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The Impact of Labour Market Reform Policies on Insiders' and Outsiders' Low-Wage Risk

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EU-SILC, low-wage, deregulation, centralisation, labour market entrants, closed employment relationships

Abstract:

Taking a cross-national comparative perspective, this study analyses differences in individual determinants of the low-wage risk across institutional settings. It builds on previous research that dealt with the impact of labour market deregulation and commodification on the distribution of labour market risks in advanced economies. It is widely held that such reforms have a particularly adverse effect on labour market outsiders, specifically on entrants to the labour market. We seek to differentiate this assumption and to show that this presumed effect is conditional on the configuration of the bargaining system. Using hierarchical models that match EU-SILC microdata with several macro indicators for 20 countries, we find that, in contexts with a high degree of bargaining centralisation, the relative low-wage risk of *entrants* and *re-entrants from inactivity* increases with commodification and deregulation. If bargaining is decentralised, however, the effects of labour market reform policies on insider/outsider disparities are marginal. Additionally, we show that the same still holds true if a measure of employment protection legislation (EPL) is regarded as the moderating institutional filter. We explain these findings with theoretical concerns based on the concept of *closure*. These predict that centralised bargaining structures and high EPL (or, rather, *closed employment relationships*) will systematically channel risks produced in the political framework to the periphery of the labour market.

Introduction

In recent decades, social and labour policy reforms have substantially changed the context of employment in advanced societies (Gilbert and Voorhuis, 2001; Palier, 2010). Empirical research has shown that this process led to increasing rates of *atypical employment*, *low-wage work*, and *in-work poverty* (Lohmann, 2009; Andreß and Lohmann, 2008; Lucifora *et al.*, 2005; OECD, 2011). Specifically, outsiders to the labour market have been shown to react very sensitively to processes of policy transformation. As several studies reveal, labour market entrants and re-entrants are confronted disproportionately with increasing risks (or, rather, *uncertainties*) in modern societies (Mills and Blossfeld, 2003; Blossfeld *et al.*, 2005; Blossfeld *et al.*, 2011; McGinnity *et al.*, 2005; OECD, 1996).

This study builds on these previous findings. However, it argues that the extent to which outsiders are affected by deregulation and commodification varies systematically across countries. This assumption is based on the observation that policy reform measures are similar across advanced economies, but that they are embedded in different institutional settings at the national level. In line with research on insider/outsider disparities (Solow, 1985; Lindbeck and Snower, 1988) we assume that, in particular, the *configuration of the bargaining system* acts as an institutional filter, channels risks, and, finally, moderates the impact of policy transformation on outsiders' labour market risks.

Our explanatory model refers to the concept of *closure*, which explains how positions on the labour market are associated with protection from market forces (Weber, 1956; Sørensen, 1996). Linking this concept to an insider/outsider framework, we identify those conditions that specifically protect the core workers of the labour market. The theoretical argument

based on these concerns finally predicts that the higher the *degree of bargaining centralisation* is in a given context, the more deregulation and commodification raise outsiders' low-wage risks.

In the empirical model, we distinguish three groups of labour market outsiders (*entrants*, *re-entrants from unemployment*, and *re-entrants from inactivity*) and contrast their risk to that of insiders in different institutional settings. Taking a cross-country comparative perspective, this hierarchical theoretical framework is tested on the basis of a multilevel analysis using data from 20 countries. We use individual measurements from the EU Statistics on Income and Living Conditions (EU-SILC, see Eurostat, 2005a) and match institutional macro variables from different sources.

Labour Market Reform Policies and Institutional Filters

The argument developed in this section follows three steps. First, it is argued that labour market reform measures produce labour market risks, specifically *low-wage risks*, on the individual level. Subsequently, centralised bargaining is introduced as key feature of a *closed employment relationship*. Finally, it is postulated that centralised bargaining channels the low-wage risk associated with reform measures to the outsiders of the labour market.

Our interest concerns those reform measures that are directed towards a more liberal labour market configuration and are often discussed as forms of *activation* (Palier, 2010; Gilbert, 2002; Palier and Thelen, 2010). This term refers to a wide range of institutional measures¹ – here, we focus on elements of activation policies that act as mechanisms to stimulate market forces and thereby produce risks on the individual level. In this light, one core component of

activation policies are modifications in the *degree of decommodification*. This refers to changes in the extent to which a citizen's reliance on the (labour) market is reduced by the system of unemployment benefits (Esping-Andersen, 1990). Another relevant aspect of activation are policies promoting non-standard employment (Kalleberg *et al.*, 2000; Gilbert, 2002). We refer to this aspect of activation as *labour market deregulation* (acknowledging that this term often refers to a broader range of measures; see, for example, Regini, 2000).

From the macro perspective, deregulation and commodification appear to be closely linked measures: while *labour market deregulation* is aimed at reconfiguring the pattern of job supply and adapting it to the requirements of an open market, *commodification* forces integration into this pattern. On the micro level, decommodification implicitly defines weak conditions for acceptable wages, while deregulation measures provide the (atypical) jobs consistent with those conditions. Such *atypical jobs* are associated with low wages (Kalleberg *et al.*, 2000) as they imply reductions in working time (*part-time and marginal employment, fixed-term employment*) and/or are excluded from company wage standards (*temporary work, agency work, self-employment*). Consequently, deregulation and commodification promote low-wage employment and produce low-wage risks.

However, labour policy settlements are complemented by other institutions in the framework of the labour market. These institutions channel the distribution of labour market risks by providing safeguards from the effects of labour policy reform. Such institutional safeguards, which associate certain positions on the labour market with a barrier and extract them from the competitive market, are usually described as means of *closure* (Sørensen, 1996; Weber, 1956).

Based on the concept of *closure*, the distinction between regimes with *open* and *closed employment relationships* has gained significance: In regimes with closed employment relationships, *closure* is provided specifically to labour market insiders (Sørensen 1983). Therefore, risks produced in the frame of the labour market are channelled to persons in entry-level positions (Mills and Blossfeld, 2003; Blossfeld *et al.*, 2005). In the literature, centralised negotiating procedures are regarded as one key element of closed employment relationships (Regini, 2000; Hofäcker and Blossfeld, 2011). In view of that, a centralised bargaining structure is predicted to concentrate closure on insider positions and to protect those from forces of labour market reform.² Below, we want to illuminate the concrete mechanisms behind this prediction in greater detail. For this purpose, sociological and economic theories offer three perspectives.

The first perspective refers to the foundations of closure theory. These predict a high degree of centralisation to organise the insiders as a coherent group: according to Weber (1956), the distribution of closure to a specific group is determined by the group's ability to organise its collective interests. In this light, a high aggregation level of bargaining can be regarded as an effective means to coordinate the collective interests of *insiders*. Thus, a collective representation of insiders' interests, which is a specific characteristic of a centralised bargaining structure, accentuates disparities in the distribution of closure between insiders and outsiders.

A second, economic theory perspective focuses on the role of unions in centralised bargaining structures. As union members are predominantly established employees, and union representatives are generally loyal to the preferences of union members (Roberts, 1989), unions are established as insiders' interest organisations (Lindbeck and Snower,

1986). Accordingly, insider/outsider theories argue that unions aim at increasing *labour turnover costs* (Solow, 1985; Lindbeck and Snower, 1988). High labour turnover costs, in turn, provide de facto *closure* for insiders against the impacts of commodifying and deregulating policy measures. The instruments that unions use to increase labour turnover costs include strikes and work-to-rule actions, which can be utilized to respond to specific threats or to generally influence employment protection legislation (Lindbeck and Snower, 1989). However, the effectiveness of such measures depends on the degree of coordination among workers (Lindbeck and Snower, 1988) and therefore on the level of bargaining centralisation. In line with this assumption, the economic research discusses bargaining centralisation as a key factor determining the influence (or, rather, *success*) of unions (Blau and Kahn, 1996). Accordingly, the degree of centralisation largely defines the ability of unions to increase labour turnover costs and to protect insiders from the impacts of labour market reform.

The third perspective takes the employers' viewpoint. According to Calmfors *et al.* (1988), the costs associated with insider-based protection mechanisms can only be maintained in a system with a centralised and coordinated bargaining structure. If the provision of *closure* to insiders is not in line with binding, sector- or economy-wide standards, those employers who provide closure (instead of paying based strictly on productivity) will be punished by the market (see also Sørensen, 1983). Thus, specific protection of insiders will be marginal in decentralised bargaining regimes.

