

Informal workers across Europe: Evidence from 30 European countries *

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Abstract

The European Social Survey data are used to analyze informal employment at the main job in 30 countries, focusing on employees without contracts and on distinction between informal and formal self-employed. Overall informality rate decreases from South to West to East to North. However, dependent work without contract is more prevalent in Eastern Europe than in the West, except for Ireland, the UK and Austria. Between 2004 and 2009, no cases found when unemployment and dependent informality rates in a country went up together, suggesting that work without contract is pro-cyclical in Europe. The dependent informality rate is inversely related to skills (measured by either schooling or occupation). The low-educated, the young (especially students), the elderly, and persons with disabilities are more likely to work informally, other things equal. In Southern and Western Europe, immigrants from CEE and FSU feature the highest dependent informality rate, whilst in Eastern Europe this group is second after minorities without immigrant background. In Eastern, Southern and part of Western Europe, immigrants not covered by EU free mobility provisions are more likely to work without contracts than otherwise similar natives. We provide evidence that exclusion and discrimination play important role in pushing employees into informality, whilst this seems not to be the case for informal self-employed. Both on average and after controlling for a rich set of individual characteristics, informal employees in all parts of Europe are having the largest financial difficulties among all categories of employed population (yet they fare much better than the unemployed and discouraged), whilst informal self-employed are at least as well off as formal employees. Finally, we find a negative and significant effect of the individual-level satisfaction with the national government on the propensity to work without contract in Eastern Europe, as well as in Western Europe.

JEL classification: *J08, J61, J71, O17, O52*

Keywords: *informal employment, discrimination, human capital, minorities, immigrants, tax morale.*

* This is a background paper for *In from the Shadow: Integrating Europe's Informal Labor*, a World Bank regional report on the informal sector in Central, Southern Europe and the Baltic countries (Task number P112988). The paper has greatly benefited from discussions with and suggestions by Truman Packard. I thank Alexander Tarvid for excellent research assistance. I thank Hartmut Lehmann, Jan Rutkowski, Indhira Santos and participants of IZA/World Bank Workshop *Institutions and Informal Employment in Emerging and Transition Economies* (Bonn, June 2011) for useful comments and suggestions. The usual disclaimer applies.

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Introduction

Paid work without legal contract is a phenomenon closely related to such fields of economic and social studies as shadow economy, tax evasion, trust in and efficiency of institutions, labor demand and labor supply, self-employment, worker mobility, labor market flexibility, social exclusion, social security, and many others. Understanding determinants of the size of informal workforce is thus important both for policy making and for design of institutional reforms. Yet research in this field, especially in European context, has been limited due to lack of data.

In this paper we compare the prevalence of informal employment in 30 European countries using data from the European Social Survey (2004-2009), further referred to as ESS. Our analysis excludes under-declared work (envelope wages) and does not distinguish declared and undeclared output. In other words, we focus on dependent workers without contracts, as well as on self-employed (a further classification of self-employed into ‘formal’ and ‘informal’ will be suggested below).

We address the following questions:

- How strongly do European countries, as well as Northern, Western, Eastern and Southern Europe¹ differ from each other in terms of levels of informal employment observed in the first decade of the 21st century? Does a stable ranking emerge?
- How does prevalence of work without contract among wage earners depend on their human capital and other characteristics? In particular, how do minorities, first and second generation immigrants compare to native workers?
- Is informal wage employment found only in small establishments in selected sectors, or is it more common?
- How are the levels of informal employment related to the economic cycle (and, in particular, how did they respond to the current crisis)?
- In what ways is the profile of an informal worker different from that of a person employed under a contract, on one hand, and of informal self-employed, on the other? Are these differences country-specific?
- Does a typical informal worker come from a poorer household than his/her counterpart who has an employment contract? What about informal self-employed?
- What are the main determinants of informal employment at the individual level?

ESS data have some features important for the analysis of informality which are, to our best knowledge, not available in other multi-country datasets (in particular, in EU LFS). First, ESS questionnaires for rounds 2, 3, and 4 (implemented in years 2004-2005, 2006-2007, and 2008-2009, respectively), allow users to identify employees working without a contract. By contrast, LFS data (both the anonymised data sets disseminated by *Eurostat* and, for most countries, also the original datasets) allow users only to distinguish between permanent and temporary contracts, while answer

¹ We will sometimes refer to these geographical areas as to „European regions”. Otherwise (i.e. when „European” is not added) „regions” stand for within-country regions.

‘no contract’ is not offered to respondents (like it was in round 1 of ESS)². Comparison of ESS data of rounds 2-4 with those of round 1 suggests strongly that if the answer ‘no contract’ is not included, the proportion of employees who do not answer the question about type of contract (or choose answer “Don’t know”) cannot, in general, be used as a proxy for proportion of informally employed dependent workers (see Table A2 in the Annex).

Second, in ESS data, a distinction can be made between self-employed persons with and without employees, and in the former case the number of employees is reported as well. This is important because in many studies which use data without direct information on contract, employees are ‘assigned’ to informal sector if they work in enterprises with 5 or fewer workers. It would then make sense to apply the same criterion to employers, i.e. to consider an employer with 5 or fewer employees to be working in informal sector. However, LFS and most other internationally comparable datasets provide, at best, only information on “number of persons working in the local unit” of respondent’s main job; in case of employers this of course cannot be considered as a proxy for the total number of employees working for him.

Third, ESS data are available not only for all EU countries, but also for Norway, Switzerland, Russia, Ukraine, and Israel (for various data-related reasons our analysis omits Luxembourg, Malta, Turkey, and Croatia).

The contribution of the paper to the literature on informal employment is three-fold. First, we use direct survey evidence (rather than proxies) to provide a multi-country longitudinal analysis of the levels, dynamics and profile of dependent employment without contract, as well as informal self-employment, in Europe. Importance of using direct evidence is highlighted in Henley et al. (2006), who find that “definitions of informality based on occupation and employer size seem the most arbitrary in practice”, and in Perry et al. (2007), who report (based on a survey conducted in 9 countries in Latin America) that “large firms... have a significant number of employees without social security contributions”. On the other hand, we are able to draw the line between informal and formal self-employment more accurately than most other studies (which often consider all self-employed informal).³ Importantly, for 25 countries, our analysis includes the early stage of the economic crisis of 2008-2010: field work of the round 4 of the ESS has been completely or mostly performed in 2008/q4 for 14 countries, and in 2009 for 11 countries in our sample.

² Moreover, in cases when the original questionnaire includes the „no contract” option, *Eurostat* groups these responses together with „temporary”, making it very difficult to distinguish informally employed from who is legally employed fixed-term workers.

³ ILO (2002) states that „the self-employed ...include high-end professionals and employers of registered enterprises, who are not considered to be informally employed. These categories are assumed to be small worldwide...”. We consider a self-employed person belonging to formal sector if he/she either works in a professional occupation (like lawyer, doctor, consultant, etc.) or has more than five employees. This approach is similar to the one found in Henley et al. (2006) and consistent with the ILO (2003) guidelines requiring that “The enterprise of informal employers must fulfill *one or both* of the following criteria: size of unit below a specified level of employment, and non-registration of the enterprise or its employees”. We show further (see Table 3) that in Eastern Europe formal self-employed account for about 2% of labor force, whilst in the rest of Europe this proportion is 3% and thus cannot be claimed negligible.

Second, we show that both on average and after controlling for a rich set of individual characteristics, informal employees in all parts of Europe are having the largest financial difficulties among all categories of employed population (yet they fare much better than the unemployed and discouraged), whilst informal self-employed are at least as well off as formal employees.

Third, we find a negative and significant effect of the individual-level satisfaction with the national government on the propensity to work without contract in Eastern Europe, as well as in Western Europe.

The rest of the paper is organized as follows. Section 1 briefly outlines the predictions of search and matching labor market model (Pissarides 2000) with regards to workers' sorting between formal and informal jobs. Section 2 describes prevalence and dynamics of informal employment in Europe. Section 3 compares profiles of informal and formal employees, as well as informal self-employed in terms of key personal characteristics and job profile (Section 3.1), exclusion factors (Section 3.2), and household income (Section 3.3). Section 4 presents econometric analysis of individual level determinants of work without contract among employees⁴. Section 5 amends this analysis by adding worker satisfaction with the national government to the explanatory variables and applying instrumental variable techniques. Section 6 concludes.

1 Theoretical framework

The literature provides several models describing the behavior of workers and firms, as well as the role of institutions and other macro factors in an economy with formal and informal sector⁵ in presence of labor market frictions Boeri and Garibaldi (2005); Boeri et al. (2011), De Paula and Scheinkman (2011), Basu et al. (2011) and Johansson (2011) among others assumed workers to differ just in one parameter (skill or labor market productivity); they predict that informal jobs are occupied by relatively low skilled workers. Our approach here is closer to that of Bosch and Maloney (2010), where workers have several attributes affecting their comparative advantage in one of the sectors, as well as search intensity. Our focus is on workers, whilst macro factors and institutions are considered exogenous⁶. Compared to Bosch and Maloney (2010), we provide a more detailed and structured description of workers' attributes and derive specific predictions with respect to determinants of informality.

Following Bosch and Maloney (2010), we do not explicitly model firms' behavior, treating demand for formal and informal labor as exogenous (yet allowing for regional heterogeneity). However, in the context of search and frictions model, we assume that firms try to minimize

⁴ See Hazans (2011a) for a more general analysis of determinants of labor market status, including employment formality.

⁵ Unemployment is considered either as an option within each of the two sectors or as a „third sector”.

⁶ See Hazans (2011b) for a more general approach. In a general equilibrium framework, Boeri and Garibaldi (2005) derive effects of some institutions; Basu et al. (2011) derive an ‘optimal’ minimum wage level.

recruitment costs; thus, to fill an informal job they target individuals belonging to specific groups known to be over-represented in the informal sector and/or to have difficulties in the formal labor market; in addition they might use networks of their existing informal employees. This way, “informal” social capital increases individual’s chances to receive an informal job offer. Likewise, “formal” social capital raises chances to receive a formal job offer.

At a given moment of time, utility of an individual i (from region R) from choosing any of available labor market states s (formal and informal dependent employment, formal and informal self-employment, unemployment and inactivity) is given by

$$U_{is} = u_s(V_i) + \delta_{Rs} + \varepsilon_{is}, V_i = \mathbf{x}_i\boldsymbol{\beta}_s + \mathbf{z}\boldsymbol{\gamma}_s, \quad (1)$$

where V is the expected present value of the best of the vacancies (including the present job if any) available for the agent in the state s , $\boldsymbol{\beta}_s$ and $\boldsymbol{\gamma}_s$ are state-specific returns to [vectors of] individual characteristics \mathbf{x}_i and macro factors \mathbf{z} , u_s are given utility functions, and δ_{Rs} , ε_{is} are region and individual level random errors. In the random utility maximization framework (McFadden, 1981), an agent chooses the state in which U_{is} is maximal. Formal dependent work might not be available to the most low-skilled workers, because formality is costly to the firms, and it does not pay to employ a low-productivity worker formally. This and other basic features of informal and formal jobs, along with the targeted recruitment process outlined above, suggest the following list of main individual determinants of informal (rather than formal) dependent employment (conditional on being an employee)⁷:

- (i) low skills (as measured by educational attainment, occupation, experience, etc.) and/or low unobserved productivity;
- (ii) strong preference for flexible working time and/or substantial volatility of desired working hours over the course of the year;
- (iii) low value placed on job security;
- (iv) large endowment of social capital relevant for the informal sector (belonging to a group or groups which is known to be over-represented in the informal sector and/or to have difficulties in the formal labor market: ethnic or linguistic minority, first or second generation immigrants, students, pensioners, persons with disabilities);
- (v) low level of tax morale and/or trust in state institutions.

Apart from the standard prediction that informal workers are likely to be less skilled, it follows that the age-informality profile is likely to be U-shaped. Indeed, younger and older workers are usually less productive than middle-aged ones and less prepared for a stable fulltime work; the young ones, especially students, and those in retirement age are also less concerned about job stability. Students and persons with disabilities, also are more likely than others to receive informal job offers (and, plausibly, to be less productive) than other workers, so we expect these groups to feature higher informality rates, other things equal.

⁷ See Hazans (2011a) for econometric analysis of agents’ sorting across all six labor market states.

Minorities, workers with immigrant background, as well as workers in less developed regions, are more likely to hold informal jobs because of large informal social capital which, in addition, might interact with low trust in institutions and in some cases with productivity problems caused by insufficient language skills.

With respect to gender and family status, the predictions are ambiguous because those whose family status suggests a strong preference towards flexible working time, are also likely to place high value on job security and be more risk averse in general.

2 Prevalence and dynamics of informal employment in Europe, 2004-2009

In this section we use the ESS data to compare prevalence of informal employment (in the main job) across 30 European countries and years 2004 to 2009. For 25 countries we will also show (in Table A3) that ESS-based results for 2004-2006 are well in line with the results of the Fourth European Working Conditions Survey (EWCS) conducted in 2005 (European Foundation for the Improvement of Living and Working Conditions, 2007); it is worth noting that ESS and EWCS have been coordinated by different research teams, and the fieldwork providers for the two studies have been also different in all but three countries. For few countries, we will also provide comparisons with other studies which have information on work without contract.

2.1 Measuring informal employment

Although international guidelines for a statistical definition of informal employment have been developed by ILO (see ILO, 2002; ILO, 2003; Hussmanns, 2004), the literature suggests a variety of approaches to identifying informal working relationships using, ‘legalistic’, ‘*de facto*’, or ‘productive’ definitions (see e.g. Henley et al., 2006; Perry et al., 2007; Bernabè, 2008; OECD, 2009; Pfau-Effinger, 2009). Legalistic definitions refer (in the simplest cases) to social security contributions or to employment status (self-employment vs. dependent employment) and, in the latter case, to employment contract. *De facto* (‘in law or in practice’) definitions take into account various situations when labor regulations are not applied, not enforced, or not complied with for any reason. Productive definitions rely on characteristics of the employer and/or the employed, e.g. size of establishment or occupation of a self-employed person. Combinations of these approaches are common; the ILO guidelines distinguish nine categories (cells) within informal employment (see ILO, 2003 or Hussmanns, 2004 for details).

One can further distinguish informal employment at the main or secondary job. Moreover, the concept of informal employment overlaps with the concept of under-declared work (also known as ‘envelope wages’ or ‘quasi-formal employment’, see Riedmann and Fischer, 2008; Williams and

Renooy, 2008; Williams, 2009)⁸. Arguably, such quasi-formal employment falls into ILO (2003) definition of “informal employment outside the informal sector”; however, ILO (2003) asserts that “for purposes of analysis and policy-making, it may be useful to disaggregate the different types of informal jobs”, and work without a contract is clearly a category which deserves to be analyzed separately. *Hereafter, as far as employees are concerned, we apply the term ‘informal employment’ only to work without a contract.*

To identify informal employees, different surveys use either direct questions about employment contract/‘labor card’/‘tax book’ or indirect questions (e.g. about social security contributions, paid annual leave or sick leave), see e.g. Hussmanns (2004), Henley et al. (2006), Perry et al. (2007), Bernabè (2008). Although, as shown by Henley et al. (2006), different definitions of informal employment may lead to substantially different results and “may imply very different conceptual understandings of informality”, exact definitions applied in particular studies are often dictated by data availability. To give an example, Bernabè (2008) suggests a classification of informal employment, but operational definitions based on available household surveys for seven CIS countries appear to be far from identical. For cross-country studies, ability to apply a comparable operational definition is crucial. This study fills an apparent gap in the literature in this respect for Europe.

Details of our suggested classification of the employed population by ‘formality’ of employment are given in Table 1. The ESS questionnaire does not ask details on work activities other than main job, hence informal employment outside main job is beyond the scope of this study. Hence, our estimates of informality rates are quite conservative. *Formal employment* includes anybody holding an employment contract (including family workers with a contract).

Employers with more than five employees, as well as the self-employed without workers who work as professionals (i.e. those belonging to ISCO main group 2) are considered *formally self-employed*. The ‘five workers threshold’ is a natural extension of the approach used in the literature when classifying the “formality” of employees based on data without information on contract type. On the other hand, professionals are more often operating legally with some kind of license and pay taxes from at least some part of their income; unreported part of their income, if any, if not relevant for our classification – as are ‘envelope wage’ payments received by legally employed workers. Other self-employed persons (i.e. all non-professional self-employed operating solely, as well as employers with 5 or fewer workers) are considered *informally self-employed*. Thus, all employers, including those working as professionals, are treated according to the firm-size criterion⁹.

⁸ There are also broader, activity-based, concepts of undeclared work and shadow economy activities (Pedersen, 2003; Djankov et al., 2003; Hanousek and Palda, 2003; Schneider, 2005; Williams and Renooy, 2008; Williams, 2009; Feld and Schneider, 2010; Schneider et al. 2010) which are not considered in this paper.

⁹ An alternative approach would be to classify all employers working as professionals as formally self-employed, disregarding the number of employees. In both cases some classification errors are inevitable. As a robustness check, informality rates have been recalculated under this alternative definition. Country rankings are not affected on total informality and not significantly affected on informal self employment. The decline in the share of informal self employed in the extended labor force in most cases is well below 1 percentage point, except for Italy, Germany, Switzerland and Cyprus where it is between 1.0 and 1.3 points (from a base above 10%). In relative terms, the decline is below 3% for 12 countries, between 4% and 6% for another 12 countries, 7% to 9% for 3 countries, and between 10% and 14% for Germany, Switzerland and Romania.

Persons working without a contract for own family's business (*family workers*) form a separate (small) category. These persons belong rather to informal than to formal employment (ILO, 2003), but being residual earners from profits they are different from both the formal employees and the self-employed. Finally, employees without a contract (or those uncertain of their contract) are *informally employed*, i.e. belong to *informal dependent employment*.

Note that there are some differences across countries in the legal requirements on employment contracts for dependent workers (see Table A1 in the Annex). In Eastern European countries (except Hungary and Poland), in Nordic countries (except Finland), as well as in Switzerland, Italy and Greece, a *written* employment contract is always required. In most of these countries the contract must be signed in advance or immediately after starting work; in Russia and Ukraine – within 3 days; and in Greece – within 2 months.

By contrast, in most of the Western Europe, as well as in Hungary, Poland, and Portugal, having a written contract is considered good practice but is required either only for “atypical” (apprenticeship; fixed-term; seasonal; part-time; replacement, etc.) employment, as in Austria, Belgium, France and Portugal, or, the other way around, only for contracts of indefinite duration (Hungary and Cyprus), or is not generally required (Poland, Finland, Germany, the Netherlands, Ireland and the UK)¹⁰. In all these cases a contract as such is required but it might be oral (in Finland – also electronic); moreover, the employee must be given *written* terms of employment (*ToE*) signed by the employer (the mandatory content of ToE is specified in the law).

From employee perspective, this latter document is as good as a contract – and it is fair to assume that an employee with an oral contract and a written ToE will not choose the answer “No contract” in the questionnaire (it is important to emphasize that ESS questionnaire asks about a contract as such rather than about a written contract). On the other hand, workers with oral contracts who were not given written ToE, might well respond as if they work without a contract, but their situation is in fact closer to informal than to formal employment. In other words, there are reasons to believe that, most of the time, the ESS contract question indeed identifies informal employees even in the countries where a written contract can be replaced by written ToE. Like with the written contracts, some countries request that ToE are issued in advance or immediately after starting work, whilst others allow for this some time: Finland, the Netherlands and Cyprus - 1 month; the UK and Ireland – 2 months. In fact, during this period the employee might be considered employed informally, and the possibility to postpone signing of ToE as such is likely to increase informality (in case of inspection, the employer might say that the employee in question started to work less than a month or two ago). Whether or not this likelihood will materialize depends on other factors – institutions and social norms (including tax morale). As we will see later, four of six countries where signing the contract or ToE can be postponed substantially (Greece, Cyprus, the UK and Ireland) feature very high dependent informality rates, whilst it is not the case for Finland and the Netherlands.

¹⁰ In Spain, a written contract is required if either party requests it (even during the course of employment relationship), as well as for “atypical” employment.

