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Temporary Employment in Central- and Eastern Europe: Individual Risk Patterns and Institutional Context

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Editorial Note:

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work, atypical employment and returns to education.*

Abstract

This article uses data from the European Union Labour Force Survey (EULFS) 2004 for a comparative analysis of individual and contextual determinants of temporary employment contracts in Central and Eastern European (CEE) countries. Descriptive analyses reveal that temporary contracts are more often involuntary by nature and associated with relatively lower occupational status than permanent contracts in CEE countries compared to Western European average. Individual-level logistic regressions show that the general determinants of temporary employment are rather similar in both parts of Europe, but vary in their strength between countries. To evaluate the impact of macro-level influences on these cross-country differences in temporary employment risks, we focus on the risk of young people as one group of potential labour market outsiders. In general, young persons have a higher temporary employment risk, but their relative risk varies between countries. We use multi-level models implemented in a two-step estimation procedure and try to explain this cross-country variation with the intervening role of institutional influences under control of macro-structural conditions. Comparing CEE countries and Western European countries shows that neither employment protection of regular contracts nor its interaction with the level of employment protection of temporary contracts affects the young people's risk. Instead, we find a positive association between collective bargaining coverage as a measure of insider-outsider cleavages and the relative temporary employment risk of young persons.

Contents

1   Introduction

The labour market situation in Central- and Eastern European (CEE) countries changed dramatically during the course of transition from socialism to market economies. Before transition, CEE economies were characterised by a system of guaranteed employment and wages that led to high employment rates, no open unemployment, and an excess of labour demand over supply. With the onset of the transition employment rates dropped and unemployment increased substantially because the increased competition due to privatisation and free markets led to downsizing the over-staffed public sector whereas the evolving new private sector was not able to absorb the labour resources of dismissed workers (Nesporova, 2002; Rutkowski, 2006). As in Western Europe, rising unemployment and uncertainty through increased international competition and globalisation called for labour market deregulation (Esping-Andersen and Regini, 2000; Mills and Blossfeld, 2005). For example, temporary contracts, i.e. contracts of limited duration that end automatically after their expiry, were introduced as such instrument of external flexibilisation (Regini, 2000). While in former socialist times employment meant full time permanent work contracts, these new temporary employment forms are supposed to reduce the firing costs and increase the degree of flexibility because temporary employment enables flexible adjustments of labour inputs.

However, temporary work has become a subject of fierce discussions in the scientific literature and in the public debate. On the one hand, proponents of labour market flexibilisation argue that temporary contracts provide a "bridge" to employment for jobseekers, who find particular difficulties in integration into the labour market, and additionally provide benefits for businesses by reducing firing costs and by increasing flexibility. A contrasting perspective is that the temporary worker status is associated with lower wages, poor working conditions, and small chances for further promotion. For example, DiPrete et al. (2006) interpret temporary employment as a crucial new inequality in Europe because it erodes employment protection. Many empirical studies found evidence for this "segmentation" perspective in Western Europe (Nätti, 1993; Kalleberg, 2000; Booth et al., 2002; Giesecke and Groß, 2003; Forrier and Sels, 2003; Scherer, 2004). Given disadvantages of temporary employment, the question becomes important who enters such employment relations.

To date, however, very little is known about the nature and the individual determinants of temporary employment in CEE countries. Most available studies describe the institutional settings and the use of temporary contracts in CEE countries in a qualitative way commenting on aggregate figures and ignoring any individual determinants like age, gender, or education (Cazes and Nesporova, 2004; Riboud et al., 2002). We try to fill this gap by analysing the specific allocation processes of individuals into these labour market positions as well as their job quality consequences in Central and Eastern Europe. The focus will be on the group of youth as one representative group of labour market outsiders. Previous studies on Western Europe have shown that particularly the group of youth is confronted with temporary employment risks above average (a.o. Schömann et al., 1998; Kahn, 2005).

Furthermore, a particular shortcoming of the literature about temporary employment is that it has largely disregarded cross-country comparative analysis. The few existing studies that analyse macro-structural and macro-institutional influences on individual risk patterns using multi-level data are restricted to comparisons between Western European countries (Maurin and Postel-Vinay, 2005; Kahn, 2005; Polavieja, 2006). Employment protection legislation, unions' bargaining power, and structural factors, like the overall unemployment rate, are considered as central macro-level influences on the individual risk of getting a temporary contract. The experience of transition countries should allow for a better understanding of the intervening role of these labour market institutional arrangements and structural conditions for the individual risk patterns of temporary employment. The comparison between CEE countries and Western Europe could provide additional variation with respect to structural and institutional settings.

Therefore, this paper should give some new insights about the determinants and the role of temporary employment in CEE countries. Due to data limitations, we select eight new member states for our analysis: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. Specifically, the contribution of this paper should be threefold. First, we describe the distribution of temporary employment in CEE countries and investigate whether these contracts are associated with less favourable labour market positions, measured here by the voluntariness of temporary employment as a subjective indicator and the occupational status as an objective measure. Second, we examine with multivariate analysis the individual determinants of performing temporary work in CEE countries to see if the social inequality patterns observed and described in the literature concerning Western Europe exist in the formerly centrally planned economies as well. The focus is on the group of youth as one potential group of labour market outsiders. Other individual and firm characteristics are also considered. Third, the intervening role of institutional influences on young people's temporary employment risk is examined under control of structural influences. We concentrate on two central labour market institutions: employment protection secured by labour law regulations and unions' collective bargaining coverage. In a multi-level research design, implemented in a two-stage estimation procedure, we evaluate whether these institutions can explain the cross-national variation in the young people's temporary employment risk. Institutional influences are investigated by comparing the patterns in CEE countries with those of Western European countries.

This paper is organised as follows. Section 2 gives first descriptive evidence on the nature of temporary employment in CEE countries. In section 3, we discuss potential determinants of temporary employment as well as possible institutional contextual influences. Based on these theoretical arguments, we derive hypotheses for the empirical analysis. Section 4 describes the data set, variables, and the statistical methods used. In section 5, results of the empirical analysis are discussed. Section 6 concludes.

2   Temporary employment in Central and Eastern Europe

First descriptive evidence reveals that there is high variation in the extent of flexibilisation of employment relationships in CEE countries (cp. figure 1). At the lower bound we can identify most of CEE countries with overall temporary employment shares that remain well below 10%, which is also much less than the Western European average of 11.5%.[1] In contrast, the countries that clearly stand out are Poland and Slovenia with temporary employment rates of 21.6% and 13.4%, respectively. This picture of variation is similar to Western Europe where the share of temporary employment varies from 2% in Ireland to 30.8% in Spain. Additionally, the descriptive analysis of figure 1 shows that there is substantial variation with respect to the share of performing temporary work for young people as one potential group of labour market outsiders. As in Western Europe, young people have a substantial higher risk than the whole population of employees. The difference in temporary employment is especially pronounced in Poland and Slovenia, which suggests that young people might find it relatively more difficult to obtain stable jobs than other groups of jobseekers in these countries.