In a nutshell, centralised bargaining structures organise insiders as a coherent group, empower their lobbies, and enable employers to treat insiders preferentially without being punished by the market. In line with the aforementioned references on closed employment

relationships, we therefore conclude that centralised bargaining creates closure for insiders (mediated inter alia via employment protection legislation), extracts their positions from the open market, and consequently provides them with a high level of protection against the forces of deregulation and commodification.³

Thus, within a centralised bargaining system, low-paid employment associated with commodification and deregulation is highly concentrated at the margins of the labour market. These positions are held by individuals at the threshold between the educational systems and the labour market, and by people trying to re-establish themselves in the labour market after unemployment or economic inactivity. Within a decentralised system, however, specific protection for insiders is absent; therefore, in such contexts, outsiders and insiders are likely to be affected similarly by reform measures.

Hypotheses

In the previous section, it was argued that centralised bargaining structures provide established employees with safeguards against the effects of labour market reform and channel risks to the margins of the labour market. Thus, our general hypothesis is that *with rising levels of bargaining centralisation, the effects of deregulation and commodification on labour market outsiders' relative low-wage risk will increase.*

In our theoretical framework, we referred to three different types of labour market outsiders: *entrants from the educational system, re-entrants from unemployment, and re-entrants from inactivity.* Moreover, *deregulation* and *commodification* were discussed above as distinct features of activating policies. We therefore examine the two factors separately.

Consequently, the general hypothesis outlined above can be specified according to the scheme presented in Table 1.

<Table 1 about here>

Previous studies on the impact of institutional factors on individual living conditions provide some support for our hypotheses. Based on data from 11 countries, Blau and Kahn (1996) show that a high degree of bargaining centralisation significantly reduces wage dispersion, especially in the bottom half of the wage distribution. In addition to affecting wage levels, the configuration of the bargaining system has also been shown to *structure* labour market risks: Lucifora *et al.* (2005) find a disproportionately high incidence of low pay among young persons in countries with high degrees of bargaining centralisation. Using 11 country studies as a basis (see Blossfeld *et al.*, 2008), Kurz *et al.* (2008) conclude that closed employment relationships generally increase difficulties in transitions from the educational system to the labour market. Similarly, Baranowska and Gebel (2010) find that collective bargaining coverage has an impact on the percentage of temporary employment contracts among young people within a sample of 23 European countries. Additionally, several studies find that activation policies have an effect on insider/outsider disparities (OECD, 1996; Blossfeld *et al.*, 2011; Blossfeld *et al.*, 2005; Mills and Blossfeld, 2003; OECD, 2011).

There is also some empirical evidence on the presumed institutional interaction. Mills (2005) report that the effects of the forces of globalisation on insider/outsider disparities are stronger in countries with *closed employment relationships*: on the basis of several single country studies (Blossfeld *et al.*, 2005), the authors find that young adults are disproportionately affected by increased competition in contexts with centralised bargaining procedures (see also Hofäcker and Blossfeld, 2011). However, this conclusion is not tested

within a multivariate framework. Yet, it is in line with findings from several single country studies: Barbieri and Scherer (2009) report that the introduction of flexibility in Italy – a country with high protection for existing employment relations – leads to a concentration of atypical employment in entry-level positions. Giesselmann (2009) arrives at a similar conclusion examining the increase of outsiders’ low-wage and in-work poverty risks in Germany during the process of labour market transformation.

In sum, there is clear empirical evidence on the main effects of reform measures and centralisation on insider/outsider cleavages. To date, however, evidence of an interaction of these two factors on insider/outsider disparities in the low-wage risk is limited to descriptive comparisons of single country studies. The next section therefore discusses the appropriate analytical design for performing a multivariate test of our hypotheses.

Method

Data

Suitable data must contain information on individual socio-economic status, as well as information on the institutional context. The first condition is met by the EU-SILC, a cross-country microdata set provided by Eurostat (Eurostat, 2005a). This survey collects comparable data from 26 European countries, offering information on economic living conditions, demographic variables, and status attainment. The EU-SILC data have been collected on a yearly basis since 2003, and are available in two different formats, both of which stem from the same collection process and refer to the same sample: a *longitudinal version* revealing the panel structure of the measurements, and a *cross-sectional version*

simulating a pooled cross-sectional dataset. We are using the panel version as this allows us to identify entrants and re-entrants, and to track them after they experience a labour market event. Additionally, we are able to harmonize information according to time, as variables collected in the yearly interviews refer to different periods. In this study, waves 2003 to 2007 from the 2007 longitudinal version of the EU-SILC are used.

We match this data with institutional, country-specific variables collected in macrodata projects, which enables us to model institutional and individual characteristics simultaneously. The combined hierarchical data cover 25 countries (as measurements from Germany are not included in the EU-SILC longitudinal version) and offer 237,830 observations of employed persons. 25,339 measurements of five countries had to be excluded due to lack of macrodata and 12,808 observations cannot be used due to missings in micro-covariates. For 21,389 observations, questions on wages do not apply as no income is indicated in a filter variable. Of the remaining 178,294 measurements, 27,355 (or, rather, 15.3%) have a missing value in gross wage, although we use a generated variable, which includes imputed values.⁴ Thus, the net sample consists of 150,939 observations of 95,738 persons clustered in 20 countries, contributing between 2,081 and 13,127 observations.⁵

Concerning the unbiasedness of estimators, drop-outs of entire countries are unproblematic as our theory does not refer to the specific macro framework represented by the EU-SILC (but rather to modern economies in general). However, we have to assume that concepts of interest do not influence the nonresponse likelihood on the individual level. As we are mainly interested in complex macro/micro interactions and not in genuine impacts of individual-level variables, this assumption seems plausible to us.

Concepts and Operationalisation: Micro Characteristics

The hypotheses refer to employed persons. The sample therefore consists of individuals between the ages of 17 and 64 who reported being in dependent part-time or full-time employment for at least seven months of the year of the interview (Lohmann, 2008; 2009). This information is generated on the basis of the monthly job calendar.

According to the hypotheses, the *low-wage risk* is used as the dependent variable in the analysis. The mechanisms we described are related to a discourse on increasing uncertainty and address the individual economic situation; therefore, the measurement of low-wage refers to the monthly gross employee income (OECD, 1996; Bosch, 2009).⁶ Monthly income is constructed on the basis of a variable measuring the yearly employment income, which is divided by the number of months in self-reported dependent full-time or part-time employment. The low-wage threshold is defined as two-thirds of the country- and year-specific median of the distribution of monthly wages of dependent employees (OECD, 1996), and is calculated on the basis of EU-SILC data.

Labour market entrants are defined as persons who entered the labour market *a)* from the educational system or *b)* from a phase of unemployment that followed the phase of primary education. The measurement is based on a variable that refers to the age at which a person started his or her first regular job.⁷ An observation is identified as referring to a labour market entrant if the first regular job was taken up within the two calendar years prior to the measurement. This strategy takes the gradual nature of the entrance process into consideration (Scherer, 2001).

In the analysis, two types of *labour market re-entrants* are considered separately: re-entrants from economic inactivity and re-entrants from unemployment. Both groups are identified by a variable measuring the most recent change in the individual's activity status. If a person reports a transition from unemployment to employment since the last interview in wave t , (s)he is regarded as an entrant from unemployment in waves t and $t+1$. If a person reports a transition from retirement or "other inactivity" to employment since the last interview in wave t , (s)he is regarded as an entrant from inactivity in waves t and $t+1$. All employees who do not qualify as entrants and re-entrants according to this definition are considered as *insiders*.

Concepts and Operationalisation: Macro Characteristics

The information on context variables stems from OECD statistics and the ICTWSS database. All macro variables refer to the situation in either 2005 or 2006. The indicator for the *degree of centralisation* is taken from the ICTWSS database (Visser, 2009), and refers to both the authority of central confederations over their affiliates and the level at which bargaining takes place. To measure the degree of *decommodification*, a policy-based indicator as provided by Esping-Andersen (1990) is desirable but not feasible, due to the limited number of cases provided at the macro level. Thus, a measure of *average net replacement rates during unemployment* (OECD, 2010) is applied in this study (Lohmann, 2008; 2009).

Many indicators measuring the *degree of labour market regulation* actually reflect outcomes of bargaining processes. However, our theoretical model regards bargaining systems and labour policies as two distinct dimensions. Therefore, the indicator used in the analysis must

be exclusively based on legislative measures; a condition which is met by a score measuring the *strictness of regulation of temporary employment* (OECD, 2009). This indicator is constructed on the basis of items referring to the maximum number of successive fixed-term and temporary work contracts, the maximum cumulated duration of such contracts, the types of employment that temporary work agencies are entitled to arrange, and the extent of settlements justifying fixed-term contracts.⁸ Both reform indicators' scales are reversed in the analysis to directly measure de-regulation and commodification.

