila (1990), strict job protection raises the productivity level cut-off below which it becomes profitable for firms to lay off workers, which dampens job losses and has a stabilizing impact on employment and output when the economy is temporarily depressed by an adverse shock.

This paper addresses this gap in the empirical literature. We build a new “narrative” cross-country dataset of major reforms of job protection legislation for permanent workers covering 26 advanced economies over the period 1970-2013, and estimate the dynamic response of sectoral employment to these shocks using a local projection method (Jordà, 2005)—which has been used recently to study the dynamic impact of macroeconomic shocks such as financial crises (Romer and Romer, 2015) or fiscal shocks (Jordà and Taylor, 2016). The role of macroeconomic conditions is explored using the smooth transition function proposed by Auerbach and Gorodnichenko (2012) to estimate fiscal multipliers in expansions and recessions; here we use this approach to estimate the response to job deregulation shocks instead of fiscal shocks. In this respect, an important novelty and strength of our reforms database is to identify the precise timing and nature of *major* legislative actions (reform “shocks”), and to do so over a much longer period—starting from the 1970s—than had been possible thus far using other sources.

We estimate the response of sectoral employment to large job deregulation shocks using country-sector-level data and applying a differences-in-differences identification strategy à la Rajan and Zingales (1998). Following Basannini et al. (2009), our identifying assumption is that stringent dismissal regulations are more binding in sectors that are characterized by a higher “natural” propensity to regularly adjust their workforce, that is a higher “natural” layoff rate. The advantages of having a three-dimensional ( $j$  industries,  $i$  countries and  $t$  time periods) dataset are twofold:

- First, it allows us to control for aggregate and country-sector shocks by including country-time ( $i, t$ ), country-industry ( $i, j$ ) and industry-time ( $j, t$ ) fixed effects. The inclusion of the country-time ( $i, t$ ) fixed effect is particularly important as it controls for any unobserved cross-country heterogeneity in the macroeconomic shocks that affect countries’ employment growth. In a pure cross-country analysis, this would not be possible, leaving open the possibility that the impact attributed to employment protection legislation (EPL) reforms would be due to other unobserved macroeconomic shocks.
- Second, it mitigates concerns about reverse causality. While it is typically difficult to identify causal effects using cross-country time-series data, it is much more likely that

EPL reforms affect cross-industry differences in employment than the other way around; since we control for country-time fixed effects—and therefore for aggregate employment—reverse causality in our set-up would imply that differences in employment across sectors influence the probability of reforms at the aggregate level. Moreover, our main independent variable is the interaction between EPL reforms and industry-specific natural layoff rates; this makes it even less plausible that causality runs from industry-level employment growth to this composite variable.

To further strengthen the causal interpretation of our results, we perform two final exercises. First, we estimate Instrumental Variable (IV) regressions, in which EPL reforms are instrumented by a small set of external variables drawn from the literature on the political economy of reforms, namely demographics, the timing of elections and the political orientation of the government. Second, we check for robustness to several additional controls—including interactions between other reforms and sector-specific natural layoff rates, whose omission could bias our estimates.

Consistent with recent theory, we find that the short-term effects of job protection deregulation vary depending on prevailing macroeconomic conditions at the time of reform—they are positive in an expansion, but become negative in a recession. These findings are robust across different estimation strategies and robustness checks. Our results provide a case for undertaking job protection reform in good times, or for designing it in ways that enhance its short-term impact—for example, by passing reforms that come into force only later when economic conditions improve.

Our paper relates to the extensive literature on the macroeconomic effects of job protection legislation. While strict job protection legislation has been found to reduce productivity (Eslava et al., 2004; Autor et al., 2007; Bassanini et al., 2009; Van Schaik and Van de Klundert, 2013), notably by reducing job turnover (Micco and Pages, 2006; Haltiwanger et al., 2010; Cingano et al., 2010), its impact on aggregate employment remains empirically unclear (for a review, see for example OECD, 2013), in line with the ambiguous effect underscored by theory (for example, Pissarides, 2000). With some exceptions—not least the seminal paper by Lazear (1990), cross-country time-series studies have typically found mixed results (see e.g. Nickell et al., 2005; Bassanini and Duval, 2009; for a review, Boeri et

al., 2011). They focus on the long-term impact of (de)regulation and ignore their short-term effect and/or how the latter may vary depending on prevailing macroeconomic conditions—the two issues of focus of the present paper. Focusing more on the short-to-medium term, Blanchard and Wolfers (2000) find some evidence that pre-existing labor market institutions, including job protection, shape the employment effect of macroeconomic shocks in a panel of OECD countries covering four decades. Although quite different in focus and approach, our paper can be seen as addressing the symmetric issue, namely whether pre-existing macroeconomic conditions shape the employment effect of labor market regulation shocks. Closer to our empirical approach, more recent studies have strengthened identification strategies by exploiting the differential impact of legislative changes on different groups of workers, firms, regions and/or industries. Although results vary, they tend to point overall to small adverse negative employment effects of stringent job protection (see Hernanz *et al.*, 2003; Autor *et al.*, 2004, 2006; Kugler and Saint-Paul, 2004; Behaghel *et al.*, 2008). One common issue across those studies that focus on differential effects across groups of workers is the difficulty to account for substitution effects, and therefore to infer aggregate effects. Importantly in our context, our focus on differences across country-industry units mitigates this concern. Most crucially, unlike these papers, ours addresses the question of whether macroeconomic conditions matter for the short-term impact of changes in job protection that has been studied in the most recent literature—see for example Bassanini and Cingano (2016) and Duval and Furceri (2017).

Also related to this paper is the small but growing theoretical literature on the dynamic effects of labor market—including job protection legislation—reforms. A number of small DSGE models, as well as large-scale models built at central banks and international institutions, have been used to explore the dynamic impact of labor market reforms in normal times (for example, Arpaia *et al.* 2007; Everaert and Schule 2008; Gomes *et al.* 2013), and most recently at the zero lower bound (Eggertsson *et al.* 2014). However, these studies model job protection deregulation as a compression in wage mark-ups, which rules out any effects stemming from the dynamic impact of deregulation on layoffs vs. hires. Cacciatore and Fiori (2016) address this issue by incorporating explicit search-and-matching frictions in the labor market and, using such a model, Cacciatore *et al.* (2016b) show that the more depressed the economy is relative to its steady state at the time of reform, the more job protection



deregulation entails short-term employment and output losses. The latter conclusion also follows naturally from older partial equilibrium models of labor demand in the presence of shocks and firing, starting with Bentolila and Bertola (1990). To our knowledge, our paper is the first to test empirically this prediction, for which we find strong support.

The remainder of this paper is organized as follows. Section II presents our new dataset of major employment legislation reforms as well as other data used in the empirical analysis. Section III sets up our econometric framework. Section IV provides the main regression results and performs several robustness checks. Section V concludes and elaborates on policy implications.

## II. DATA

### A. Employment Protection Legislation Reforms

Major reforms of employment protection legislation (EPL) for permanent workers are identified by examining documented legislative and regulatory actions reported in all available *OECD Economic Surveys* for 26 individual advanced economies since 1970, as well as additional country-specific sources.<sup>2</sup> In this respect, the methodology is related to the “narrative approach” used by Romer and Romer (1989, 2004, 2010, and 2015) and Devries et al. (2011) to identify, respectively, monetary and fiscal shocks and periods of high financial distress.

In a first step, we identify all legislative and regulatory actions related to regular EPL mentioned in any *OECD Economic Survey* for any of the 26 countries over the entire sample. Over 100 such actions are identified overall. In a second step, for any of these actions to qualify as a major reform or “counter-reform”—namely a major policy change in the opposite direction—one of the following three alternative criteria has to be met: (1) the *OECD Economic Survey* uses strong normative language to define the action, suggestive of an important measure (for example, “major reform”); (2) the policy action is mentioned repeatedly across different editions of the *OECD Economic Survey* for the country

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<sup>2</sup> The 26 countries covered are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom and United States.

considered, and/or in the retrospective summaries of key past reforms that are featured in some editions, which is also indicative of a major action; or (3) the existing OECD regular EPL indicator of the regulatory stance is in the 5<sup>th</sup> percentile of the distribution of the change in the indicator—or would be in the top 5<sup>th</sup> percentile if the OECD’s scoring system were applied, but no OECD regular EPL indicator score is available for the country and year considered.

When only the third condition is met, an extensive search through other available domestic and national sources, including through the internet, is performed to identify the precise policy action underpinning the change in the indicator. Following this process, we end up with a variable that, for each country, takes value 0 in non-reform years, 1 in reform years, and -1 in “counter-reform” years. In all cases, implementation years are considered.

An important advantage of this database in our context is to identify the precise timing and nature of *major* legislative actions taken by advanced economies since the early 1970s. Specifically, compared with existing databases on policy actions in the area of labor market institutions (such as the European commission *Labref*, the Fondazione Rodolfo de Benedetti-IZA, and the ILO- *EPLex* database), the approach allows identifying major legislative reforms as opposed to just a long list of actions that in some cases would be expected to have little or no bearing on macroeconomic outcomes. Likewise, compared with an alternative approach that would infer major reforms from large changes in existing EPL indicators produced by the OECD, we are able to identify the exact timing of major legislative actions—including for a few actions that would not be identified by an indicator-based approach altogether—and also have longer time-series coverage, starting in the early 1970s rather than in the mid-1980s. These features are particularly useful for empirical analysis that seeks to identify the short-term effects of reform shocks.

The major strengths of this narrative reform database come with one limitation; because two large EPL reforms can involve different specific actions (for example, a major simplification of the procedures for individual and collective dismissals, respectively), only the average impact across major historical reforms can be estimated. It should also be highlighted that the reform database provides no information regarding the *stance* of current (or past) EPL, which is not the purpose of this paper.

## B. Stylized Facts

Table 1 provides the detailed list of EPL reforms (and counter-reforms) identified using this procedure, and Figure 1 sums up their cross-country and time-series patterns for the entire sample. Looking at Panel A, while some core European countries (“Other Europe”) consistently reformed throughout the four decades under scrutiny, most of the action took place in the 2000s, particularly in Southern European countries after the Global Financial Crisis. In some cases, this was the result of the conditionality embedded in the financial assistance programs provided by international organizations, while in others it partly reflected financial market pressure. In contrast, most counter-reforms took place in the 1970s, as part of a broad tightening of labor market regulations amid rising job losses in the wake of the oil shocks (Panel B).

Finally, and importantly in the context of our empirical analysis, the implementation of major EPL reforms does not appear to have depended significantly on economic conditions (Table 2). In fact, while the share of EPL reforms is almost identical between periods of high and low economic growth, when it comes to counter-reforms, these tended to be implemented mostly during expansionary times (such as the boom years immediately before the crisis).

## C. Other Data

Our sector-level series of output and employment come from the EU KLEMS and World KLEMS databases. Data on layoff rates are taken from Basannini et al.(2009) and are computed based on industry-level U.S. layoff rates reported in the 2004 *CPS Displaced Workers Supplement*. While relying on U.S. layoff rates can be considered a good proxy for underlying layoff propensity in the absence of dismissal regulations, one potential problem with this approach is that they may not be representative for the whole sample—that is, U.S. layoff rates may be affected by U.S.-specific regulations or sectoral patterns. To check for the sensitivity of the results to this assumption, the analysis is replicated using U.K. layoff rates computed from U.K. Labor Force Surveys in the robustness checks section further below.

### III. ECONOMETRIC FRAMEWORK

Two econometric specifications are used to assess the short-term effects of EPL reforms. The first establishes whether these reforms have significant effects on sectoral employment. The second assesses whether these effects vary with overall business cycle conditions prevailing at the time of the reform. In both cases, following Bassanini et al.(2009), our identification assumption is that stringent dismissal regulations are likely to be more binding in sectors that are characterized by a higher “natural” propensity to adjust their workforce to idiosyncratic shocks, that is a higher “natural” layoff rate.<sup>3</sup> This differences-in-differences identification strategy is in the spirit of Rajan and Zingales (1998).