In the literature, survey-based prevalence of informal employment has been presented as a percentage of (i) working-age population; (ii) labor force; (iii) total (or non-agricultural) employment; (iv) salaried workers. The choice of base depends on the definition of informality, on the information available in the survey, and on the purpose of the study. The first approach is used in studies focusing on transitions between sectors and labor market states (e.g. Bosch et al. (2007), Bosch and Maloney (2010), Nikolova et al. (2010)), as well in cases when data come from surveys where questions on shadow activities refer to a much longer period (e.g. 12 months) than the ones used in ILO definitions of employment (e.g. Riedmann and Fischer, 2008; Williams and Renooy, 2008). Loayza et al. (2009: Figure 1) apply (ii) and (iii), whilst Perry et al. (2007: Figure 2) use all four approaches. The third approach is used also by ILO (2002) and Feld and Schneider (2010: Table 14¹¹). Given that unemployment and ‘discouragement’ are alternatives to formal or informal employment that are shaped by the same policies and economic circumstances, we argue that the labor force extended to include discouraged workers is a more reasonable base for measuring the size of informal employment, especially for the purposes of international comparisons.

To allow comparability with other studies, in Table 2 we present various measures of prevalence of informal employment in Southern, Eastern, Western, and Northern Europe. As we are mostly interested in comparisons between countries and in the effects of institutions, most of our results are either based on within-countries calculations or derived assuming that a respondent from any country is equally likely to be surveyed (i.e. countries are not weighted by population size); in Table 2, however, we present both equally-weighted and population-weighted estimates for the four above mentioned geographical areas, as well as for Europe as a whole. Equally-weighted estimates (means shown in Table 2 and medians found e.g. in Figure 2) refer to prevalence of informal employment in ‘an average country’ in a country group; in this case the size of country’s population does not affect the estimate – Belgium has the same weight as Germany. Population-weighted estimates refer to the share of informal employment in the adult population (or labor force, or total employment) of European regions. Such estimates are of interest on their own, but being dominated by large countries they are less useful for policy analysis.

2.2 Informal employment in Eastern, Western, Northern and Southern Europe

It appears that informality is most prevalent in the South and least prevalent in the Nordic countries, whilst the difference between the West and the East is, on aggregate, surprisingly small, especially as far as population-weighted estimates are concerned. According to population-weighted estimates based on respondents’ status *during the survey* (Table 2, panel A, left), the proportion of employees without a contract among all employees in 2008-2009 varies from 2.7% in the Nordic countries to 9.5% in the Southern Europe, whilst it is just above 5% in the West and in the East alike;

¹¹ Feld and Schneider (2010) express the estimated full-time equivalent shadow labor force as percentage of ‘official labor force’, but the figures suggest that by labor force they mean employed population.

when those who did not respond to the question regarding the contract are treated as not having a contract (which is a plausible assumption), the prevalence of work without a contract becomes higher in the East (6.7%) than in the West (5.5%), whilst it does not change much in the North and in the South. Equally-weighted estimates are substantially higher than the population-weighted ones for the South and for the West, disregarding the treatment of non-response. This is due to very high proportions of employees without contracts in a few relatively small countries: Cyprus (almost half), Greece and Israel (about one third), Ireland (close to one fifth), and Austria (one tenth); see Table 3 for details.

Total informal employment (i.e., employees without contracts, non-professional self-employed operating solely, employers with 5 or less employees, and family workers) accounts for about 10% of extended labor force in the Northern Europe, about 14% in the West and in the East, and about 25% in the South; equally-weighted averages are again higher for the South and for the West (Table 2, panel A, right). The overall population-weighted average for the 30 countries covered is 15.7%, and equally-weighted average is 17.4%. Hence one out of six labor force members (and about one out of ten adult residents) in Europe has been working informally during the surveys conducted in 2008-2009. See Table 2 for more details.

Informal employment is often irregular or seasonal. During the periods of employment, shadow workers might become hard-to-reach by the surveyors if they work long hours or work far away from their residence. This is why, in principle, *estimates based on engagement in informal work during the last 12 months* (rather than during the survey week) are more reliable. In the case of ESS such an approach also helps to address the potential seasonality issue (the season of the field work varies by country, see Table 3). ESS data provide detailed information about the last job (if any) of respondents who are currently non-employed, so that those who were employed informally can be identified according to definitions in Table 1.

Unfortunately, it is not possible to apply the 12 months reference period exactly, because for each respondent we know the month of the interview but only the year of the last job. We have dealt with this as follows: respondents interviewed between September and December (respectively, between January and August) have been classified as ‘recently employed informally’ if they last worked (informally) within the same year (respectively, within the same or the previous year). In most countries, the core period of field work was between September and March, so that in 21 out of 30 countries the average reference period deviated from 12 by no more than 2 months; in 6 countries it was about 15 months, and only in Latvia and the Czech R. it was close to 18 months. Moreover, for each of the four European regions the average is close to 12 months: 11 months for the North, 11.6 months for the West, 12.6 months for the South, and 14.6 months for the East.

Based on these reference periods, the estimated size of currently non-employed population engaged in informal employment during the 12 months preceding the 2008-2009 round of the ESS is 3.5% of current extended labor force, ranging from 1.5% in the Nordic countries to 3% in the West to 4% in the East; for Southern Europe, the population-weighted estimate is 3.6%, but the equally-

weighted one reaches 5.5% (Table 2, panel B, left). Note that the vast majority of these cases concerns dependent employment without a contract (rather than self-employment). When these estimates are added to the estimates of informal employment during the survey, the overall population-weighted (respectively, un-weighted) average estimate of population recently engaged in informal employment for the 30 countries covered is 19.2% (respectively, 21.3%) of the current extended labor force, or 11.4% (respectively, 12.8%) of the population aged 15+. The informality ranking of the four European regions remains unchanged: the highest prevalence of informal employment is found in the South (more than one quarter of extended labor force); in the West and in the East this proportion is one sixth, whilst in the Nordic countries it is between one ninth and one eighths (Table 2, panel B, right). Note these are *lower bound estimates*, because respondents employed during the survey were not asked about their past activities.

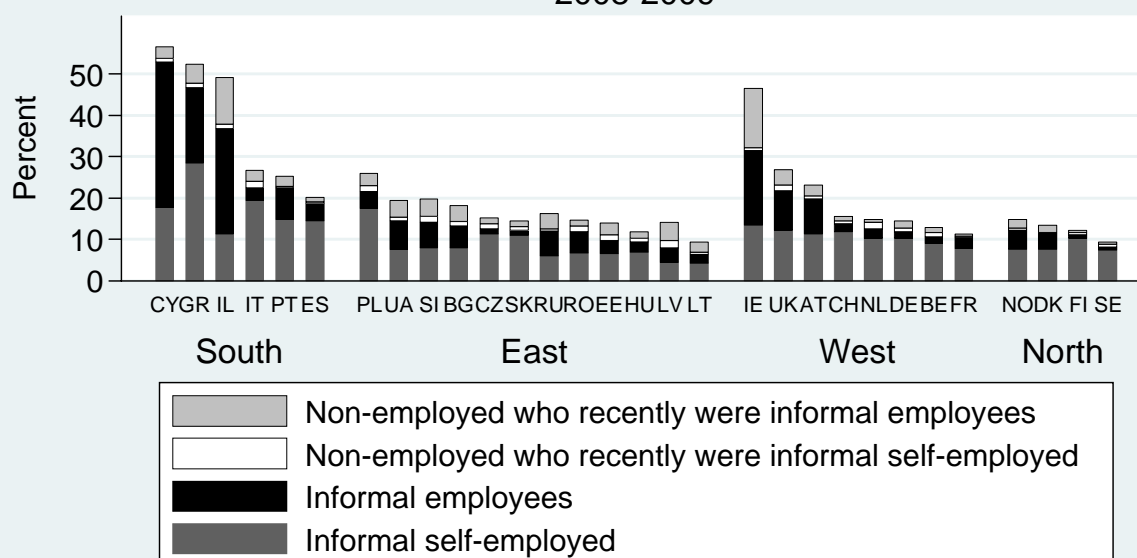
Figure A1 (in Annex), based on results of ESS rounds 2, 3 and 4, summarizes main findings on the prevalence of informal employment in the four European regions for the whole period between 2004 and 2009.¹² Overall size of informal employment decreases from the South to West to East to North, but the median prevalence of dependent informal employment is higher in the East than in the West. For each of these country groups, the median (across space and time) level of informal self-employment is higher than that of informal dependent employment. The East and the North are much more homogeneous in terms of informal employment than the West and the South.

2.3 Country level estimates

Table 3 presents breakdown of extended labor force by proximity to formal employment for each of 30 European countries as of 2008-2009 (data for Austria and Italy refer to 2007 and 2006, respectively), along with the LFS-based unemployment rate for the respective period of field work, and the estimate of the non-employed population which was recently informally employed. Figure 1, derived from Table 3, features current total informal employment and its two components, workers without contracts and informal self-employed, measured as proportions of extended labor force; on top of this, recent informal employment of currently non-employed population is shown in the same units. Adding the ‘recent’ component significantly increases the estimated level of informality for a number of countries (see Figure 1 for details), but leaves the ranking basically intact. In the following discussion we refer to the current levels of informal employment, unless stated otherwise.

¹² Like in all Figures hereafter, countries in Figure A1 are not weighted by population size.

Share of Extended Labor Force Employed Informally 2008-2009



Labor force extended to include discouraged workers
 Austrian data refer to 2007; Italian data refer to 2006
 Due to data limitations, shares of non-employed who were recently informally employed are not perfectly comparable across countries. Average 'recent' period varies as follows: 10-15 months in the South and in the West, 11-18 months in the East, 10-11 months in the North
 Source: Calculation with ESS data

Figure 1 Selected European countries by share of extended labor force employed informally, 2008-2009

Notes: Informal self-employment includes all non-professional self-employed operating solely, as well as employers with 5 or fewer workers. Informal employees are those working without a contract (or those uncertain of their contract). Extended labor force includes persons which, during the reference week, were either employed or unemployed and willing to work. The latter category includes both those unemployed who were actively looking a job and those who were not actively looking for a job. See Tables 1 and 3 for details.
Source: Calculation with ESS data.

All Southern European countries appear to be heavily informal, with 37% to 53% of economically active and marginally attached population working informally in Israel, Greece, and Cyprus; in Spain, Italy and Portugal this proportion is between 19% and 22%¹³. These six countries together with Ireland (33%), the UK and Poland (22% each), and Austria (20%) constitute the ‘highly informal’ part of working Europe.

On the other extreme is Lithuania with estimated 6.4% of extended labor force working informally, followed by Latvia, Sweden, and Hungary with 8.0% to 9.4%; Estonia, France, and Belgium feature just slightly higher level of informality around 10%¹⁴. In other countries covered by the study (Finland, Denmark, Norway, Germany, Netherlands, Switzerland, Romania, Russia,

¹³ Actual level of informality in the South might be even higher, as seasonal immigrant workers (e.g. fruit-pickers) are mostly not covered by ESS surveys. This remark applies also to France, Germany, Ireland and UK.

¹⁴ Recall that our analysis is restricted to the form of employment relationship, while envelope wages (or *quasi-formal employment*, see Williams (2009)) are not considered; according to *Eurobarometer* survey on undeclared work conducted in 2007, Lithuania, Latvia, Hungary, and Estonia are among the countries with relatively high prevalence of envelope wages, see Riedmann & Fischer (2008), Williams and Renooy (2008).

Slovakia, Czech R., Bulgaria, Slovenia, and Ukraine) 11% to 14% of the extended labor force are working informally.

Classifying the Baltic countries and Hungary as low-informality countries based on data referring to the time of crisis, which was much deeper in these countries than elsewhere in the EU, should be taken with care. Indeed, Latvia was among the top ten countries regarding informal dependent employment in 2007, whilst Lithuania was just outside the top 10 in terms of both dependent and total informal employment in 2005 (see Table A3). By contrast, informality rate has been always low in Hungary and, according to most estimates, in Estonia. Furthermore, Latvian State Labor Inspectorate (2011) reports a substantial increase in the incidence of unregistered employment in the post-crisis period (along with falling unemployment).

As a robustness check, in Table A3 we compare ESS-based proportions of employees working without contracts and proportions of all informally employed persons in total employment for 2004-2006 with similar indicators calculated from the Fourth European Working Conditions Survey¹⁵ conducted in 2005. Cyprus, Greece and Ireland, with very high rates, occupy the top three positions in informality ranking by each of the two criteria in both surveys. Top ten countries by the total prevalence of informal employment are also the same for both surveys; the list repeats the one given above for 2008-2009, excluding Israel (not represented in EWCS) and adding Bulgaria¹⁶. With regards to work without a contract, nine out of top ten countries are the same in both surveys. Moreover, for most countries the EWCS-2005 total informality rate is very close either to both ESS-2004 and ESS-2006 rates or at least to one of them. Situation with the dependent informality rates is broadly similar. The exceptions in both cases include Slovenia, Norway and the Netherlands.

The coherent findings from ESS and EWCS raise concerns about the quality of field work performed in the countries of Southern Europe, as well as UK, Ireland and Poland for the Special Eurobarometer Survey on Undeclared Work in the European Union (Riedmann and Fischer (2008), - according to this survey, even after adding together positive responses and non-response, the level of informal employment in these countries is significantly lower than it follows from the ESS data (detailed comparisons are available on request).

When recent informal employment is accounted for, the largest increases in the informality level are found in countries where it was already high. As the result, the total level of informal employment is [at least] around 50% in Ireland, Israel, Greece, and Cyprus, around 25% in Austria, the UK, Poland, Portugal, and Italy, and close to 20% in Spain, Ukraine, Slovenia, and Bulgaria. Most of the other European countries feature informality level from 14 to 16%, whilst it is 11% to 13% in France, Hungary, Finland, Belgium, and Denmark, and just 9% in Sweden and Lithuania.

¹⁵ The difference between the two surveys in handling the contract question is minor: EWCS provides answer options „A temporary employment agency contract”, „An apprenticeship or other training scheme” and „Other” (which we of course do not treat as informal); on average these account for 3.2% of all responses, although this proportion varies between 4% and 6% in six countries and between 6% and 8% in the Czech R. and Greece.

¹⁶ Romania is missing from the ESS results on 2004-2006 and hence is excluded from the EWCS top ten.

In terms of relative size of dependent and self-employed informal workforce, three groups of countries emerge:

- (i) In Cyprus, Israel, and Ireland both groups are large, but employees without contracts dominate the informal sector (even despite seasonal migrant workers are likely to be not covered, see footnote 13);
- (ii) In Russia, Ukraine, Bulgaria, Romania, Slovenia, Latvia, the United Kingdom, and Austria the two groups are of comparable size;
- (iii) In remaining countries (i.e., Portugal, Spain, and Italy; the four Central European countries; Estonia and Lithuania; the Nordic countries; as well as Switzerland, Netherlands, Germany, France, and Belgium) the informal sector is dominated by the self-employed.

The latter finding calls for a closer look, given that, according to anecdotal evidence, in countries with more restrictive Employment Protection Legislation a large share of self-employed are hired as „self-employed service providers” and doing work that is in every way identical to a formal dependent worker’s. However, even if this is the case, in a survey such workers might describe their status as „an employee without a contract” or even as „an employee with a contract” (the contract being not an employment one though). Fortunately, ESS data allow to distinguish between ‘true self-employed’ and ‘quasi-self-employed’, using the question „Are you allowed to decide how daily work is organized?” (self-assessment, where 0 means „I have no influence”, and 10 means „I have complete control”). The data do not support the hypothesis that a substantial proportion of ESS respondents which classify themselves as informal self-employed are in fact employees. Their median self-assessed autonomy is 10 in all countries but PT where it is 9, and mean self-assessed autonomy in all countries is well above that of formal employees. Figure 2 shows that the same is true also for the 25th percentile of the autonomy variable, thus excluding the possibility that even a quarter of informal self-employed are in fact dependent workers.

When both size and composition of informal workforce are taken into account, all countries considered can be arranged in 11 clusters, as shown in Table A4 (in the Annex).

An important finding from Table 3 and Figure 1 is that median country in the East features a substantially higher proportion of employees without contracts than median country in the West. In fact, in 5 out of 8 Western European countries (and in 7 out of 12 countries when the Nordic countries are added) workers without contracts account to less than 3% of extended labor force, while among 12 Eastern European countries this is the case only for four countries, and the median is about 4%. This provides at least some support to an ‘intuitive’ belief that there ‘should’ be more informality in the East.

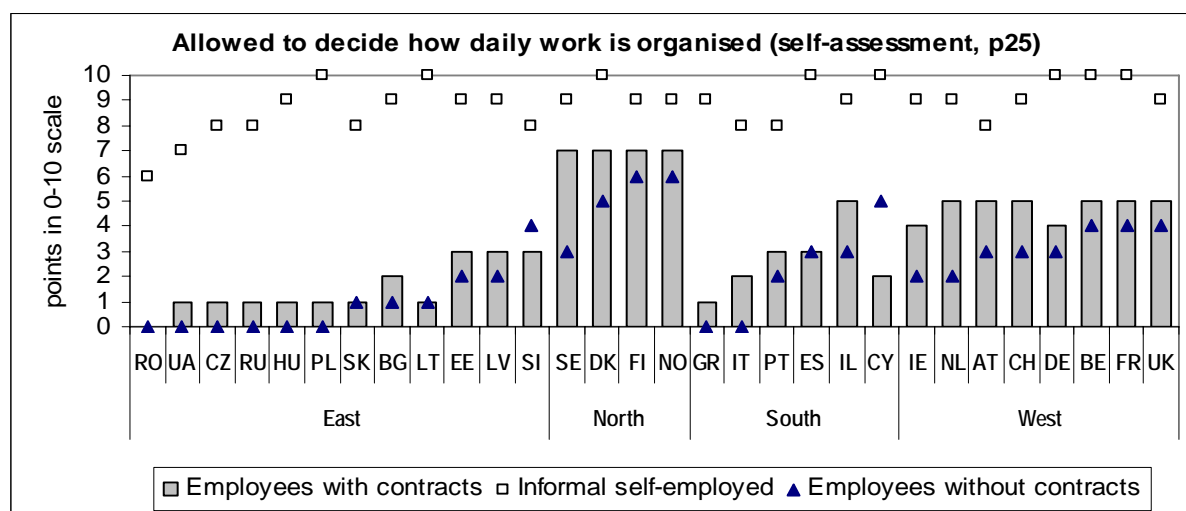


Figure 2 Worker autonomy: Informal self-employed vs. formal and informal employees. 2004-2009

Notes: The Figure displays the 25th percentile of the self-assessed autonomy for each of the three groups.

Source: Calculation with ESS data

2.4 Dependent informality rates by worker and job characteristic

Table 4 reports, for each of the four European regions and for Europe as a whole, proportion of informal employees among all employees (the *dependent informality rate*), broken down by gender, age, educational attainment, origin, occupation, size of establishment, and economic activity. The estimates refer to 2008-2009 and are non-weighted averages of country-specific estimates. Apart from the South as a whole, Table 4 includes a separate column for Spain, Portugal, and Greece¹⁷. It appears that in Southern Europe prevalence of work without contract is higher among females (23% vs. 19% among males), whilst elsewhere the difference is fairly small (larger differences exist at the country level though). Plausibly, this has to do with the fact that the share of hospitality, personal and household services (sectors which are female-dominated and feature high informality rates) in dependent employment is higher in the South than elsewhere.

In all parts of Europe, the lowest dependent informality rate is found among tertiary-educated workers, whilst the highest rate is found among medium-educated in the South and among low-educated elsewhere. Overall average is 14.5% for low-educated workers, 8.4% for medium-educated, and 5.7% for those with higher education. Likewise, the smallest proportion of workers without contract (5% on average, ranging from 1% in the North to 17% in the South) is found among those holding highly-skilled non-manual occupation, whilst the highest informality rate is associated with elementary occupations (17% on average, from 8% to 10% in the North and East, to 15% in the West to 30% in the South). For other occupations, the overall informality rate is about 10%, ranging from 4% in the North to 6% in the East to 9% in the West to 21% in the South. To sum up, dependent

¹⁷ Recall that for Italy the latest available data refer to 2006, whilst two other Southern countries in our data, Cyprus and Israel, are small.

informality rate is inversely related to skills (measured in terms of either schooling or occupation). These findings are in line with theoretical expectations (see, e.g. Perry et al., 2007: pp. 6, 9; Pfau-Effinger, 2009: Table 1): motivation to go informal is strongest for low-skilled, low-productive workers both on the supply side (as their alternative in the formal sector is not much better) and on the demand side (small firms find it too costly to hire formally low-productive workers), as well as with empirical findings from Latin America (e.g. Henley et al., 2006: Table 5) and Italy (Boeri and Garibaldi, 2005: Table 2).