Estimation

Statistical testing of the hypotheses is undertaken within a logistic regression framework: the estimation of coefficients refers to the *logged odds* of the low-wage risk and is based on a *maximum likelihood* algorithm. In order to account for the hierarchical structure of the data, differences in the level of low-wage employment across countries are specified as random variables. This is done by adding the variance of (residual) country-specific heterogeneity to the group of parameters to be estimated.⁹ This procedure is usually labelled *multi-level analysis* (Snijders and Bosker, 2012) and is often discussed critically if the number of analysed macro units is low. However, we assume – based on results from simulations by Mass and Hox (2005) – that point-estimates and standard errors of cross-level interactions (which are the core of our interest) are unbiased in our design (see also Snijders and Bosker, 2012). Equation (1) summarises the model and specification.

$$\begin{aligned}
\ln\left(\frac{p(lw)}{1-p(lw)}\right) = & b_0 + (b_1 * re-entrant) + (b_2 * entrant) \\
& + (b_3 * cent) + (b_4 * dereg) + (b_5 * com) \\
& + (b_6 * cent * dereg) + (b_7 * cent * com) \\
& + (b_8 * cent * re-entrant) + (b_9 * dereg * re-entrant) + (b_{10} * com * re-entrant) \\
& + (b_{11} * cent * entrant) + (b_{12} * dereg * entrant) + (b_{13} * com * entrant) \\
& + (b_{14} * cent * dereg * re-entrant) + (b_{15} * cent * com * re-entrant) \\
& + (b_{16} * cent * dereg * entrant) + (b_{17} * cent * com * entrant) \\
& + res(country) + res(individual)
\end{aligned}
\tag{Eq.1}$$

The first two lines display the main effects of the micro and macro variables. In line 3, interactions at the macro level are specified, while lines 4 and 5 contain simple cross-level interactions. In lines 6 and 7, complex interactions (measuring differences of micro determinants across institutional settings) are specified. The error part of the model in line 8 contains an individual- and a country-specific component, which are treated as two separate sources of residual variance within the random effects estimation.

The unbiasedness of estimators b_x is conditional on the assumptions that *a)* the composition of individuals does not vary systematically across different institutional settings and *b)* integrated institutional variables do not transport main or interaction effects of unobservable macro characteristics. As the construction of coefficients is based on cross-sectional and not longitudinal variance, we try to rule out composition effects and alternative macro explanations by integrating a set of controls in the model.

We control for basic socio-demographics by integrating *gender* and *age* (which we allow to have a non-linear effect). The *household context* is specified via a variable indicating whether children live in the household and a set of dummy variables measuring the number of employed persons. Additionally, *occupational status* is controlled by specifying ISCO-88 main groups¹⁰ and *education* by integrating a measure based on the ordinally scaled ISCED

Classification (UNESCO, 1998). Based on the OCED definition of low education, the ISCED levels are combined into three categories: “high” (ISCED 4-6), “medium” (ISCED 3) and “low” (ISCED 0-2). We additionally control for cross-level interactions with education to rule out that outsider-specific macro coefficients mediate differences in the effect of education across institutional settings. Furthermore, two major macroeconomic indicators are specified: the *GDP growth rate* (GDP) and the *unemployment rate* (UE). As the macroeconomic situation might influence not just the level of low-wage employment in a given context but also insider/outsider disparities, *cross-level interactions* with the two macro controls are also included.

To rule out biased estimators due to selective sampling or unit-nonresponse, we use a weight in all analyses that is a modified version of the EU-SILC standard weighting variable (Eurostat 2005b). As the research design regards countries as institutional frames that define a treatment mix for the individuals within them, every country in the sample is assigned the same impact. Additionally, every individual is weighted according to the prevalence of his or her socio-demographic characteristics within a given country’s population.

Results

Table 2 provides an overview of the countries in the analysis, institutional characteristics and country-specific low-wage rates. Within the group of countries used in the analysis, Hungary shows the lowest, and Austria the highest degree of centralisation (column 2). The figures in column 3 show that the UK is the country with the least restrictive policies on temporary employment, while Luxemburg has the strictest regulation policies. The

distribution of average net replacement rates across countries (column 4) approximately reflects regime type-boundaries. Accordingly, Italy shows the lowest rate, while the transfer systems in Denmark and Norway both replace more than three-quarters of the former income. The average low-wage rate among the countries under observation (column 5) ranges from 14% (Denmark) to 29% (UK & Ireland).

<Table 2 about here>

Table 3 shows the results of the multivariate analysis (we only present coefficients of main predictors and selected controls, fully displayed models are outlined in Table A2 in the appendix). In Model 1, main micro and macro predictors are specified. Model 2 additionally introduces simple cross-level interactions. Thus, it takes into account that insider/outsider disparities might differ systematically across institutional contexts. By integrating micro and macro controls to Model 1 and Model 2, it is ruled out that these differences are caused by composition effects, or that they mediate insider/outsider-specific effects of macroeconomic performance. However, the model assumes that impacts of institutional variables are not dependent on other macro variables. Model 3 loosens this assumption: here, triple interaction-terms are integrated. Their coefficients estimate whether the impact of deregulation and commodification on insider/outsider disparities is moderated by the degree of bargaining centralisation. Thus, this model reflects the hypotheses of this study. Again, it controls for macroeconomic characteristics and interactions at the same complexity level.

The low-wage risk of labour market insiders is, in general, significantly smaller than that of labour market outsiders (Model 1, Section B). However, it does not vary significantly with institutional characteristics (Model 2, A). Even with regard to the overall low-wage risk, no significant main effects of macro variables are estimated (Model 1, A). Additionally, the

impacts of deregulation and commodification on insiders' low-wage risk are not estimated to differ significantly according to the degree of centralisation (Model 3, A).

<Table 3 about here>

Entrants to the labour market have, in general, significantly higher low-wage risks than insiders, but a lower risk than both groups of re-entrants (Model 1, B). Coefficients of simple interaction terms in Model 2 (Section C) additionally estimate that differences between insiders and entrants increase with commodification and decline with deregulation. However, respective coefficients differ significantly across contexts with varying degrees of centralisation (Model 3, C): the higher the degree of centralisation, the more entrants' low-wage risk is predicted to rise (relative to insiders' risk) with increasing degrees of commodification and deregulation. Thus, the analysis confirms hypotheses H1a and H1b.

Re-entrants from unemployment have a higher low-wage risk than insiders (Model 1, B). However, this difference is estimated to decline significantly with increasing degrees of deregulation (Model 2, C). Model 3 finally does *not* predict that this impact of deregulation is influenced by the degree of centralisation. The same goes for the interaction with centralisation on commodification. Thus, hypotheses H2a and H2b are not confirmed by the analysis: the impact of labour policy reform measures on cleavages between re-entrants from unemployment and insiders is not shown to depend on the degree of bargaining centralisation.

The difference in the low-wage risk between insiders and *re-entrants from inactivity* is not predicted to differ significantly with varying degrees of deregulation and commodification (Model 2, B). However, regarding the respective coefficients as dependent on bargaining

centralisation (Model 3, C), we obtain significant estimators of the interaction terms: in contexts with low degrees of centralisation, re-entrants from economic inactivity profit from deregulation and commodification. In highly centralised contexts, however, their low-wage risk is predicted to increase with rising degrees of activation measures. Thus, the analysis confirms hypotheses H3a and H3b.¹¹

Figure 1 illustrates the substantial size of the complex interaction terms in Model 3 on the basis of predicted probabilities. The logged odds of having a low wage have been transformed into probabilities for an average employee with varying insider/outsider characteristics, and then compared across different prototypical institutional contexts. Under the assumption that coefficients are unbiased estimators of effects, the figure illustrates the impact of shifts in deregulation and commodification on insider/outsider disparities. More specifically, it contrasts the consequences of this shift in a context with an average degree of bargaining centralisation with the impact thereof in a highly centralised context.