The statistical method follows the approach proposed by Jordà (2005) to estimate impulse-response functions. This approach has been advocated by Auerbach and Gorodnichenko (2013) or Romer and Romer (2015), among others, as a flexible alternative to vector autoregression (autoregressive distributed lag) specifications since it does not impose dynamic restrictions. It is also particularly suited to estimating nonlinearities (including interactions between shocks and other variables of interest) in the dynamic response. The first regression specification is estimated as follows:

$$y_{i,j,t+k} - y_{i,j,t-1} = \alpha_{i,t} + \gamma_{i,j} + \mu_{j,t} + \beta_k \vartheta_j R_{i,t} + \theta X_{i,j,t} + \varepsilon_{i,j,t} \quad (1)$$

in which  $y_{i,j,t+k}$  is log employment in sector  $j$  of country  $i$  in period  $t+k$ ;  $\alpha_{i,t}$  are country-time fixed effects, which control for any variation that is common to all sectors of a country’s economy, such as country-wide macroeconomic shocks and reforms in other areas, including other types of labor market reforms;  $\gamma_{i,j}$  are country-sector fixed effects, included to take account of cross-country differences in the average employment growth of certain sectors;  $\mu_{j,t}$  are sector-specific time dummies to control for different employment growth rates of different industries;  $R_{i,t}$  is our EPL reform variable, which takes value 0 in non-reform years,

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<sup>3</sup> All else equal, high-lay-off rate industries also have shorter average job tenure which, insofar as regular EPL typically gets more stringent with seniority, might imply that *de facto* EPL be comparatively less stringent in these industries. If anything, this might bias our results regarding the employment effects of EPL reform (in a conservative direction) toward not finding any significant results.

1 in reform years and -1 in counter-reform years;  $\vartheta_j$  is the “natural” layoff rate, which is taken to be the U.S layoff rate reported in the 2004 *CPS Displaced Workers Supplement*—the analysis also presents robustness checks using a measure of natural layoff rates for the UK, computed from waves of the Quarterly UK Labor Force Survey (for details see Bassanini et al., 2009);  $X_{i,j,t}$  is a set of controls including two lags of sectoral employment growth and two lags of EPL reforms interacted with sector-specific “natural” layoff rates.

In the second specification, the dynamic response is allowed to vary with the state of the economy:

$$y_{i,j,t+k} - y_{i,j,t-1} = \alpha_{it} + \gamma_{ij} + \mu_{j,t} + \beta_k^L F(z_{i,t}) \vartheta_j R_{i,t} + \beta_k^H (1 - F(z_{i,t})) \vartheta_j R_{i,t} + \theta M_{i,j,t} + \varepsilon_{i,j,t} \quad (2)$$

with

$$F(z_{it}) = \frac{\exp(-\gamma z_{it})}{1 + \exp(-\gamma z_{it})}, \quad \gamma > 0$$

in which  $z_{it}$  is an indicator of the state of the economy normalized to have zero mean and unit variance. Following Auerbach and Gorodichenko (2012), the indicator of the state of the economy is GDP growth (or the unemployment rate in some robustness checks), and  $F_{it}$  is a smooth transition function used to estimate the macroeconomic impact of major reform shocks in expansions versus recessions. They further argue for setting  $\gamma = 1.5$ , which we also use. In the robustness checks, we present the results based on alternative measures of economic slack (unemployment) and using a dummy to identify the effects across business cycle regimes, rather than a smooth transition function.  $M$  is the same set of control variables used in the baseline specification, but now including also the interaction term between  $F_{it}$  and the sectoral-specific layoff rate.

This approach is equivalent to the smooth transition autoregressive model developed by Granger and Teräsvirta (1993). The advantage of this approach is twofold. First, compared with a model in which each dependent variable would be interacted with a measure of the business cycle position, it permits a direct test of whether the effect of reforms varies across

different regimes such as recessions and expansions. Second, compared with estimating structural vector autoregressions for each regime it allows the effect of reforms to change smoothly between recessions and expansions by considering a continuum of states to compute the impulse response functions, thus making the response more stable and precise.

Equations (1) and (2) are estimated for each  $k=0,\dots,4$ . Impulse response functions are computed using the estimated coefficients  $\beta_k$ , and the confidence bands associated with the estimated impulse-response functions are obtained using the estimated standard errors of the coefficients  $\beta_k$ , based on clustered standard errors at the country-sector level.

The equations are estimated using OLS as the inclusion of the rich set of fixed effects is likely to largely address the endogeneity concerns related to omitted variable bias. In addition, reverse causality is unlikely to be a concern in our set-up. First, the natural propensity to layoff in the U.S. is arguably orthogonal to sectoral employment growth in other countries. Second, it is very unlikely that sectoral employment patterns can influence EPL reform. Aggregate employment may well do so, and employment growth may co-move across all sectors, but this potential source of reverse causality is addressed through the inclusion of country-time fixed effects. In other words, claiming reverse causality would mean arguing that differences in employment growth across sectors lead to EPL reforms; this, we argue, is unlikely. Nonetheless, one possible remaining issue in estimating equations (1) and (2) with OLS is that other macroeconomic variables might affect sectoral employment growth when interacted with industries' natural layoff rates. This, in particular, may apply to reforms of EPL for temporary workers—these may correlate with regular EPL reforms, while affecting employment growth differently across sectors depending on their natural layoff rate. In addition, in order to further mitigate any endogeneity concerns, we also re-estimate our specifications using an IV approach, drawing our instruments from the political economy literature on the drivers of reforms. The next section starts with baseline OLS regression results, followed by robustness checks and IV estimates.

## IV. MAIN RESULTS AND ROBUSTNESS CHECKS

### A. Baseline

Figure 2 presents the results obtained by estimating equation (1). It shows that over the medium term—that is, four years after the reform takes place—EPL reforms for regular contracts tend to increase employment in industries with a higher propensity to layoff relative to those with a low layoff rate. The results suggest that the differential medium-term employment gain between an industry with a relatively high natural layoff rate (at the 75<sup>th</sup> percentile of the cross-sector distribution of layoff rates in the U.S) and one with a relatively low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution) is about 1 percent.

However, these unconditional effects mask considerable variation depending on business cycle conditions, as shown by the OLS estimation of equation (2) reported in Figure 3. Under strong conditions, reforms have a sizable positive impact on employment, whereas their impact becomes contractionary when undertaken during periods of slack. This heterogeneity in the response is quantitatively large. As an illustration, when EPL is deregulated during a strong expansion—in which the smooth transition function  $F$  takes value 0, the differential medium-term effect on employment between a sector that has a relatively high propensity to lay off (at the 75th percentile of the distribution of natural layoff rates) and one that has relatively low propensity to lay off (at the 25th percentile) is about 4 percent (Figure 3, Panel B). By contrast, this differential effect of EPL reforms on sectoral employment becomes negative, reaching -2 percent after two years, during a major recession—in which  $F$  takes value 1. This negative effect is statistically significant in the first two years following the reform. The difference in the response of sectoral employment between strong and weak business cycle conditions is statistically significant (at 5 percent) at each horizon  $k=0,..4$ .

As noted above, the theoretical rationale for this asymmetric effect of deregulation across different economic regimes stems is that reform affects differently firms' hiring versus firing incentives in good and bad times. In a recession, firms seek to dismiss more and hire less than in a boom, but stringent job protection partly discourages them from laying off (Bentolila and Bertola, 1990). Relaxing that constraint triggers a wave of layoffs, increasing unemployment, weakening aggregate demand and delaying the recovery (Cacciatore et al., 2016b).

## **B. Robustness Checks and Instrumental Variables Estimation**

### **Using U.K. natural layoff rates**

As a first robustness check, we replicate the analysis using sector-specific layoff rates for the U.K. According to the EPL indicators published by the OECD, dismissal procedures in the UK are the second least regulated in the OECD after the U.S, thus making U.K sectoral layoff rates a valid alternative measure. The results obtained estimating equations (1) and (2) are presented in Figures 4 and 5. They are largely similar to, and not statistically different from, those reported in the baseline.

### **Omitted variable bias**

As discussed above, a possible concern in estimating equations (1) and (2) is that the results are biased due to the omission of other reforms affecting sectoral employment through the sector-specific natural layoff rate that may at the same time be correlated with EPL reforms. A prime candidate is EPL reform for temporary workers. In order to enhance the labor market prospects of disadvantaged groups such as youth, governments have often chosen to deregulate temporary contracts either as an alternative to, or—of potential concern in our context—in combination with EPL reform for regular contracts, particularly during the 1990s and the first half of the 2000s (see e.g. OECD, 2006). Deregulating temporary contracts may have a positive short-term effect even in recessions, since it increases incentives to hire (temporary workers) without affecting incentives to lay off—giving rise to a transitory, positive “honeymoon effect” on employment that eventually vanishes in the steady state (Boeri and Garibaldi, 2007).

To test whether the results are robust to the inclusion of EPL reforms for temporary workers, we re-estimate equations (1) and (2) adding the interaction effect between these reforms and the sectoral-specific layoff rate (and the state of the business cycle in equation (2)). Data on major reforms of EPL for temporary contracts, as well as major reforms in other areas considered further below, are taken from Duval and others (forthcoming). The results presented Figure 6 and 7 show that the effect of regular EPL reforms on sectoral employment are very close to, and not statistically different from, those reported in Figure 2 and 3. Interestingly, and somewhat surprisingly, we do not find any significant effect of



employment protection reforms for temporary workers on sectoral employment, even during expansions/recessions.

Another potential candidate is unemployment benefit reform. Reducing the generosity of the unemployment benefit system can increase employment by strengthening job search incentives (e.g. Pissarides 2000), and some recent evidence suggests this effect may be weaker or even negative in the short-term if benefits are cut during a recession (Duval and Furceri 2017). However, the omission of these reforms from our baseline specification could bias our estimates only insofar as they are correlated with EPL reforms and also tend to have larger effects in industries with higher natural layoff rates. While this is far from obvious *a priori*, we still check the robustness of our results by adding in equations (1) and (2) the interaction of these reforms with the sector-specific natural layoff rate as well as with the state of the business cycle.<sup>4</sup> The results reported in Figure 8 and 9 show that the inclusion of these controls does not significantly affect our results.

By the same token, the omission of product market reforms could potentially be a source of omitted variable bias. We check the robustness of our results by adding in equations (1) and (2) the interaction of these reforms with the sector-specific natural layoff rate as well as with the state of the business cycle. Data on major product market reforms are drawn from Duval and others (forthcoming), as used in Duval and Furceri (2017). The results reported in Figure 10 and 11 are very similar to, and not statistically different from, those reported in the baseline.

### **Identification of slack**

We check the sensitivity of our results to alternative measures of economic slack. Based on data availability considerations and the fact that it is generally accepted as a measure of underutilization, we use the unemployment rate, instead of the GDP growth rate, to compute the smooth transition function across business cycle regimes (for a similar approach, see Ramey and Zubairy, forthcoming). The results presented in Figure 12 show that the responses of sectoral employment to EPL reforms across business cycle regimes are rather

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<sup>4</sup> Event dates for these reforms are taken from Duval et al. (forthcoming).

similar to those obtained in the baseline. They are somewhat larger than, but not statistically different from, the baseline responses.

We also re-estimate equation (3) without measuring business cycle conditions through a smooth transition function, but instead more simply through a dummy variable that takes value 1 when the GDP growth rate of the country considered is below its sample average and zero otherwise. Again, the estimated responses are somewhat larger than, but not statistically different from the baseline responses (Figure 13).

### **Instrumental Variables Estimation**

Even though, as discussed earlier, we believe that our empirical set-up addresses endogeneity concerns, we still check the robustness of our results to an IV approach that instruments EPL reforms. Specifically, we use the following set of variables as external instruments: (i) the share of old-age population (*Age*), which is the percentage of the population aged 65 and over—taken from the World Bank’s World Development Indicators; (ii) the number of months to the next legislative elections (*Months*)—taken from the World Bank’s Database on Political Institutions; and a dummy for the political orientation of the government that takes value 1 for left-wing parties and 0 for center-right parties (*Parties*)—also taken from the Database on Political Institutions.