The age-informality profile is U-shaped: The informality rate is 17% among the youth, 7% for the prime age workers, 9% for the 55-64 year olds, and 16% among those in retirement age. In the West and (to a smaller extent) in the South, the dependent informality rate among the retirees is higher than among the young workers, whilst it is the other way around in Eastern Europe and in the Nordic countries (see Table 4 for details). Again, both supply and demand side explanations are readily available. On the demand side, both the young and the elderly are likely to be among the least demanding jobseekers, acknowledging their below-average productivity (and, in case of the young, facing above-average unemployment rates). In addition, both groups are interested in flexible work schedule which is often easier to achieve via informal employment. Young workers are likely to be less concerned with and/or less informed about social security and more willing to trade it for higher in-hand payments. For those seeking their first job, informal employment might be the most straightforward way to gaining some work experience, thus facilitating school-to-work transition. In countries with a strong apprenticeship culture (like Germany, Austria, France, and the UK), informal apprenticeships might be seen as a natural complement to the formal apprenticeship system¹⁸.

On the supply side, the low productivity factor works in the same way as in the case of low-educated workers. In addition, both the young and the elderly feature above-average quit rates, thus making firms worry about firing costs if these workers were to be hired formally. Higher informality among the elderly in the West and in the South might have to do with higher firing costs for older workers, a feature which is less pronounced or weakly enforced in the East (Muravyev, 2010).

There is a large body of literature providing robust evidence that ethnic and language minorities face various forms of labor market disadvantages in European labor markets; see Kahanec and Zaiceva (2009) and Kahanec, Zaiceva and Zimmermann (2010) for overview; Kahanec and Zimmermann (eds.) (2011) for country studies. Ambrosini (2001) and Flaquer and Escobedo (2009) refer to the availability of a high number of immigrants without work permits as one of the reasons for relatively high share of undeclared work in Southern European countries. Say (2011) asserts that „Immigrants... may be less aware of employment protection regulations and less likely to claim their rights, which may create a gap between the costs for employers of hiring a native relative to hiring an immigrant” and finds that negative effect of a strict EPL on employment and hiring rates is less pronounced for immigrants than for natives. The same argument, however, suggests that immigrants are more likely to

¹⁸ I thank Truman Packard for this remark.

accept informal jobs. Table 4 supports this hypothesis, but to a different extent depending on the country group.

In the South, one finds a classic divide: the dependent informality rate is 16% among native majority population, whilst it varies between 24% and 37% in all other groups: local born ethnic or linguistic minorities, second generation immigrants, as well as first generation immigrants (the highest rate is found among immigrants from CEE and former Soviet Union; in Spain, Portugal and Greece this rate exceeds 50%). In Eastern Europe, the picture is broadly similar: local born minorities feature the highest dependent informality rate of about 11%, followed by second generation immigrants and immigrants from CEE and former Soviet Union with 7%, whilst this rate is just 4% among the natives. Moreover, in Eastern Europe, as well as in Spain, Portugal, and Israel, ethnic and linguistic minorities are more likely to work informally also after controlling for a variety of characteristics (Table 9).

In Western Europe, the only minority group with above-average proportion of non-contracted employees consists of immigrants from CEE and former Soviet Union: 12% of employees of this origin works without contracts, whilst for the natives this rate is 7%. In the Nordic countries no clear pattern emerge, probably because the sub-sample of informal immigrant employees is too small.

Table 4 also compares informality rates of immigrants depending on whether they do have an ‘automatic’ working right due to nationality (based on country- and year-specific rules on free movement of labor within EU). The differences by legal status are smaller than those by geographic origin. Somewhat surprisingly, informality rates are slightly higher among immigrants covered by the “free movement of labor” provisions in all parts of Europe except the South. It appears that in other parts of Europe persons not covered by the provisions are either not likely to work as non-contracted employees or they are not captured by the ESS surveys. On the other hand, persons covered by the provisions are more likely to move without a job in hand, and hence more likely to end up with an informal job. The situation is strikingly different in Spain, Portugal, and Greece, where informality rate among non-covered immigrants is twice as big as among covered ones (33.7% vs. 16.5%). After controlling for individual characteristics and industry of employment, non-covered immigrants in Southern and Eastern Europe are more likely to work informally than natives and, in the South, also than covered immigrants (Table 9).

The above findings are supported by Figures A2 and A3 (in the Annex), which display proportions of ethnic minority population and population with immigrant background among formal employees, informal employees and informal self-employed in each country using data of from three ESS rounds conducted in 2004-2009.

As expected, informality sharply declines with the size of establishment. Estimated across all 30 countries proportion of non-contracted employees is 16% in establishments with less than 10 workers, 8% in units with 10 to 24 workers, 5.5% in units with 25 to 99 workers, and 4% in those with 100 or more workers. Interestingly, in the South the informality level seems to stabilize for establishments with 25 or more workers (see Table 4 for details). Plausibly, high concentration of informality in small firms has to do with the fact that they are less monitored; on the other hand, as Perry et al. (2007)

argue, formality can be seen as an input in the production process for which small firms have little need.

The following five economic activities feature highest dependent informality rates: hotels and restaurants (20%), personal and household services (18%), construction (14%), agriculture (13%), and trade¹⁹ (11%). The first four activities in this list are also found among the top five in each of the four European regions (see Table 4 for details).

2.5 The dynamics of informal employment

We conclude this section with a brief overview of the dynamics of informal employment. Table 5 presents changes (in % points) in estimated prevalence of informal employment and unemployment in the extended labor force of European countries between ESS rounds: round 4 (2008-2009), round 3 (2006-2007), and round 2 (2004-2005). In most cases the changes in both dependent and own-account informal employment are statistically insignificant and small. Between rounds 2 and 3, there have been significant increases in the share of employees without contracts in Portugal (3.6 points), Denmark (2.7 points), Estonia (2.0 points), and Spain (1.0 points). In Portugal and Estonia this has been accompanied by a comparable decrease in the share of informal self-employment, whilst the latter went up as well in Denmark and Spain. A significant decrease in total informal employment between rounds 2 and 3 is found only in the UK (3.3 points) and Slovenia (2.6 points).

The changes between rounds 3 and 4 are of course of special interest because in all countries most of the round 4 field work was during the early stage of crisis (2008/q4 or 2009). From a theoretical perspective, the effect of the recession on informal dependent employment is ambiguous. On the supply side, the workers are likely to be more willing to accept informal employment. On the demand side, there is likely to be much less work left out for outsiders, as private sector employees across Europe have seen substantial working time reductions, and both the firms and the households do not have money for irregular (not urgent) tasks. While firms do have strong incentives to reduce costs via tax avoidance, they might prefer paying envelope wages to workers already on the payroll to using unregistered workers. Yet there is an incentive to conduct as much repair and construction as possible while informal labor is cheap, and this is likely to have a positive effect on informal self-employment. For a more detailed discussion of relationship between informality and economic cycle we refer to Perry et al. (2007), Bosch and Maloney (2010) and Nikolovova et al. (2010), who have analyzed workers' transitions between formal and informal jobs, and Bajada and Schneider (2009), Schneider et al. (2010) and Hazans (2011b) who have studied the effect of economic growth (among other macro factors) on the size of informal economy and prevalence of informal employment.

Inspection of Table 5 reveals that in countries where a significant change in informal dependent employment has occurred between 2006-2007 and 2008-2009, this change was negative: 6.9 points in Ireland, 5.4 points in Cyprus, 3.9 points in Denmark, 2.4 points in Bulgaria and Latvia, 1.7 points in

¹⁹ Including repair of motor vehicles.

Netherlands; the only exception was Slovenia with a significant increase by 2.7 points. On the other hand, informal self-employment increased significantly in Poland, Estonia, and Netherlands, whilst in Portugal, Ukraine, Slovenia, Czech R., Slovakia, the UK, and France a (statistically insignificant) increase by 1 to 2 percentage points has been registered; a substantial (by 2 points) decline in the prevalence of informal self-employment is found only in Norway and Switzerland.

Figure 3 which refers to 2004-2009 (and thus covers both growth and recession episodes) suggests a negative association between the change in dependent informality rate and the change in the rate of joblessness within extended labor force. First, the whole scatter diagram is consistent with a downward sloping curve (summarizing both within-countries and between-countries variation in the two indicators). Second, almost all segments connecting the points corresponding to the same country are downward sloping, suggesting that within countries unemployment and informality tend to move in opposite directions (the UK, Hungary, and the Netherlands seem to violate this pattern). Finally, 47 out of 48 observations lie outside the positive quadrant – in other words, there are virtually no cases when the rate of dependent informality and unemployment go up simultaneously. This does not necessarily contradict to the ‘safety net story’ of displaced workers switching to self-employment (Harris and Todaro, 1970).

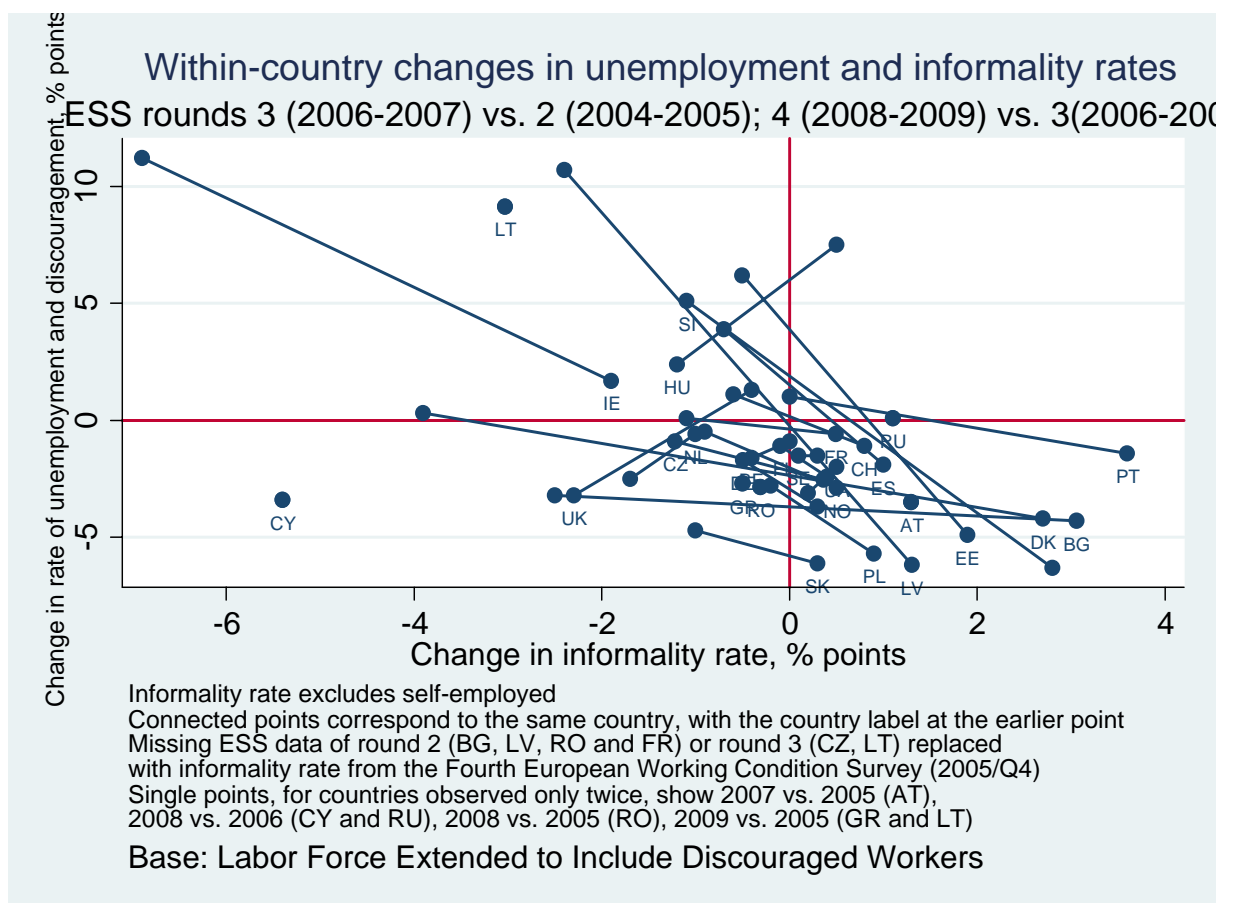


Figure 3 Change in unemployment and discouragement vs. change in informality rate

3 Informal workers at a glance

As noticed by Riedmann and Fischer (2008), knowledge of the characteristics of the shadow sector workers is an important prerequisite for designing appropriate political measures to deal with undeclared work. The differences between profiles of informal and formal workers might be country-specific, depending on social norms and corporate culture, on strictness or particular components of employment protection legislation, and on the sectoral composition of the economy. For instance, high firing costs and (relatively) high minimal wage are likely to push young workers disproportionately into informal sector. Lack of flexible working time arrangements in the formal sector might make informal work more attractive for students and married women. Booming construction (respectively, hospitality) sector likely increases proportion of males (respectively, females) among informal workers.

In Section 3.1 we compare (at the country and/or European region level) composition of formal and informal workers in terms of key personal characteristics and [main] job profile. Most of the time, we concentrate on employees with and without contracts. In order to have enough observations on this category for statistical inference at the country level, the ESS data which refer to 2004-2009 have been combined with the data of the Fourth European Working Conditions Survey (2005). This way, we have 51 to 95 observations on informal employees for six countries, 100 to 200 observations for eleven countries, 200 to 350 observations for five countries, and 500 to 1000 observations for four countries. Only for Sweden the number of observations (31) is insufficient and the results should be interpreted with care. The samples of formal employees and those of informal self-employed are large enough for all countries.

We find systematic differences between the formal and informal employees in terms of gender, age, educational attainment, occupation, economic sector, and establishment size. Some of these differences are country-specific or just more pronounced in some countries than in the others. Many of the comparisons are given also for informal self-employed, which appear to be quite different from informal employees in most respects. These findings might be of interest from the perspective of integrating informal labor. Moreover, some of them also contribute to the 'exit vs. exclusion' literature about prevailing reasons for working informally (see Maloney, 1999; Maloney, 2004; Djankov et al., 2003; Hanousek and Palda, 2003; Perry *et al.* 2007, Williams and Renooy, 2008; Loayza, Servén and Sugawara, 2009; Pfau-Effinger, 2009; Williams, 2009; Schneider, Buehn and Montenegro, 2010). Although heterogeneous nature of self-employment is now well understood in principle, the empirical base in European context remains scarce.

To further inform this debate, Section 3.2 compares formal and informal workers in terms of belonging to groups which are known to be exposed to social exclusion or discrimination (minorities, first and second generation immigrants) or are associated with past (and maybe future) work in the formal sector (past and current union membership); we also look at perceived discrimination. This analysis sheds some light on the worker mobility between formal and informal sector, thus

complementing country-specific studies (Packard, 2000; Bosch et al., 2007; Bosch and Maloney, 2010; Nikolovova et al., 2010; see also Le (1990, Section 4.1) for a survey of earlier studies). Section 3.3 compares household income of informal and formal employees.

3.1 Key personal characteristics and job profile

Gender. Figure 4 shows that in nine European countries (Latvia, Bulgaria, Poland, Estonia, Ukraine and Hungary in the East; Finland and Norway in the North; and UK in the West) proportion of males is much higher among the shadow sector employees than in the formal economy. The opposite situation is found in Sweden, Italy, Spain, and Switzerland. In the rest of the countries, shadow and formal employees do not differ substantially in terms of gender balance. These difference between countries are explained by the prevalent type of work (e.g. construction and repair vs. personal and household services) performed by shadow employees in different countries (see below).

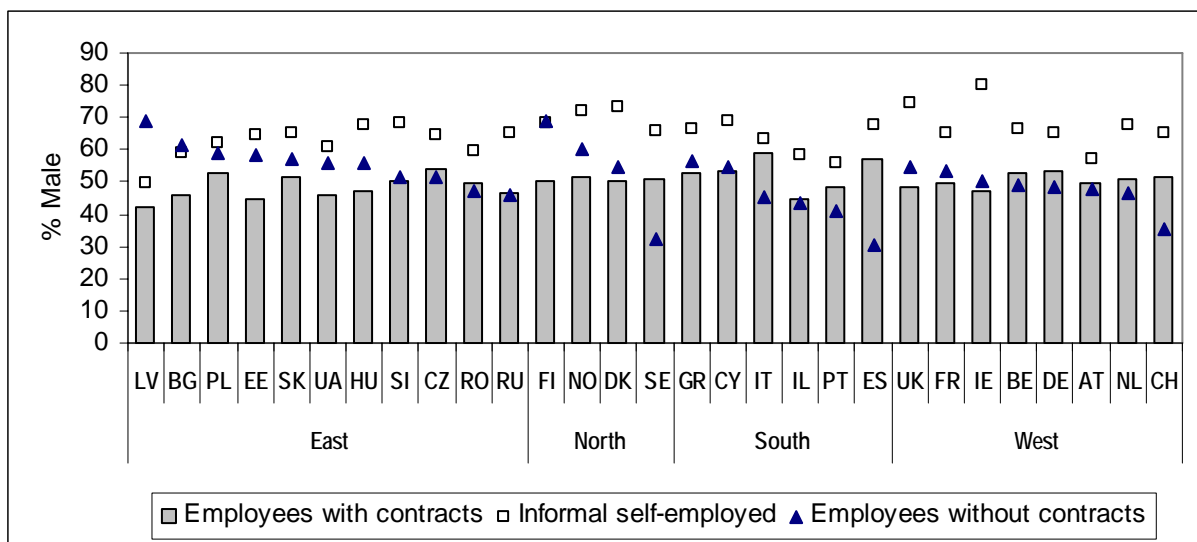


Figure 4 Gender composition of formal and informal employment, 2004-2009.

Source: Calculation with ESS data.

By contrast, in *all* European countries the proportion of males among the informally self-employed is higher than among formal employees; the ratio varies between 1.2 and 1.5 in continental Europe, whilst it is 1.6 in the UK and 1.8 in Ireland²⁰. Possible explanations include a higher risk tolerance among males (see Ekelund *et al.* (2005), Le *et al.* (2010) and references therein), and the heritage of the social norms which considered business as a ‘non-female’ occupation. The fact that informal self-employment is dominated by males is consistent with the finding of the survey of undeclared work in the EU (Riedmann and Fischer 2008: p. 24) that undeclared work of any type is done mostly by males, both in the EU as a whole and in every country except Spain, France, and Italy.

²⁰ Higher prevalence of (and/or preference for) self-employment among males is reported by Georgellis and Wall (2005), Flaquer and Escobedo (2009), Macieira (2009), Leoni and Falk (2010).

Age. The age composition of informal workforce is also markedly different for its two components: In all parts of Europe, the young workers are over-represented among employees without contracts but (with exception of Russia) under-represented among informal self-employed (Figure 5). On the other hand, workers aged 55+ are over-represented among informal self-employed (less so in Central and Eastern European countries), whilst the degree of involvement of the elderly as no-contract employees varies by country (Figure 6). This finding can be used to support both the exclusion and the exit arguments explaining informal self employment. The exclusion story might refer to workers which were in early 1990s displaced by privatization, de-industrialization or retrenchment in the public sector; being unable to find other jobs, they are forced into work like taxi drivers. The exit argument refers to the accumulation of financial and social capital: plausibly, small business owners have spent a long portion of their working lives in order to save up enough money and build up a client base for starting up their own business ventures.