Figure 1: Temporary employment as a percentage of total employees by age groups in CEE countries
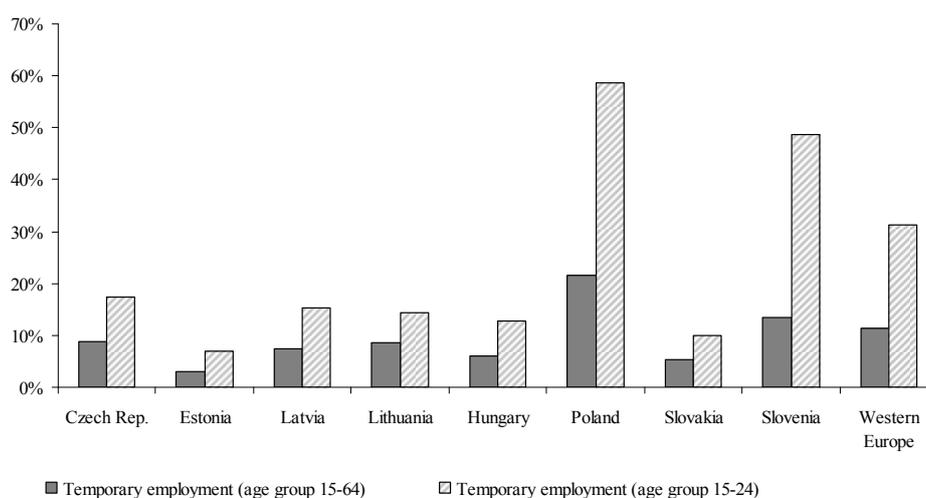
Note: (1) We restrict the sample to employees who no longer participate in education, i.e. we exclude students and apprentices

Source: EULFS 2004

An important question regarding flexible employment in CEE countries pertains not only to the incidence, but also to quality of temporary work. To assess the job quality of temporary employment we compare subjective and objective indicators. Starting with the subjective evaluation, it emerges that in

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[1]   Western Europe includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, and Sweden. Data for the UK are not available in the EULFS 2004.

CEE countries the temporary job is a position that most workers tend to avoid (cp. figure 2). The great majority of persons who held temporary jobs have not chosen this type of work contract voluntarily. Instead, most temporary workers have accepted temporary contracts because they couldn't find a permanent job. The incidence of taking up temporary contracts involuntarily ranges between 68.2% in Latvia and 89.2% in Estonia and is higher than the average of Western European countries (64.2%). A notable exception at this point is Slovenia, where this share reaches only 47.1%. This coincides with an exceptionally high share of persons in Slovenia who did not have a permanent contract. However, this might be at least in part a result of the fact that in Slovenia students and pupils who take up temporary work receive tax allowance (Slovenian Ministry of Finance, 2007). In general, however, the share of involuntary temporary work is higher in CEE countries than the average level observed for Western European countries. Obviously, with the exception of Slovenia, temporary employment is a less desired status in CEE countries than in Western Europe on average.

Figure 2: The share of involuntary temporary employment in CEE countries

■ Involuntary temporary employment
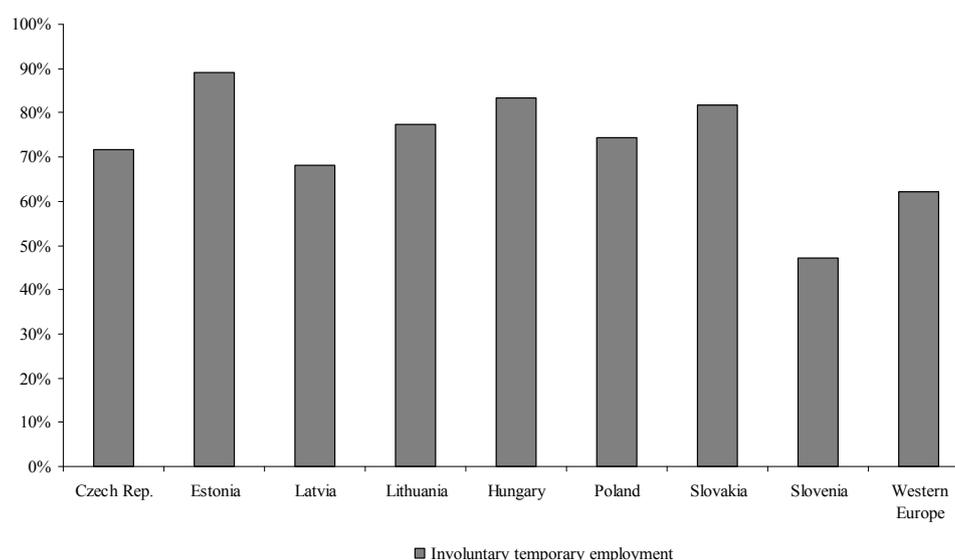
Note: (1) Involuntary temporary employment means that a person has a temporary contract because the person could not find a permanent job. (2) Estimates for Slovenia from Eurostat (2008)

Source: EULFS 2004

An objective evaluation is displayed in figure 3 in form of the difference in average occupational level of permanent and temporary status. To investigate the labour market effects of having a temporary contract, we analyse the occupational status of the current job. The occupational status is determined on the basis of the International Socio-Economic Index (ISEI), which represents an internationally comparable measure of occupational status (Ganzeboom et al., 1992). The ISEI assigns status scores to ISCO88 classified occupational titles based on a weighted average of the educational level and income level of persons employed within occupations. The association between temporary work and low level of occupational status is particularly strong in the Baltic States, while in Slovenia the tempo-

rary contracts register relatively lower occupational status differences.[2] These patterns also persist after controlling for characteristics such as age, education level, and industry within regression frame-work.[3] As documented in the literature summarising the patterns of flexibilisation of employment in Western Europe, temporary workers usually perform jobs associated with low occupational status (Kalleberg, 2000). However, the strength of this link varies across Europe, with CEE countries stand-ing out as labour markets where the "status penalty" for temporary worker status is exceptionally pro-nounced. Differences in average ISEI level between permanent and temporary positions vary between 2.6 ISEI points in Czech Republic and 11.4 ISEI points in Lithuania and are all higher than the Western European average of 1.8 ISEI points.

Figure 3: Temporary employment effects on occupational status (ISEI) in CEE countries

■ Difference in average ISEI level between permanent and temporary workers
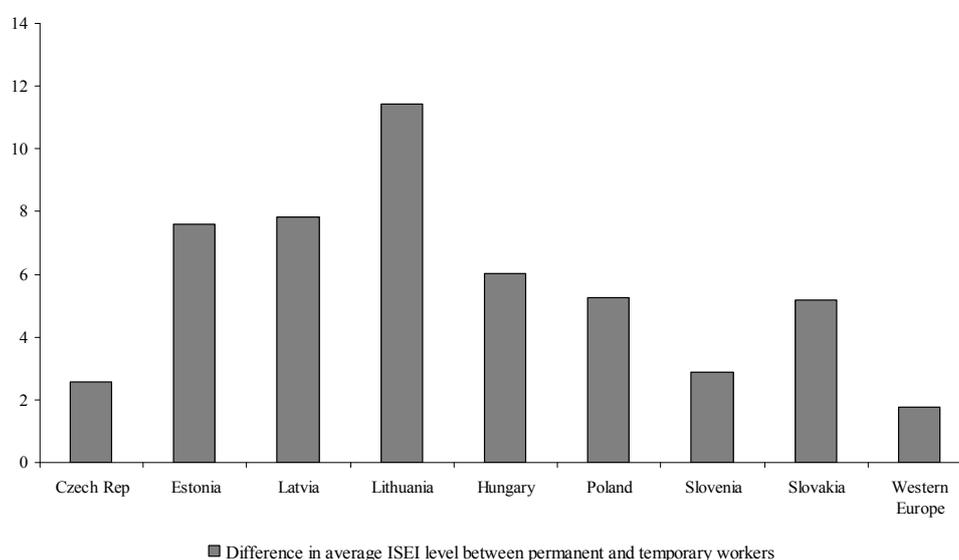
Source: EULFS 2004.