We proceed in two steps. In the first step, we regress EPL reforms on these indicators, controlling for time and country fixed effects. The results of the first stage suggest that these instruments can be considered as sufficiently “strong instruments”—that is, the joint F-test is above the indicative value (10) identified by Staiger and Stock (1997).<sup>5</sup> In the second step, we re-estimate equations (1) and (2) using the exogenous component of EPL reforms driven

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<sup>5</sup> The first-stage estimation are results are the following:

$$R_{i,t} = 0.01Age_{i,t} + 0.002Months_{i,t} - 0.036Parties_{i,t}$$

(3.54)                      (2.58)                      (-3.80)

with t-statics in parenthesis. The joint F-test is 10.31.

(continued...)

by these instruments—that is, the fitted value of the first step.<sup>6</sup> The results reported in Figure 14 and 15 are similar to, and not statistically different from those obtained using OLS, confirming that endogeneity is not a serious concern in our set-up.

## V. CONCLUSION

This paper estimated the short-term impact of deregulating regular job protection and how it varies with prevailing business conditions, applying a local projection method to a new dataset of major reforms in advanced economies spanning over four decades, and using as an identifying assumption the fact that stringent dismissal regulations are more binding in sectors that are characterized by a higher “natural” layoff rate. Our main finding is that employment rises when reform is undertaken during economic expansions, but declines when reform happens during recessions. This result is robust to a battery of sensitivity checks, including to IV estimation using political economy drivers of reforms as instruments. It is also consistent with economic theory that, to our knowledge, had been untested thus far.

To the extent that streamlining job protection for regular workers yields long-term economic gains and that reform is therefore worth pursuing, what do our results imply for its timing and design? Under adverse macroeconomic conditions, other than postponing job protection deregulation until better times, one way to address short-term costs may include passing—or credibly announcing—today a reform that will come into force only the future. A more extreme option is to grandfather the new legislation altogether, that is, to apply it only to new contracts—a design feature of many of the post-Global Financial Crisis reforms of employment protection legislation in Europe, notably in Italy, Portugal and Spain where some of the provisions of the reforms of the 2010s were grandfathered. Such strategies have the advantage of frontloading the positive hiring effect of reform while delaying its adverse impact on layoffs. However, these short-term gains should be weighed against the possible efficiency losses from a more gradual phasing-in of the reform. We leave a cost-benefit analysis of these reform strategies for future theoretical and empirical research.

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<sup>6</sup> In the second step, we bootstrap the standard errors to account for the fact that our left-hand-side variable is estimated.

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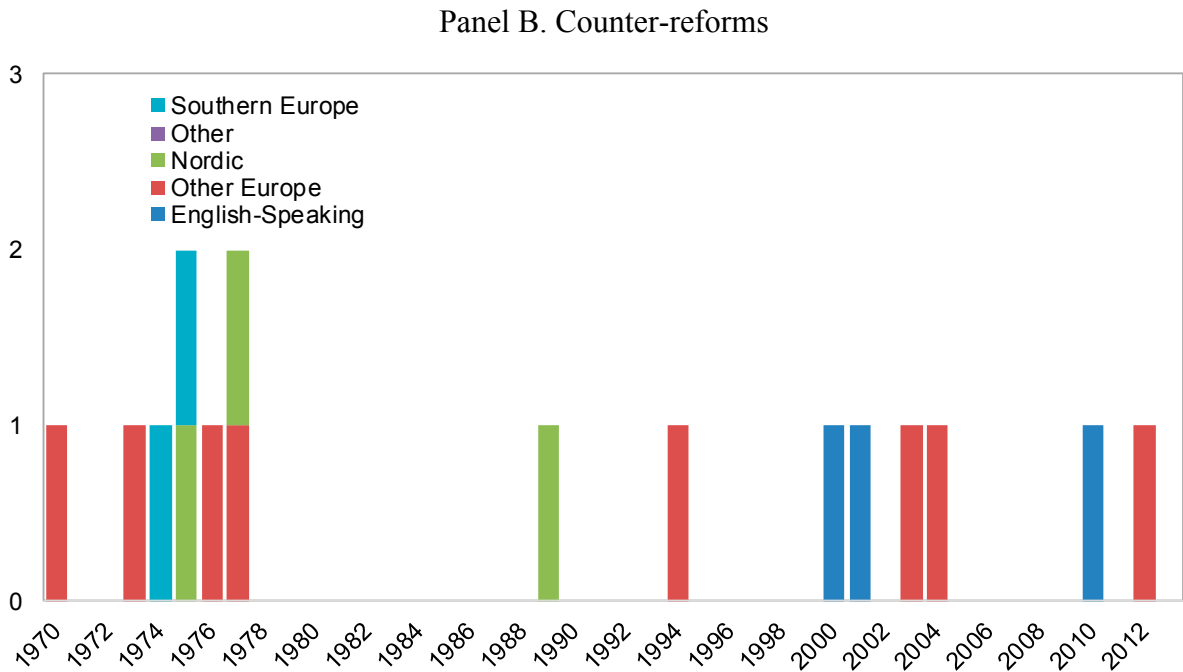
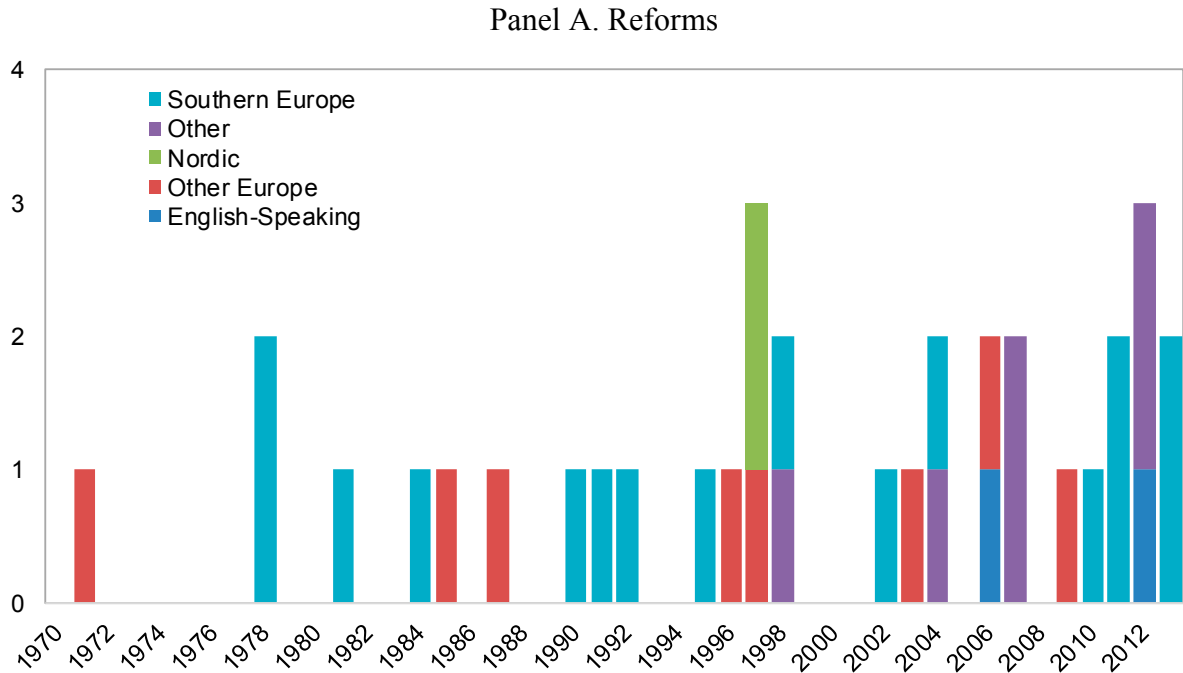
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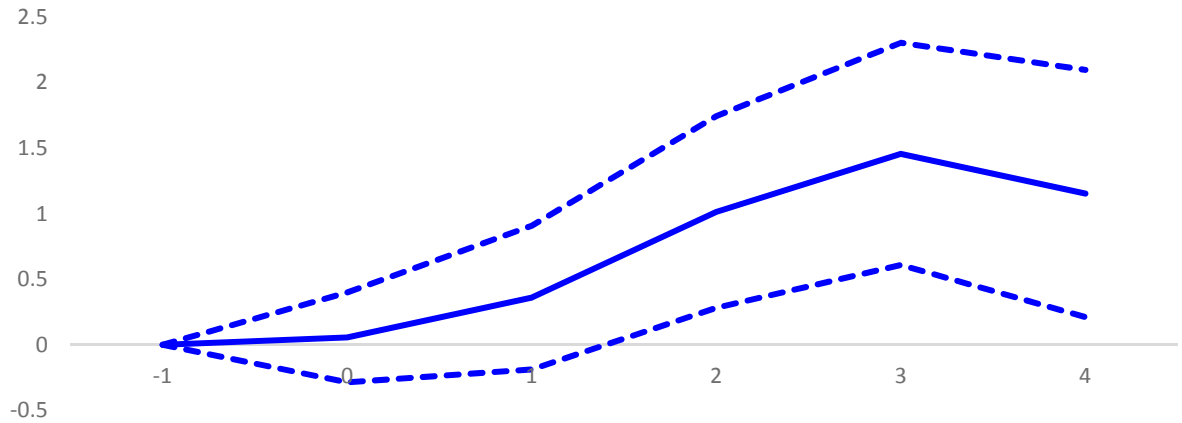
**Figure 1. EPL Reforms and Counter-Reforms by Groups and Periods**



Note: “Southern Europe” includes Greece, Portugal, Italy and Spain. “Other Europe” includes Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands and Switzerland. “English Speaking” includes U.S., U.K., New Zealand and Australia. “Nordic” includes Denmark, Norway, Sweden, Finland and Iceland. “Other” includes Korea, Japan, Czech Republic and Slovak Republic.