<Figure 1 about here>

For a 35-year-old male labour market insider, Model 3 predicts a low-wage risk of 6.6% in an *average context* (with average degrees of centralisation, deregulation, and commodification). His low-pay probability is 0.6 percentage points higher in an *activating context* (with a similar degree of centralisation, but one standard deviation higher degrees of commodification and deregulation). However, in a highly decentralised context (with a one standard deviation higher degree of centralisation), the same shift in reform measures is estimated to decrease his low-wage risk by 1.3 percentage points (*centralised context* vs. *centralised and activating context*).¹²

According to the figure, the impact of labour policy reform measures on insider/outsider disparities in the low-wage risk depends heavily on the degree of bargaining centralisation: in a context with an average level of centralisation, a standard deviation increase in commodification and deregulation is estimated to raise the low-wage risk of the prototypical entrant by 4.3 percentage points. In a highly centralised context, the same change in reform measures predicts an increase in risk of 8.6 percentage points. When this difference is related to the dynamics of insiders' risk, the moderating effect of bargaining centralisation is even more accentuated: low-wage disparities between insiders and entrants are estimated to increase by 3.7 percentage points if degrees of deregulation and commodification are raised by one unit of the standard deviation – but only in contexts with an average level of bargaining centralisation. If bargaining is highly centralised, the same change in labour policies is predicted to increase entrant/insider disparities by 9.9 percentage points.

A similar pattern can be observed for re-entrants from inactivity. Assuming identical realisations in covariates, re-entrants' predicted low-wage risk is estimated to increase by 0.8 percentage points if a context shifts from *average* to *activating*. However, this group's low-wage risk is estimated to increase by 4.5 percentage points with a shift in deregulation and commodification in a context with a high degree of centralisation. Thus, depending on the degree of bargaining centralisation, a standard deviation increase in reform measures is either associated with a predicted increase of 0.2 percentage points (average centralised context) or 11 percentage points (highly centralised context) in low-wage disparities between insiders and entrants from inactivity.

According to the insignificant coefficients of triple interaction terms for re-entrants from unemployment, the prototypical track of their low-wage risk across the different institutional settings largely resembles the dynamics of insiders.

Conclusions and Discussion

In this study, it has been argued that labour market reform measures affect insider/outsider disparities in low-wage employment. The nature of this change was assumed to depend on the country-specific institutional frame of the labour market. In line with the theoretical model, multilevel multivariate analyses have revealed that the higher the degree of bargaining centralisation, the stronger the correlation of deregulation and commodification measures with insider/outsider disparities. As similar multilevel designs have been shown to produce accurate estimates (Maas and Hox, 2005; Snijders and Bosker, 2012), we refer to the coefficients of the multivariate analysis as *effects* in the discussion. However, the limited number of countries in the data required a parsimonious specification at the second level of our statistical model. Thus, we acknowledge that the underlying assumption of uncorrelated errors is strong.

Given this assumption, we conclude that the low-wage risk of *re-entrants from inactivity* is not affected by increasing levels of commodification and deregulation in an average centralised context. If bargaining is highly centralised, however, this group is substantially disadvantaged by increasing levels of reform measures. Similarly, in centralised contexts, commodification and deregulation are predicted to have an increased impact on the relative low-wage risk of *entrants to the labour market*. In contrast, in contexts with a low degree of

centralisation, the model predicts a decline in their relative low-wage risk with increasing deregulation and commodification. The same still holds true if an EPL measure (instead of centralisation) is regarded as the moderating institutional filter.¹³

Thus, the empirical evidence supports the assumption that centralised bargaining, as a key feature of a regime with closed employment relationships, channels effects of deregulation and commodification. In contexts with centralised bargaining procedures, insiders' positions are obviously associated with closure, and are protected from labour policy reform measures. Thus, negative consequences of reforms in such contexts are routed to entry positions. At the same time, up to a certain (low) level of bargaining centralisation, entrants and re-entrants from inactivity seem to benefit from the increase in competition and mobility associated with labour market reform measures. Therefore, our results contradict (or, rather, *modify*) a view that considers outsiders *generally* as losers of reform processes.

However, in contrast with findings for re-entrants from inactivity, results for *re-entrants from unemployment* do not fit this pattern: the degree of bargaining centralisation has not been shown to matter for this group when it comes to the impact of activation policies on their low-wage dynamics. The most straightforward explanation for this ambiguity is that there are differences in the socio-demographic composition of the two groups of re-entrants: while employed women are proportionally represented among re-entrants from unemployment, they are overrepresented in the group of re-entrants from inactivity. It is possible that the latter group's coefficient of institutional interaction mediates a gender-specific difference in the response to centralisation: women seem to be adversely affected by labour market reform policies if bargaining is centralised. This evidence calls for a more thorough analysis of the interaction between gender and institutions and suggests that

women should be treated as a separate group of labour market outsiders. Additionally, some ambivalent findings for re-entrants from inactivity might be explained with the overrepresentation of women in this group, too: as Robson *et al.* (1999) have shown, benefits of regulations on minimum wage levels do not extend to women as to men in modern economies. This might explain why entrants from inactivity are generally not affected by increasing levels of deregulation on minimum-wage levels (see Table A4).

Another shortcoming of our study is indicated by the positive point-estimates of variables measuring the number of employees within the household (see Table 2): obviously, the respective coefficients mediate the effect of being a secondary earner in the household. This finding implies that in certain cases, low-wage employment might reflect an individual choice. Besides household composition and other control variables, there possibly are other – unobservable – characteristics that drive processes of self-selection of outsiders into low-wage employment. This allows only for a cautious discussion of the *main* coefficients of insider/outsider characteristics. However, we assume the unobservables that influence outsider-specific self-selection into low-wage do not vary systematically across the specified institutional contexts. Given this assumption, we can interpret the coefficients of cross-level interactions as a social policy concern.

In this light, the adverse effects of deregulation and welfare state retrenchment on labour market entrants in contexts with centralised bargaining structures are alarming. Policies that channel low-wage risks to the early career phase seem particularly questionable in light of postponed family formation and declining birth rates in most European countries, which are widely viewed as the result of growing economic insecurities among young adults (Mills and Blossfeld 2003; Hofäcker and Blossfeld, 2011; Mills *et al.*, 2005). Obviously, in

contexts with closed employment relationships, policy makers face major challenges in dealing with potentially conflicting demands for labour market flexibility, on the one hand, and for support to family formation on the other. In such contexts, this study might be read as an argument for the implementation of specific institutional measures to secure economic stability in the sensitive early phase of the life course.

Notes

¹ Besides settlements of rather demanding nature, activating measures comprise also supportive elements for unemployed persons, like regularly interviews with counsellors and the provision of training or job creation programs (OECD 2005).

² General employment protection legislation (EPL) sometimes is discussed as an explicit second feature of closed employment relationships (Hofäcker and Blossfeld, 2011). Therefore, *EPL for regular contracts* is considered as an alternative moderating macro characteristic in this study.

³ In the literature, the introduction of deregulation while still retaining protections for previously existing standard employment relationships is often referred to as *partial deregulation* (Regini, 2000), and is discussed as a regime introducing flexibility solely at the margins of the labour market (Barbieri, 2009).

⁴ The EU-SILC regulations request that the contributing national institutions apply multiple imputation techniques on income non-response (Eurostat, 2005b). However, the regulations also acknowledge that imputation might not be feasible in certain cases. A country-specific overview on the share of imputed information is included in the appendix (Table A1).

⁵ A detailed overview on country-specific sample attributes and drop-out patterns is provided in the appendix (Table A1).

⁶ However, in a supplementary analysis (Table A5 in the appendix), we demonstrated the robustness of the results to a specification with the low *hourly* wage risk as dependent variable.

⁷ Vacation jobs, casual jobs and marginal jobs with a work schedule of fewer than 15 hours a week are disregarded in this variable.

⁸ This indicator might be considered as restrictive with regard to our concept of deregulation. We therefore performed supplementary analyses with alternative indicators of deregulation, which additionally address restrictions on part-time employment and the minimum-wage level (see Tables A3 and A4 in the appendix).

⁹ All multivariate analyses are computed with the statistical software package HLM (Raudenbush and Bryk, 2002). Data management has been performed with STATA (Statacorp, 2005).

¹⁰ In order to assess the magnitude of composition effects with regard to occupational groups, we performed a supplementary analysis without specifying occupational groups (see appendix, Table A5). However, this had no effect on key predictors.

¹¹ Specifically for entrants, models with alternative indicators of deregulation reveal similar results. For re-entrants from inactivity, however, an operationalisation based on minimum-wage-levels does not show the presumed coefficient (Table A4 in the appendix).

¹² See appendix Table A7 for a complete overview on predicted values.