Summing up, the more negative than in Western Europe subjective assessment of temporary work and relatively lower occupational status of employees with temporary contracts in CEE countries underline the importance of this study focus. The uniqueness of CEE case study suggests that its closer investigation can bring new insights into academic debate concerning temporary employment. Variations of temporary employment risk in Eastern Europe combined with the variation in Western Europe might allow for a better understanding of the intervening role of labour market institutional arrangements and structural conditions for the individual risk patterns of temporary employment.

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[2] Interestingly, we find a positive interrelatedness between the subjective and objective evaluation of temporary employment. There is a positive correlation of 0.56 between the involuntariness of temporary employment and the status gap between permanent and temporary jobs in our sample of CEE countries. This pattern exists also in the full sample of Western and Eastern European countries with a correlation coefficient of 0.49.

[3] Results of regression of determinants of ISEI are not presented here; they are available on request from the authors.

3 Theoretical background

3.1 Individual risk patterns

The empirical evidence so far for Western Europe shows that temporary employment risk is related to individual characteristics (a.o. Schömann et al., 1998; Maurin and Postel-Vinay, 2005; Kahn, 2005; Polavieja, 2006). In general, it is our aim to investigate whether these individual social inequality patterns of temporary employment observed and described in the literature concerning Western Europe exist in the formerly centrally planned economies as well. We concentrate on the group of youth as one potential group of labour market outsiders. The preceding descriptive analysis has already shown that young people have a substantial higher risk than the whole population of employees in all CEE countries.

Theories differ about the mechanisms by which persons are allocated to temporary employment positions according to their individual characteristics. According to screening theory, employers may opt for temporary contracts as a form of prolonged probationary period that allows to better screen workers before employing them on a permanent basis (Arrow, 1973; Spence, 1973; Riley, 2001). Employers can be expected to recruit those applicants who can be considered to be both most productive and least costly for the kind of work required by the job. However, information is incomplete in the labour market, i.e. job applicants' abilities are not completely observable for the employer and reveal only after the worker's performance on the job has been monitored for some time. Then, temporary contracts allow firms to obtain information that is unavailable before hiring an employee and that serves as a screening device for the quality of the match between worker and job. For those who fail to come up with the employers' expectations, the contract will not be converted into a permanent one.

For example, educational credentials may serve as a decisive positive signal for unknown productivity. They are easily recognised by employers and one can derive the general expectation that the higher the applicants' educational level, the higher should be her productivity. Then, less educated persons are more likely to have a temporary employment contract than more highly educated persons. Furthermore, firms try to establish loose employment relationships particularly with young persons since they lack, in contrast to the more experienced workers, work experience, seniority, and networks because of their short employment history. The younger the worker, the less is known about the skills he or she possesses. Therefore, screening argument is especially relevant for young people, while it should be of less importance for prime age workers, who have already gained stable position in the labour market. We expect that young people face a higher risk of performing temporary jobs as compared with prime age workers (*Hypothesis 1*).[4]

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[4] Similar arguments can be derived from labour market segmentation theory (Doeringer and Piore, 1971; Saint-Paul, 1996). Permanent workers are found in the favourable primary segment, whereas labour market outsiders like young persons are concentrated in the secondary segment with temporary contracts.

3.2 The institutional context

The impact of individual characteristics on the risk of temporary work may be mediated by the specific national institutional arrangements. We focus on the institutional settings of the labour market, which can affect the risks of getting a temporary employment relationship. In particular, the role of employment protection legislation and unions' strength are considered.

While the objective of employment protection legislation is to reduce the exposure of employment relationships to unfair actions and to the risk of fluctuating incomes, these regulations may also increase the costs of hiring and firing workers. Firing regular employees with permanent work contracts may become very expensive due to high direct costs in form of severance payments as well as indirect costs that emerge from procedural difficulties (Bentolila and Bertola, 1990). From employers' point of view, it might be therefore cheaper to hire workers on the basis of temporary contracts, which have the advantage to reduce the firing costs because they end automatically after their expiry (Blanchard and Landier, 2002; Cahuc and Postel-Vinay, 2002; Güell, 2000; Polavieja 2006). The expected firing costs depend on the risk of dismissing the workers. As it was argued in the previous section, this risk is especially high for young people. Unlike prime age workers, young workers have short working history, and the risk of poor job-worker match is especially high in their case. Hence, more stringent employment protection for regular jobs is predicted to increase the relative incidence of temporary employment for young workers (*Hypothesis 2*).

Besides regulations of permanent contracts, one can expect that the regulation of temporary employment also affects the risk of getting a temporary contract. For example, Cahuc and Postel-Vinay (2002) or Güell (2000) derive from their theoretical models that lower firing costs for temporary jobs reduce the likelihood that a temporary job will be converted into a permanent one. However, the empirical evidence so far shows that temporary employment regulation has no effect on the incidences of temporary employment controlling for the strictness of employment protection for regular workers (Dolado et al., 2001; Booth et al., 2002; Kahn, 2005). Instead, the recent increase in the share of temporary employment in some Western European countries has been explained by partial deregulation, i.e. the combination of high employment security for workers on permanent contracts and the removal of all hitherto barriers for the use of flexible temporary contracts (Esping-Andersen and Regini, 2000). Therefore, we expect an interaction effect of the form that the positive impact of strict permanent employment protection on temporary employment risk is especially pronounced in countries with less restrictive regulations on the use of temporary contracts (*Hypothesis 3*).

The unions' power in negotiating wages and employment conditions is another labour market institution that might shape the distribution of individual risks of getting a temporary contract (Polavieja, 2006). The general argument of increased temporary work risk through strict regulations is only true in the case if wages cannot compensate for high firing costs (Lazear, 1990). If there are no wage floors for permanent workers that prevent this kind of compensation, then firing costs need not raise the overall cost of offering permanent positions. The mechanism of compensating the high firing costs with lower labour costs can be prevented by unions, which are the central labour market institution that

affects wage setting. If unions compress wages by setting the floor at a high level (Blau and Kahn, 1996), then collective bargaining may accentuate the effects of employment protection in shutting younger workers out of permanent jobs. Hence, we expect an interaction effect between regulation of permanent work and collective bargaining coverage. Specifically, more stringent employment protection on regular jobs raises young persons' risk of getting a temporary contract substantially more in countries with higher levels of collective bargaining coverage (*Hypothesis 4*).