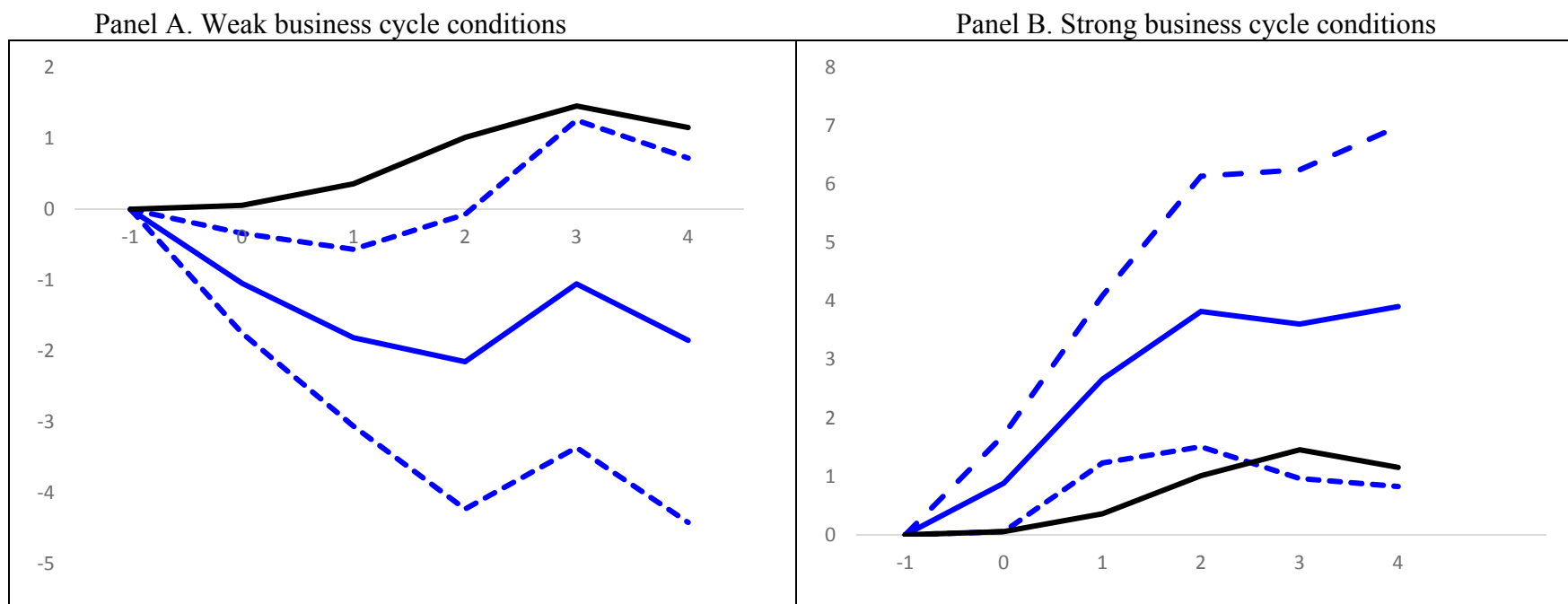


**Figure 2. The Effect of EPL Reforms on Sectoral Employment (%)**



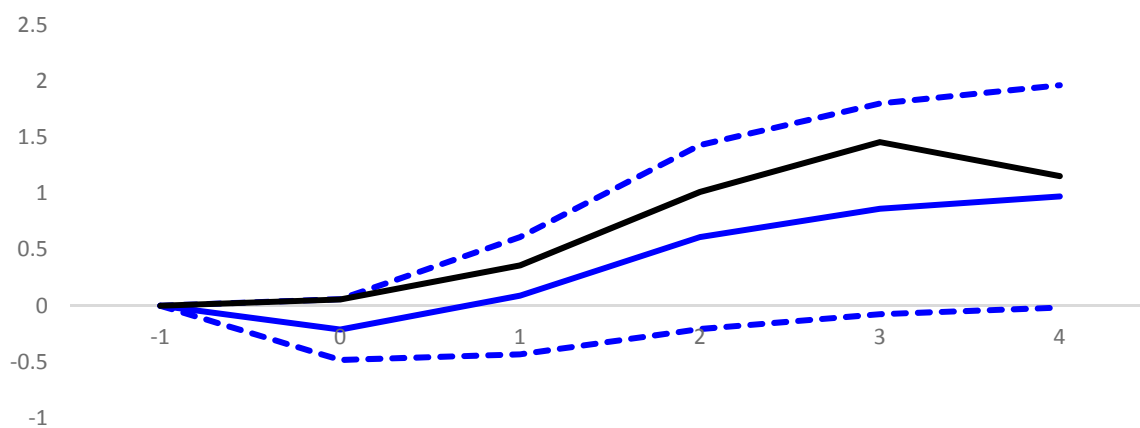
Note: estimates based on equation (1). Solid line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level.

**Figure 3. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions (%)**



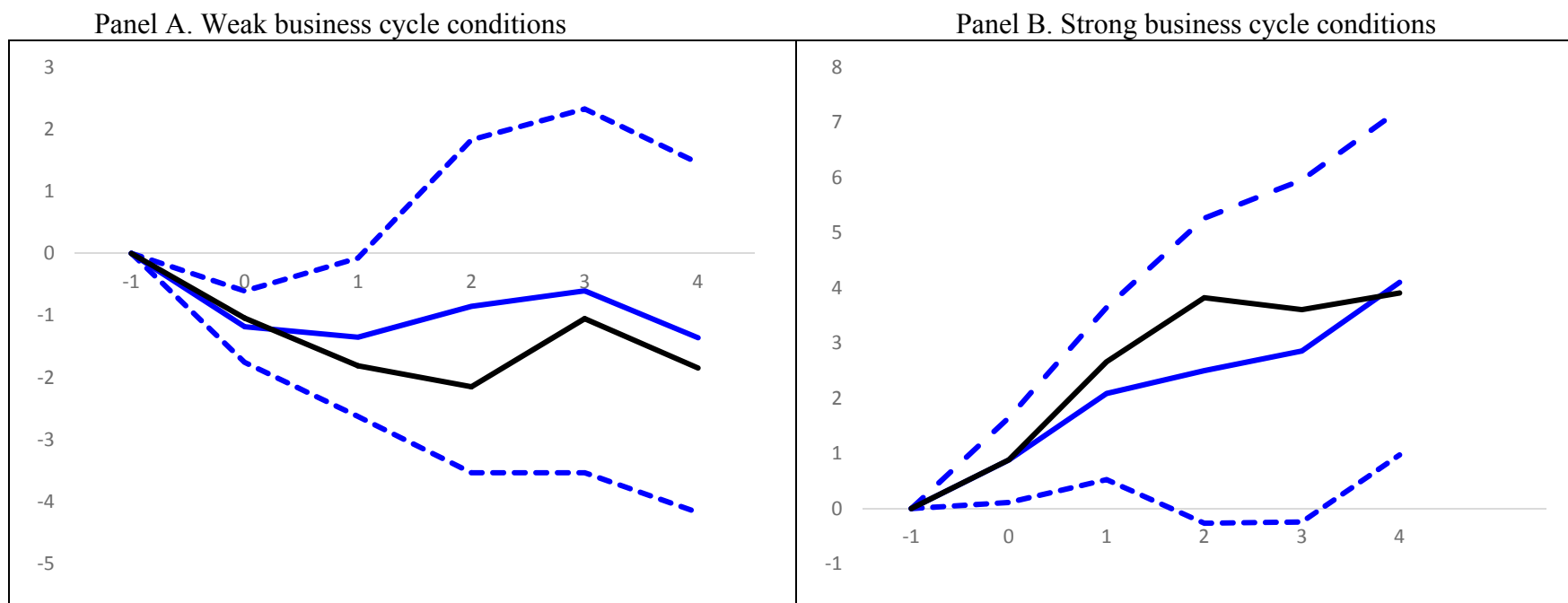
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the unconditional response presented in Figure 2.

**Figure 4. The Effect of EPL Reforms on Sectoral Employment: Using U.K Layoff Rates (%)**



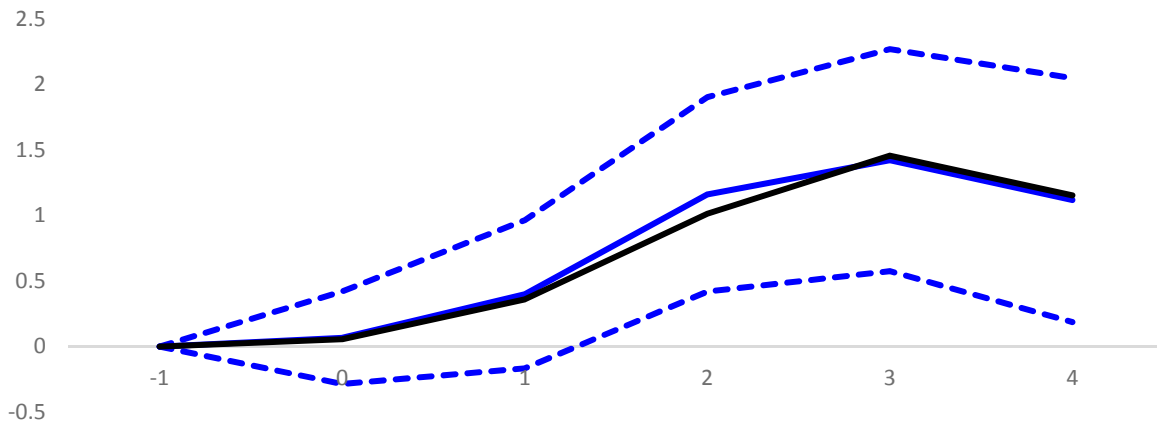
Note: estimates based on equation (1). Solid blue line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black line indicates baseline response presented in Figure 2.

**Figure 5. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Using U.K Layoff Rates (%)**



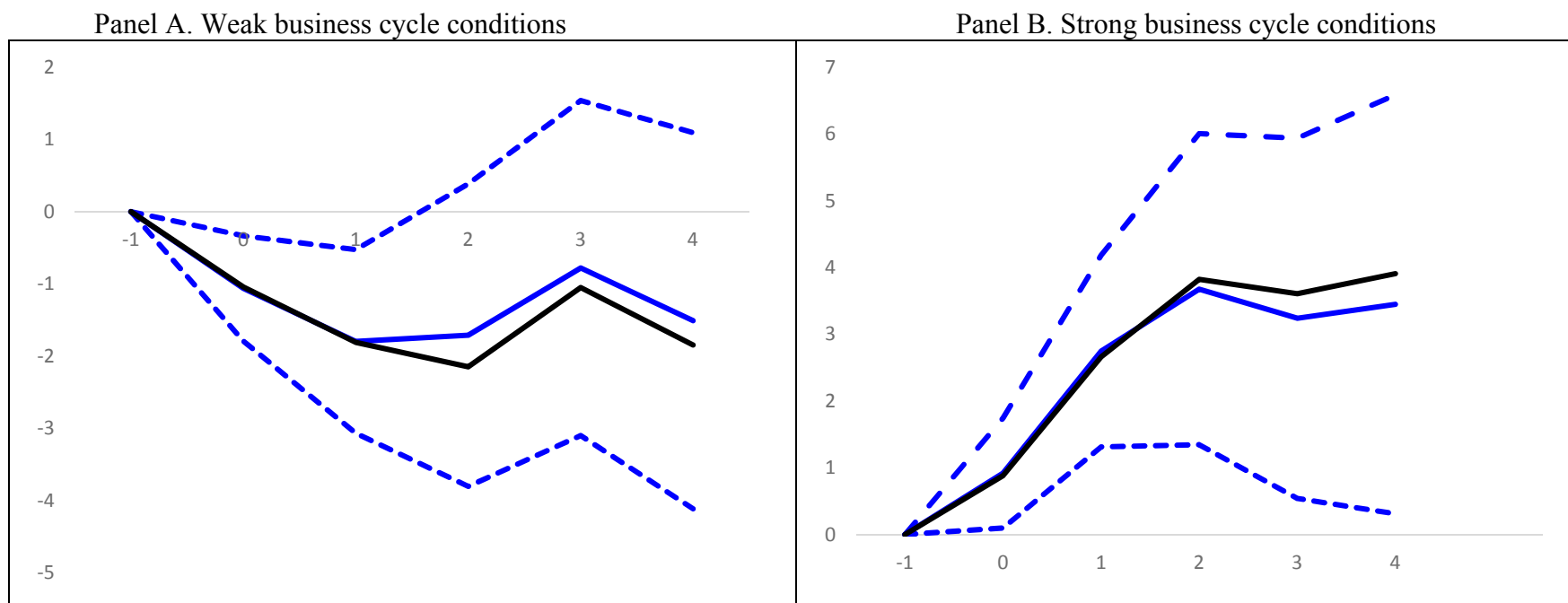
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses (using U.S. layoff rates) presented in Figure 3.