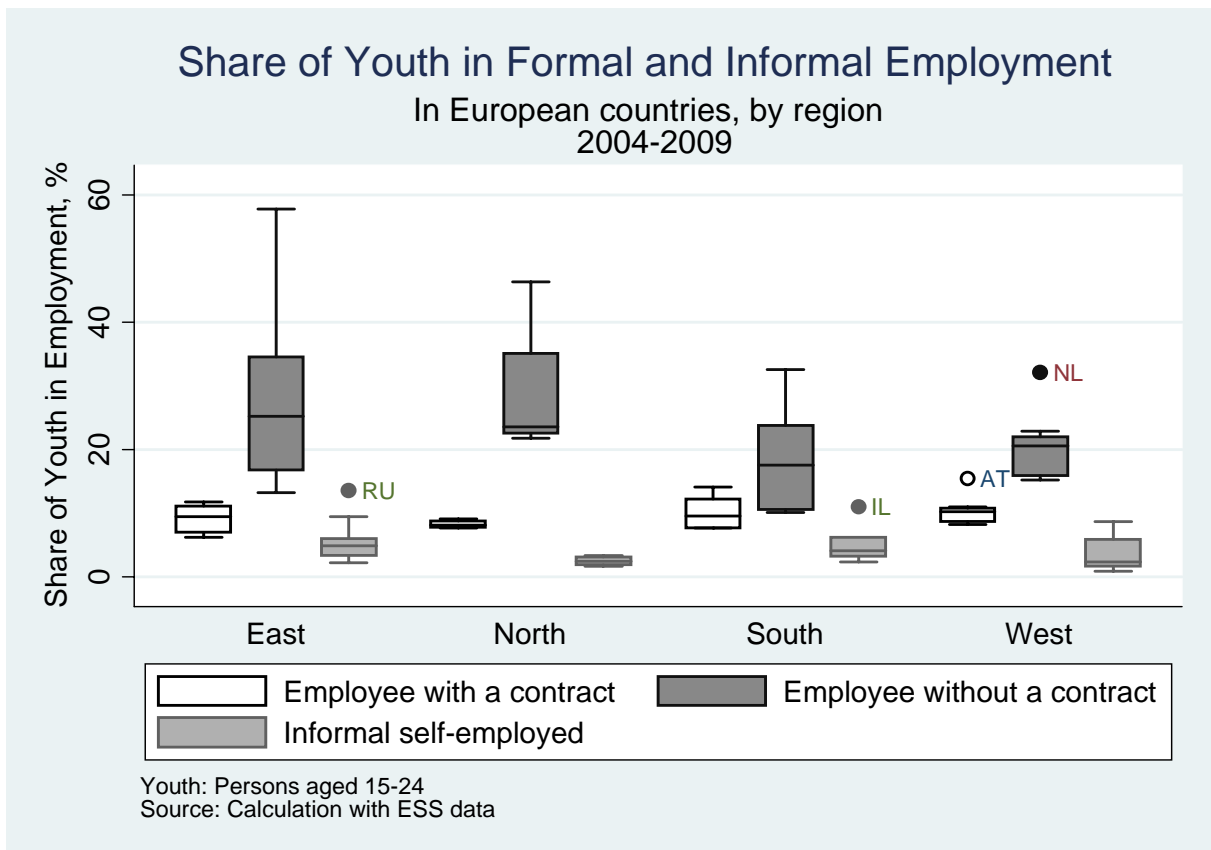


Figure 5 Share of youth in formal and informal employment

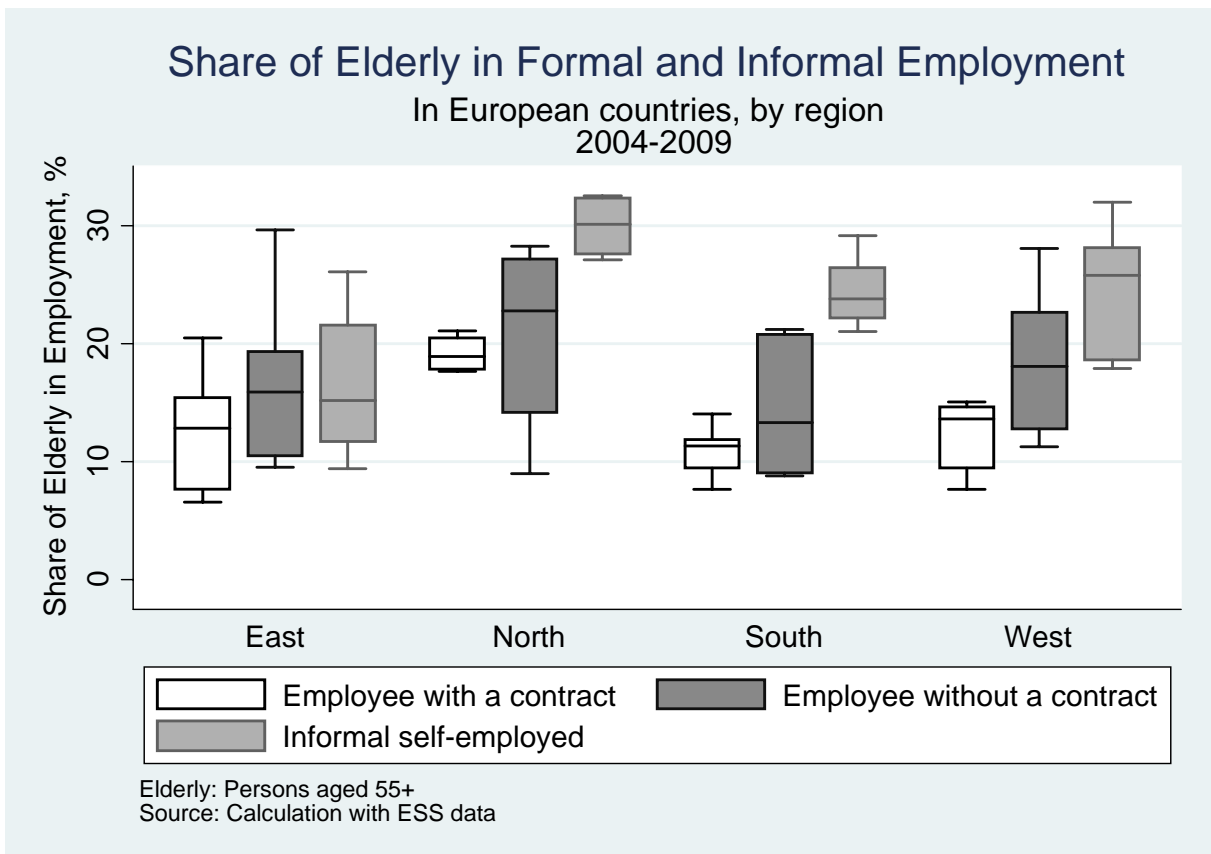
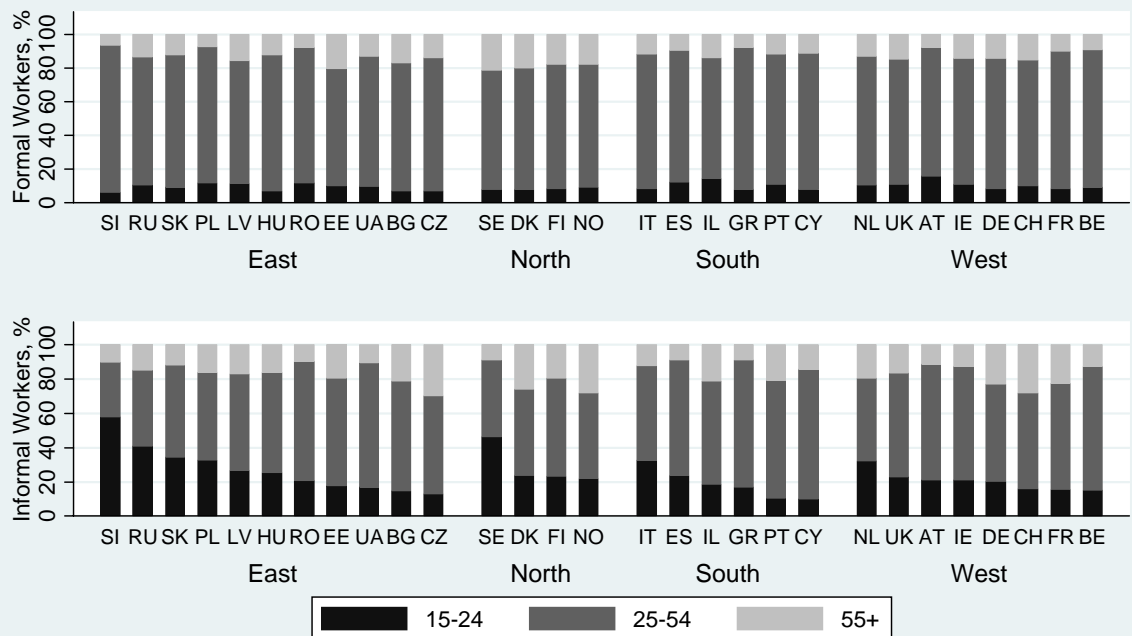


Figure 6 Share of elderly in formal and informal employment

Figure 7 demonstrates that the share of young workers among informal employees is close to 20% or even higher in all European countries except Bulgaria, Czech R., Cyprus, and Portugal. Especially high proportions of 15-24 year olds among those working without contracts are found in Slovenia (close to 60%), Russia (40%), Slovakia, Poland, Italy and the Netherlands (35 to 30%). By contrast, the share of youth among formal employees fluctuates around (in most cases, below) 10%; only in Austria and Israel it is closer to 20%. The share of youth among informal employees is substantially higher than among their formal sector counterparts in all countries except Portugal, Cyprus and Israel.

The elderly are over-represented among informal employees in all Western European countries except Ireland, but also in Poland, Czech R., Denmark, Norway, Israel and Portugal (Figure 7).

Age Composition of Formal and Informal Employees In European Countries, by Region. 2004-2009



Formal: Employee with a contract; Informal: Employee without a contract.
Source: Calculation with ESS data

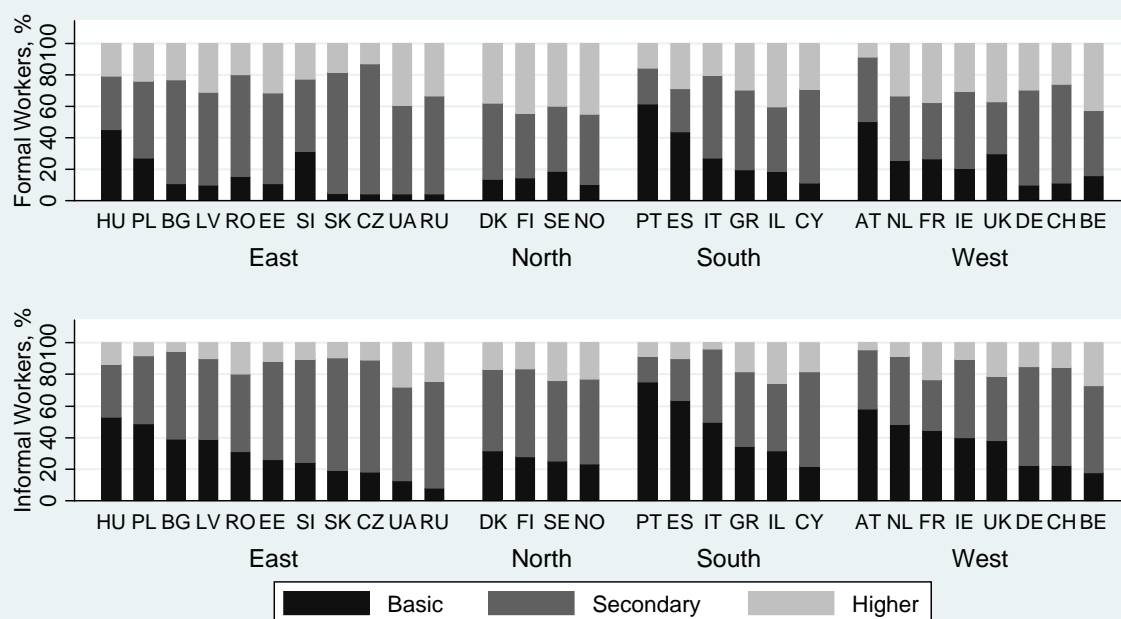
Figure 7 Age composition of formal and informal employees, by country

Education. Figure 8 demonstrates that low-educated workers are over-represented in the shadow sector of most countries (exceptions to this rule include Slovenia, where the low-skilled are under-represented in the shadow sector, as well as Russia and Belgium, where they are represented proportionally). On the other hand, university graduates are under-represented in the shadow sector everywhere except Czech R. and Romania. Similar results are presented in Boeri and Garibaldi (2005: Figure 2) for Italy in 1995-2002.

The contrast between skill composition of formal and informal employees is especially sharp in Poland, Bulgaria, Latvia, Denmark, Spain, Italy, Ireland and the Netherlands.

However, it would be wrong to claim that generally informal employees in Europe are predominantly low-educated. In all countries except Poland, Hungary, Portugal, Spain, Italy, Austria, the Netherlands and France, three fifths to nine tenths of those working without contracts have at least secondary. Moreover, in Ukraine, Russia, Norway, Sweden, Israel, France, the UK and Belgium, 20 to 30% of informal employees hold university degrees, and in seven other countries this proportion is between 15% and 20%.

Educational Attainment of Formal and Informal Employees In European Countries, by Region. 2004-2009



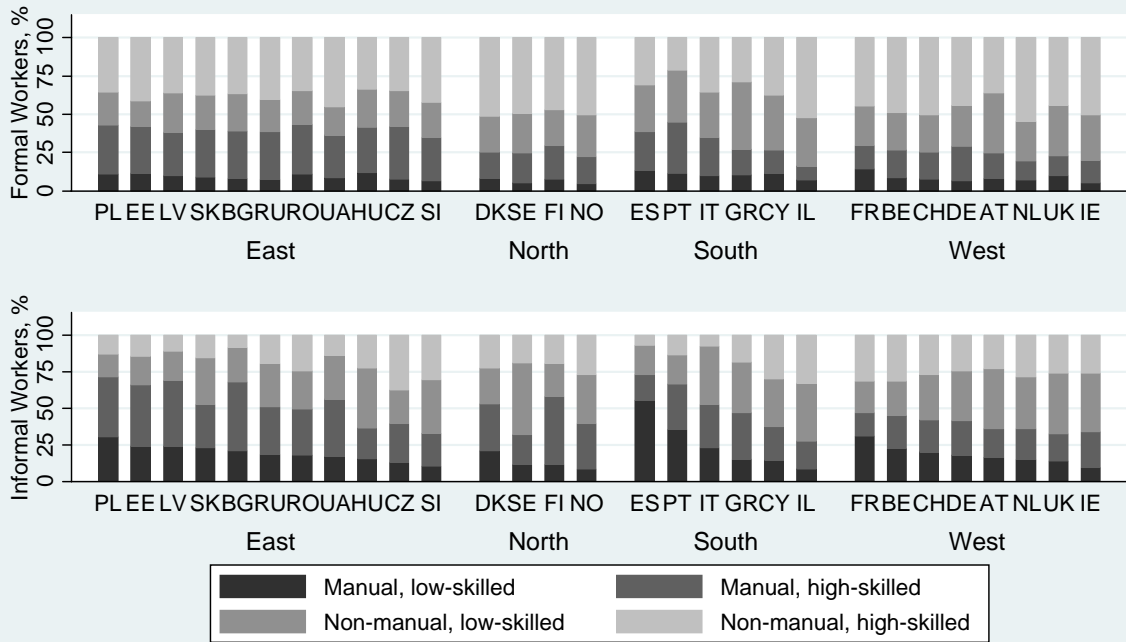
Work status refers to the survey week
 Formal: Employee with a contract; Informal: Employee without a contract. Self-employed excluded
 Source: Calculation with ESS data

Figure 8 Formal and informal employees by educational attainment

Occupations. The generally lower educational attainment among informal employees results of course in a substantially different occupational composition than that found in the formal sector. Generally speaking, among informal employees one finds a much larger share of manual jobs and a much smaller share of highly-skilled non-manual jobs than among formal employees (Figure 9).

This is true for all countries examined except for the Czech Republic and Slovenia. These three countries aside, the share of low-skilled manual (elementary) occupations among no-contract employees in Central and Eastern European countries except Poland, as well as in Denmark, Italy, Greece, Cyprus, and Western European countries except Ireland, varies between 14% and 24%, whilst in the formal sector it varies between 6% and 14%. The contrast is even sharper in Poland, Spain, Portugal and France, where the share of elementary occupations is less than 14% among formal employees but among their informal counterparts varies from 31% in France and Poland to 36% in Portugal to 56% in Spain. For the latter two countries this, plausibly, has to do with infamously strict EPL which makes it prohibitively expensive for employers to hire formally anyone but the most productive.

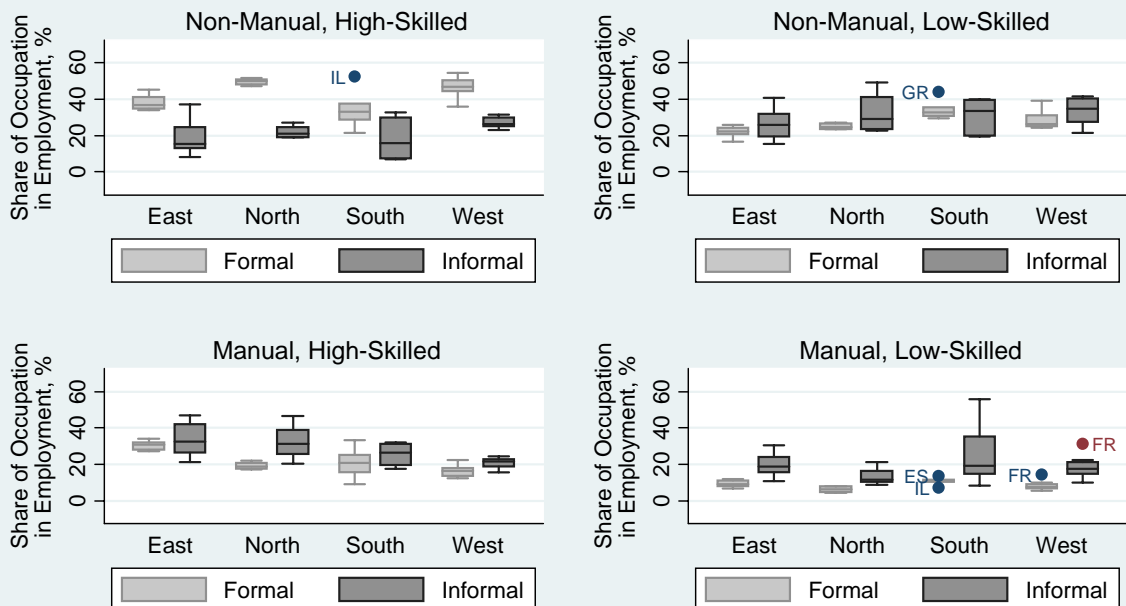
Formal and Informal Employees by Occupation In European Countries, by Region. 2004-2009



Formal: Employee with a contract; Informal: Employee without a contract. Self-employed excluded
Source: Calculation with ESS data

Figure 9 Occupational composition of formal and informal employees, by country

Occupational Composition of Formal and Informal Employees In European Countries, by Region. 2004-2009



Formal: Employee with a contract; Informal: Employee without a contract. Self-employed excluded
Data not weighted by countries' population: A worker from any country is equally likely to be sampled
Source: Calculation with ESS data

Figure 10 Shares of manual and non-manual occupations among formal and informal workers in European Regions

On the opposite end of the skill ladder, one finds that in every European country but Greece, Spain, and Portugal, 34% to 55% of formal employees hold high-skilled non-manual jobs, whilst among informal employees this proportion is less than 20% in 13 of the countries examined and falls between 20% and 30% in 12 countries; only in the Czech R., Israel, Belgium and France does it exceed 30%. Figure 10 summarizes these and related findings by comparing distribution of shares of manual and non-manual occupations in countries' formal and shadow sector across European regions.

Recall (see, e.g. European Commission, 2008, p.104: Table 8 in Annex to Chapter 2) that a worker with higher education holding a manual or low-skilled non-manual occupation, is considered *over-qualified*; secondary-educated workers employed in elementary occupations are also over-qualified. Figure 11 provides a cross-country comparison of prevalence of over-qualification among formal employees and two categories of shadow workers. Overall, there is a quite strong positive correlation between the three over-qualification rates. However, in countries such as Ukraine, Russia, Slovenia, Denmark, Norway, Spain and Switzerland, employees without contracts are much more likely than their formally employed colleagues to have education beyond the level their job require. This could indicate either a lack of demand for skilled workers, or a skills mismatch between what is learned and what is demanded on the labor market at a level high enough to justify the cost of hiring formally. Given that the trends in favor of more skilled workers (both in terms of education and occupation) found in the structure of European employment, as well as in the structure of job creation (European Commission, 2009: Figures 2-4), the skill mismatch is a more likely explanation.