The unions' power in negotiating employment conditions is additionally related to the scale of the insiders-outsiders cleavage that might shape the distribution of individual risk of getting a temporary contract. According to insider-outsider theory, unions represent collective interests of labour market insiders, who have already gained permanent employment relationships in the primary labour market segment (Lindbeck and Snower, 1988, 2002). Insiders have the strategies to prevent labour market outsiders from the secondary job segment to get access to their privileged positions. For example, they can negotiate high wages, which are above the level of the wage that could be offered by employers to less experienced – end therefore less productive – young workers. Labour market outsiders are not represented in the negotiations of the social partners; therefore, the actions taken by insiders result in more difficult integration of outsiders into the labour market and higher temporary employment risk. According to the literature, one can define labour market outsiders in different ways: as the unemployed, low-skilled workers or the labour market entrants. Considering that young people – contrary to prime age workers – are more often at the job entrants' positions, lack work experience, seniority and networks, and are rarely represented by unions in social dialogue, we examine to what extent the difference in risk of temporary work in this group (as compared to prime age workers group) can be explained by the differences in the level of union power. One can conclude that the stronger the representation of insiders' interests through strong unions, the lower is the relative chance for outsiders like young people to get permanent contracts (*Hypothesis 5*).

4   Research design

4.1   Data

In order to test these hypotheses, we use data drawn from European Labour Force Survey (EULFS), covering the second quarter of 2004. This database provides standardised, cross-sectional information on individuals compiled from national Labour Force Surveys. It contains information regarding labour force participation, employment characteristics, gender, age, education, and occupational status among others. The survey is designed to be representative of the working-age population in Europe, thus providing a unique database of large-scaled, comparable cross-sectional surveys of labour market behaviour and employment issues in EU countries (Eurostat, 2006). The EULFS data are available for eight new member states zof the European Union: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. For our multi-level analysis we include additionally

fourteen Western European countries.[5] We restrict the sample to employees aged 15-64 who no longer participate in education, i.e. we exclude students and apprentices.

4.2 Variables at the individual level

The central variable defining the type of employment contract is a binary indicator, coded 1 for temporary contracts and 0 in case of permanent contracts. Temporary employment is characterised by the agreement between employer and employee on objective conditions under which a job ends, such as a specific date, the completion of a task or the return of another employee who has been temporarily replaced. In particular, this applies to occasional, casual or seasonal workers, temporary agency workers, workers on probationary period as well as workers with a contract for a specific task (Eurostat, 2006).

The set of explanatory variables reflecting the individual determinants of the type of an employment contract contains personal demographic and employment characteristics as well as firm characteristics (for details, cp. table A.1). Standard demographic variables include gender and age. Gender is dummy-coded whereas age is grouped in intervals (15-24, 25-34, 35-54, and 55-64 years). To control for differences in educational attainment, we introduce the level of education. Highest level of education achieved is measured in terms of an augmented ISCED classification that distinguishes three levels of qualifications: having attained no more than lower secondary qualifications (ISCED 0-2), upper secondary and post-secondary, non-tertiary education (ISCED 3-4), and tertiary education (ISCED 5-6). We also control for firm characteristics in form of firm size and economic sector of employer. Firm size is differentiated in three groups: small firms (1-10 employees), medium-sized firms (11-50 employees), and large firms (more than 50 employees). Economic sector is measured according to nine aggregated NACE classification (cp. table A.1). Firm characteristics should capture compositional differences in the structure of the economy.

4.3 Variables at the contextual level

Cross-country variations in the institutional setting and macro-structural conditions of the labour market are also taken into account. In order to investigate to what extent the cross-national variation in individual risk patterns of temporary employment could be explained by the specific institutional arrangements we focus on two dimensions: employment protection legislation for temporary and permanent contracts and unions' power in wage setting mechanisms.

Employment protection legislation (EPL) influences employers' costs of hiring and firing workers. It is measured according to OECD (2004) indices that consider the legislation on permanent employment and temporary employment. Regular employment legislation regards the rules for hiring and firing

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[5]   Data are available for Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, and Sweden.

procedures concerning permanent workers, notification requirements, and severance payments. Temporary employment legislation regulates the use of temporary contracts, their renewal and maximum duration as well as the functioning of temporary work agencies. The higher the value of the EPL index, the stricter is the employment protection legislation. Table 1 reports the values for CEE countries and the average for Western Europe.

Table 1: Contextual level variables

	Regular Employment[1]	Temporary Employment[1]	Collective Bargaining Coverage[2]	Unemployment rate[3]
Czech Republic	3.3	0.5	27.5%	8.0%
Estonia	2.7	1.3	29.0%	10.1%
Hungary	1.9	1.1	34.0%	7.3%
Latvia	2.3	2.1	10.0%	10.3%
Lithuania	2.9	2.4	12.5%	11.0%
Poland	2.2	1.3	40.0%	19.7%
Slovakia	3.5	0.4	48.0%	19.0%
Slovenia	2.7	2.3	100.0%	6.1%
Western Europe (average)	2.4	2.2	70.5%	8.4%

Sources: 1) Figures for Western Europe, Poland, Czech Republic, Slovakia, and Hungary from OECD (2004: Table 2 A2.4; measures situation in 2003); for Estonia, Slovenia, Latvia, and Lithuania from Tonin (2005: Table 1; measures situation in 2001-2004); for Latvia from Eamets and Masso (2004: Table 4). 2) Carley (2002: Table 3; refering to situation 1999-2001); for Italy and Norway from OECD (2004: Table 3.3), experts estimates for Greece and Ireland. 3) Unemployment rates for age group 15-64 from EULFS 2004

While under the centrally planned economic system workers enjoyed a fairly high degree of employment protection, structural transformations and market-oriented reforms led to substantial moderation of workers' protection in the 1990s (Cazes, 2002). In the new millennium, regulation concerning regular employment varies strongly across CEE countries around the Western European average. In the Czech Republic and Slovakia the legislation is rather rigid, whereas the labour law imposes only few restrictions on regular dismissals in Hungary. A different picture emerges from the perspective of regulation on temporary work. Here, legislation is much weaker in most CEE countries than in Western Europe with the exception of Lithuania, Slovenia and Latvia.[6]

Union strength as a measure for insider power can be assessed by different indicators. We choose collective bargaining coverage that measures the percentage of all salaried workers unionised and not unionised who are covered by collective agreements (cp. table 1). Before 1990, industrial relations systems in CEE countries were characterised by central political and managerial control exercised by

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[6] However, EPL might be weaker in CEE countries because of differences between the written law and actual law enforcement. Economic agents may violate existing laws if law enforcement agencies are weak or if these laws cover only a small proportion of the total workforce (Eamets and Masso, 2004). Furthermore, in CEE countries alternative pathways to flexible employment like informal sector activities might be more pronounced (Rutkowski, 2006).

the state (Crowley, 2004; Kubicek, 2004). There was, in general, one single union, to which membership was quasi compulsory, and unions were mainly meant to act as a transmission belt for the implementation of policies and decisions taken by the state-party structure (Bronstein, 2003). During the transition, efforts were made to develop industrial relations typical of a market economy (Carley, 2002). After the abolition of mandatory membership union, membership and collective bargaining coverage sharply declined during the 1990s from the 100% coverage of the work force registered at the beginning of transition. Table 2 shows that collective bargaining coverage varies considerably from total coverage in Slovenia to 10% coverage in Latvia. Most countries have a low coverage rate of less than 40%. Compared to Western Europe, collective bargaining coverage is relatively weak in most transition countries (Crowley, 2004; Kubicek, 2004; Armingeon, 2006; Feldmann, 2006).