**Figure 6. The Effect of EPL Reforms on Sectoral Employment: Controlling for Reforms of EPL for Temporary Contracts (%)**



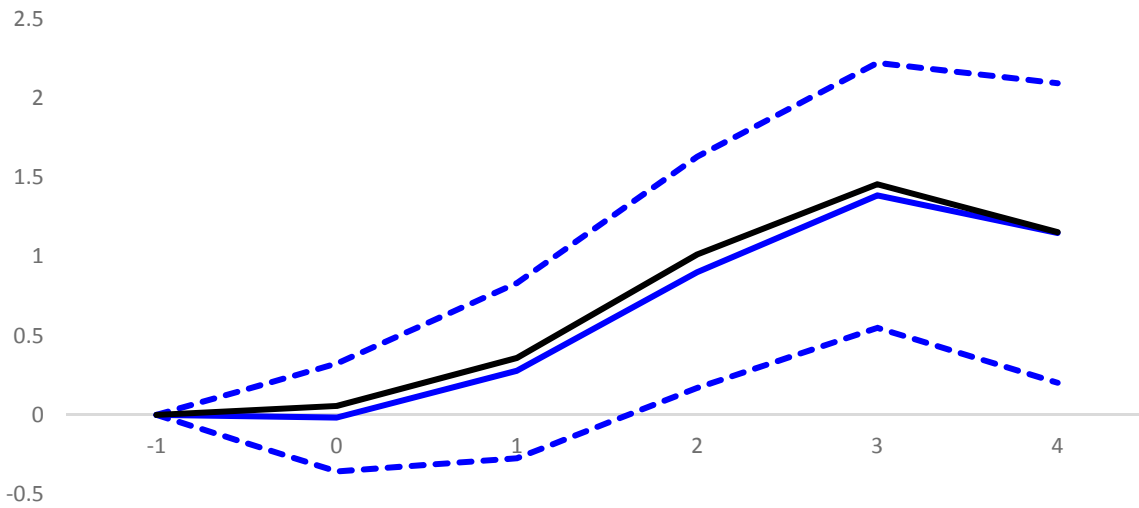
Note: estimates based on equation (1). Solid blue line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black line indicates baseline response presented in Figure 2.

**Figure 7. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Controlling for Reforms of EPL for Temporary Contracts (%)**



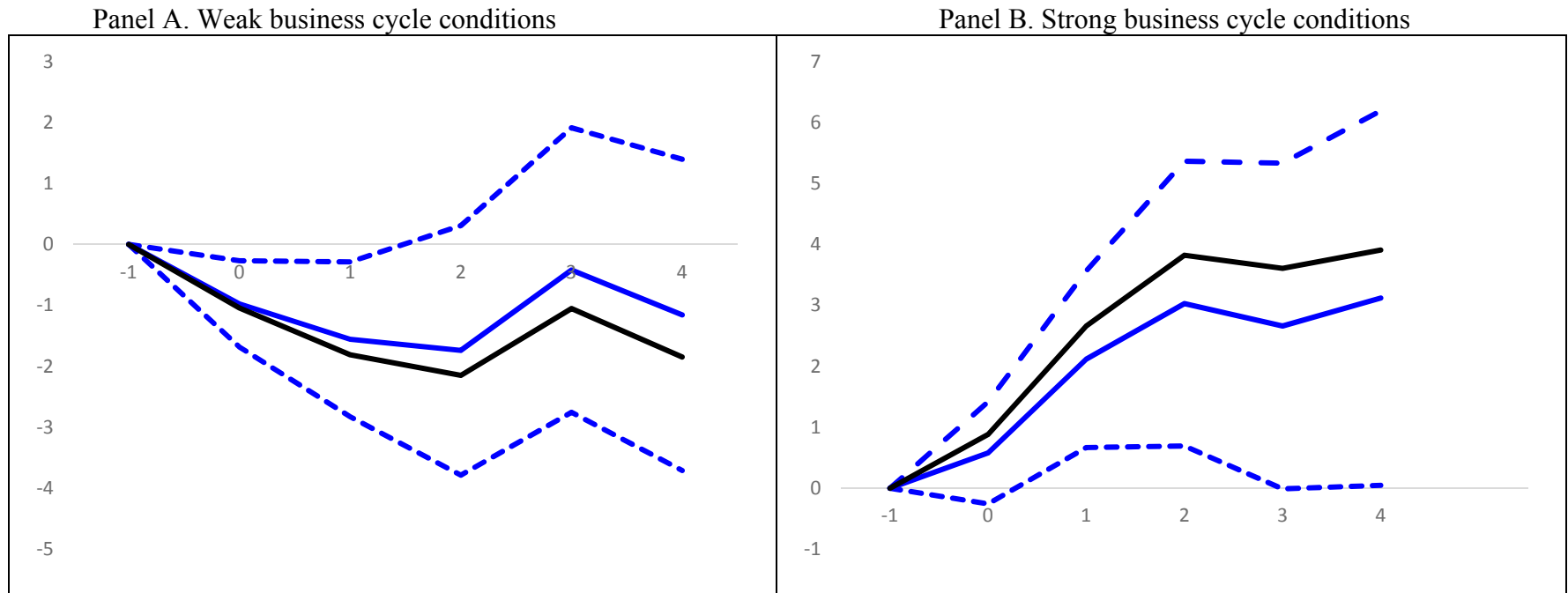
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using F=0 (F=1). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

**Figure 8. The Effect of EPL Reforms on Sectoral Employment: Controlling for Unemployment Benefit Reforms (%)**



Note: estimates based on equation (1). Solid blue line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black line indicates baseline response presented in Figure 2.

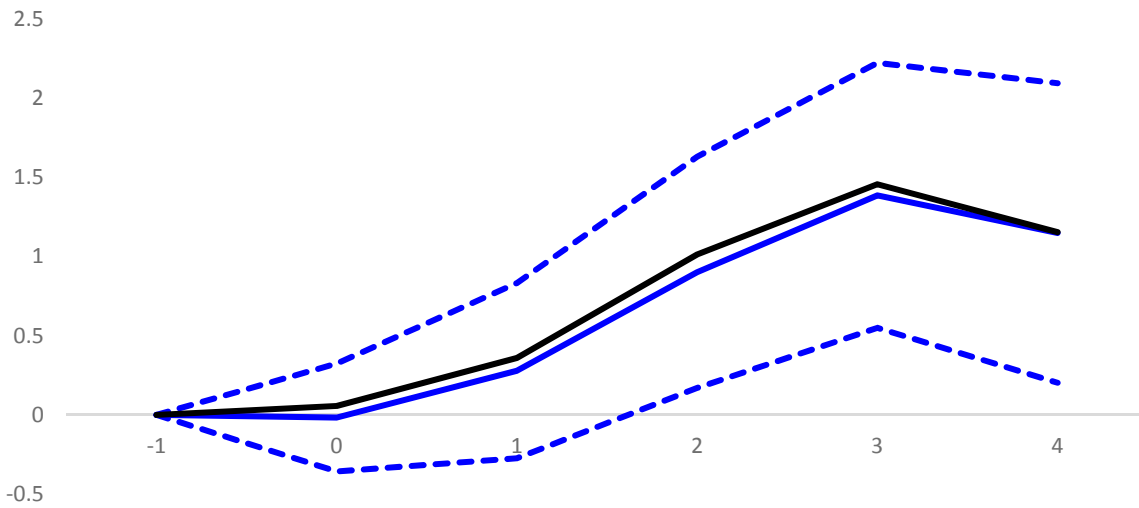
**Figure 9. The effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Controlling for Unemployment Benefit Reforms (%)**



Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

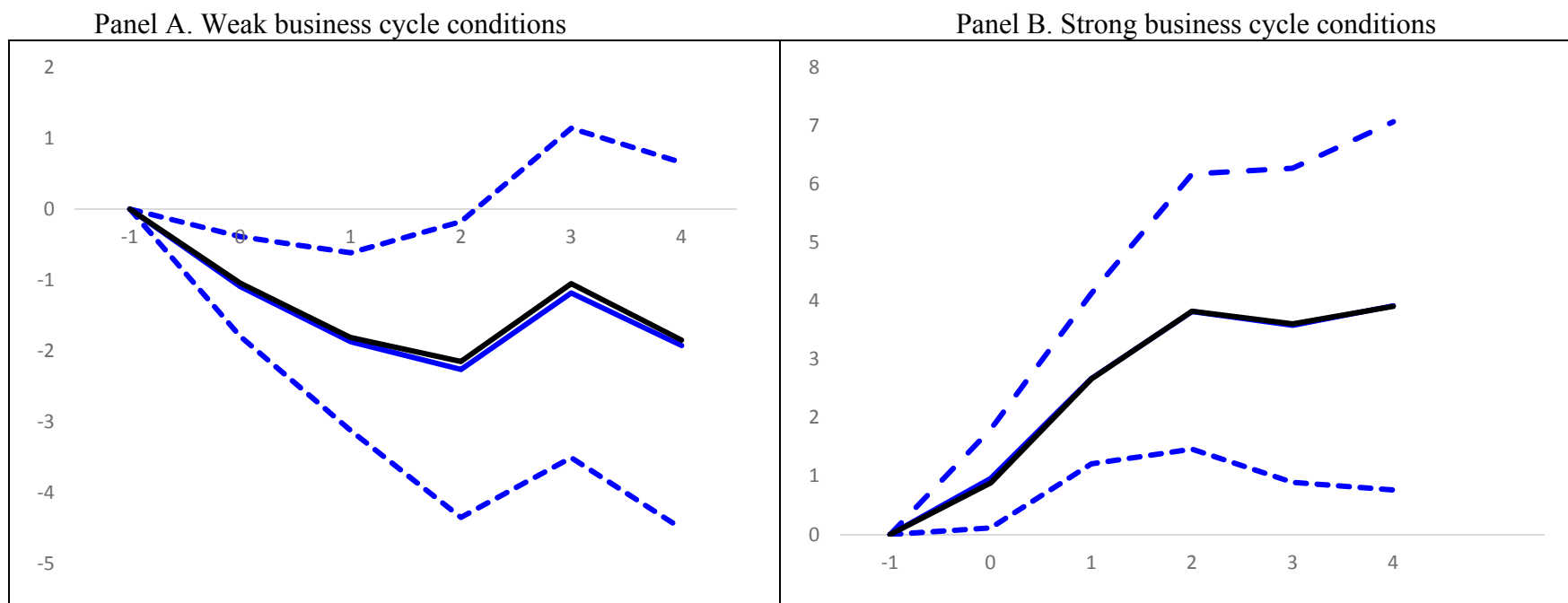


**Figure 10. The Effect of EPL Reforms on Sectoral Employment: Controlling for Product Market Reforms (%)**



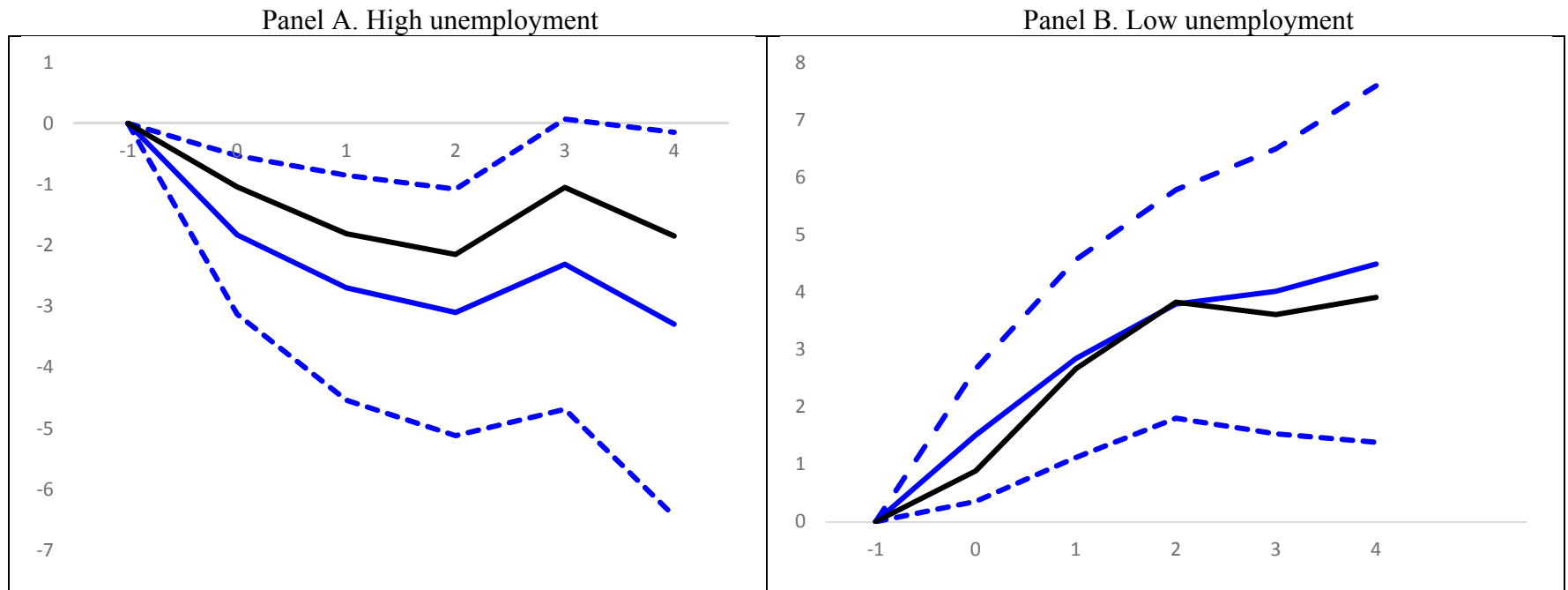
Note: estimates based on equation (1). Solid blue line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black line indicates baseline response presented in Figure 2.