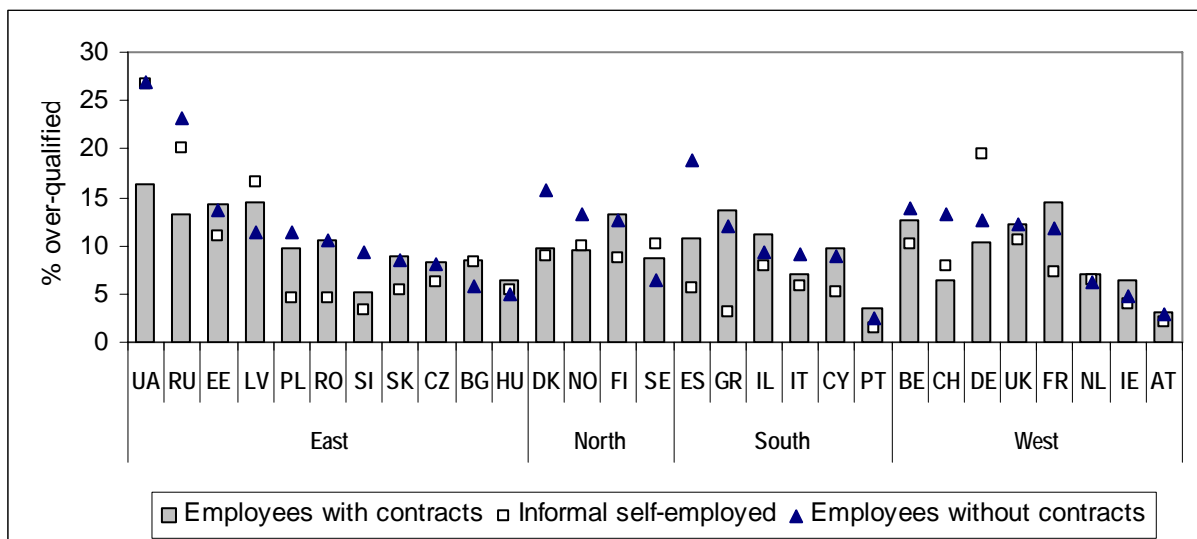


Figure 11 Over-qualification among formal and informal workers, 2004-2009.

Source: Calculation with ESS data.

Sectoral composition. Previous research on undeclared work (Riedmann and Fischer, 2008: p.23; Williams and Renooy, 2008: p. 9-10; Pedersen, 2003: Figure 4.2) has revealed construction, household and personal services, trade, and hospitality as the most popular activities among informal workers, as well as the ones with the highest proportions of all workers involved in undeclared work; yet the same studies suggest that countries and European regions might substantially differ from each

other in terms of sectoral distribution of undeclared work. For instance, Williams and Renooy (2008) report that construction activities account for only 3% of undeclared work in Southern Europe, whilst in the Nordic countries this proportion is 27%. However, given the sensitive nature of the questions and relatively small samples in the underlying surveys, country-specific findings should be subject to caution. ESS-based results, reported in Table 6 by categories similar to the ones used in Williams and Renooy (2008), suggests a much smaller geographical variation in sectoral distribution of informal work; in particular, the share of construction is about 10% in the South and 13% in the North. On the other hand, within European regions we find substantial differences between undeclared employees and informal self-employed. In particular, the former are much more concentrated in education and health-related services, as well as in industry, whilst the latter – in agriculture, and (in Eastern and Southern Europe) also in trade, auto repair, and hospitality sector. The differences in findings between ESS and *Eurobarometer* survey is likely to be driven by various factors. ESS does not cover secondary jobs; moreover, employed respondents are not asked about their past activities, while the *Eurobarometer* questions refer to the last 12 months. The seasonal factor might play a role, too: most of the ESS field work has been conducted during autumn and winter months, while it was in the summer for the *Eurobarometer*. On the other hand, ESS samples are much larger, and, as mentioned above, the quality of ESS field work in the Southern Europe, as well as in Ireland and UK seems to be better.

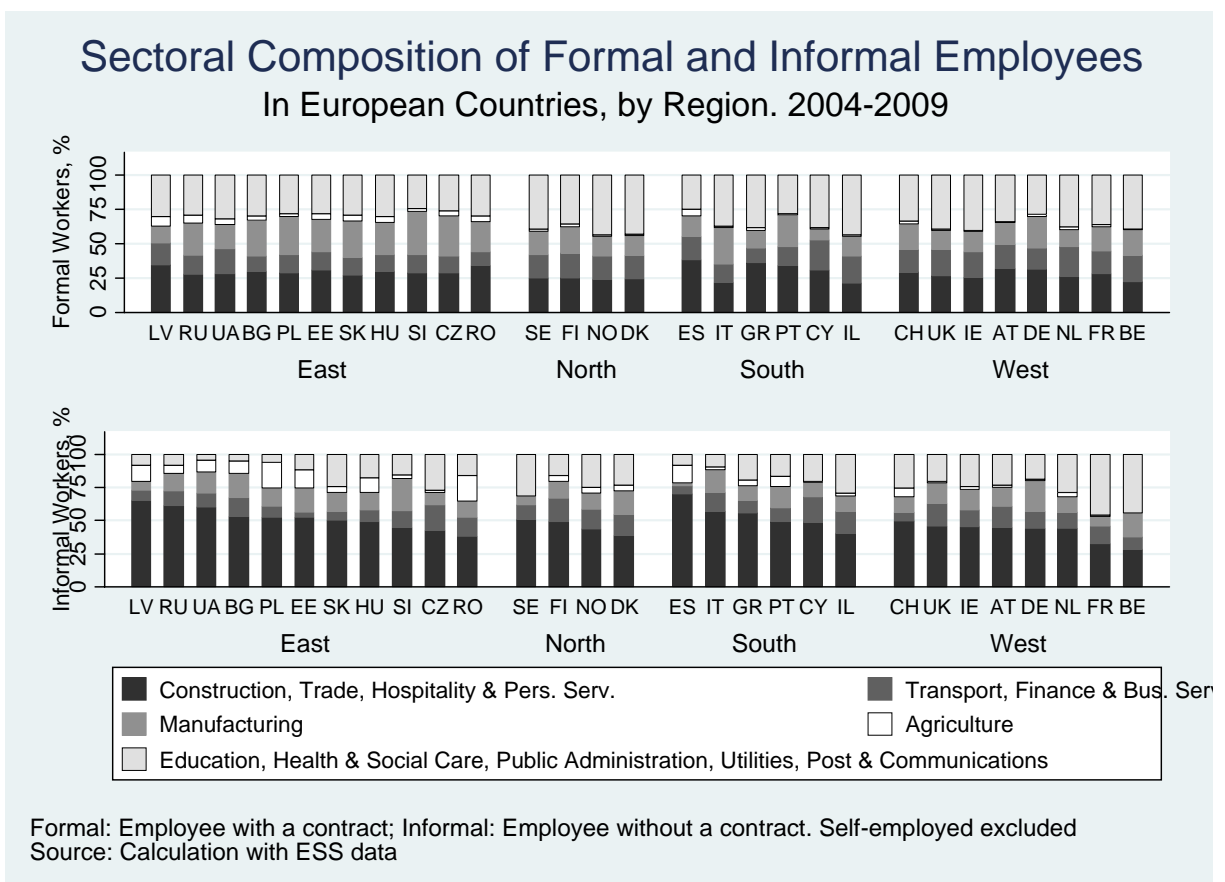


Figure 12 Sectoral composition of formal and informal employees, by country

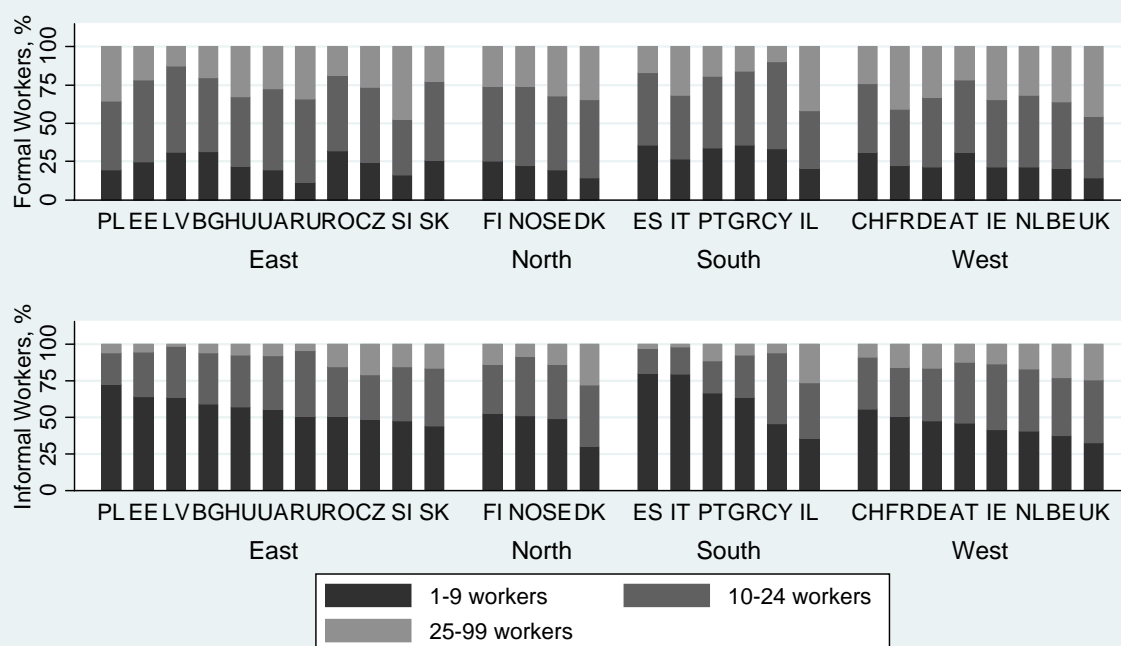
Figure 12 compares, for each country, sectoral distribution of informal employees and their formal sector counterparts (self-employed are not considered). Taking into account that the number of observations on informal employees for seven of the countries examined is less than 100, we report distribution among just five broad sectors. The “usual suspects” (construction, trade, auto repair, hotels and restaurants, personal and household services) together account for [almost] 40% to 70% of all non-contracted employees in all countries except Belgium and France; with few exceptions, this share is one-and-a-half to two times as big as among formal employees.

Another sector which accounts for a substantial share of informal employees in most countries includes services such as education, health and social care, post and communications, as well as energy and water supply. This share ranges between 15% and 32% in most cases, but reaches 45% in France and Belgium, whilst it is below 10% in Latvia, Russia, Ukraine, Bulgaria, Poland and Italy. In every country except Estonia, 6% to 20% of non-contracted employees work in transportation, finance, and business services. The same is true for manufacturing – this time with the exception of Spain, where this share is low, and somewhat higher shares in Germany and Slovenia. The share of agriculture among shadow employees exceeds 5% only in Eastern European countries (except the Czech R. and Slovenia), as well as in Spain and Portugal. This finding does not change even if the currently non-employed persons who were engaged in informal work during the year before the survey are included. However, one must keep in mind that much of the seasonal agricultural work is performed by legal or illegal temporary immigrants which are unlikely to be covered by the surveys.

Establishment size. Figure 13 compares, for each country, distribution of informal employees and their formal sector counterparts by establishment size. As expected, in all countries the share of small (under 10 workers) units is much larger in the informal sector (recall that we have not used the firm or establishment size when classifying employees as formal or informal). Moreover, in most countries at least half of informal employees work in units of less than 10 workers, and only in four countries (Denmark, Israel, Belgium and the UK) this share falls below 40%.

However, in every country a substantial part (from one fifth to two thirds) of informal employees work in establishments of size exceeding the conventional ‘5 workers informality threshold’ by a factor of two at least; moreover, in the Czech R., Denmark, Israel, the UK, and Belgium one 20% to 30% of informal employees work in establishment with 100 or more workers. Similar findings for Latin America are reported by Perry et al. (2007: Figure 6.1).

Formal and Informal Employees by Establishment Size In European Countries, by Region. 2004-2009



Formal: Employee with a contract; Informal: Employee without a contract. Self-employed excluded
Source: Calculation with ESS data

Figure 13 Formal and informal employees by country and size of establishment

3.2 Exclusion factors²¹

Long-term unemployment experience. Prevalence of long-term unemployment experience among informal employees is much higher than among their formal counterparts (or among informal self-employed) in most countries (see Figure 14; exceptions include Hungary, Slovakia, Czech R., Norway, Greece, and Cyprus). In 14 countries one tenth to one fifth of shadow employees have been unemployed for more than 12 months during their life, while in Latvia, Belgium, Bulgaria, Netherlands, UK, Portugal, and Italy this proportion ranges from one quarter to one third. This suggest that substantial part of the informal wage earners have been forced into informal sector by being rejected in the formal sector.

Perceived discrimination. In a number of countries, estimated proportion of informal employees who consider themselves belonging to a discriminated group, is well above similar proportion among both formal employees and informal self-employed (Figure 15), once again supporting the hypothesis that exclusion or poverty escape motive plays an important role in the way how employees end up working without a contract. Table 7 provides evidence that within European regions the differences between informal and formal employees are statistically significant (at the country level the relevant sub-samples are too small).

²¹ Results of this section are based on ESS data only and for some countries should be interpreted with care due to limited number of observations on informal employees. See Note to Figure 14 for details.

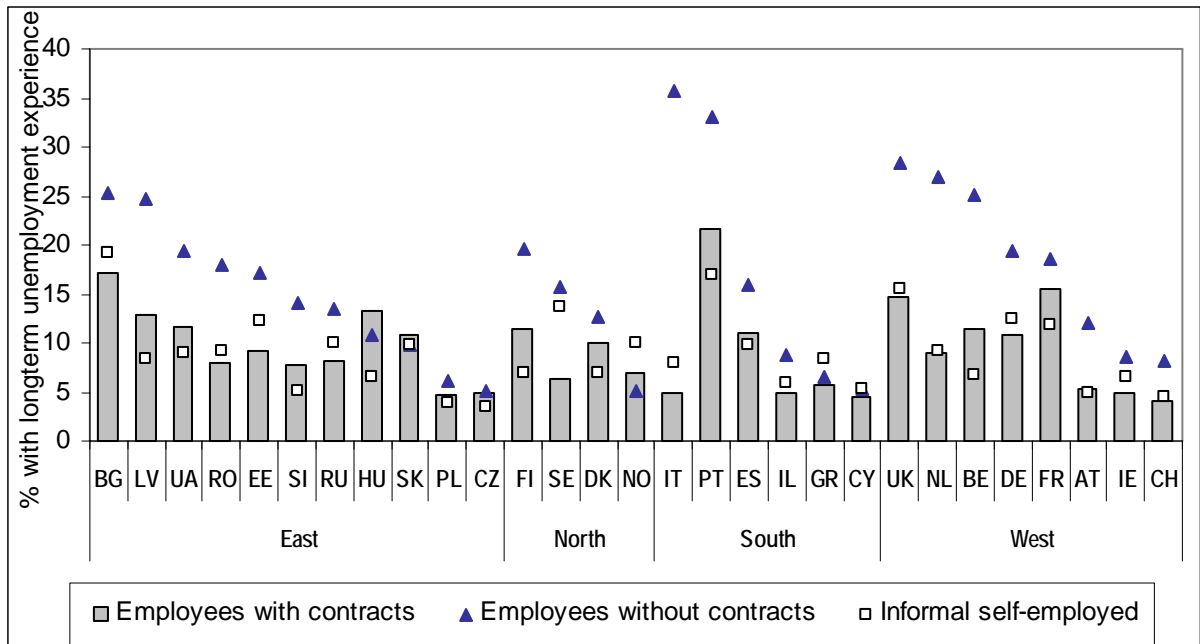


Figure 14 Long-term unemployment experience of formal and informal workers, by country. 2004-2009

Note: The sample size of employees without contracts is less than 30 for IT, SE and FI; between 50 and 90 for CZ, RO, SK, HU, EE, BE, FR, DE and CH; between 100 and 745 for other countries.

Source: Calculation with ESS data.

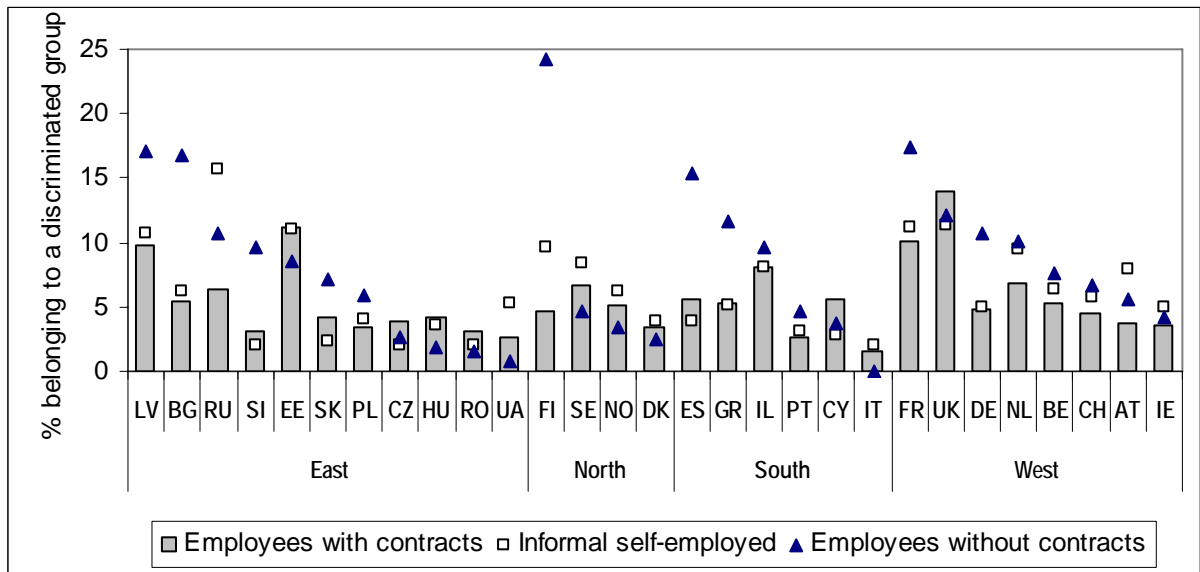


Figure 15 Perceived discrimination among formal and informal workers, by country. 2004-2009

Note: The sample size of employees without contracts is less than 30 for IT, SE and FI; between 50 and 90 for CZ, RO, SK, HU, EE, BE, FR, DE and CH; between 100 and 745 for other countries.

Source: Calculation with ESS data

Union experience. Another indicator which helps to understand where the informal workers are coming from is trade-union membership (current or past). Informal workers with union experience have clearly been working in the formal sector some time ago (and those with current membership probably plan to return). Figure 16 compares union coverage (current or past) among formal and

informal workers. It appears that transition from formal to informal sector is quite common in Nordic countries, Cyprus, Israel, Belgium, Ireland, UK, Germany, and Austria, where from 35% to 80% of informal employees (and, except for Cyprus, similar fractions for informal self-employed) come from the unionized sector. In Israel, Greece, Portugal, and France these proportions are lower (around 20%), but still similar to the ones found among formal workers, again suggesting that the two sectors are not isolated from each other.

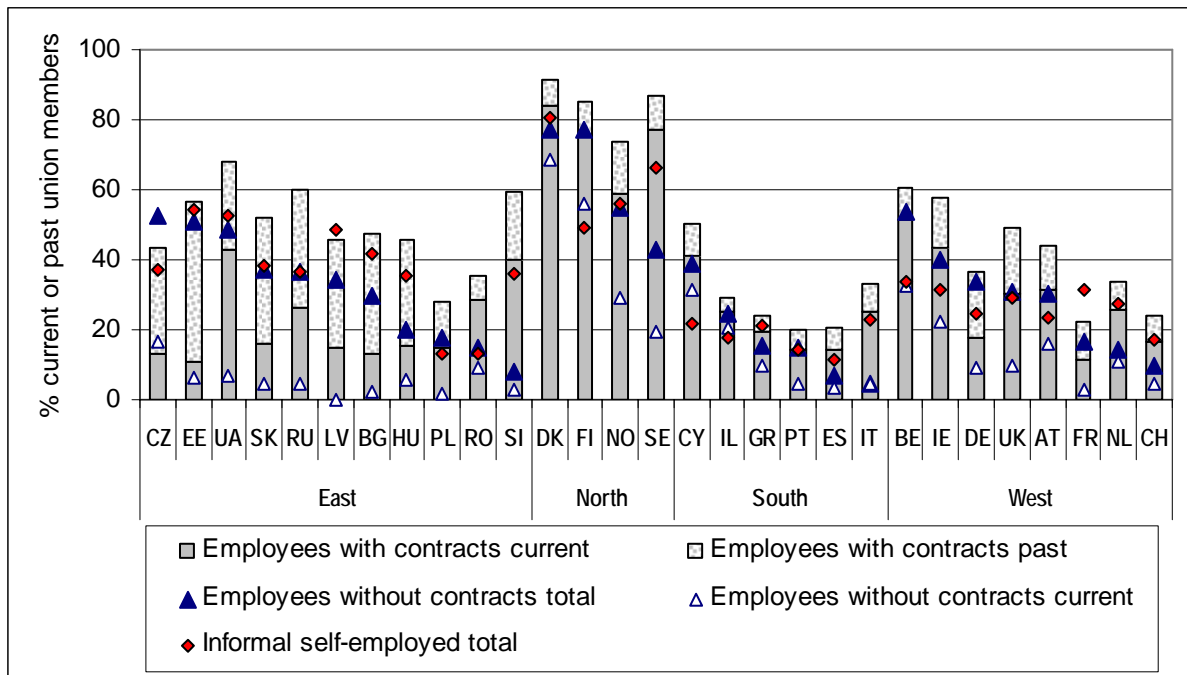


Figure 16 Trade-union experience of formal and informal workers, by country. 2004-2009

Note: The sample size of employees without contracts is less than 30 for IT, SE and FI; between 50 and 90 for CZ, RO, SK, HU, EE, BE, FR, DE and CH; between 100 and 745 for other countries.