To account for macro-structural influences we control for the unemployment rate. There is considerable variation in unemployment rates between CEE countries (cp. table 1). On the one extreme, Hungary and Slovenia have low unemployment rates around 6%, whereas on the other extreme, Poland and Slovakia have high shares of about 19%. The unemployment measure should proxy for general labour market conditions in a country. Holmlund and Storrie (2002) show that depressed labour market conditions will create incentives for firms and individuals to use and accept temporary contracts. In contexts of high economic uncertainty, workers will have strong incentives to accept temporary jobs and hence escape the pressing risk of unemployment. Furthermore, depressed market situations increase firms' incentives to use temporary contracts to screen workers and adapt to volatile markets. Other macro-structural factors as crowding-out effects and educational gaps in the workforce are shown to be ill suited to explain the distribution of temporary work (Polavieja, 2006).

4.4 Statistical method

Since the EULFS database consists of individual-level surveys for each country, the data can be represented as a hierarchical, multi-level structure with two levels, where level-1 units are individuals (the respondents in each of the national labour force surveys) nested within level-2 units which are the countries (Snijders and Bosker, 1999). Such a structure allows for cross-national heterogeneity in the individual determinants of temporary employment. In this manner, we can investigate if individual-level relationships differ between countries and how this can be explained, for example, by national institutional settings. A general multi-level model can be formulated in the following way (a.o. Steenbergen and Jones, 2002):

$$Y_{ij} = \sum_{p=0}^{P} \beta_{pj} X_{pij} + u_{ij} \qquad (1)$$

where Y_{ij} is the dependent variable for an individual *i* nested in country *j*. Further, X_{pij} are *P* individual-level predictors like age, gender, or education, and u_{ij} is an individual level disturbance term. The model looks like a simple multivariate linear regression model but with the important difference that the regression coefficients β_{pj} vary across countries. We can model the variation of the individual-level

regression parameters in (1) as a function of one or more country-level institutional variables, like employment protection legislation or collective bargaining coverage, such that the general level-2 model is given by:

$$\beta_{pj} = \sum_{q=0}^{Q} \gamma_{pq} Z_{qj} + \nu_{pj} \qquad (2)$$

Here, the estimated parameters γ_{pq} on the second level are assumed to be fixed as in standard regressions. The country-level error terms ν_{pj} capture all variation that is not modelled by the Q country-level predictors Z_{qj}. Hence, we have error components on both the individual level and the country level. This specification is more sophisticated compared to a simple linear-interactive model where micro-level and macro-level variables as well as cross-level interaction terms are estimated in one equation with a single error term and, thus, no separate macro-level error (Steenbergen and Jones, 2002).

The above specified multi-level model may be estimated in two ways that are equivalent whereas the relative advantage and practicality of one procedure depends on the analysed problem and available data (Franzese, 2005). On the one hand, the parameters of each of the levels can be estimated simultaneously assuming a multivariate normal distribution of all individual- and country-level error components. On the other hand, a two-stage approach might be applied, where the individual-level parameters are first estimated within each country and then, in a second stage, the estimated coefficients from the first stage are used as dependent variables for the country-level regression. The former simultaneous multi-level procedure has the disadvantage that it pools individuals from all countries restricting the variables and model specification to be identical across countries. In contrast, the two-step approach allows different model specifications in each country and all individual level effects to vary across countries.[7] Moreover, outlier diagnostics are simplified in two-step multi-level models what is demonstrated in our empirical application below. The additional argument that simultaneous multi-level procedures have the advantage to "borrow strength" across units does not apply in our case because of our large sample sizes within each level-2 unit. Finally, simultaneous multi-level models assume joint normality of level-1 and level-2 error imposing stochastic complexities that might induce problems especially in the case of binary outcomes as in our empirical example (Franzese, 2005). Due to these considerations, we decided to implement the two-step procedure.

The first step involves running separate binominal logit models in each country that estimate the effects of individual-level attributes like age group, education or gender, on the likelihood of having a temporary contract.[8] In the second step, selected parameters from the first stage, like young people's

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[7] Simultaneous multi-level models for binary dependent variables usually allow only a limited number of individual level effects to vary across countries (random effects) because of convergence and computational problems in large samples. Such theoretically reduced models can suffer from serious misspecifications.

[8] This is equivalent to a fully interactive model in which country dummies are included in interaction with each individual-level variable, and variance parameters are permitted to vary across countries (Jusko and Shively, 2005).

temporary employment risk, become subject to our further investigation with respect to the intervening role of institutional factors. Since we use estimated parameters from the first stage as dependent variables in the second stage, the analysis must account for the uncertainty of these estimates. This uncertainty can be summarised as the sampling error ε_{pj} measured as the difference between the true value of the dependent variable β_{pj} and its estimated value $\hat{\beta}_{pj}$. Hence, the second stage regression residuals can be thought of as having two components (Hanushek, 1974; Lewis and Linzer, 2005). The first component ε_{pj} comes from the individual-level regressions, since each $\hat{\beta}_{pj}$ is estimated with error. The second component is the country-level error term v_p as specified in (2). Since the first error component is heteroscedastic because it differs across countries, for example because of different level-1 sample sizes, standard errors have to be corrected by weighting the second stage regression by the inverse of:

$$\sqrt{\mathrm{var}(\varepsilon_{pj}) + \mathrm{var}(v_p)} \quad (3)$$

It is straightforward to estimate the variance $\mathrm{var}(\varepsilon_{pj})$ of the first error component as the variance $\mathrm{var}(\hat{\beta}_{pj})$ of the estimated coefficient $\hat{\beta}_{pj}$ from the first stage. The second error component $\mathrm{var}(v_p)$ can be approximately estimated according to Borjas and Sueyoshi (1994) under independence assumption between individual- and country-level errors as

$$\frac{1}{J-(Q+1)}\left(\sum_{j=1}^{J}\hat{\omega}_{pj}^{2} - \sum_{j=1}^{J}\mathrm{var}(\hat{\beta}_{pj})\right) \quad (4)$$

where *J* is the number of countries and (*Q+1)* is the number of country-level explanatory variables (including the constant), i.e. *J-(Q+1)* is the degrees of freedom left in the second stage. $\hat{\omega}_{pj}$ represent the estimated residuals from the second-stage regression. Borjas and Sueyoshi (1994) provide evidence from Monte Carlo simulations that this weighting strategy has good small sample properties for models with binary dependent variables in the first stage, a relatively small number of level-2 units, and a large number of observations within each level-2 unit, as it is the case in our empirical study.

5   Empirical results

5.1   Individual risk patterns

In the first part of our empirical analysis, we investigate the determinants of temporary employment at the individual level in CEE countries and compare it to the average Western European allocation pattern. We examine the impact of individual determinants of temporary employment with binominal logit models estimated for all eight analysed CEE countries. The results are confronted with a pooled

regression for all available Western European countries. Table 1 displays the results of the binominal logit models for the probability of holding a temporary contract. The models estimate a baseline specification that includes individual characteristics, like age, gender, education, and firm characteristics, like firm size and industry dummies.