**Figure 11. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Controlling for Product Market Reforms (%)**



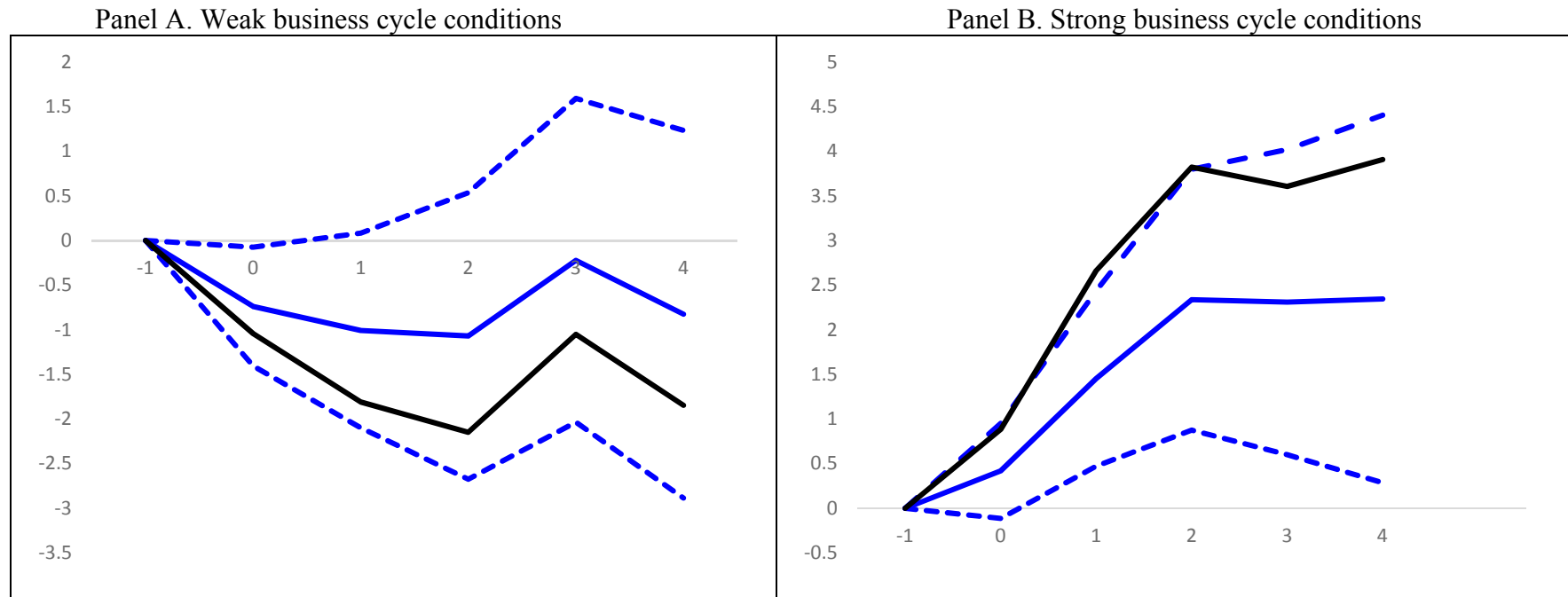
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

**Figure 12. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Using Unemployment Rather than GDP Growth to Measure Business Cycle Conditions in the Smooth Transition Function (%)**



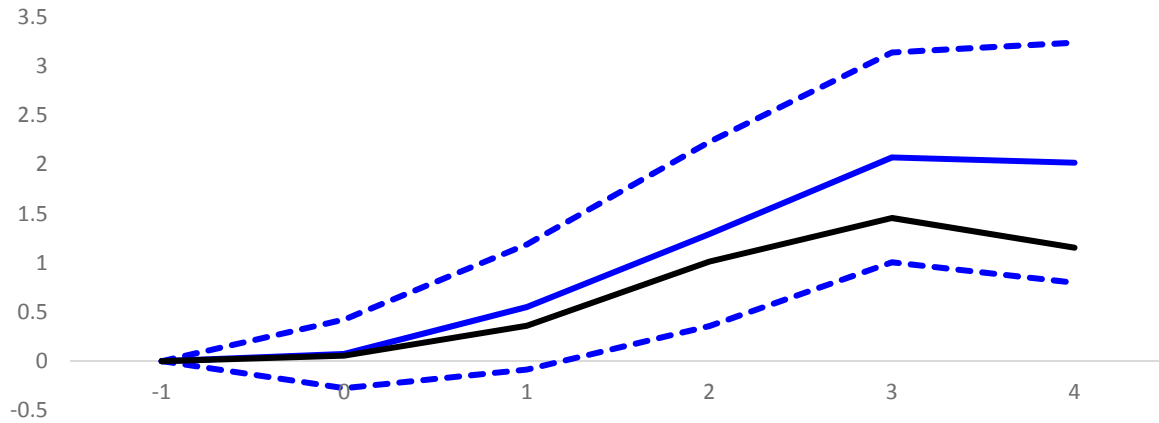
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

**Figure 13. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle Conditions: Using a Dummy Variable Rather Than a Smooth Transition Function to Measure Business Cycle Conditions (%)**



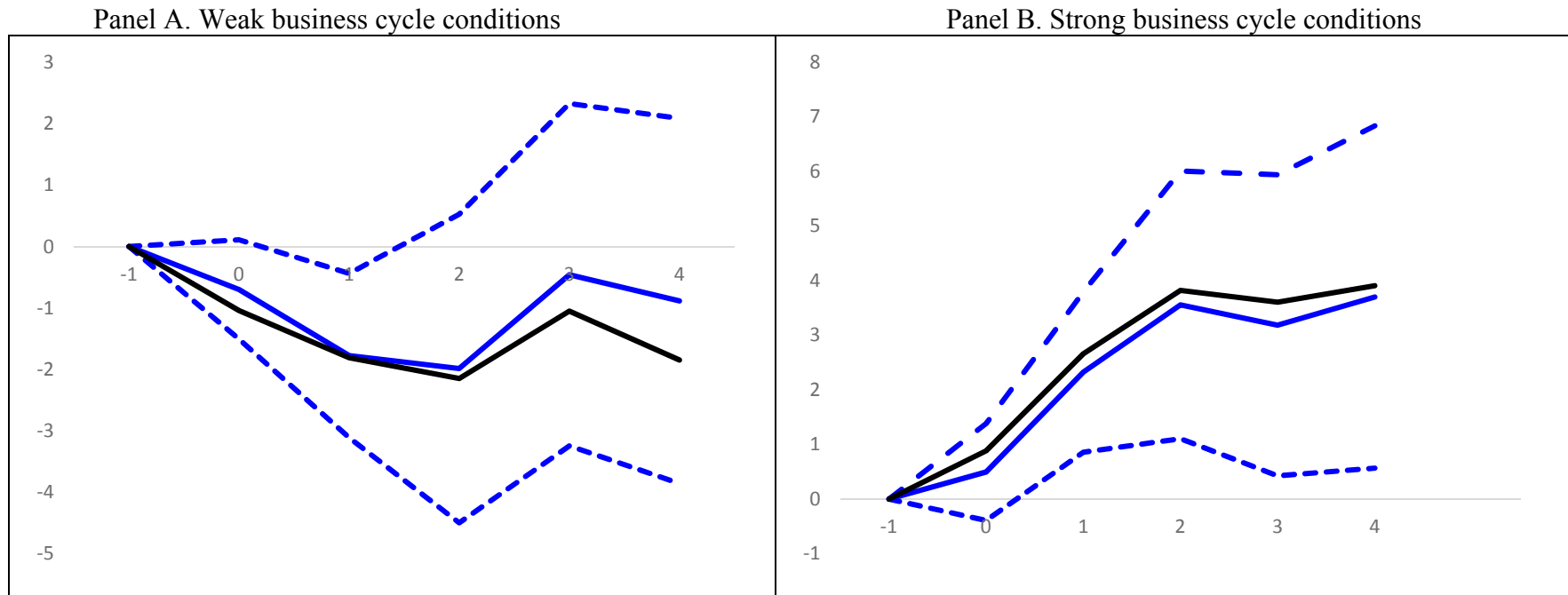
Note: estimates based on equation (2). Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using a dummy variable that takes value 1 when a country's GDP growth is below its sample average, and zero otherwise. Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

**Figure 14. The Effect of EPL Reforms on Sectoral Employment: IV Estimates (%)**



Note: estimates based on equation (1) with IV. Solid blue line denotes the differential employment effect of reform between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black line indicates baseline response presented in Figure 2.

**Figure 15. The Effect of EPL Reforms on Sectoral Employment Depending on Business Cycle: IV Estimates (%)**



Note: estimates based on equation (2) with IV. Solid blue lines denote the differential employment effect of reform under weak (Panel A) and strong (Panel B) business cycle conditions between a sector with a high natural layoff rate (at the 75<sup>th</sup> percentile of the distribution) and a sector with a low natural layoff rate (at the 25<sup>th</sup> percentile of the distribution). Effects under strong (weak) business cycle conditions are shown here using  $F=0$  ( $F=1$ ). Dotted lines indicate 90 percent confidence interval based on standard errors clustered at country-sector level. Solid black lines denote the corresponding responses presented in Figure 3.