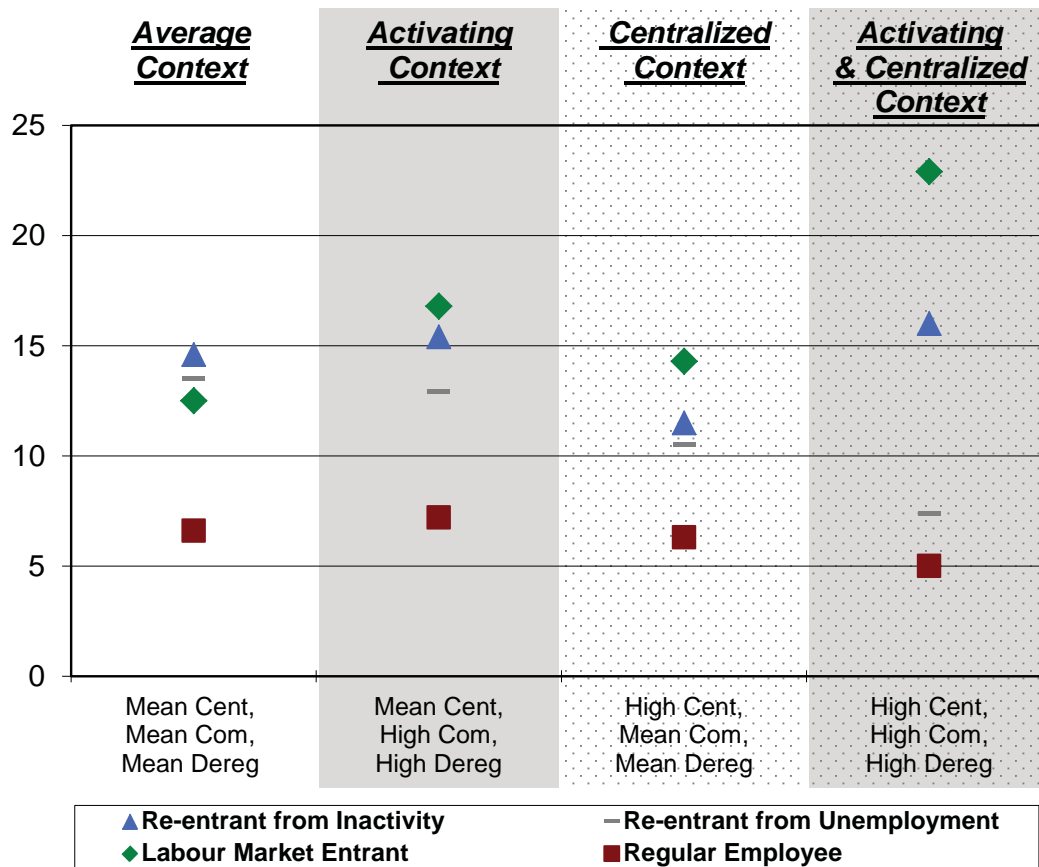
¹³ Modelling *employment protection on regular contracts* instead of *centralisation* (see note 2) reveals significant cross-level interactions with commodification and deregulation for labour market entrants (Table A6 in the appendix). This might be seen as additional evidence on the validity of the theoretical explanatory model and of the general idea that regimes with closed employment relationships channel risks produced by labour market reform to entrants (see also Mills *et al.*, 2005). However, for re-entrants from inactivity, this test fails.

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Figure 1: Labour Market Position and Low-Wage Risk in different Institutional Settings (Predictet Values to Model 3)



Note: Predicted probabilities of being in low-wage employment (in percent) for a 35 year-old male with an average level of education, employed in the service sector, with children and one additional earner in the household in a country with average GDP growth and unemployment rate. Own calculations on the basis of coefficients from Model 3 (Table 3).

Table 1 Hypotheses on the low-wage risks of outsiders

<i>Interaction of bargaining centralisation...</i>		<i>with</i>	
		deregulation	commodification
<i>on low-wage risk of</i>	entrants from education	+ (H1a)	+ (H1b)
	re-entrants from unemployment	+ (H2a)	+ (H2b)
	re-entrants from inactivity	+ (H3a)	+ (H3b)

Table 2 Macro indicators and low-wage rate, by countries

Country	Centralisation ^a	Regulation ^b	Decommodification ^c	Low-wage rate ^d
AT	0.76	1.5	62	0.23
BE	0.48	2.6	63	0.17
CZ	0.38	0.9	59	0.20
DK	0.44	1.4	79	0.14
EE	0.30	1.8	44	0.24
ES	0.46	3.5	50	0.21
FI	0.39	1.9	72	0.16
FR	0.24	3.6	61	0.19
GR	0.30	3.1	21	0.22
HU	0.25	1.1	42	0.25
IE	0.45	0.6	68	0.29
IT	0.35	2.1	8	0.20
LU	0.44	3.8	70	0.28
NL	0.59	1.2	70	0.24
NO	0.52	2.9	79	0.25
PL	0.29	1.8	59	0.25
PT	0.56	2.8	60	0.22
SE	0.53	1.6	73	0.21
SI	0.38	1.9	38	0.19
UK	0.31	0.4	61	0.29
Ø	0.42	2	57	0.22
Std	0.13	1	19	0.04

^a Degree of centralisation in 2006 according to ICTWSS Database (Visser 2009), Range: 0-1

^b Strictness of regulation of temporary employment (2005) according to OECD (2009), Range 0-5

^c Average net replacement rates during unemployment (2005) according to OECD (2010), per cent

^d Average low-wage rate 2003-2006, based on threshold of 66% of median monthly labour income. Own weighted calculation on the basis of EU-SILC (2007lt)

Table 3 Logistic regression: micro and macro determinants of the low-wage risk, *logged odds* (random effects specification, standard errors in brackets)

	Model 1		Model 2		Model 3	
	Main Predictors		Simple ¹ Interactions		Triple Interactions	
Section A: Macro Predictors: Institutions						
Degree of centralisation (Cent)	-0.25	(0.94)	-0.13	(0.97)	11.41	(7.06)
Deregulation on temporary contracts (Dereg)	0.08	(0.10)	0.06	(0.10)	0.56	(0.53)
Degree of commodification (Com)	0.002	(0.01)	0.003	(0.01)	0.05	(0.04)
Dereg * Cent					-1.25	(1.27)
Com * Cent					-0.11	(0.10)
Section B: Micro Predictors: Insider/ Outsider						
Position on the labor market, (ref.: 'Insiders')						
Entrant (ent)	0.39***	(0.03)	0.52*	(0.28)	5.08***	(0.80)
Re-Entrant from unemployment (re_unemp)	0.79***	(0.03)	2.36***	(0.26)	2.02**	(0.79)
Re-Entrant from inactivity (re_inact)	0.72***	(0.04)	1.31***	(0.32)	7.26***	(1.76)
Section C: Cross-Level Interactions						
Entrant specific inst. predictors						
Cent * ent			0.54*	(0.36)	-10.57***	(1.77)
Dereg * ent			-0.11***	(0.03)	-0.73***	(0.16)
Com * ent			0.01***	(0.002)	-0.04***	(0.01)
Dereg * Cent * ent					1.39***	(0.38)
Com * Cent * ent					0.15***	(0.04)
Re-Entrant (unemp.) specific inst. predictors						
Cent * re_unemp			-1.83***	(0.31)	-0.92	(1.95)
Dereg * re_unemp			-0.11***	(0.03)	0.03	(0.15)
Com * re_unemp			-0.003	(0.002)	-0.01	(0.01)
Dereg * Cent * re_unemp					-0.35	(0.36)
Com * Cent * re_unemp					0.01	(0.04)
Re-Entrant (inact.) specific inst. predictors						
Cent * re_inact			-0.19	(0.36)	-12.76***	(3.60)
Dereg * re_inact			-0.05	(0.04)	-1.09***	(0.36)
Com * re_inact			0.002	(0.003)	-0.05***	(0.02)
Dereg * Cent * re_inact					2.32***	(0.81)
Com * Cent * re_inact					0.14***	(0.05)
Controlls - Micro Predictors ²						
Demographics						
Age	-0.19***	(0.005)	-0.19***	(0.01)	-0.19***	(0.01)
Age * Age	0.002***	(0.0001)	0.002***	(0.0001)	0.002***	(0.0001)
Female (ref: Male)	1.39***	(0.02)	1.40***	(0.02)	1.40***	(0.02)
Household Characteristics						
Children in Household	0.27***	(0.02)	0.27***	(0.02)	0.27***	(0.02)
One additional employed person (Ref: none)	0.06***	(0.02)	0.06***	(0.02)	0.07***	(0.02)
More that one additional employed person (Ref. None)	0.19***	(0.02)	0.19***	(0.02)	0.19***	(0.02)
Education						
ISCED 3 (ref. ISCED 4-6)	0.44***	(0.02)	0.6***	(0.13)	1.38***	(0.41)
ISCED 0-2 (ref. ISCED 4-6)	0.94***	(0.03)	1.01***	(0.14)	0.52	(0.48)
Educ: Simple ¹ cross-level interactions with macros				X		X
Educ: Triple cross-level interactions with macros						X