We find evidence for the main individual level hypothesis 1 in quite all CEE countries: young workers who lack work experience, seniority, and networks are more likely to find themselves in temporary jobs than the reference group of prime-age workers. The logit coefficient is significantly different from zero on the 1% level in all countries apart from Estonia (significant on the 10% level) and Latvia (where the effect is not significant). The comparison between CEE countries shows that there is variation in the temporary employment risk for young workers. For example, the implied odds ratio ranges from 2.2 $\left(e^{0.77}\right)$ in Lithuania to 12.1 $\left(e^{2.49}\right)$ in Slovenia indicating that young persons' risk of working within temporary instead of permanent contract is about two or respectively twelve times higher than the risk faced by prime age workers. These results for CEE countries in favour of hypothesis 1 are in line with the pooled logistic regression for Western Europe where the young persons are also confronted with a relatively higher temporary employment risk. The latter result is well known from the existing literature (a.o. Kahn, 2005).

The other individual level variables have mostly the expected effects. For example, we find that the higher the level of education, the lower the risk of temporary work in all CEE countries apart from Estonia where the effect is not significant, which might be related to the smaller sample size. This mirrors the result from the pooled regression for Western Europe where the better educated workers also have better and more stable employment conditions than the less-educated ones. Furthermore, there is no clear gender bias in the risk of getting a temporary contract. In some countries, like Czech Republic, Slovakia and Slovenia, women still have a higher risk of getting a temporary contract. In other countries, like Hungary and Lithuania, they even have a significantly lower risk than men. Firm characteristics also matter in the micro-level regressions. For example, firm size has a significant negative impact in all CEE countries despite in Slovakia and not for the pooled regression for Western Europe.

In general, we find rather similar individual risk patterns of temporary employment in CEE countries and Western Europe. There is a certain degree of heterogeneity within CEE countries in line with our descriptive evidence. We will try to explain these cross-country variations in temporary employment risk in whole Europe in the following subchapter.

Table 2: Results of logistic regression analysis of getting a temporary contract: logit effects

|	Czech Rep	Estonia	Hungary	Lithuania	Latvia	Poland	Slovakia	Slovenia	Western Europe
Age (Ref.: 35-54)									
Age 15-24	1.23***	0.88*	1.05***	0.77***	-0.19	1.91***	1.11***	2.49***	1.11***
	(15.86)	(1.77)	(19.80)	(2.77)	(-0.55)	(24.56)	(7.29)	(17.80)	(7.29)
Age 25-34	0.49***	0.24	0.44***	0.02	0.06	0.74***	0.69***	1.30***	0.69***
	(7.43)	(0.64)	(10.25)	(0.09)	(0.27)	(13.70)	(5.26)	(12.36)	(5.26)
Age 55-64	1.13***	-0.91	-0.26***	-0.44	-0.38	-0.14	1.56***	0.47**	1.56***
	(16.44)	(-1.44)	(-3.33)	(-1.39)	(-1.05)	(-1.16)	(10.14)	(2.33)	(10.14)
Female	0.42***	-0.19	-0.27***	-0.51**	0.11	0.04	0.21*	0.41***	0.21*
	(7.56)	(-0.52)	(-6.77)	(-2.55)	(0.50)	(0.72)	(1.81)	(4.08)	(1.81)
Education (Ref. ISCED 1-2)									
Medium education (ISCED 3-4)	-0.62***	-0.37	-0.82***	-1.00***	-0.86***	-0.58***	-0.76***	-0.40***	-0.76***
	(-7.59)	(-0.89)	(-19.91)	(-4.29)	(-3.60)	(-7.19)	(-4.43)	(-2.94)	(-4.43)
High education (ISCED 5-6)	-0.80***	-0.60	-1.46***	-1.82***	-1.58***	-0.88***	-0.88***	-0.35**	-0.88***
	(-7.00)	(-1.09)	(-20.96)	(-5.57)	(-3.83)	(-8.77)	(-3.84)	(-2.09)	(-3.84)
Firm size (Ref. 1-10 employees)									
Firm size 11-50	-0.14**	-1.72***	-0.16***	-1.76***	-0.77***	-0.19***	-0.05	-0.35***	-0.05
	(-2.18)	(-4.56)	(-3.55)	(-8.45)	(-3.44)	(-2.85)	(-0.42)	(-2.96)	(-0.42)
Firm size >51	-0.41***	-1.64***	-0.48***	-2.67***	-1.33***	-0.58***	-0.13	-0.62***	-0.13
	(-6.22)	(-3.67)	(-9.80)	(-12.03)	(-4.49)	(-8.55)	(-0.90)	(-5.35)	(-0.90)
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pseudo-R²	0.05	0.14	0.06	0.31	0.15	0.11	0.08	0.13	0.08
N	20615	1486	47308	3577	1743	12422	8370	5330	8370

Note: (1) * p<0.10, ** p<0.05, *** p<0.01. (2) Z-statistics in parentheses. (3) Pooled logistic regression for Western Europe (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, and Sweden)

Source: EULFS, second quarter of 2004, own calculations

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5.2 The institutional context

We restrict ourselves to the risk of young persons as one central group of labour market outsiders and we investigate how the cross-country variation is related to institutional and structural conditions. Institutional influences are examined by comparing the patterns in CEE countries with those of Western Europe. As outlined in chapter 4.4 we use multi-level models estimated in a two-step proce- dure. In the first step, we estimate a simple individual level model according to formula (1) explaining the likelihood of having a temporary contract by age groups, education, gender, firm size, and indus- try. The model is estimated separately for each country (cp. table 2).[9] The relative risk of temporary work is measured by the logit coefficient from the first step comparing the chances of young people and prime age workers. The two-step procedure allows us to easily visualise our multi-level data in simple two-dimensional graphs. Figure 4 plots for each country the estimated young age slope coeffi- cient against the EPL index for regular employment.

Figure 4: Temporary employment risk and EPL index for regular employment
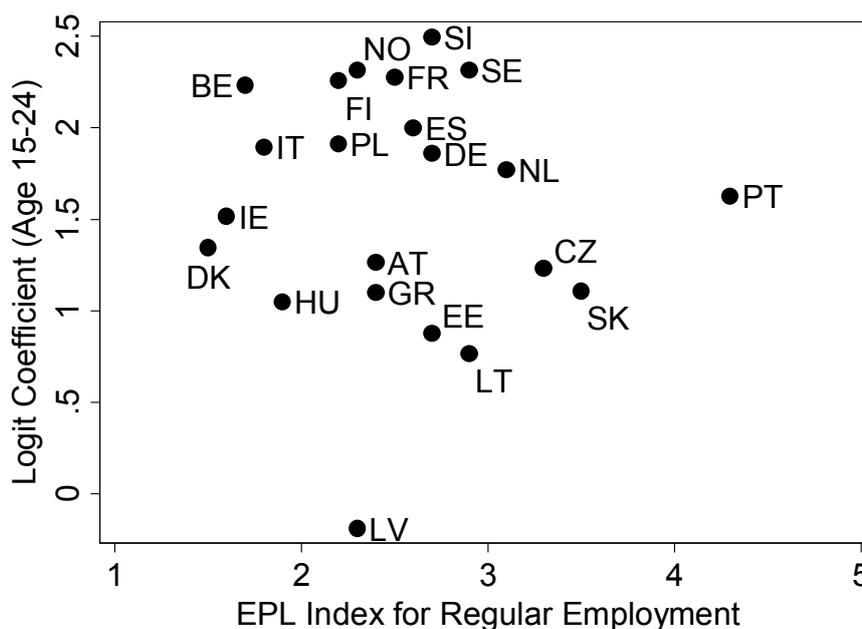
Source: EULFS, second quarter of 2004, own calculations