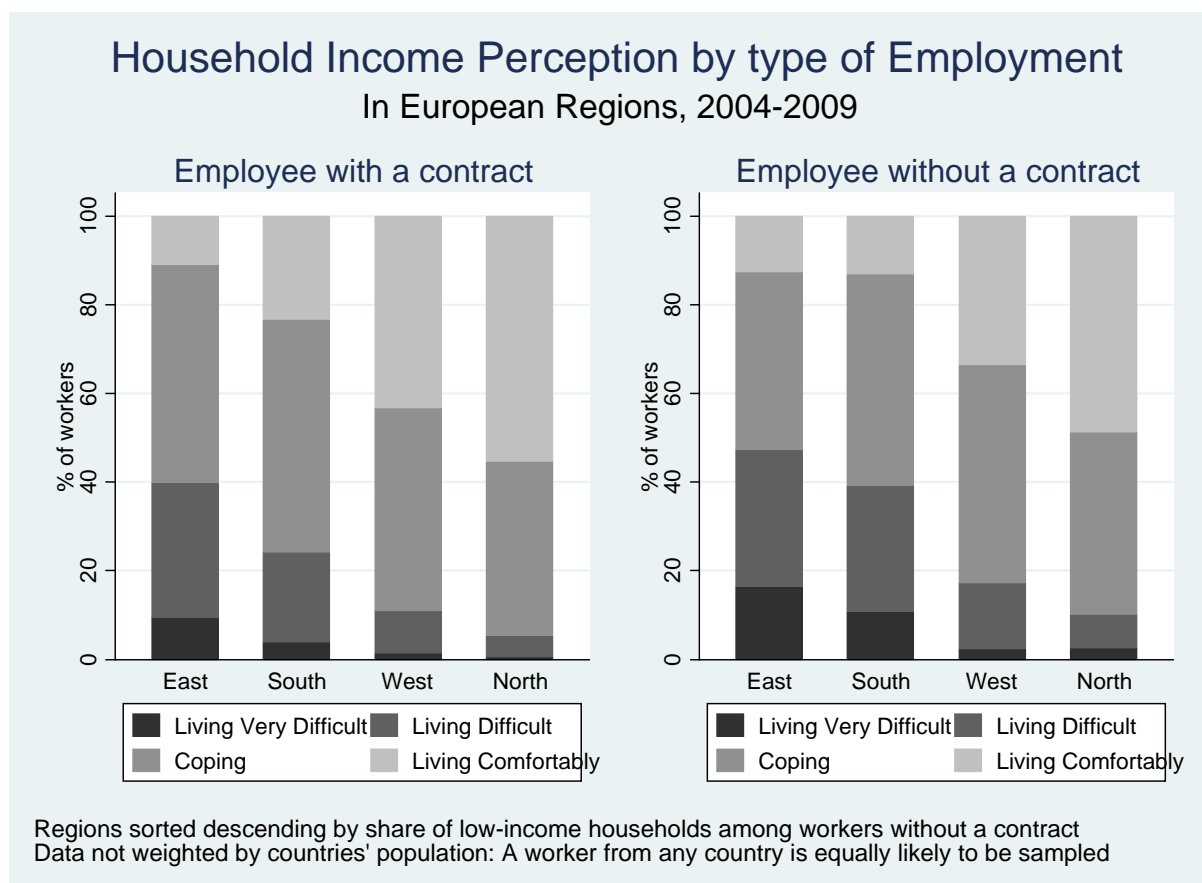
Source: Calculation with ESS data

By contrast, in Hungary, Romania, Slovenia, Spain, Italy, Netherlands, and Switzerland proportions of informal employees with union experience are low both in absolute terms and in comparison with formal workers, suggesting substantial segmentation. It is more difficult to interpret situation in remaining Eastern European countries (the Czech R., Slovakia, Poland, Estonia, Latvia, Bulgaria, Ukraine, and Russia), where the proportions of informal workers (both employees and self-employed) with union experience are substantial but it is not clear whether this experience refers to the socialist era or to the market economy period.

3.3 Are informal workers poorer than the formal ones?

Figure 17 compares perception of household financial situation by formal and informal employees. In both the Eastern and Southern Europe, the proportion of those seeing their situation as ‘very difficult’ is much higher among non-contracted workers: 19% vs. 10% in the East and 11% vs.

4% in the South²². The situation is similar when respondents describing their situation as ‘difficult’ or ‘very difficult’ are taken together: This category accounts for 53% of informal employees and just 41% of formal employees in the East, whilst corresponding figures for the South are 39% vs. 24%. By contrast, in Western Europe and especially in the Nordic countries, distributions of formal and informal employees among four household income perception categories are rather similar.



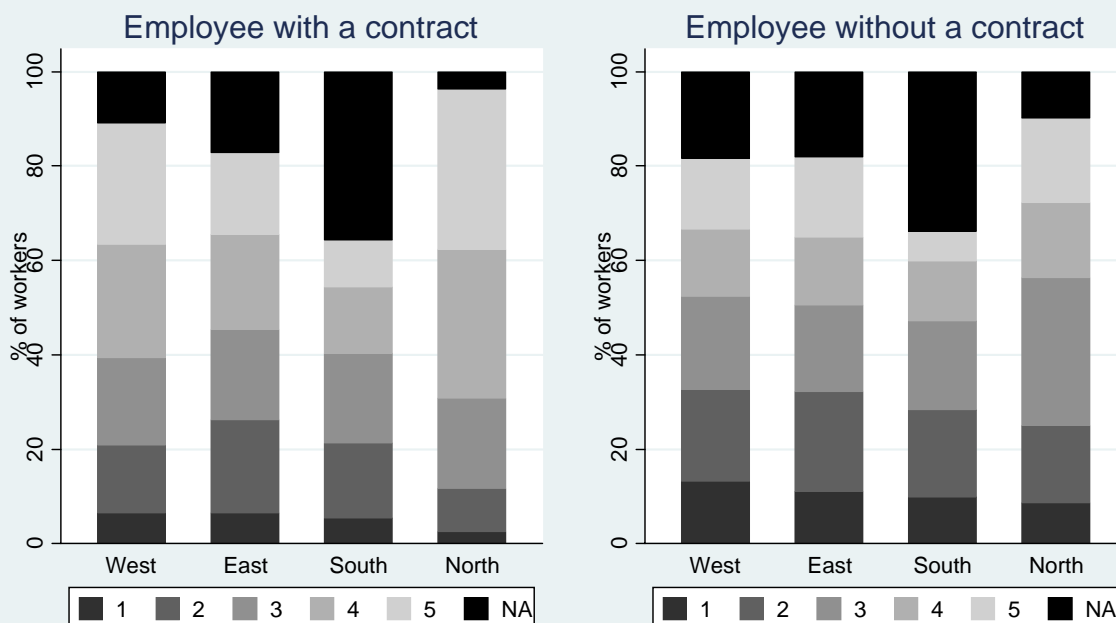
**Figure 17 Perception of household financial situation
among formal and informal employees in European regions**

Source: Calculation with ESS data.

The data mentioned above refer to the period between 2004 and 2009. For 2008-2009, round 4 of ESS provides also information on household income decile group within the country, although non-response to corresponding question (unlike the question on income perception) was quite substantial. Figure 18 summarizes this information (in quintile rather than decile form) by European region, separately for contracted and non-contracted employees. In Eastern and Western Europe, 11% and 13%, respectively, of non-contracted employees and just 6.5% of contracted employees live in the bottom quintile households. In Southern Europe these proportions are 9.9% vs. 5.4%, whilst in Northern Europe – 8.6% vs. 2.5%. In other words, while informal workers disproportionately suffer from absolute poverty only in the East and in the South, the incidence of relative poverty among informal workers is much larger than among their formal counterparts in all parts of Europe.

²² These (rounded) figures are obtained after excluding non-response which for the question at hand was quite small. Recall that countries are not weighted by population size.

Household Income Quintiles by type of Employment In European Regions, 2008-2009



Regions sorted descending by share of low-income households among workers without a contract
Data not weighted by countries' population: A worker from any country is equally likely to be sampled

**Figure 18 Household income quintiles
among formal and informal employees in European regions**

Source: Calculation with ESS data.

The results of descriptive analysis are reinforced by ordered probit results (Table 8 and Figure 19), which suggest that after controlling for a rich set of individual characteristics (including parental background, as well as minority/migrant background), informal employees are having the largest financial difficulties among all categories of employed population (yet they fare much better than the unemployed and discouraged).

The situation of informal self-employed varies by country group: in the UK, Ireland, Austria and Netherlands, they are as well off as formal employees; in France, Belgium, Germany, and Switzerland, as well as in the Nordic countries and in Southern Europe, they are better off than otherwise similar formal employees, but not by much; and in Eastern Europe they are substantially better off²³.

Note that these results are not subject to selection bias because non-response to the question on self-assessment of household's financial situation is quite small, and non-employed population is included in the sample. Yet we cannot claim that the relationship is causal because the same unobserved factors can influence propensity to work informally and propensity to experience financial hardship, although presence of parental background controls mitigates this problem.

²³ In this analysis, we do not account for coordinated labor supply decisions within household. This awaits a separate study (there are, however, some data limitations).

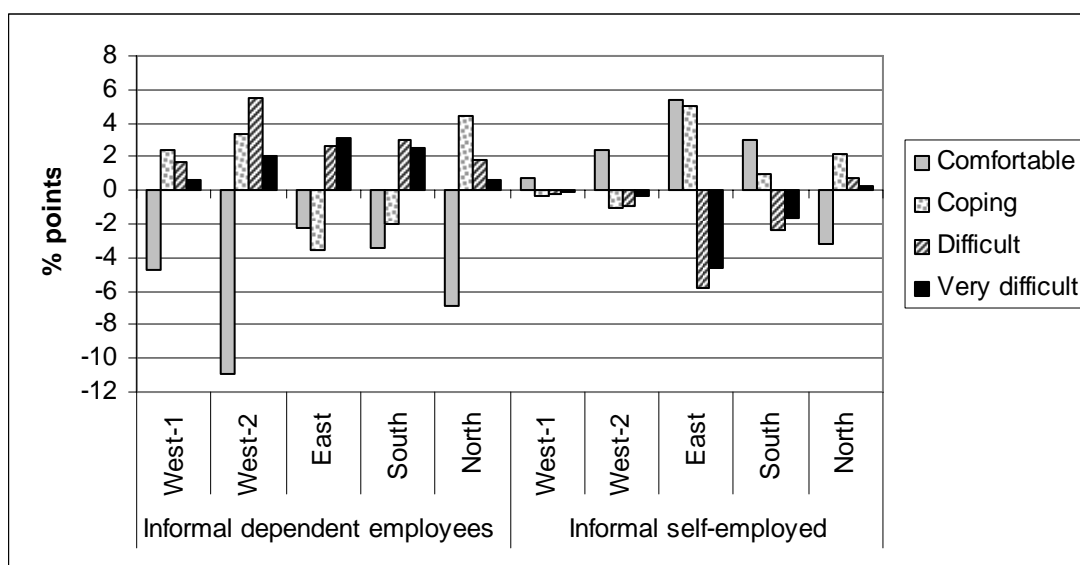


Figure 19 Impact of employment status on perceived household financial situation (ordered probit marginal effects vs. formal employees)

Source: Calculation with ESS data (based on model reported in Table 8).

Our findings are qualitatively similar to those by Perry et al. (2007: Chapter 3) on Latin America: in Argentina, informal salaried workers have substantially higher income-poverty and self-rated poverty rates than formal salaried workers; in Dominican Republic, the same is true for income-poverty and dissatisfaction with employee benefits (but not for self-rated poverty and dissatisfaction with earnings); and in Colombia, for dissatisfaction with both earnings and employee benefits. Moreover, earnings of informal employees are, on average, by more than 40% lower than those of formal workers in Bolivia and Dominican Republic and by more than 60% in Argentina. These earnings and welfare gaps remain significant after controlling for worker characteristics in some cases but become insignificant in others. In most cases, welfare and/or earnings disadvantage of informal self-employed is either smaller or absent (or disappears after controlling for characteristics).

We conclude this section by noting that, contrary to a popular perception, the overwhelming majority of informal employees (81 to 83% in the North and in the West; 88 to 89% in the East and in the South) mention wages (rather than social assistance benefits) as the main source of their household income; this level is not much lower than 93 to 95% found among formal employees.

4 Determinants of work without a contract

In this section, to test empirically the predictions of the model outlined in Section 1, we present the results of econometric analysis of individual determinants of work without a contract among employees, ignoring the effects of selection into dependent employment. Thus, we are modeling the “choice” between formal and informal dependent employment, once the worker has, for the given

period, chosen paid work over self-employment or non-employment. Note that the potential selection bias is mitigated by presence of parental background controls which proxy for unobserved ability.

The results are presented in Table 9 separately for seven country groups which appear to be homogenous with respect to the main effects²⁴:

- (i) East-1: Poland, the Czech R, Slovakia, Estonia, Latvia, Lithuania, Russia, Ukraine, and Bulgaria;
- (ii) East-2: Hungary, Romania and Slovenia;
- (iii) North: Sweden, Norway, Finland and Denmark;
- (iv) West-1: the Western European countries with high informality level (Ireland, UK, Austria), joined by the Netherlands, where the direction of the main effects appears to be largely similar to the ones found in the other three countries, and the legal requirements on employee contracts are similar to those in the UK and Ireland (see Table A1 in the Annex);
- (v) West-2: Germany, Switzerland, France, and Belgium, which feature broadly similar level and structure of informal employment (let aside being German and/or French-speaking);
- (vi) South-1: Spain, Portugal and Israel;
- (vii) South-2: Italy, Greece and Cyprus.

The models are mixed-effects logits (see Train, 2003; Greene, 2008: pp. 851-852) with country and year fixed effects (capturing the macro factors) and region-level random effects, capturing region-specific differences in economic development and/or in social norms. Here “regions” are NUTS level 1 for Germany, France, the UK and Spain; NUTS level 3 for the Baltic countries, the Netherlands, Bulgaria and Slovenia; and NUTS level 2 for remaining countries, except for Russia (10 federal regions) and Ukraine (26 “oblast’s” surrounding largest cities).

Except for Nordic countries, Hungary, Romania and Slovenia, we have found a substantial within-country regional variation in informality: estimated standard deviations of the random effects are significant at 1% level in East-1, West-1, South-1 and South-2, and significant at 5% level in West-2; the [conservative] LR tests comparing estimated models with the ones without random effects are also highly significant in East-1, West-1, South-1 and South-2, and significant at 11% level in West-2.

For East-2 and North, where informality differences across regions are not large enough, we present models where region-level random effects are integrated over the sample, i.e. population-averaged models estimated by the Generalized Estimating Equations (GEE) method (see Liang and Zeger 1986)²⁵.

The results are consistent with the predictions of the model outlined in Section 1, as well as with the descriptive statistics discussed in Sections 2 and 3. In all country groups, the propensity to work

²⁴ Single-country models have been estimated and compared as a preliminary stage of analysis.

²⁵ For the other five country groups, the marginal effects from population-averaged logit estimates are similar to the ones presented in Table 9.

without a contract is inversely related to education level, although the patterns and the strength of this effect varies by country group. Students are much more likely to work informally than otherwise similar other workers. In four out of seven country groups, the same holds also for workers with a disability or a chronic illness. Even after controlling for being a student, the age-informality profile is U-shaped, with the minimum ranging between 37 and 48 years, depending on country group. The only exception is the South-1 group (Spain, Portugal, and Israel), where the minimum is at 21 years of age among non-students (and at 27 years if being a student is not controlled for). Recall that both the young and the elderly, as well as persons with permanent health problems, apart from lower-than-average productivity, are likely to have a source of non-labor income, to be less concerned with the job security, to have rather volatile preferred number of hours worked, and to place a high value on flexible work schedule. Moreover, the students, the pensioners and the disabled, by the group belonging, are likely to have large informal social capital and are more likely than others to receive informal job offers.

After accounting for the sector of employment, the gender effect varies by country group (plausibly, reflecting the differences in informality traditions across countries). In Eastern Europe (except Romania and Slovenia), female workers are less likely to be informal than otherwise similar male workers; in Nordic countries this is true only for non-single females. In Belgium and France, we have not found a significant gender effect, whilst in the rest of Western Europe, as well as in Southern Europe female workers are more likely to work without a contract than their male counterparts (in Greece, Cyprus and Italy this applies only to childless females).

In Eastern Europe, as well as in Israel, workers with either ethnic minority or immigrant background have a significantly higher propensity to work without a contract than otherwise similar native workers²⁶. In Eastern Europe, this effect is less pronounced for those with only one parent being immigrant, as well as for immigrants from EU countries. In Spain and Portugal, all immigrants, both from EU and non-EU countries, face a substantially higher risk of informality than native workers (the marginal effect is 13 to 15 percentage points); however, this is not the case for second generation immigrants. In Italy, Greece, and Cyprus we found a significantly higher informality risk only for immigrants not covered by the free movement of labor provisions (the marginal effect is 21 percentage point), as well as for „mixed” second generation immigrants (13 percentage points). With regards to Italy this result should be interpreted carefully because the Italian data cover only year 2006, and the sub-sample of informal employees is pretty small.

In the UK, Ireland, Austria, and the Netherlands, immigrants not covered by the free movement of labor provisions constitute the only group among population with immigrant or minority background featuring a significant informality effect (5.6 percentage points above native workers). It

²⁶ This result does not apply to Hungary, Romania, and Slovenia. However, at least for the former two countries, this might be due to data limitations: It is well documented (see e.g. Kahanec et al., 2010; Kahanec and Zimmermann, 2011), that informal employment is common among Roma population across Eastern Europe. Yet this minority group is severely under-represented in ESS samples for Hungary and Romania.

is worth noting that belonging to this group is clearly an exogenous variable – unlike having an individual work permit.

Remarkably, in Nordic countries, as well as in Germany, Switzerland, France and Belgium, none of the minority or immigrant groups, after controlling for other observable characteristics, features a higher informality rate than the native employees. See, however, Hazans (2011a; 2011b) for a simultaneous analysis of informal dependent employment, informal self-employment, unemployment and inactivity.

In Eastern Europe (but not elsewhere), workers who are return migrants are more likely to be employed informally. This is consistent with the idea that a substantial part (although not necessarily a majority) of return migrants might be “negatively selected” out of home-country’s labor force, and their return is an evidence of not being successful abroad as well. It is enough if the proportion of such low-productivity workers among return migrants would be substantially higher than the informality rate among stayers, which is about 5% in the Eastern Europe, and such a situation is quite a likely outcome; Hazans (2008) shows that about 25% of return migrants are negatively selected.

It is worth mentioning that some of the results obtained are similar to those by Jonasson (2011) who studied determinants of informality in urban labor markets of Brazil using a probit model. This concerns the negative education effect, the U-shaped age-informality profile, and the positive effects of being an immigrant (Jonasson controls for a rural-urban immigrant) or disabled.

5 Are workers dissatisfied with the government more likely to have no contract?

The literature indicates that tax morale and perception of the quality of the government institutions has a significant effect on the tax evasion behavior and the size of informal economy in general (see Frey and Weck-Hanneman, 1984; Pedersen, 2003; Schneider, 2005; Torgler, 2007, 2010; Schneider, Buehn and Montenegro, 2010 among others). However, to our best knowledge, there have been no comparative studies on this effect with respect to work without contract in particular. Moreover, most studies investigate the effect of country average tax morale on tax evasion or shadow economy indicators or, as Torgler 2010, the effect of individual characteristics on tax morale; very few studies look at the effect of individual level drivers of tax morale on actual informal activities of the agents. To fill this gap, we amend mixed-effects logit models²⁷ described in the previous section, with self-reported satisfaction with the national government measured at the 0-10 scale.