**Table 1. Major Reforms of Job Protection Legislation for Permanent Workers in 26 Advanced Economies over 1970-2013**

	Implementation/Scored Year	Area	Content	Normative language	Mention in other reports	Large change in OECD indicator	reform /counter-reform
United Kingdom	2000	severance pay	Quadrupling maximum compensation for unfair dismissals from October 1999 (pg. 116, 2000)			yes for 2000	-1
Austria	2003	severance pay	... the system underwent thorough reform. In the new system, which became effective in January 2003, the management of severance pay is attributed to retirement accounts, which are legally independent from the employers and funded by employers via a monthly untaxed payment of some 1.5 per cent of gross wages. Accumulated entitlements rest in the employee's account until retirement, unless the work contract has been terminated by the employer, which makes cash payments admissible under certain conditions... (pg. 66, 2003)			yes for 2003	1
Belgium	1970	notice for individual dismissal	In November 1970, the notice period, which had been lengthened from 21 to 30 days early in 1969, was increased to three months. The possibility of a further extension to five months was left open and the five months' period was applied in most cases. (pg. 27, 1971)			no data but would qualify if scoring applied	-1
Belgium	1971	notice for individual dismissal	In April 1971, the period of prior notice was reduced to two months (pg. 27, 1971)			no data but would qualify if scoring applied	1
Belgium	1985	severance pay	...various measures to increase labour market flexibility: authorisation for ailing businesses to pay severance allowances in monthly instalments, when obliged to terminate indefinite-term contracts; incentives for the development of fixed-term contracts in order to promote youth employment and temporary work; lengthening of probation periods from 3 and 6 months to 6 and 12 months (pg. 47, 1985)	A major effort has also been made to promote part time work, temporary work and fixed-term contracts... (pg. 31, 1986) A major effort has also been made to increase labour flexibility... (pg. 32, 1986)		no	1
France	1987	procedural inconvenience	Checks on the genuineness of redundancies in firms with fewer than 10 employees to be discontinued (and from 1st January 1987, official authorisation for lay-offs no longer necessary). (pg. 76, 1987)	...one area - employment - where a deliberately active economic policy is being pursued, with 1985 marking a major shift in the choice of instruments... the most important measure, at least from a psychological point of view, was the discontinuation of the requirement for official authorisation to lay off workers (with full effect from January 1987)... (pg. 37, 1987)	pg. 33 or 44, 1989; pg. 59, 1990	yes for 1987	1
France	2003	collective dismissal	...government introduced the Social Modernisation Law in 2002, significantly tightening the constraints on dismissal of more than 10 employees...in 2003 the new government suspended some of these provisions before introducing another law in 2004 which, while moderating some aspects of EPL, increased the obligation on employers to try to find alternative jobs for employees under threat of collective dismissal... The law permits "economic" dismissal only if it is necessary to preserve the competitiveness of the firm. Financial rationalisation by the management is not sufficient justification...in 2002 the Social Modernisation Law added a provision requiring that the financial position of the group to which the firm belongs should be taken into account, which means that an economic dismissal is not legally justified if the group is healthy. (pg. 105, 2005)	...the Social Modernisation Law in 2002, significantly tightening the constraints on dismissal of more than 10 employees... These provisions prevent firms from undertaking practically any reorganisation to increase productivity that might ensure the survival or faster growth of the firm in the future... (pg. 105-106, 2005).		yes for 2003	-1
France	2009	procedural inconvenience	Layoff law has been simplified by introducing the possibility of mutually agreed termination (rupture conventionnelle) of the CDI. (pg. 52, 2009)			yes for 2009	1

Germany	1994	notice for individual dismissal	Notice period for blue-collar workers extended to four weeks, thereby aligning it with that of white-collar workers [see e.g. OECD Employment Outlook 2004 pg. 119]			yes for 1994	-1
Germany	1997	procedural inconvenience	Legislation easing employment protection provisions...came into force in October 1996.. The employment ceiling for enterprises above which employment protection is applicable was raised from five to ten employees per firm. The number of enterprises which are not subject to the general job protection law was thereby increased by some 15 percent. These companies employ some 30 per cent of all employees... With respect to large scale redundancies, the general requirement to consider social criteria in selecting employees to be made redundant was relaxed, with greater emphasis given to economic factors... (pg. 132, 1997)	... the measures reduce the costs and uncertainty of taking on new workers, thereby increasing the possibility for the unemployed and new entrants into the labour market to make the transition into permanent employment... (pg. 132, 1997)		no	1
Germany	2004	procedural inconvenience	The Protection against Dismissal Act (PaDA) states that a dismissal is "socially unjust" and, hence, invalid if there is no suitable reason (§ 1). A dismissal is socially justified only (1) in cases of personal misconduct, (2) lack of individual capabilities or (3) due to business needs and compelling operational reasons. Moreover, in the third case the PaDA requires that firms select workers or employees to be dismissed in accordance with social criteria such as age, tenure, alimony duties or individual disabilities. Until 2003, the regulations of the PaDA generally applied to all firms with more than a minimum number of five permanent employees. Since 2004, the four criteria of age, tenure, maintenance payments, and individual disability are listed explicitly in § 1(3) of the PaDA [see <a href="http://www.zew.de/en/publikationen/dfgflex/paperGoerke.pdf">http://www.zew.de/en/publikationen/dfgflex/paperGoerke.pdf</a> ]			yes for 2004	-1
Italy	1970	procedural inconvenience	The Act of 1970 referred to as the "workers' statute". Mechanism for reinstatement after a dismissal has been declared unlawful...laid down by Article 18 [see <a href="https://www.eurofound.europa.eu/efemiredictionary/workers-statute">https://www.eurofound.europa.eu/efemiredictionary/workers-statute</a> ]			No data but would qualify if scoring applied	-1
Italy	1991	procedural inconvenience	...the job allocation scheme was abolished in June 1991 (pg. 54, 1991)	A number of important measures...been taken in recent years to enhance the flexibility of the labour market, most prominent among them the abolition of the job allocation scheme in July 1991 (pg. 19, 1994)	pg. 19, 1994 pg. 11, 1995 pg. 134, 1999	no	1
Italy	2013	procedural inconvenience	Comprehensive labour market reform (with explicit provision for monitoring of its effects) including: relaxation of employment protection rules, reduced incentives to hire on non-permanent contracts.... potentially increase in flexibility on the firing side... (pg. 42, 2013) ...reform relaxed employment protection rules on permanent contracts, notably limiting the possibility of reinstatement following unfair dismissal. (pg. 27, 2015)		pg. 27, 2015	yes for 2013	1
Netherlands	1976	collective dismissal	Compulsory 3-month advance notification to employment exchange and trade unions required for the intended dismissal of 20 or more employees (pg. 47, 1977). [Collective Redundancy Notification Act established rules applying to collective dismissals]			no data but would qualify if scoring applied	-1
Netherlands	1996	procedural inconvenience	The Government decides to shorten dismissal procedures. According to the new rules, an employer can dismiss his employee at the same time or even before asking permission from the director of the Public Employment Service. (pg. 122, 1996)			yes in 1995	1
Norway	1977	procedural inconvenience	The main legislation concerning employment protection is the law on worker protection and the working environment which dates back to 1977. The law regulates a number of issues ranging from the terms of termination of employment, working hours, overtime and unfair dismissals.... (pg. 164, 2004)		pg. 164, 2004	no data	-1
Sweden	1975	notice for individual dismissal	...introduction of the employment security act in July 1974, stipulating that employers are to give 6 months' warning in advance of layoffs... (pg. 21, 1976)  The Act on Security of Employment, which took effect in 1974, stipulates that an employer must have acceptable reasons for laying off workers. Notice of dismissal, which may extend up to six months depending on age, can be contested in court and an employee is generally entitled to retain his employment pending a decision. Furthermore, employers must give the Employment Board 2 to 6 months notice of production cutbacks, depending on the number of employees affected... (pg. 36-37, 1980)		pg. 36-37, 1980	no data but would qualify if scoring applied	-1



Sweden	1997	notice for individual dismissal	<p>The revised Employment Protection legislation enters into force, embodying modifications in i) the criteria determining the length of notice periods; ii) enterprises' rehiring obligation vis-à-vis laid-off workers; iii) a wider scope for fixed-term contracts; and iv) a strengthened position for part-time workers and workers on replacement contracts.</p> <p>... the government tabled a set of proposals which were adopted by Parliament in late 1996, to enter into force during 1997. Of particular importance are: i) the length of notice periods is to be determined on the basis of tenure and not of age, implying that the costs of hiring older workers will fall relative to other groups; ii) enterprises' rehiring obligation vis-à-vis laid-off workers will expire after nine instead of twelve months; iii) twelve-month fixed-term contracts with no restrictions applied to the nature of the work carried out has been introduced, with all enterprises regardless of size being allowed to employ up to five persons on such contracts and new establishments being allowed to extend them to eighteen months... (pg. 81-82, 1998)</p>		pg. 105, 1999	yes in 1997 and 1999	1
Japan	2007	procedural inconvenience	<p>Labor Contract Act of 2007 [see e.g. <a href="http://apirnet.ilo.org/resources/the-labor-contract-act-of-2007-and-other-legislative-developments/at_download/file1">http://apirnet.ilo.org/resources/the-labor-contract-act-of-2007-and-other-legislative-developments/at_download/file1</a>].</p>			yes in 2007	1
Finland	1989	notice for individual dismissal	<p>Protection of workers is improved. Periods of notice will be extended from 1989. Dismissal for economic reasons will be possible only if work has decreased significantly and permanently and if employees cannot be transferred or trained for new tasks. (pg. 120, 1989)</p>			no data but would qualify if scoring applied	-1
Finland	1997	notice for individual dismissal	<p>In March 1996, several acts were submitted to the parliament regarding labour market reform aimed at stimulating new hiring... Employers' period of notice has been shortened to one month (from two months) and that for employees to fourteen days (from one month)... (pg. 78, 1996)</p> <p>Notice periods for employers and employees have been halved, to one month and two weeks, respectively (Pg. 63, 1997).</p>		pg. 63, 1997	yes in 1997	1
Greece	2011	notice for individual dismissal, severance pay, collective dismissal.	<p>The following measures were introduced in 2010 (Laws 3863/2010 and 3899/2010) to facilitate job reallocation:</p> <ul style="list-style-type: none"> <li>• Reduction in notice period. The notice period prior to dismissal of white collar workers has been reduced substantially. For an employee working 28 years or more, for example, notification is reduced to 6 from 24 months. The new provisions lower total severance costs for white collar workers with long tenure. Employers now have a clear incentive to provide notice of dismissal for workers with long tenure, in which case their severance payments are halved.</li> <li>• New rules for the settlement of severance payments...make it possible for severance payment, when it exceeds 2 months' pay, to be paid in installments.</li> <li>• Redefinition of collective dismissal rules. The new law increases the threshold above which dismissals are characterised as collective to 6 employees for enterprises with 20-150 employees and 5% or 30 employees for those with more than 150 employees. This compares with thresholds of 4 employees per month for enterprises with 20-200 employees and 2-3% or 30 employees for enterprises with more than 200 employees under the 2000 law.</li> <li>• Extension of probationary period. It was extended from 2 months to 1 year. (pg. 123, 2011)</li> </ul>			yes in 2011	1
Greece	2012	severance pay	<p>The length of prior notice of dismissal has been shortened to a maximum of four months, compared to 24 months for white-collar workers previously. The severance pay for white-collar workers has been reduced and subjected to a ceiling of 12 months' salary. (pg. 50, 2013)</p>			yes for 2012	1
Ireland	1973	notice for individual dismissal	<p>Minimum Notice and Terms of Employment Act, 1973, introduces and defines minimum notice period for dismissal [see e.g. <a href="http://www.irishstatutebook.ie/eli/1973/act/4/section/4/enacted/en/html#sec4">http://www.irishstatutebook.ie/eli/1973/act/4/section/4/enacted/en/html#sec4</a>]</p>			no data but would qualify if scoring applied	-1
Ireland	1977	procedural inconvenience, notice for individual dismissal	<p>During the 1970s, extensive legislation was enacted in Ireland to protect employees' rights and conditions of employment. The most important of these are the Protection of Employment Act (1977), the Unfair Dismissals Act (1977) and the Employment Equality Act (1977). (pg. 89, 1987)</p> <p>[see <a href="http://www.irishstatutebook.ie/eli/1977/act/7/enacted/en/html">http://www.irishstatutebook.ie/eli/1977/act/7/enacted/en/html</a> <a href="http://www.irishstatutebook.ie/eli/1977/act/10/enacted/en/html">http://www.irishstatutebook.ie/eli/1977/act/10/enacted/en/html</a> <a href="http://www.irishstatutebook.ie/eli/1998/act/21/enacted/en/html">http://www.irishstatutebook.ie/eli/1998/act/21/enacted/en/html</a>]</p>			no data	-1
Ireland	2006	notice for individual dismissal	<p>Revision of the 1973 Minimum Notice and Terms of Employment Act (which had introduced and defined minimum notice period for dismissal [see e.g. <a href="http://www.irishstatutebook.ie/eli/1973/act/4/section/4/enacted/en/html#sec4">http://www.irishstatutebook.ie/eli/1973/act/4/section/4/enacted/en/html#sec4</a>]</p>			yes in 2006	1