Labour market characteristics (main groups ISCO-88: 1-9)	X		X		X	
Controls - Macroeconomics						
Main predictors (Unemployment, GDP)	X		X		X	
Simple ¹ cross-level interactions with outsiders			X		X	
Triple cross-level interactions with outsiders					X	
Intercept	-0.18	(0.86)	-0.40	(0.88)	-5.09	(3.02)
Additional Estimation Patameters						
SD Intercept: $\sigma(c)$	0.38		0.39		0.41	
Log likelihood	-63,053		-62,941		-62,913	

Data: EU-SILC 2003-2007, 20 countries, n=150,939

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, own, weighted calculations

¹ 'Simple' refers to products 'micro*macro', 'triple' to 'micro*macro*cent'

² Detailed description of control variables in method section

Table A1 The use of EU-SILC data in the analysis of low-wage predictors: country-specific drop-outs and mean imputation factors

Country	Number of observations ¹	...with information on macros	...with non-missing covariates	...with non-zero gross wage	...with non-missing gross wage	non missing-rate of gross wage-variable	Imputation factor in gross wage ²
Austria	9,381	9,381	8,840	7,863	7,787	99%	0.37
Belgium	6,248	6,248	5,884	5,294	5,294	100%	0.2
Cyprus	5,276	0	0	0	0	-	-
Czech Republic	10,393	10,393	10,069	8,938	8,915	100%	0.38
Denmark	3,857	3,857	3,673	3,480	3,391	97%	n/a
Estonia	8,178	8,178	7,768	7,381	7,205	98%	0.21
Spain	17,132	17,132	16,026	13,261	13,127	99%	n/a
Finland	5,612	5,612	5,348	4,448	3,904	88%	n/a
France	18,970	18,970	17,933	16,860	12,161	72%	0.24
Greece	7,359	7,359	7,062	5,748	2,089	36%	n/a
Hungary	8,016	8,016	7,494	7,035	6,849	97%	0.05
Ireland	4,561	4,561	4,378	3,588	3,588	100%	0.06
Iceland	2,490	0	0	0	0	-	-
Italy	27,018	27,018	25,782	22,906	9,262	40%	0.02
Lithuania	5,321	0	0	0	0	-	-
Luxembourg	12,777	12,777	12,200	11,549	11,197	97%	0.11
Latvia	4,828	0	0	0	0	-	-
Netherlands	7,458	7,458	6,762	6,331	6,193	98%	0
Norway	12,737	12,737	11,667	11,098	10,939	99%	n/a
Poland	17,016	17,016	15,609	12,135	12,081	100%	0.24
Portugal	6,672	6,672	6,146	5,590	2,319	41%	n/a
Sweden	5,330	5,330	5,118	4,878	4,727	97%	0
Slovenia	13,678	13,678	12,492	11,526	11,526	100%	0.04
Slovakia	7,424	0	0	0	0	-	-
UK	10,098	10,098	9,432	8,385	8,385	100%	0.0001
All	237,830	212,491	199,683	178,294	150,939	85%	0.12

Data: EU-SILC 2003-2007^{1t}

¹ Observations of employed persons (see method section)

² Reversed non-imputation factor (see Eurostat 2005b)

Table A2 Fully reported models to Table 3, *logged odds* of low-wage risk

	Model 1		Model 2		Model 3	
	Main Predictors		Simple Interactions		Triple Interactions	
Macro Predictors: Institutions						
Degree of centralisation (Cent)	-0.25	(0.94)	-0.13	(0.97)	11.41	(7.06)
Deregulation on temporary contracts (Dereg)	0.08	(0.10)	0.06	(0.1)	0.56	(0.53)
Degree of commodification (Com)	0.002	(0.01)	0.003	(0.01)	0.05	(0.04)
Dereg * Cent					-1.25	(1.27)
Com * Cent					-0.11	(0.10)
Micro Predictors: Insider/ Outsider						
Position on the labor market, (ref.: 'Insiders')						
Entrant (ent)	0.39***	(0.03)	0.52*	(0.28)	5.08***	(0.80)
Re-Entrant from unemployment (re_unemp)	0.79***	(0.03)	2.36***	(0.26)	2.02**	(0.79)
Re-Entrant from inactivity (re_inact)	0.72***	(0.04)	1.31***	(0.32)	7.26***	(1.76)
Micro/ Macro Interactions						
Entrant specific predictors						
Cent * ent			0.54*	(0.36)	-10.57***	(1.77)
Dereg * ent			-0.11***	(0.03)	-0.73***	(0.16)
Com * ent			0.01***	(0.002)	-0.04***	(0.01)
Dereg * Cent * ent					1.39***	(0.38)
Com * Cent * ent					0.15***	(0.04)
Re-Entrant (unemp.) specific predictors						
Cent * re_unemp			-1.83***	(0.31)	-0.92	(1.95)
Dereg * re_unemp			-0.11***	(0.03)	0.03	(0.15)
Com * re_unemp			-0.003	(0.002)	-0.01	(0.01)
Dereg * Cent * re_unemp					-0.35	(0.36)
Com * Cent * re_unemp					0.01	(0.04)
Re-Entrant (inact.) specific predictors						
Cent * re_inact			-0.19	(0.36)	-12.76***	(3.60)
Dereg * re_inact			-0.05	(0.04)	-1.09***	(0.36)
Com * re_inact			0.002	(0.003)	-0.05***	(0.02)
Dereg * Cent * re_inact					2.32***	(0.81)
Com * Cent * re_inact					0.14***	(0.05)
Controls - Macro Predictors						
Macroeconomics						
GDP growth (GDP)	0.02	(0.05)	0.04	(0.05)	-0.09	(0.22)
Unemployment rate (UE)	-0.02	(0.04)	-0.03	(0.04)	0.19	(0.18)
GDP * Cent					0.38	(0.63)
UE * Cent					-0.58	(0.50)
Controls - Micro Predictors						
Education						
ISCED 3 (ref. ISCED 4-6)	0.44***	(0.02)	0.6***	(0.13)	1.38***	(0.41)
ISCED 0-2 (ref. ISCED 4-6)	0.94***	(0.03)	1.01***	(0.14)	0.52	(0.48)
Demographics						
Age	-0.19***	(0.005)	-0.19***	(0.01)	-0.19***	(0.01)
Age * Age	0.002***	(0.0001)	0.002***	(0.0001)	0.002***	(0.0001)
Female (Ref: male)	1.39***	(0.02)	1.40***	(0.02)	1.40***	(0.02)
Household Characteristics						

Children in Household	0.27***	(0.02)	0.27***	(0.02)	0.27***	(0.02)
One additional employee person (Ref: none)	0.06***	(0.02)	0.06***	(0.02)	0.07***	(0.02)
More than one additional employee person (Ref: none)	0.19***	(0.02)	0.19***	(0.02)	0.19***	(0.02)
Labour Market Characteristics (Ref.: ISCO-88: 1)						
ISCO-88: 2	-0.06	(0.05)	-0.06	(0.05)	-0.06	(0.05)
ISCO-88: 3	0.31***	(0.04)	0.3***	(0.04)	0.31***	(0.04)
ISCO-88: 4	0.70***	(0.04)	0.69***	(0.04)	0.70***	(0.04)
ISCO-88: 5	1.63***	(0.04)	1.63***	(0.04)	1.63***	(0.04)
ISCO-88: 6	2.11***	(0.07)	2.12***	(0.07)	2.11***	(0.07)
ISCO-88: 7	1.18***	(0.04)	1.18***	(0.04)	1.19***	(0.04)
ISCO-88: 8	0.94***	(0.05)	0.94***	(0.05)	0.95***	(0.05)
ISCO-88: 9	2.01***	(0.04)	2.02***	(0.04)	2.02***	(0.04)
Controls - Micro/Macro Interactions						
Cent * ISCED 3			-0.59***	(0.16)	-2.45***	(0.95)
Dereg * ISCED 3			0.05**	(0.02)	-0.01	(0.08)
Com * ISCED 3			-0.001	(0.001)	-0.02**	(0.01)
Dereg * Cent * ISCED 3					0.14	(0.19)
Com * Cent * ISCED 3					0.04*	(0.02)
Cent * ISCED 0-2			0.02	(0.19)	1.29	(1.15)
Dereg * ISCED 0-2			0.04*	(0.02)	0.19**	(0.09)
Com * ISCED 0-2			-0.005***	(0.002)	-0.02	(0.01)
Dereg * Cent * ISCED 0-2					-0.38*	(0.22)
Com * Cent * ISCED 0-2					-0.002	(0.02)
GDP * ent			-0.18***	(0.02)	-0.42***	(0.07)
UE * ent			0.02*	(0.01)	0.04	(0.05)
GDP * Cent * ent					0.72***	(0.22)
UE * Cent * ent					-0.11	(0.16)
GDP * re_unemp			-0.08***	(0.02)	-0.11	(0.08)
UE * re_unemp			-0.02	(0.01)	0.01	(0.06)
GDP * Cent * re_unemp					0.08	(0.23)
UE * Cent * re_unemp					-0.08	(0.18)
GDP * re_inact			-0.1***	(0.02)	-0.14	(0.10)
UE * re_inact			-0.01	(0.02)	0.05	(0.09)
GDP * Cent * re_inact					0.01	(0.32)
UE * Cent * re_inact					-0.26	(0.23)
Intercept	-0.18	(0.86)	-0.40	(0.88)	-5.09	(3.02)
Additional Estimation Parameters						
SD Intercept: $\sigma(c)$	0.38		0.39		0.41	
Log likelihood	-63,053		-62,941		-62,913	