It is important to acknowledge that this variable might be endogenous to informality for various reasons. Violating government regulations by itself suggests some dissatisfaction with these regulations and hence with the government. This dissatisfaction might well be exogenous, but work without contract puts a person in a (latent or open) conflict with the authorities, which might reinforce dissatisfaction rendering it endogenous. Furthermore, the person working informally might seek

²⁷ Simple logit and probit estimates are similar and available on request.

moral justification and to this end purposefully collect (or just pay more attention to) the evidence for the government's wrongdoings.

Therefore we start by testing exogeneity of the variable measuring satisfaction with the national government in the probit model explaining informal employment. The test amounts to evaluating, by the maximum likelihood method, [the arc-hyperbolic tangent of] error correlation in simultaneous model of informality and satisfaction with the government (*STF_GOV*), where the latter is instrumented by a variable z which has a significant effect on *STF_GOV* but is not correlated with errors in informality equation. We have tried three versions of the instrument (all measured on the same 0-10 scale): *Trust* ("Most people can be trusted"), *Fair* ("Most people try to be fair"), and *Rightwing* (self-placement on the left-right scale). All three variables are strong predictors of the satisfaction with the government, but tests of instrument validity are sometimes more convincing for one of the instruments. We report results based on the *Trust* for all country groups except for South-2 in which case *Rightwing* has been used. In all cases, the instrument has a positive and highly significant impact on satisfaction with the government (F-tests of excluded instrument are all significant at 1% level). The first-stage regressions F-tests are high enough to exclude weak identification. As shown in Tables 10, exogeneity of *STF_GOV* is not rejected for each of the seven country groups: p -values of the Wald test in IV probit models are in the range between 0.36 and 0.89 for all country groups, except for West-1, in which case it is 0.21. For two larger country groups, Eastern and Western Europe, p -values are 0.87 and 0.31. Note that statistics are based on robust standard errors clustered on within-country regions. Moreover, the instruments appear as valid also in linear probability models, and exogeneity is again not rejected (to save space, these tests results are reported only for Eastern and Western Europe, see Table 11). Hence, in the models reported in Tables 10 and 11 we treat satisfaction with the government as exogenous.

The results in Table 10 suggest a negative and significant effect of the satisfaction with the government on the propensity to work without contract in the East-1 (the Poland, the Czech R, Slovakia, Estonia, Latvia, Lithuania, Russia, Ukraine, and Bulgaria), as well as in the West-1 (the UK, Ireland, the Netherlands, and Austria). Other things equal, an increase in satisfaction by 5 points would reduce informality rate among employees roughly by 1 percentage point in the East-1 and by 1.7 percentage points in the West-1. Given the current informality rates (5% in the East-1 and 14% in the West-1), this is a substantial reduction. In the East-2, as well as in the South-1, the estimated effect of satisfaction with the government on informality of dependent employment is also negative but not statistically significant, whilst in the North, in the West-2, and in the South-2 it is virtually zero. However, when all Eastern European countries or all Western European countries are pooled together (Table 11), we again find a highly significant and sizable negative effect of satisfaction with the government: in both cases, an increase in satisfaction by 5 points would reduce informality rate among employees by 1 percentage point. These results are consistent with positive effects (at the individual level) of trust in the government and of governance quality on tax morale in Eastern European countries found by Torgler (2010).

Of course, for each country group the effect of satisfaction with the government comes from two sources: (i) a similar within-country effect; (ii) higher informality in countries with low government ratings. The latter pattern is especially evident in Eastern Europe (see, in particular, Hazans, 2011b: Tables 3A, 3B). At the country level, we find negative and significant effect of the satisfaction with the government on the propensity to work without contract in Estonia, Latvia, Romania, Russia, Norway, Austria, the UK, Ireland, and Israel (these results are available on request).

6 Conclusion

In this paper we have compared the prevalence of informal employment in 30 European countries using data from the European Social Survey. Overall size of informal employment decreases from the South to West to East to North, but the median prevalence of dependent informal employment is higher in the East than in the West. Yet there is a strong heterogeneity within these geographical areas. In particular, Western Europe is split into highly informal part (Ireland, the UK, and Austria) on one hand and the continental part (without Austria), where work without contract is quite rare, although informal self-employment is more prevalent than in most of Eastern Europe. We have found a substantial within-country regional variation in informality in all countries except for Nordic countries, Hungary, Romania and Slovenia.

In all parts of Europe, the dependent informality rate is inversely related to skills (measured in terms of either schooling or occupation). The low-educated, the young (especially students), the elderly, and persons with permanent health problems are more likely to work informally, other things equal.

Both in Southern and in Western Europe, the highest dependent informality rate is found among immigrants from CEE and former Soviet Union, whilst in Eastern Europe this group is second after local born minorities without immigrant background. In Southern Europe (especially in Spain, Portugal, and Greece) immigrants not covered by the “free movement of labor” provisions are more likely to work without contract than both natives and covered immigrants. Both in Eastern and Southern Europe, as well as in highly informal part of Western Europe, these not covered immigrants have significantly higher propensity to work without contracts also after controlling for individual characteristics.

Our findings lend support to theoretical arguments that apart from low productivity, informality drivers include “informal” social capital, low value placed on job security, and preference for flexible working time and/or substantial volatility of desired working hours.

We provide evidence that exclusion, lack of human capital and discrimination play important role in pushing employees into informality, whilst this seems not to be the case for informal self-employed. Both on average and after controlling for a rich set of individual characteristics, informal employees in all parts of Europe are having the largest financial difficulties among all categories of employed population (yet they fare much better than the unemployed and discouraged), whilst informal self-employed are at least as well off as formal employees.

Finally, we find a negative and significant effect of the individual-level satisfaction with the national government on the propensity to work without contract Eastern Europe, as well as in Western Europe.

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**Table 1 Classification of extended labor force
(economically active and marginally attached population)
based on European Social Survey data**

No.	Category	Definition
1	Formal employment	Formal employment includes the following two groups: (i) Employees holding an employment contract; (ii) Persons working for own family's business and having a contract.
2	Formal self-employment	Formal self-employment includes the following two groups: (i) Employers with more than 5 workers; (ii) Self-employed working as professionals (without workers)
3	Informal self-employment	Informal self-employment includes the following two groups: (i) All non-professional self-employed operating solely; (ii) Employers with 5 or fewer workers
4	Family workers	Persons working without a contract for own family's business
5	Informal dependent employment	Employees (persons in a dependent employment relationship) without a contract or who is uncertain of their contract.
6	Unemployed willing to work	Persons which during the reference week did not work, were not temporarily absent from a job, and were either actively looking for a job or wanting a job but not actively searching.

Notes: This classification is fully applicable to ESS data starting from round 2. In round 1, it was not possible to distinguish between categories 1 and 5. Moreover, due to data limitations, the classification is applicable to French data only starting from round 3, and to Romanian data - from round 4.

**Table 2 Prevalence of informal employment in Europe, by region.
2008-2009**

Per cent

A. Estimates based on current (during the survey week) status of respondents

Employees without a contract as a share of all employees

	Non-response about contract excluded		Non-response treated as „No contract”		Total employment		Extended labor force		Population aged 15+	
	a	b	a	b	a	b	a	b	a	b
	<i>South</i>	9.5	20.2	10.1	21.1	28.2	35.6	24.5	31.3	14.0
<i>West</i>	5.1	6.3	5.5	7.1	15.8	17.8	14.5	16.4	8.9	10.1
<i>East</i>	5.2	3.8	6.7	5.3	14.8	13.6	13.4	11.9	7.9	6.9
<i>North</i>	2.7	2.6	2.7	2.7	10.7	11.1	10.3	10.6	6.6	6.7
<i>Total</i>	5.8	8.0	6.6	8.6	17.4	19.3	15.7	17.4	9.4	10.4

B. Lower bound estimates of the population engaged in informal employment during the last year^c

Non-employed population members who were recently informally employed, as a share of current extended labor force

	Recent employees		Total		Extended labor force		Population aged 15+	
	a	b	a	b	a	b	a	b
	<i>South</i>	2.7	4.7	3.6	5.5	28.1	36.7	16.1
<i>West</i>	2.0	2.8	3.0	3.8	17.5	20.2	10.7	12.4
<i>East</i>	3.3	2.9	4.1	4.0	17.6	15.8	10.3	9.2
<i>North</i>	1.1	1.1	1.5	1.5	11.8	12.1	7.6	7.7
<i>Total</i>	2.6	3.1	3.5	4.0	19.2	21.3	11.4	12.8

Notes: Total informal employment includes categories 3-5 (Table 1). See Table 3 for the list of countries in each of the four European region, as well as details on the period of field work. Note that South includes Italy with year 2006 data, whilst West includes Austria with year 2007 data. ^a Countries weighted by population.

^b Countries weighted equally (i.e. a respondent from any country is equally likely to be sampled). ^c Exact reference period varies by country, but on average it is close to 12 months in each of the four European region: 11 months for the North, 11.6 months for the West, 12.6 months for the South, and 14.6 months for the East.

**Table 3 Extended labor force by proximity to formal employment.
Selected European countries, 2008-2009**

Country	Core Period ^b	Formal Employment			Informal Employment				Unemployed Willing to Work			LFS-based unemployment rate	Non-employed who recently were informally employed ^c
		Dependent employment	Self-employment	TOTAL	Dependent employment	Self-employment	Family	TOTAL	Seeking work	Not seeking work	TOTAL		
Southern Europe													
Cyprus	2008/q4	38.8	4.3	43.1	35.2	14.5	3.3	53.0	2.0	1.9	3.9	3.6	3.7
Greece	2009/q3	37.0	2.3	39.3	18.2	26.2	2.3	46.7	8.0	6.0	14.0	9.5	5.7
Israel	2009/q1	46.0	4.4	50.4	25.5	10.7	0.6	36.8	8.6	4.1	12.7	6.8	12.3
Italy ^a	2006/q1	59.0	3.7	62.7	2.9	19.2	0.3	22.4	9.3	5.5	14.8	7.1	4.1
Portugal	2009/q1	62.9	1.3	64.2	7.6	13.8	1.0	22.4	10.1	3.3	13.4	8.5	2.8
Spain	2008/q4	68.4	2.2	70.6	4.4	13.9	0.5	18.8	7.8	2.9	10.7	13.0	1.3
Eastern Europe													
Poland	2008/q4	65.9	2.0	67.9	4.1	16.6	0.9	21.6	7.1	3.5	10.6	6.8	4.4
Ukraine	2009/q1	73.9	0.9	74.8	6.9	7.3	0.2	14.4	8.4	2.4	10.8	9.5	5.1
Slovenia	2008/q4	74.4	1.3	75.7	6.2	7.2	0.7	14.1	4.9	5.3	10.2	4.3	5.8
Bulgaria	2009/q1	65.2	1.7	66.9	5.3	6.7	1.2	13.2	13.9	5.9	19.8	6.4	5.0
Czech R.	2009/q2	77.3	2.7	80.0	1.3	10.7	0.5	12.5	4.9	2.5	7.4	6.6	2.7
Slovakia	2008/q4	77.4	2.9	80.3	1.2	11.0	0.0	12.2	6.2	1.3	7.5	9.3	2.2
Russia	2008/q4	78.8	1.5	80.3	6.1	5.4	0.5	12.0	4.4	3.3	7.7	7.4	4.2
Romania	2009/q1	78.0	1.6	79.6	5.1	5.9	0.8	11.8	5.5	3.1	8.6	6.7	2.9
Estonia	2009/q1	78.0	2.2	80.2	3.2	6.3	0.3	9.8	6.8	3.1	9.9	10.3	4.2
Hungary	2009/q1	71.6	1.0	72.6	2.6	6.2	0.6	9.4	12.4	5.6	18.0	9.7	2.4
Latvia	2009/q2	69.4	1.8	71.2	3.7	3.6	0.7	8.0	13.9	6.8	20.7	17.0	5.9
Lithuania	2009/q4	74.2	1.4	75.5	2.2	4.2	0.0	6.4	12.6	5.6	18.1	15.6	3.0
Western Europe													
Ireland	2009/q4	45.8	2.4	48.2	18.1	13.4	1.5	33.0	13.8	5.0	18.8	12.6	15.1
UK	2008/q4	67.8	2.5	70.3	9.6	11.0	1.1	21.7	6.0	2.0	8.0	6.2	5.2
Austria ^a	2007/q3	73.7	2.4	76.1	8.5	9.9	1.3	19.7	2.6	1.6	4.2	4.3	3.4
Switzerland	2008/q4	79.1	2.4	81.5	1.9	11.5	0.3	13.7	3.8	0.9	4.7	4.0	1.8
Netherlands	2008/q4	79.7	4.3	84.0	2.4	9.1	1.1	12.6	2.1	1.3	3.4	3.1	2.2
Germany	2008/q4	75.4	4.5	79.9	1.6	10.1	0.2	11.9	5.9	2.3	8.2	7.1	2.5
Belgium	2008/q4	74.9	4.2	79.1	1.6	8.4	0.5	10.5	5.4	5.1	10.5	7.2	2.4
France	2008/q4	79.0	1.2	80.2	2.7	7.1	0.5	10.3	7.7	1.8	9.5	8.3	1.0
Northern Europe													
Norway	2008/q3	82.6	2.6	85.2	4.7	7.2	0.4	12.3	2.0	0.6	2.6	2.5	2.5
Denmark	2008/q4	82.2	2.4	84.6	3.9	7.5	0.1	11.5	2.9	1.0	3.9	3.5	1.9
Finland	2008/q4	80.0	2.9	82.9	0.9	10.1	0.2	11.2	3.7	2.2	5.9	6.2	1.0
Sweden	2008/q4	84.6	2.8	87.4	0.8	7.1	0.3	8.2	3.5	1.1	4.6	6.3	1.2

Notes: ^a Results are based on round 4 of ESS. Results of round 4 were not available for Italy and Austria; the latest available results are presented instead. ^b 'Core period' is the quarter during which *most* of the field work has been performed; it is given for the reference only; by contrast, LFS-based unemployment rate has been calculated as weighted average of quarterly unemployment rates for quarters covering the whole field work period. ^c Due to data limitations (only year but not month of the last job is known for non-employed respondents), the shares of non-employed who were recently informally employed (see the last column) are not perfectly comparable across countries. Average 'recent' period varies as follows: 10-16 months in the South, 11-18 months in the East, 11-15 months in the West, and 10-12 months in the North. Experiments with the data show, however, that changing this period by few months do not change the results significantly.

Source: Calculation with ESS data.

**Table 4 Informal employees as percentage of all employees,
by European region and worker category, 2008-2009**

	<i>South</i>	<i>ES, PT, GR</i>	<i>East</i>	<i>West</i>	<i>North</i>	<i>Total</i>	<i>% N obs.</i>
Total	21.1	14.2	5.3	7.1	2.7	8.6	26247
Male	19.2	12.8	5.4	7.0	2.6	8.2	12839
Female	22.9	15.6	5.1	7.2	2.7	8.9	13405
Education							
Less than secondary	20.9	14.9	9.0	12.9	5.3	14.5	5049
Secondary	24.5	17.6	5.1	6.8	3.2	8.4	12758
Tertiary	16.6	8.6	4.2	3.4	1.4	5.7	8407
Students (all levels)	30.5	20.2	21.3	16.0	12.7	19.7	1000
Age							
15-24	29.5	21.6	14.9	13.8	8.1	17.0	2378
25-54	18.5	12.9	4.1	5.6	1.9	7.1	19653
55-64	26.5	13.1	5.2	8.6	2.4	9.0	3673
65+	33.9	36.4	8.0	23.7	6.9	15.7	489
Disability or illness affects life	28.2	19.7	5.8	6.8	4.0	8.0	3840
Origin							
Native majority	15.7	12.2	4.2	7.1	2.8	6.9	19999
Native minority	30.3	16.1	10.7	6.0	1.8	14.0	1770
2 nd generation immigrant	31.1	14.4	6.7	6.2	2.1	12.6	2092
Immigrant:							2386
Working rights due to nationality ^a	30.0	16.5	6.5	8.7	1.9	15.0	1650
No working rights due to nationality	33.5	33.7	5.9	6.0	0.0	14.3	736
From CEE of FSU	37.1	55.4	7.1	11.9	1.4	18.9	1049
From developing countries	23.6	16.2	1.9	6.8	0.0	13.0	728
From developed countries	28.8	20.8	0.0	5.2	2.3	8.6	609
Occupation							
Highly skilled non-manual	17.2	8.6	3.0	3.9	1.2	5.1	10986
Low skilled non-manual	20.9	12.4	6.8	9.0	3.8	10.7	6909
Skilled manual	21.9	13.6	5.6	8.5	3.8	9.0	5479
Elementary	30.3	28.6	9.7	14.6	8.0	16.8	2319
Establishment size							
1-9	31.2	25.7	10.6	13.2	4.9	16.2	6501
10-24	15.5	9.5	5.5	7.7	2.6	7.8	5549
25-99	16.5	4.1	2.5	5.7	1.4	5.5	6445
100+	14.9	6.3	1.7	2.7	1.9	4.1	6893
NA	21.1	6.5	10.3	17.6	29.0	13.4	859
Economic activity							
Agriculture & Forestry	31.1	27.7	7.1	14.3	5.6	13.3	623
Manufacturing and Mining	15.8	9.5	3.1	5.1	2.1	5.6	4341
Construction	27.1	19.7	11.4	10.0	5.5	13.7	1863
Trade & Auto Repair	24.5	13.9	7.7	9.1	3.3	11.0	3292
Hotels & Restaurants	29.7	22.1	10.4	22.2	6.1	19.7	996
Transport	23.0	12.5	3.5	6.6	4.3	7.6	1271
Finances	17.1	2.4	3.4	3.1	1.8	6.0	824
Business Services	15.1	9.2	6.5	6.8	1.4	7.8	2243
Public utilities	22.2	7.4	2.3	10.1	0.0	6.3	335
Post & Telecom	8.4	7.2	3.8	3.7	0.0	4.5	443
Public Administration	14.5	5.4	2.6	4.3	1.1	6.1	2055
Education	18.7	7.5	2.1	4.8	2.0	6.1	2644
Health & Social Care	10.8	9.1	2.1	4.8	1.9	4.1	2808
Personal & HH Services	39.5	38.6	8.3	13.3	5.2	17.7	1471

Notes: For Italy and Austria, results refer to 2006 and 2007, respectively. Countries weighted equally (i.e. a respondent from any country is equally likely to be sampled). ^a Country-specific (and year-specific) rules on free movement of labor within EU are taken into account. *Source:* Calculation with ESS data.

Table 5 Dynamics of informal employment and unemployment in European countries, 2004-2009^a

	Informal Dependent Employment		Informal Self-Employment		Total Unemployed Willing to Work		LFS-Based Unempl. Rate	
	Round 4 vs. Round 3	Round 3 vs. Round 2	Round 4 vs. Round 3	Round 3 vs. Round 2	Round 4 vs. Round 3	Round 3 vs. Round 2	Round 4 vs. Round 3	Round 3 vs. Round 2
Southern Europe								
Cyprus	-5.4*		0.0		-3.4**		-0.5	
Greece ^b	-0.5		0.7		-2.7*		-0.9	
Portugal	0.0	3.6***	1.5	-2.5	1.1***	-1.4***	0.1	0.9
Spain	-0.6	1.0***	-1.0	1.7	3.7***	-1.8	4.7	-1.8
Eastern Europe								
Poland	-0.2	0.9	4.2**	-3.5**	-2.7*	-5.8***	-5.4	-5.8
Ukraine	0.2	0.5	1.1	2.0	-3.0	-2.1	2.7	-1.9
Slovenia	2.7**	-1.1	1.3	-1.5	-6.3***	5.2***	-1.3	-0.9
Bulgaria	-2.4**		0.5		-3.2		-2	
Czech R. ^b	-0.8		1.7		-2.5**		-1.6	
Slovakia	-1.0	0.3	1.6	-1.3	-4.6***	-6.2***	-2.6	-5.4
Russia	1.2		0.7		0.1		0.8	
Estonia	-0.5	2.0***	1.8*	-1.6*	6.2***	-4.8***	4.9	-3.4
Hungary	0.6	-1.2	-1.1	-0.9	7.5***	2.4	2.2	0.4
Latvia	-2.4***		0.3		10.7***		11	
Western Europe								
Ireland	-6.9***	-2.0	-0.9	1.1	11.2***	1.7	8.1	0.1
UK	-0.4	-2.3	1.5	-1.0	1.2	-3.1**	0.7	0.8
Austria		1.3		0.4		-3.6***		-0.9
Switzerland	-0.5	0.8	-2.1	1.9	1.2	-1.1	0.5	-0.9
Netherlands	-1.7**	-1.0	2.2*	-0.6	-2.5***	-0.6	-0.9	-1.1
Germany	0.3	-0.5	0.3	1.1	-3.8***	-1.7	-2.2	-0.9
Belgium	0.0	-0.4	-1.2	-0.1	-1.0	-1.6	-0.7	-0.5
France	-1.1		1.4		0.1		-0.7	
Northern Europe								
Norway	-0.9	0.5	-2.1*	-0.2	-0.6	-2.9***	0.7	-1.2
Denmark	-3.9***	2.7**	0.1	1.0	0.3	-4.2***	-0.2	-1.3
Finland	0.4	-0.1	0.6	-0.6	-2.4**	-1.1	-0.6	-1.1
Sweden	0.2	0.1	-0.2	-0.4	-1.5*	-1.5	0.2	-0.9

Notes: ^a The table presents the changes in estimated prevalence of informal employment and unemployment between ESS rounds: Round 4 (2008-2009), Round 3 (2006-2007), Round 2 (2004-2005). ^b For Greece and the Czech R., Round 4 is compared to Round 2 (rather than to Round 3).