The first graphical inspection shows that contrary to what was stated in hypothesis 2 there is no clear linear relationship between the impact of young age on the risk of temporary work and regulation of permanent contracts. In CEE countries with moderate protection for permanent jobs, like Poland or Slovenia, we can observe that despite limited strictness of legislation young people have higher risk of temporary employment than prime age workers. In contrast, in Latvia, where this strictness is consid-

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[9] Results are not reported separately for each Western European country, but are available on request from the authors.

erably low, young persons have chances of getting a permanent contract close to the chances faced by prime age workers. Thus, even if firing regular employees with permanent work contracts may become very expensive due to strict employment protection, employers do not hire more workers on the basis of temporary contracts, although these contracts should have the advantage to reduce firing costs because they end automatically after their expiry (Bentolila and Bertola, 1990).

In order to confirm the above presented observation, we estimate a statistical model testing the hypotheses about how EPL for regular employment affects the individual level temporary employment risk. According to formula (2) we regress on the country level the estimated coefficients from the first step on EPL index for regular employment. Standard errors are corrected by weighting procedures following formulas (3) and (4). Table 3 reports results of different specifications.

Table 3: Temporary employment risk and EPL – second step regression estimates

	Model 1		Model 2		Model 3	
EPL regular	-0.02	(-0.10)	-0.00	(-0.01)	0.20	(0.38)
Unemployment rate			-4.42	(-1.39)	-4.33	(-1.14)
EPL temporary					0.40	(0.57)
EPL regular * EPL temporary					-0.11	(-0.44)
Constant	1.67**	(2.68)	2.02***	(3.09)	1.27	(0.89)
R-square	0.0005		0.0931		0.1185	
Log likelihood	-23.39		-22.27		-21.96	
Number of observations	22		22		22	

Note: (1) * $p<0.10$, ** $p<0.05$, *** $p<0.01$. (2) t-statistics in parentheses

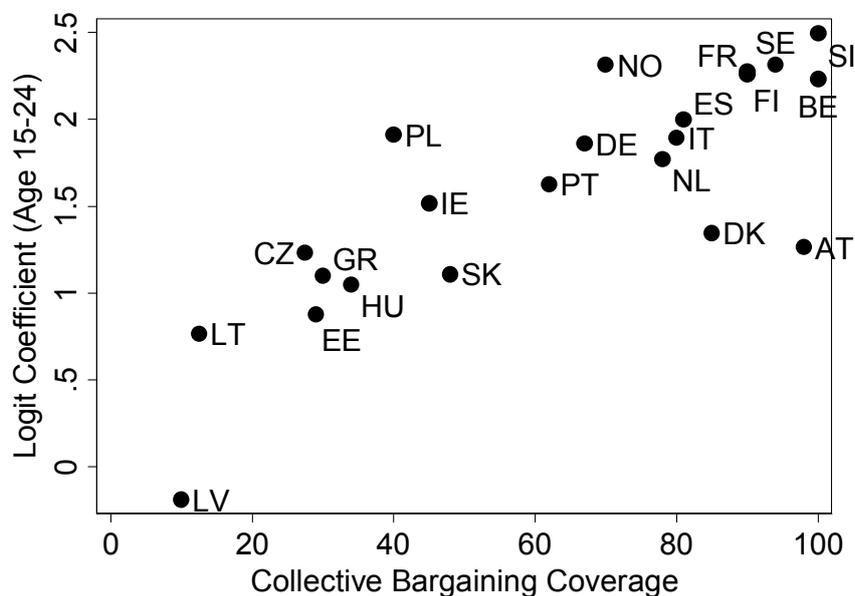*Source: EULFS, second quarter of 2004, own calculations*

Model 1 repeats the graphical exercise in a regression context. In accordance with the graphical intuition there is no significant positive relationship between EPL for regular employment and the impact of young age on the temporary employment risk. This is also reflected in the low r-square of almost zero. Hence, we find no evidence for hypothesis 2. Model 2 shows that the results do not change substantially when macro-structural conditions are controlled for by including the unemployment rate. Interestingly, the effect of unemployment rate is insignificant and shows an unexpected negative sign. Thus, in depressed labour markets with high unemployment, employers do not use relatively more temporary contracts for young persons because of depressed markets and/or young persons do not accept temporary contracts more often to escape the pressing risk of unemployment.

Finally, model 3 tests for the interaction effect between regulation of permanent and temporary jobs. The interaction term is negative but insignificant, i.e. we find no evidence for hypothesis 3 that expects that the positive impact of strict permanent employment protection on temporary employment risk is especially pronounced in countries with less restrictive regulations on the use of temporary contracts. Furthermore, the point estimate for the direct effect of temporary employment regulation displays the wrong sign. This might be interpreted – albeit with some reservations - by policy endogeneity: in case

of low temporary employment incidence, governments might not see reasons for strict temporary work legislation, whereas in case of high temporary employment risks, governments strengthen the restrictions of use of temporary contracts.

In sum, we do not find any evidence for significant influences of EPL on the likelihood of having a temporary contract, which is in line with the existing literature for Western Europe (Booth et al., 2002; OECD, 2004; Kahn, 2005). Another explanation suggested by some studies (see, for example, Eamets and Masso, 2004) is that high firing costs, approximated by high EPL, are no incentive to use flexible temporary work contracts because in some countries firms are able to find alternative ways to achieve flexibility.

Figure 5: Temporary employment risk for youth and wage bargaining

Source: EULFS, second quarter of 2004, own calculations

What seems to alter the impact of being on position of an outsider on the risk of temporary employment is the union's role in negotiating wages (cp. figure 5). We can observe that in most CEE countries, in which the role of social partners is not pronounced, the relative risk of young people to have temporary contracts is relatively low. Poland stands out in this respect as a country where, despite the limited role of collective wage bargaining, the relative temporary work risk of young people is considerable. However, these are not only CEE countries where low collective wage bargaining coverage coincides with low relative risk of temporary contracts. In Greece and Ireland, which have share of contracts that are subject to social partners' negotiations similarly low to most CEE countries, the chances of outsiders for stable employment are moderate as well. Latvia, the country with the lowest level of collective wage bargaining, is at the lower end of the scale with respect of inequality of chances for permanent contracts between insiders and outsiders. On the other hand, in Slovenia, a CEE country with the collective wage bargaining comparable to the level observed in Western coun-

tries like Belgium, Sweden, Finland or France, young people face the highest level of relative risk of temporary employment as compared with prime age workers. Summing up, even the location of country outliers in our sample is as expected as in the hypothesis 5 - the stronger the representation of insiders' interests, the lower is the relative chance for outsiders like young people to get permanent contracts.