Data: EU-SILC 2003-2007lt, 20 countries, n=150,939

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, own, weighted calculations, standard errors in brackets

Table A3 Overview: indicators of labour market regulation, by countries

Country	OECD-Indicator ^a	Betero et al.-Indicator ^b	World Bank-Indicator ^c
BE	2.6	0.75	11
AT	1.5	0.50	11
DK	1.4	0.50	11
ES	3.5	0.91	67
FI	1.9	0.84	44
FR	3.6	0.69	78
GR	3.1	0.91	78
HU	1.1	0.59	11
IE	0.6	0.50	28
IT	2.1	0.72	61
NL	1.2	0.50	28
NO	2.9	0.50	44
PL	1.8	0.50	11
PT	2.8	0.90	33
SI	1.9	0.69	61
SE	1.6	0.72	28
UK	0.4	0.50	11
LU	3.8	-	-
EE	1.8	-	-
CZ	0.9	0.00	33

^a Strictness of regulation of temporary employment (2005) according to OECD (2009), range: 0-5. Based on sub-indicators measuring restrictions on fixed-term contracts and temporary work agency contracts

^b Existence and costs of alternatives to standard employment contracts according to Botero et al. (2004), range 0-1. Based on sub-indicators measuring restrictions on fixed-term contracts and part-time contracts

^c Difficulty of hiring Index (2005) according to The World Bank (2006), range 0-100. Based on sub-indicators measuring restrictions on fixed-term contracts and the ratio of minimum wage to the (average) value added per worker

Table A4 Additional models with alternative indicators of deregulation¹ (see Table A3), *logged odds* of low-wage risk

	Model A1		Model A2		Model A3	
	OECD-Indicator (reference model)		Botero et al. -Indicator		World-Bank -Indicator	
Section A: Macro Predictors: Institutions						
Degree of centralisation (Cent)	11.41	(7.06)	19.82*	(8.73)	9.24	(6.04)
Deregulation on temporary contracts (Dereg)	0.56	(0.53)	6.91*	(3.10)	0.03	(0.02)
Degree of commodifiocation (Com)	0.05	(0.04)	0.09*	(0.04)	0.03	(0.04)
Dereg * Cent	-1.25	(1.27)	-17.28*	(8.38)	-0.07	(0.05)
Com * Cent	-0.11	(0.10)	-0.21*	(0.10)	-0.07	(0.10)
Section B: Micro Predictors: Insider/ Outsider						
Position on the labor market, (ref.: 'Insiders')						
Entrant (ent)	5.08***	(0.80)	5.87***	(1.35)	2.95***	(0.74)
Re-Entrant from unemployment (re_unemp)	2.02**	(0.79)	0.68	(1.28)	1.39*	(0.73)
Re-Entrant from inactivity (re_inact)	7.26***	(1.76)	9.17***	(2.04)	2.13	(1.54)
Section C: Cross-Level Interactions						
Entrant specific inst. predictors						
Cent * ent	-10.57***	(1.77)	-12.92***	(3.34)	-5.85***	(1.73)
Dereg * ent	-0.73***	(0.16)	-5.46***	(1.44)	-0.02***	(0.01)
Com * ent	-0.04***	(0.01)	-0.07***	(0.02)	-0.03**	(0.01)
Dereg * Cent * ent	1.39***	(0.38)	11.62***	(3.68)	0.03**	(0.01)
Com * Cent * ent	0.15***	(0.04)	0.20***	(0.04)	0.12***	(0.04)
Re-Entrant (unemp.) specific inst. predictors						
Cent * re_unemp	-0.92	(1.95)	1.24	(3.30)	0.27	(2.03)
Dereg * re_unemp	0.03	(0.15)	1.76	(1.22)	0.01	(0.01)
Com * re_unemp	-0.01	(0.01)	0.02	(0.02)	-0.004	(0.02)
Dereg * Cent * re_unemp	-0.35	(0.36)	-4.79	(3.33)	-0.03	(0.10)
Com * Cent * re_unemp	0.01	(0.04)	-0.04	(0.04)	0.005	(0.04)
Re-Entrant (inact.) specific inst. predictors						
Cent * re_inact	-12.76***	(3.60)	-21.86***	(5.02)	-4.53	(3.17)
Dereg * re_inact	-1.09***	(0.36)	-6.42***	(1.78)	0.003	(0.01)
Com * re_inact	-0.05***	(0.02)	-0.06***	(0.02)	-0.02	(0.02)
Dereg * Cent * re_inact	2.32***	(0.81)	18.93***	(4.92)	0.01	(0.03)
Com * Cent * re_inact	0.14***	(0.05)	0.15***	(0.06)	0.06	(0.05)
Controlls - Micro Predictors ²						
Demographics						
Age	-0.19***	(0.01)	-0.19***	(0.01)	-0.19***	(0.01)
Age * Age	0.002***	(0.0001)	0.002***	(0.0001)	0.002***	(0.0001)
Female (Ref: male)	1.40***	(0.02)	1.35***	(0.02)	1.35***	(0.02)
Household Characteristics						
Children in household	0.27***	(0.02)	0.28***	(0.02)	0.28***	(0.02)
One additional employeeed person (Ref: none)	0.07***	(0.02)	0.05***	(0.02)	0.05***	(0.02)
More that one additional employed person (Ref. none)	0.19***	(0.02)	0.15***	(0.03)	0.15***	(0.03)
Education						
ISCED 3 (ref. ISCED 4-6)	1.38***	(0.41)	2.81***	(0.51)	0.64*	(0.38)
ISCED 0-2 (ref. ISCED 4-6)	0.52	(0.48)	1.97***	(0.58)	0.32	(0.45)
Educ: Simple cross-level interactions with macros	X		X		X	
Educ: Triple cross-level interactions with macros	X		X		X	
Labour market characteristics(main groups ISCO-88: 1-9)	X		X		X	

Controls - Macroeconomics

<i>Main predictors (Unemployment, GDP)</i>	X		X		X
<i>Simple cross-level interactions with outsiders</i>	X		X		X
<i>Triple cross-level interactions with outsiders</i>	X		X		X

Intercept	-5.09	(3.02)	-8.15**	(3.52)	-3.73	(2.43)
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Additional Estimation Patameters

SD Intercept: $\sigma(c)$	0.41		0.36		0.39
Log likelihood	-62,913		-54,456		-54,577

Data: EU-SILC 2003-2007lt, 20 countries, n=150,939 (model A1); 18 countries, n=132,537 (models A2, A3)

p<0.1, ** p<0.05, * p<0.01, own, weighted calculations, robust standard errors in brackets*

¹Original indicators have been reversed in order to measure de-regulation (see methods section)

Table A5 Additional models with modified specifications, *logged odds* of low-wage risk