Ireland	2012	severance pay	Before 2012, the Government paid a rebate to employers for redundancy payouts to employees. Up until 1 January 2012 this rebate amounted to 60%; between 1 January 2012 and 1 January 2013, the Government rebate was 15%; from 2013 onwards the Government rebate was abolished [see e.g. <a href="https://www.eurofound.europa.eu/observatories/emcc/erm/legislation/ireland-severance-payredundancy-compensation">https://www.eurofound.europa.eu/observatories/emcc/erm/legislation/ireland-severance-payredundancy-compensation</a> ]			yes in 2012	-1
Portugal	1975	collective dismissal	Collective dismissal procedures become subject to regulation. (pg. 43, 1976)	Where employment is concerned, a law was passed in December 1974 which considerably limited the possibility of collective dismissals (pg. 35, 1976)	pg. 12, 1979 pg. 67, 1989	no data but would qualify if scoring applied	-1
Portugal	1976	procedural inconvenience	...to combat the rise in unemployment caused by the domestic and international recession and by the return of expatriates from the former colonies, the authorities enacted legislation virtually prohibiting all dismissals (pg. 9, 1976)		pg. 12, 1979 pg. 67, 1989	no data but would qualify if scoring applied	-1
Portugal	1978	procedural inconvenience	August 29: Authorisation for firms to suspend work contracts on account of economic difficulties. (pg. 40, 1977)			no data but would qualify if scoring applied	1
Portugal	1990	procedural inconvenience	the possibility of dismissal for failure to fulfill job requirements (pg. 19, 1992)		pg. 94, 1996	yes in 1990	1
Portugal	1992	procedural inconvenience	Changes in both lay-off legislation and legal framework governing collective labour contracts aim at making labour markets more flexible. (pg. 92, 1993)			yes in 1992	1
Portugal	2004	procedural inconvenience	The new Labour Code (Código do Trabalho), which came into force in December 2003, replaces individual and collective labour legislation with a unified text, deemed to be clearer and easier to apply...employers now have the right to oppose the reinstatement of workers in dismissal cases under certain conditions, such as in cases where it would harm or disrupt business activity. (pg. 78-79, 2004)  In the case of regular contracts, the 2003 changes eased somewhat the procedures for collective dismissal: the deadlines for initiating negotiations and taking the final decision were shortened; the priority given to trade union representatives and members of workers councils was eliminated. (pg. 128, 2008)			yes in 2004	1
Portugal	2010	procedural inconvenience, notice for individual dismissal, severance pay	The introduction of the new labour code in 2009, by reducing EPL for regular contracts, is an important step in the direction of reducing labour market dualism (pg. 42, 2010)	...an important step in the direction of reducing labour market dualism (pg. 42, 2010)	pg. 33, 2012	yes in 2010	1
Spain	1978	procedural inconvenience	A Decree-Law of 4th March, 1977 made the regulations governing dismissals...considerably more flexible (pg. 13, 1977)  ...legislation on layoffs, which is currently very restrictive, will be made more flexible, and employers will be allowed to lay off up to 5 per cent of their workforce... (pg. 34, 1978)		pg. 34, 1978 pg. 27, 1982	no data	1
Spain	1981	procedural inconvenience, collective dismissals	The new Workers Statute...changed legal framework provides in particular for liberalisation of dismissals... (pg. 27, 1981)	Two important laws were enacted in 1980. The new Workers Statute... (pg. 27, 1981)  ... it was not until the promulgation of the Workers' Statute in 1980 that a comprehensive reform of labour law took place. (pg. 27, 1982)	pg. 27, 1982	no data	1
Spain	mid-1994/1995	procedural inconvenience, collective dismissals	The draft law simplifies lay-off procedures. Dismissal of a small number of workers (treated as if they were individual dismissals) would no longer require prior consultation with workers' representatives and administrative authorization. (pg. 81, 1994)  ...the Government has presented a draft law modifying existing labour legislation significantly...Lay-offs of permanent employees will be made much easier, notably by abolishing in many cases the requirement of administrative authorization. (pg. 88-89, 1994)	... far-reaching labor market reforms aimed at lifting barriers to job creation. A decree was passed at the end of 1993 and a draft has been presented to Parliament and is expected to		yes for 1995	1

				become law by the middle of 1994. (pg. 80, 1994)			
				This draft law breaks with the corporatist philosophy of past legislation and is expected to increase labour market flexibility considerably. (pg. 88-89, 1994)			
Spain	1998	severance pay	Employers and trade unions agree on a labour market reform which would encourage the creation of indefinite-term jobs. Inter alia, it calls for the introduction of a new type of indefinite-term contract with reduced redundancy costs for certain groups of workers, a new definition of the grounds for economic redundancies and proposals for improving the collective bargaining process. (pg. 179, 1998)	...The social partners have taken an important step... (pg. 76, 1998)	pg. 57, 2000 pg. 66-68, 165, 2001 pg. 101, 2010	no	1
Spain	2002	procedural inconvenience, severance pay	New measures taken in early 2001 have broadened the 1997 reform... (pg. 65-66, 2001)  In March 2001 the government approved a deepening of the 1997 labour market reform. The measures adopted include: – An extension of the new permanent contract introduced in the 1997 labour market reform beyond May 2001. – The permanent contract with reduced firing costs will continue to apply to specific groups (workers aged 18-29, workers with a temporary contract, workers aged over 45, workers that have been unemployed for more than one year, women in some professions), and has been extended to young workers (now defined as those aged between 16 and 30), long-term unemployed (for more than 6 months), unemployed women in sectors where they are underrepresented (most of them) and disabled workers... (pg. 66, 2003)		pg. 66, 2003	no	1
Spain	2011	severance pay	The labour market reform, approved in September 2010...aims to reduce the upper range of dismissal costs for permanent contracts and to smooth the difference in dismissal costs between temporary and permanent contracts: ● First, the law aims to make it easier for firms to have dismissals accepted by the courts as justified. If this reform is effective, it will reduce severance payment of firms substantially, from the current practice of 45 days' wages to 20 days' wages. ● Second, it broadens the base for which the permanent contract with reduced severance payment of 33 days' wages can be applied and guarantees that this reduced severance pay also applies now in cases where firms would prefer to declare the dismissal upfront as "unjustified" (to avoid litigation). ● Third, the introduction of a capital-funded component, similar to the one introduced in the framework of the Austrian severance pay reform, further reduces the onetime costs of dismissal. (pg. 103, 2010)	The recent reform represents significant progress... The recent reform adopted by Parliament in September 2010 should lead to significant progress... (pg. 101, 2010)		yes for 2011	1
Spain	2013	procedural inconvenience, severance pay, collective dismissals	The 2012 labour market reform aims to reduce further the duality in the Spanish labour market, with a reform of employment protection legislation...: ● The law redefines the economic reasons for dismissal, further clarifying the conditions under which a dismissal for objective reasons could be justified. In this case, the employer pays 20 days' wages of severance pay per year of seniority. ● If a dismissal is judged unjustified, the maximum severance pay is reduced to 33 days' wages per year of seniority up to a maximum of 24 months, compared with 45 days and a maximum of 42 months on the regular permanent contract before. This applies to all new contracts and for future years of service on existing contracts. ● The law eliminates the need for administrative authorisation of collective dismissal, in line with current regulations in most European countries. ● While it removes the option of express dismissal, according to which firms could declare the dismissal upfront as being "unjustified" and pay 45 days' wages per year of seniority to avoid litigation, firms no longer are obliged to pay interim wages during the period	...these reforms are a substantial step in the right direction... A potentially important part of the reform is clarifying what justified dismissal means... (pg. 34, 2012)	pg. 40, 92, 2014	yes for 2013	1

			<p>the case is adjudicated.</p> <ul style="list-style-type: none"> <li>• The law introduces a new type of permanent contract for companies with fewer than 50 employees. Hiring on this new contract is subject to an extended trial period of one year, compared with a previous maximum of six months, and various tax credits. (pg. 98, 2012)</li> </ul>				
Australia	2006	procedural inconvenience	The Workplace Relations Amendment (Work Choices) Act 2005 took effect in the first quarter of 2006 and sought to reinforce employers' prerogatives at the expense of employees (pg. 81, 2012)			yes for 2007	1
Australia	2010	procedural inconvenience, notice for individual dismissal	Work Choices removed unfair dismissal protections for employees of firms with fewer than 100 employees. The Fair Work Act restored these protections subject to minimum qualifying periods of one-year service for workers in firms with fewer than 15 employees and six months' service for workers in firms with 15 or more employees. In addition, a number of protections previously available under Work Choices were streamlined and broadened in the FW Act to protect workers against discrimination and adverse actions because they have a workplace right. (pg. 83-84, 2012)			yes for 2010	-1
New Zealand	2001	procedural inconvenience	The new Employment Relations Act...modifies provisions under the ECA in several significant ways... The ERA proposes to avoid undue litigation by making mediation a mandatory first step. If there is no resolution, the parties can then turn to the Employment Relations Authority, a new investigative body. If the parties do not agree with its ruling, or if the Authority so decides, grievances and disputes are then turned over to an Employment Court. It can redirect the matter back to mediation, to the Authority or make a final judgement. (pg. 78-79, 2000)		pg. 83, 2002 pg. 98, 2005 pg. 117, 2013	yes for 2001	-1
New Zealand	2012		The Employment Relations Act 2000 was amended to extend trial period provisions (for up to 90 days) from firms with fewer than 20 employees to all firms on 1 April 2011... (pg. 56, 2011)			yes for 2012	1
Korea	1998	procedural inconvenience, notice for individual dismissal, collective dismissals	The March 1997 labour law reform eased restrictions on layoffs by expressly allowing dismissals for "urgent managerial reasons", while specifying certain requirements that must be fulfilled beforehand by management... the Tripartite Commission agreed that it should be implemented in February 1998 to help firms restructure in the wake of the crisis... (pg. 166, 1998)		pg. 142, 2005 pg. 127, 2008 pg. 129, 2012	yes for 1998	1
Czech Republic	2007	procedural inconvenience	A new labour code was passed by the lower chamber of the parliament in early 2006. The code, if implemented, will allow a wider scope of employment contracts because it takes an "anglo-saxon" rather than "Napoleonic" legal form... (pg. 36, 2006) [NB: Amended Labor Code Act (No.262) eventually became law, see e.g. <a href="http://www.mpsv.cz/files/clanky/3221/Labour_Code_2012.pdf">http://www.mpsv.cz/files/clanky/3221/Labour_Code_2012.pdf</a> ]			yes for 2007	1
Czech Republic	2012	notice period, severance pay	2012 revision of labor code with effect from January 1st 2012 [see e.g. <a href="https://ec.europa.eu/europeaid/employment-labor-and-social-protection-social-reforms-czech-republic_en">https://ec.europa.eu/europeaid/employment-labor-and-social-protection-social-reforms-czech-republic_en</a> ...it has...introduced wider possibilities for employers to terminate the employment...The maximum duration of the probationary period extended to 6 months for executive employees...]			yes for 2012	1
Slovak Republic	2004	notice period, severance pay	Major amendments to the Labour Code were adopted in June 2003 and became effective as of 1 July 2003...More flexibility is introduced as regards an employer's right to terminate an employee's contract. When terminating an employment contract the employer is obliged to specify the reasons for termination. These are more extensive than previously allowed... In all cases the statutory notice period is reduced to two months regardless of the reason for termination. An employee working for the same employer for more than five years shall be given 3-months notice... (pg. 121-122, 2004)			yes for 2003-2004	1
Slovak Republic	2012	notice period, severance pay	Amendments to the "new" 2003 labor code that eases legislation on regular contracts (shortening of length of notice period). [For details, see e.g. <a href="http://www.ilo.org/dyn/eplex/docs/50/labour-code-full-wording-january-2012.pdf">http://www.ilo.org/dyn/eplex/docs/50/labour-code-full-wording-january-2012.pdf</a> ]			yes for 2012	1

**Table 2. Reforms and Counter-reforms Over the Business Cycle (%)**

	Lower economic growth	Higher economic growth
EPL reforms	48.6	51.4
EPL counter-reforms	40.0	60.0

Note: lower (higher) economic growth = real GDP growth below (above) the reforming country's sample average.