Table 4: Temporary employment risk and collective wage bargaining – second step regression estimates

	Model 4		Model 5		Model 6	
Collective Bargaining Coverage (CBC)	0.02***	(7.69)	0.02***	(7.07)	0.01	(0.47)
Unemployment rate			0.69	(0.38)	1.21	(0.60)
EPL regular					-0.36	(-0.77)
CBC* EPL regular					0.01	(0.70)
Constant	0.35*	(1.93)	0.26	(0.85)	1.10	(0.97)
R-square	0.747		0.750		0.760	
Log likelihood	-7.87		-7.74		-7.29	
Number of observations	22		22		22	

Note: (1) * p<0.10, ** p<0.05, *** p<0.01. (2) t-statistics in parentheses

Source: EULFS, second quarter of 2004, own calculations

In order to confirm in quantitative way hypothesis 5, which states that union's role in wage negotiations increases the relative risk of temporary work for young people, whose interests are not represented in these talks, we apply again the two step regression technique (cp. table 4). In accordance with our hypothesis, the results point that the higher the share of contracts that are subject to collective bargaining, the higher is the impact of young age on temporary employment risk (cp. model 4). This association is significant and the model fits the data quite well, which is reflected by high r-square of nearly 74%. The result remains even robust when macro-structural conditions are controlled for by including the unemployment rate in model 5.

Finally, we allow for interactions between employment protection and collective bargaining coverage because we expect according to hypothesis 4 a connection between binding wage floors and the allocative effects of employment protection mandates. Model 6 shows that the interaction term has the expected positive sign, i.e. more stringent employment protection on regular jobs raises young persons' risk of getting a temporary contract substantially more in countries with higher levels of collective bargaining coverage. Thus, strict regulations increase the temporary employment risk only if wages cannot adjust downwards for higher firing costs because of insider power represented through unions. However, the effect is not significant.

6   Conclusions

While in former socialist times, employment meant full time permanent work contracts, new temporary employment forms were introduced in CEE to combat rising unemployment and uncertainty that have been induced by increased international competition and globalisation. The share of temporary contracts lies below 10% in most CEE countries and thus below the Western European average of 11.8%. The countries that clearly stand out are Poland and Slovenia with temporary employment shares of 21.6% and 13.4%, respectively, indicating a certain degree of heterogeneity between CEE countries. Whereas the goal of labour market flexibilisation through temporary contracts is to increase employment chances by reducing firing costs, many recent studies found empirical evidence for Western Europe showing that the temporary worker status is associated with lower wages, poor working conditions, and small chances for further promotion creating a segmented labour market (a.o. Kalleberg, 2000; Booth et al., 2002). Descriptive statistics also confirm this segmentation perspective for CEE countries. The incidence of taking up temporary contracts involuntarily ranges between 68.2% in Latvia and 81.9% in Slovakia and is higher than the average of Western European countries (64.2%). Only Slovenia is an outlier with a share of 47.1%. Furthermore, the job quality of temporary work defined in terms of relative occupational status is also lower in Central and Eastern Europe. Differences in average ISEI level between permanent and temporary positions vary from 2.6 ISEI points in Czech Republic and 11.4 ISEI points in Lithuania and are all higher than the Western European average of 1.8 ISEI points.

Based on multivariate individual-level analysis we find in general rather similar individual risk patterns of temporary employment in CEE countries and Western Europe. Yong persons, as one potential group of labour market outsiders, have a significantly higher risk of getting a temporary contract compared prime age workers in all CEE countries despite Latvia. The comparison between CEE countries shows that there is variation in the temporary employment risk for young workers. We tried to explain this cross-country variation with the intervening role of institutional and structural influences. In a multi-level research design, implemented in a two-stage estimation procedure, we find that neither employment protection of regular contracts nor employment protection of temporary contracts nor interaction effects between both components affects the likelihood of having a temporary contract, which is in line with the existing literature for Western Europe (Booth et al., 2002; OECD, 2004; Kahn, 2005).

What seems to alter the impact of being on position of an outsider on the risk of temporary jobs is the union's role in negotiating wages. In accordance with our hypothesis, the results point that the higher the share of contracts that is subject to collective bargaining, the lower is the relative chance for outsiders, like young people, to get permanent contracts. Obviously, unions represent especially collective interests of labour market insiders deepening insider-outsider cleavages in the labour market. Labour market outsiders, like young persons, are not well represented in the negotiations of the social partners and therefore the actions taken by insiders result in more difficult integration of outsiders into the labour market and higher temporary employment risk. This association is significant and the model fits the data quite well, which is reflected by high r-square of nearly 74%. The result remains even

robust when macro-structural conditions are controlled for by including the unemployment rate. More-over, we find a positive interaction effect between employment protection and collective bargaining coverage. This goes in line with the hypothesis that the temporary work risk increases through strict regulations only in case of wage floors that prevent wage adjustments (Lazear, 1990). Unions are the central wage setting institution that might cause wage floors in collective agreements. However, the effect is not significant.

The above analysis has its limitation by the fact that it concentrates on one point in time. To better disentangle the effect of structural and institutional changes on the social inequality structures of temporary employment, it is necessary to expand the analysis to longer time dimensions. Further-more, the analysis could gain through the use of individual panel data for different Western and Eastern European countries. The panel component would allow for taking dynamic selection effects into temporary employment as well as individual career consequences of temporary employment into account. This exercise is left for future research because appropriate data are still lacking especially for CEE countries.

7   References

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Appendix

Table A.1: Variable definitions

Variable name	Description
Demographics	
Age	Age group dummies
Age 15-24	15-24 years old
Age 25-34	25-34 years old
Age 35-54	Reference group: 35-54 years old
Age 55-64	55-64 years old
Female	Dummy for sex (1= female; 0= male)
Education	Classification according to ISCED
ISCED 0-2	Reference group: having attained no more than lower secondary qualifications (ISCED 0-2)
ISCED 3-4	upper secondary and post-secondary, non-tertiary education (ISCED 3-4)
ISCED 5-6	tertiary education (ISCED 5-6)
Industry	Classification according to NACE revision 1.1
Agriculture	Agriculture, hunting and forestry, fishing (NACE A, B)
Manufacturing	Reference group: Manufacturing; electricity, gas and water supply (NACE C, D, E)
Construction	Construction (NACE F)
Trade	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods (NACE G)
Hotels/Restaurants	Hotels and restaurants (NACE H)
Transport/Communication	Transport, storage and communication (NACE I)
Finance/Real Estate/Renting	Financial intermediation; real estate, renting and business activities, consulting (NACE J, K)
Public Administration/ Education/Health	Public administration and defence; compulsory social security; education; health and social work (NACE L, M, N)
Other services	Other community, social and personal service activities; activities of households; extra-territorial organisations and bodies (NACE O, P, Q)
Firm size	
Firm size 1-10	Reference group: Dummy for firm size (1=1-10 employees; 0 else)
Firm size 11-50	Dummy for firm size (1=11-50 employees; 0 else)
Firm size >51	Dummy for firm size (1=more than 50 employees; 0 else)