	Model A4		Model A5		Model A6	
	Original full model		w/o ISCO-88 ¹		hourly low-wages ²	
Section A: Macro Predictors: Institutions						
Degree of centralisation (Cent)	11.41	(7.06)	10.36	(7.07)	14.29**	(5.27)
Deregulation on temporary contracts (Dereg)	0.56	(0.53)	0.61	(0.53)	0.61	(0.39)
Degree of commodification (Com)	0.05	(0.04)	0.03	(0.04)	0.05	(0.03)
Dereg * Cent	-1.25	(1.27)	-1.28	(1.27)	-1.57	(0.95)
Com * Cent	-0.11	(0.10)	-0.07	(0.10)	-0.11	(0.08)
Section B: Micro Predictors: Insider/ Outsider						
Position on the labor market, (ref.: 'Insiders')						
Entrant (ent)	5.08***	(0.80)	5.19***	(0.77)	4.39***	(0.81)
Re-Entrant from unemployment (re_unemp)	2.02**	(0.79)	1.90**	(0.76)	0.71	(0.79)
Re-Entrant from inactivity (re_inact)	7.26***	(1.76)	5.22***	(1.68)	4.14**	(1.81)
Section C: Cross-Level Interactions						
Entrant specific inst. predictors						
Cent * ent	-10.57***	(1.77)	-11.39***	(1.72)	-9.75***	(1.80)
Dereg * ent	-0.73***	(0.16)	-0.79***	(0.16)	-0.86***	(0.16)
Com * ent	-0.04***	(0.01)	-0.02*	(0.01)	-0.01	(0.01)
Dereg * Cent * ent	1.39***	(0.38)	1.63***	(0.37)	1.98***	(0.38)
Com * Cent * ent	0.15***	(0.04)	0.10***	(0.04)	0.07*	(0.04)
Re-Entrant (unemp.) specific inst. predictors						
Cent * re_unemp	-0.92	(1.95)	-0.49	(1.90)	2.50	(1.95)
Dereg * re_unemp	0.03	(0.15)	0.12	(0.14)	0.26*	(0.15)
Com * re_unemp	-0.01	(0.01)	-0.02	(0.01)	0.0004	(0.01)
Dereg * Cent * re_unemp	-0.35	(0.36)	-0.51	(0.35)	-0.72**	(0.36)
Com * Cent * re_unemp	0.01	(0.04)	0.04	(0.04)	-0.01	(0.04)
Re-Entrant (inact.) specific inst. predictors						
Cent * re_inact	-12.76***	(3.60)	-8.50**	(3.45)	-7.06*	(3.71)
Dereg * re_inact	-1.09***	(0.36)	-0.67**	(0.34)	-1.03***	(0.37)
Com * re_inact	-0.05***	(0.02)	-0.04**	(0.02)	0.02	(0.02)
Dereg * Cent * re_inact	2.32***	(0.81)	1.40*	(0.77)	2.43***	(0.83)
Com * Cent * re_inact	0.14***	(0.05)	0.12**	(0.05)	-0.06	(0.05)
Controls - Micro Predictors						
Demographics						
Age	-0.19***	(0.01)	-0.19***	(0.005)	-0.18***	(0.01)
Age * Age	0.002***	(0.0001)	0.002***	(0.0001)	0.002***	(0.0001)
Female (ref: Male)	1.40***	(0.02)	1.44***	(0.01)	0.84***	(0.02)
Household Characteristics						
Children in household	0.27***	(0.02)	0.28***	(0.02)	0.08***	(0.02)
One additional employeeed person (Ref: none)	0.07***	(0.02)	0.03	(0.02)	-0.05***	(0.02)
More that one additional employed person (Ref. none)	0.19***	(0.02)	0.21***	(0.02)	0.07***	(0.02)
Education						
ISCED 3 (ref. ISCED 4-6)	1.38***	(0.41)	2.02***	(0.39)	0.94**	(0.39)
ISCED 0-2 (ref. ISCED 4-6)	0.52	(0.48)	1.82***	(0.46)	0.89*	(0.51)
Educ: Simple ¹ cross-level interactions with macros	X		X		X	
Educ: Triple cross-level interactions with macros	X		X		X	

Labour market characteristics (main groups ISCO-88: 1-9)	X				X
Controls - Macroeconomics					
Main predictors (Unemployment, GDP)	X		X		X
Simple ¹ cross-level interactions with outsiders	X		X		X
Triple cross-level interactions with outsiders	X		X		X
Intercept	-5.09	(3.02)	-4.51	(3.03)	-5.35** (2.26)
Additional Estimation Patameters					
SD Intercept: $\sigma(c)$	0.41		0.41		0.30
Log likelihood	-62,913		-65,657		-58,147

Data: EU-SILC 2003-2007lt, 20 countries, n=150,939

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, own, weighted calculations, standard errors in brackets

¹ Orginal full model without specification of ISCO-88 main groups

² Dependent variable is the hourly low-wage risk. Hourly wages are constructed on the basis of monthly income and number of work hours per week

Table A6 Additional model with *EPL* (instead of *centralisation*) as moderator, *logged odds* of low-wage risk

	Model A7	
	w/ general EPL-Indicator ¹	
Section A: Macro Predictors: Institutions		
General employment protection (EPL)	1.43***	(0.38)
Deregulation on temporary contracts (Dereg)	0.24	(0.24)
Degree of commodification (Com)	0.09***	(0.02)
Dereg * EPL	-0.04	(0.08)
Com * EPL	-0.03***	(0.01)
Section B: Micro Predictors: Insider/ Outsider		
Position on the labor market, (ref.: 'Insiders')		
Entrant (ent)	4.27***	(0.76)
Re-Entrant from unemployment (re_unemp)	2.15***	(0.78)
Re-Entrant from inactivity (re_inact)	2.33**	(1.03)
Section C: Cross-Level Interactions		
Entrant specific inst. predictors		
EPL * ent	-0.94***	(0.22)
Dereg * ent	-0.67***	(0.20)
Com * ent	-0.06***	(0.01)
Dereg * EPL * ent	0.12**	(0.06)
Com * EPL * ent	0.02***	(0.005)
Re-Entrant (unemp.) specific inst. predictors		
EPL * re_unemp	-0.30	(0.24)
Dereg * re_unemp	0.36***	(0.14)
Com * re_unemp	-0.05***	(0.01)
Dereg * EPL * re_unemp	-0.02	(0.05)
Com * EPL * re_unemp	0.02***	(0.004)
Re-Entrant (inact.) specific inst. predictors		
EPL * re_inact	-0.25	(0.30)
Dereg * re_inact	-0.17	(0.18)
Com * re_inact	-0.006	(0.02)
Dereg * EPL * re_inact	0.03	(0.06)
Com * EPL * re_inact	0.003	(0.005)
Controls - Micro Predictors ²		
Demographics		
Age	-0.19***	(0.01)
Age * Age	0.002***	(0.0001)
Female (ref: Male)	1.40***	(0.02)
Household Characteristics		
Children in Household	0.27***	(0.02)
One additional employeeed person (Ref: none)	0.06***	(0.02)
More than one additional employeeed person (Ref. None)	0.18***	(0.02)
Education		
ISCED 3 (ref. ISCED 4-6)	0.44	(0.37)
ISCED 0-2 (ref. ISCED 4-6)	-1.22***	(0.45)
Educ: Simple ¹ cross-level interactions with macros	X	
Educ: Triple cross-level interactions with macros	X	
Labour market characteristics (main groups ISCO-88: 1-9)	X	

Controls - Macroeconomics

<i>Main predictors (Unemployment, GDP)</i>	X
<i>Simple¹cross-level interactions with outsiders</i>	X
<i>Triple cross-level interactions with outsiders</i>	X

Intercept	-4.85*** (1.23)
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Additional Estimation Patameters

SD Intercept: $\sigma(c)$	0.22
Log likelihood	-62,852

Data: EU-SILC 2003-2007, 20 countries, n=150,939

** $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, own, weighted calculations, standard errors in brackets*

¹ Difficulty of dismissal of employees on regular employment (2005) according to OECD (2009)

Table A7 Labour market positions and low-wage risk in different institutional settings
(predicted values to Model 3, see Figure 1)

	Average Context	Activating Context	Centralised Context	Activating & Centralised Context
Labour Market Entrant	12.5	16.8	14.3	22.9
Re-entrant from Inactivity	14.6	15.4	11.5	16
Regular Employee	6.6	7.2	6.3	5
Re-entrant from Unemployment	13,5	12,9	10,5	7.4

*Note: Predicted probabilities of being in low-wage employment (in percent) for a 35 year-old male with an average level of education, employed in the service sector, with children and one additional earner in the household in a country with average GDP growth and unemployment rates. Own calculations on the basis of coefficients from Model 3 (Table 3).
Data: EU-SILC 2003-2007lt*

Additional References

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