*, **, *** - estimates significantly different from 0 at the 10%, 5%, 1% level, respectively (not shown for LFS-based unemployment rates).

Source: Calculation with ESS data.

Table 6 Sectoral distribution of informal workers' main job, by European region and employment status. 2004-2009

	East			South			West			North		
	Employees	Self-employed	Total	Employees	Self-employed	Total	Employees	Self-employed	Total	Employees	Self-employed	Total
Agriculture & Forestry	5.4	15.5	11.3	3.9	19.8	13.3	1.7	15.6	11.1	3.8	21.4	17.7
Manufacturing	14.7	9.6	12.0	13.4	9.2	11.0	14.2	8.0	10.2	14.6	6.7	8.5
Construction	13.0	8.9	10.8	11.6	8.3	9.5	8.5	11.7	10.4	14.8	12.4	12.9
Trade, Auto Repair, Hotels & Restaurants	20.7	27.0	24.2	22.2	34.1	29.4	25.5	18.5	21.7	17.4	19.8	19.3
Transport, finance, & business activities	10.6	15.4	13.0	12.6	11	11.6	14.5	20.2	17.7	16.2	19.4	18.6
Education, Health & Social Care, Public Administration, Utilities, Post & Communications	16.2	4.7	9.8	20.3	3.3	10.4	24.0	10.3	15.3	22.8	8.0	11.4
Community, Personal & Household Services	9.9	10.5	10.0	13.4	10.1	11.3	7.8	10.3	9.1	5.6	9.9	8.7
NA	8.5	7.2	7.7	2.7	4.2	3.5	2.7	4.6	3.8	3.3	2.3	2.5
Total	100	100	100	100	100	100	100	100	100	100	100	100
N obs.	1857	2136	4152	2036	2337	4540	1703	2680	4567	391	1137	1561

Notes: See Table 1 for definitions of informal employment. Columns 'Employees' and 'Self-employed' here correspond, respectively, to categories 5 and 3 defined in Table 1; column 'Total' includes also family workers. Countries are not weighted by population size. Design weights corrected for variation of sample size across countries in each round are applied (i.e., all respondents are assumed equally likely to be sampled; countries which did not participate in some rounds are, however, under-represented). *Source:* Calculation with ESS data.

Table 7 Perceived discrimination on grounds of race, ethnicity, religion, language, nationality, age or disability among formal and informal workers, by European region. 2004-2009

	%				
	South	East	West	North	Total
[1] Formal Employees	3.5	3.8	4.1	2.3	3.6
[2] Informal Employees	7.6	6.4	5.3	2.8	6.2
[3] Informal Self-employed	3.9	4.0	3.9	2.3	3.7
[2]/[1]	2.18	1.70	1.30	1.24	1.74
<i>t-test</i> : [2] = [1]	0.000	0.002	0.057	0.540	0.000
<i>t-test</i> : [3] = [1]	0.505	0.638	0.749	0.970	0.609

Notes: Countries are not weighted by population size. Design weights corrected for variation of sample size across countries in each round are applied (i.e., all respondents are assumed equally likely to be sampled; countries which did not participate in some rounds are, however, under-represented).

Source: Calculation with ESS data.

**Table 8 Labor market status effects on perception of household's financial difficulties
in European regions, 2004-2009. Population aged 15-74
Ordered probit coefficients**

	<i>South</i>	<i>East</i>	<i>West-1</i>	<i>West-2</i>	<i>North</i>
<i>Employment status (vs. formal employees)</i>					
<i>Formal self-employment</i>	-0.518***	-0.640***	-0.308***	-0.318***	-0.093
<i>Informal self-employment</i>	-0.130***	-0.320***	-0.018	-0.067	0.090**
<i>Family workers</i>	-0.385***	-0.633***	0.016	0.230	0.237
<i>Informal dependent employees</i>	0.169***	0.170***	0.127***	0.332***	0.195***
<i>Unemployed willing to work</i>	0.723***	0.872***	0.908***	0.911***	0.906***
<i>Other (inactive)</i>	0.089***	0.264***	0.254***	0.171***	0.493***
Other controls	Gender, family status, children, age, age squared, education, country and time fixed effects, parental background, ethnic/immigration origin, rural residence, economic activity of last employment, disability status, household size (log)				
Pseudo R-sq.	0.1160	0.1435	0.0692	0.0913	0.1157
N obs.	24889	46357	20288	21393	19578

Notes: South : ES, PT, IT, GR, CY, and IL; East : CZ, PL, SK, HU, EE, LV, BG, RO, SI, RU, and UA; North: DK, FI, NO, and SE; West -1: UK, IE, NL, and AT; West-2: DE, FR, BE, and CH.

Larger coefficients indicate larger perceived difficulties. *, **, *** indicate that respective coefficient for the given employment status is significantly different from the coefficient for formal employees at 10%, 5%, 1% level, respectively (based on robust standard errors clustered on within-country region). Countries are not weighted by population size. Design weights corrected for variation of sample size across countries in each round are applied (i.e., all respondents are assumed equally likely to be sampled; countries which did not participate in some rounds are, however, under-represented).

Source: Calculation with ESS data.

Table 9 Determinants of working without a contract, 2004-2009
(Mixed-effects logistic regression: Marginal effects)

Country group (% employees without a contract)	% points						
	East -1	East -2	North	West -1	West -2	South -1	South -2
	(5.14)	(5.07)	(3.16)	(13.80)	(2.53)	(13.14)	(33.15)
Education (vs. Upper Secondary)							
Primary or less	3.41 ***	-0.77 + (5.70***) \times RO	0.71 *	4.70 ***	0.35	3.42 ***	10.57 ***
Tertiary	-1.10 *	-2.73*** + (7.48***) \times RO	-1.32 ***	-9.29*** + (5.20***) \times UK	-0.94 **	-3.97 ***	-3.42 (*)
Student	3.24 ***	5.24 ***	2.70 ***	10.30 ***	2.77 ***	3.69 *	14.49 *
Sector (vs. Industry)							
Agriculture	3.55 ***	2.63	2.01 ***	5.56 *	0.19	14.90 ***	-1.95
Construction, Trade, Hospitality, Personal & Household Services	4.11 ***	3.38 ***	0.67	3.89 ***	1.08	9.96 ***	5.76 *
Transport, Finance & Business Services	0.37	2.92 ***	0.15	-0.78 (*)	0.43	3.64 **	-5.54 (*)
Public Services	-2.21 ***	1.03	-1.30 **	-2.58 *	0.22	0.65	-8.42 ***
Age	-0.48 ***	-0.74 **	-0.34 ***	-0.93 ***	-0.41 ***	-0.19	-2.05 ***
Age-squared/100	0.53 ***	0.77 **	0.44 ***	1.20 ***	0.53 ***	0.44 **	2.35 ***
Female	-0.86 *	1.72** - (3.91***) \times HU	0.21	1.69 (*)	-0.64+(1.53**) \times (DE+CH)	3.42 ***	3.82 *
With Partner	-2.15 ***	0.17	-0.14	-0.17	-1.24 **	-4.13 ***	2.22
Female*With Partn.	0.92		-1.43 *	-1.92	1.17 *	4.30 **	
With Children	0.47	-4.05 ***	-0.42	-0.26	-0.46	-0.01	3.04
Female*With Children	-0.95		0.86	-1.00	0.90	-1.62	-6.50 *
Rural	0.97 ***	-0.78	0.41	0.53	0.55 *	2.67**+ IL \times (-7.54***)	-0.01
Minority (local born)	2.06 ***	-1.16	-1.59	-1.19	0.13	2.42+ IL \times (26.8***)	2.23
One parent Immigrant	1.02 *	1.62	-0.43	-1.48	-0.06	-5.90 + IL \times (30.20***)	12.75 *
Both parents Immigrants	1.85 **	-3.83 **	-3.82	3.03	-0.73	-1.23 + IL \times (23.74***)	-12.0
Immigrant, working right by nationality	1.38 (*)	-0.28	-0.67	1.68	0.41	5.52**+ IL \times (14.96***)	0.16
Other immigrants	2.13 **		0.04	5.59 ***	-1.20	12.69***	21.38 ***
Return migrant	1.84 ***	2.28 (*)	0.40	-0.62	-0.96	-0.48	0.29
Disabled	0.65 (*)	0.63	0.98 ***	1.63 *	0.37	2.89 **	-0.57
Other controls	Country and year fixed effects; Mother's highest completed education level; Parents' work status when aged 14; IE*age, IE*age-sq. (West-1)						
Log L	-3089.18	-	-	-3054.65	-1154.65	-1749.56	-1471.28
# obs. [# countries]	17724 [9]	4357 [3]	11389 [4]	9601 [4]	10745 [4]	6079 [3]	2815 [3]
# regions	118	27	24	64	34	19	37
Random effects s. d.	0.2529***	-	-	0.1032**	0.3479***	0.3829***	0.5266***
LR test vs. logistic reg.	P=0.0025	-	-	P = 0.1146	P = 0.0082	P = 0.0000	P = 0.0000

Notes: East-1: CZ, PL, SK, EE, LV, LT, BG, RU, UA; East-2: HU, RO, SI; North: DK, FI, NO, SE; West-1: UK, IE, NL, and AT; West-2: DE, FR, BE, and CH; South-1: ES, PT, and IL; South-2: IT, GR, CY. The models include region-level random effects. For East-2 and North, these effects are integrated over the sample, i.e. population-averaged models estimated by the GEE method are presented. "Regions" are NUTS level 1 for DE, ES, FR and UK; NUTS level 2 for the Nordic countries, IE, CH, CZ, HU, PL, SK, RO, PT, GR, and IL; NUTS level 3 for the Baltic countries, NL, BG and SI; 10 federal regions for Russia, and 26 [oblast level] regions for Ukraine. Marginal effects are based on fixed parts of the models and conditional on working as employee (i.e. not corrected for selection into paid employment). (*), *, **, *** - marginal effects significantly different from zero at 12%, 10%, 5%, 1% level, respectively. Source: Calculation with ESS data.

**Table 10 Impact of employee's satisfaction with the government
on the likelihood to work without a contract, by country group. 2004-2009
(Mixed-effects logistic regression: Marginal effects)**

Country group (% employees without a contract)	% points						
	East -1	East -2	North	West -1	West -2	South -1	South -2
	(5.14)	(5.07)	(3.16)	(13.80)	(2.53)	(13.14)	(33.15)
How satisfied with the govt. (0-10 scale)	-0.20 ***	-0.14	-0.04	-0.36 **	-0.02	-0.19	0.06
(standard errors)	(0.07)	(0.15)	(0.05)	(0.15)	(0.07)	(0.18)	(0.38)
Other controls	As in Table 9						
Log L	-3085.52	-	-	-3051.91	-1154.61	-1749.02	-1471.27
# obs. [# countries]	17724 [9]	4342 [3]	11399 [4]	9601 [4]	10745 [4]	6079 [3]	2815 [3]
# regions	118	27	24	64	34	19	37
Random effects s. d.	0.2494***	-	-	0.1100**	0.3468***	0.3840***	0.5263***
LR test vs. logistic reg.	P=0.0030	-	-	P = 0.0900	P = 0.0086	P = 0.0000	P = 0.0000
	Exogeneity tests ^a of <i>Satisfaction with the Govt.</i> (IV probit: robust, region-clustered statistics)						
Instr. used (0-10 scale)	Most people can be trusted						Rightwing
Wald test <i>p</i> -value	0.9591	0.3572	0.5841	0.2110	0.9326	0.5589	0.7198
F-test, first stage	F = 110.8	F = 42.02	F = 17.11	F = 138.96	F = 438.93	F = 65.97	F = 948.0
F-test of excluded instrument	P(F>211.3) = 0.0000	P(F> 88.4)= 0.0000	P(F>58.4) = 0.0000	P(F> 272.3)= 0.0000	P(F>262.6)= 0.0000	P(F> 140.2)= 0.0000	P(F> 6.25)= 0.0171

Notes: East-1: CZ, PL, SK, EE, LV, LT, BG, RU, UA; East-2: HU, RO, SI; North: DK, FI, NO, SE; West-1: UK, IE, NL, and AT; West-2: DE, FR, BE, and CH; South-1: ES, PT, and IL; South-2: IT, GR, CY. The models include region-level random effects. For East-2 and North, these effects are integrated over the sample, i.e. population-averaged models estimated by the GEE method are presented. "Regions" are NUTS level 1 for DE, ES, FR and UK; NUTS level 2 for the Nordic countries, IE, CH, CZ, HU, PL, SK, RO, PT, GR, and IL; NUTS level 3 for the Baltic countries, NL, BG and SI; 10 regions for Russia, and 26 *oblast* for Ukraine. ^a Exogeneity tests are performed on samples with non-missing instrument and satisfaction variables, which are by 2-3% smaller. In the main equations country average satisfaction is imputed when missing. Marginal effects are based on fixed parts of the models and conditional on working as employee (i.e. not corrected for selection into paid employment). *, **, *** - marginal effects significantly different from zero at 12%, 10%, 5%, 1% level, respectively.

Source: Calculation with ESS data.

**Table 11 Satisfaction with the government and working without a contract
in Eastern and Western Europe, 2004-2009
(Mixed-effects logistic regression: Marginal effects)**

Country group (% employees without a contract)	% points	
	East	West
	5.12	8.36
	Marginal effect (standard error), % points	
How satisfied with the govt. (0-10 scale)	-0.20*** (0.07)	-0.24*** (0.08)
Other controls	As in Table 9	
Log L	-3867.11	-4590.40
# obs. [# countries: # regions]	22094 [12:145]	20976 [8: 98]
Region level random effects: s. d. (s.e.)	0.224*** (0.058)	0.173*** (0.052)
LR test vs. logistic regression (conservative)	P = 0.0058	P = 0.0011
	Exogeneity tests of <i>Satisfaction with the Govt.</i> (robust, region-clustered statistics)	
Instrument (0-10 scale)	Most people can be trusted	
F-test, first stage	113.0	122.36
F-test of excluded instrument	P(F>284.9) = 0.0000	P(F>527.6) = 0.0000
Underidentification test: Kleibergen-Paap rk LM test	P(Chi-sq (1) > 59.77) = 0.0000	P(Chi-sq (1) > 42.31) = 0.0000
IV probit: Wald test <i>p</i> -value	P(Chi-sq (1) > 0.03) = 0.8691	P(Chi-sq (1) > 1.04) = 0.3069
<i>Linear probability model</i>		
Exogeneity tests of <i>Satisf with the Govt</i>	P(Chi-sq (1) > 0.122) = 0.727	P(Chi-sq (1) > 0.444) = 0.505
Instrument validity: Anderson-Rubin Wald test	P(F> 0.08) = 0.7795	P(F> 0.91) = 0.3416
Stock-Wright LM S statistic	P(Chi-sq > 0.08) = 0.7774	P(Chi-sq > 0.86) = 0.3541

Notes: See Table 10. *Source:* Calculation with ESS data.

Annex

Table A1 Legal requirements on employee contracts in European countries

		Contract or ToE must be signed in advance or immediately after starting work	Time period to sign a contract or ToE after starting work
A written contract is always required		Bulgaria, the Czech R., Denmark, Estonia, Italy, Lithuania, Latvia, Norway, Romania, Slovakia, Slovenia, Sweden, Switzerland	Greece – 2 months; Russia – 3 days; Ukraine – 3 days
If a written contract is absent, the employee must be given written terms of employment (ToE) signed by the employer	A written contract is required, except for “atypical” employment^a	Hungary	Cyprus – 1 month
	A written contract is required only for “atypical” employment^a; otherwise an oral contract is acceptable	Austria, Belgium, France, Portugal ^b	
	A written contract is considered good practice but not generally required; oral (in Finland – also electronic) contract is fine	Germany, Poland	Finland – 1 month, The Netherlands – 1 month, Ireland – 2 months, UK – 2 months
A written contract is required if either party requests it (even during the course of employment relationship), as well as for “atypical” employment^a; otherwise an oral contract is acceptable			Spain – not specified

Notes: In most countries, having a written contract is considered good practice even when it is not required by the law. ^a “Atypical” employment include: Apprenticeship; Fixed-term contract or contract for specific work; Seasonal work; Replacement contract; Part-time contract; Contract employing a domestic worker.

^b In Portugal, very short-term contracts (as well as indefinite ones) might be oral. *Source:* EURES (2011).

Table A2 Employees’ responses on European Social Survey question on contract type depending on presence of the answer ‘no contract’ (selected countries)

	ESS round 1 (2002-2003)	ESS rounds 2-4 (2004-2009)		
	Employees not responding on the question on contract type (answer 'no contract' not offered)	Employees without a contract or not responding on the question on contract type		
		min	max	average
		% of all employees		
Slovenia	2.3	4.5	7.7	6.0
Poland	1.2	5.4	6.0	5.8
Austria	2.8	9.0	10.3	9.7
Netherlands	1.4	6.2	5.0	2.9
The United Kingdom	2.6	16.2	12.4	12.4
Denmark	0.5	6.3	9.1	4.5
Portugal	1.0	5.8	10.5	10.8

Notes: In all rounds, answers “Contract of unlimited duration”, “Contract of limited duration”, and “Don’t know” were offered. In addition, answer “No contract” was offered in rounds 2-4.

Source: Calculation with ESS data.

**Table A3 Prevalence of informal employment in European countries:
ESS results compared with other sources**

	(Informal employees) / (All employees)		% (Informally employed) / (All employed)				
	Fourth European Working Conditions Survey (EWCS), 2005		European Social Survey 2004 /2005 2006/2007		EWCS 2005	European Social Survey 2004/ 2005 2006/ 2007	
	No contract	No contract (or no answer)	No contract or no answer to the contract question				
Cyprus	41.5	41.5		56.8	50.2		63.0
Greece	26	27.3	35.4		46.1	55.9	
Ireland	27.7	28.4	34.9	33.8	38.0	43.7	43.5
Romania	6.8	9.2		6.1 ^a	31.3		
Italy	6.1	6.4		4.8	28.1		26.4
Portugal	7	9.2	5.8	10.6	25.4	22.9	23.9
UK	14.1	17	16.3	12.4	25.2	26.6	22.2
Poland	5.8	6.5	5.4	5.9	24.7	24.9	20.2
Spain	8.2	8.6	5.5	6.8	22.4	19.4	21.9
Austria	8.6	14.9	9.0	10.3	22.0	19.5	20.6
Bulgaria	6.2	8.1		11.3	19.0		19.7
Lithuania	5.3	7.0		3.0 ^a	18.8		
Slovenia	9.4	9.7	5.7	4.5	17.3	14.2	11.9
Switzerland	2.8	3.1	2.1	3.1	15.1	14.3	17
Hungary	4.4	4.4	4.1	2.6	15.0	13.1	11.1
Denmark	10.3	10.5	6.3	9.1	14.2	12.6	15.9
Belgium	2.5	3.4	2.7	2.1	13.2	14.0	13.1
Czech R.	0.8	1.3	2.7		12.9	13.2	
Estonia	5.1	6.1	2.1	4.2	12.4	8.9	8.8
France	3.9	4.3		4.5	12.4		11.1
Finland	2.2	2.6	0.8	0.7	12.4	12.0	11.1
Slovakia	1.3	1.8	2.8	2.9	12.1	15.5	13.2
Latvia	5.4	6.3		7.2	11.7		11.2
Germany	3.7	4.3	2.5	1.8	9.8	12.4	12.8
Norway	2.1	2.5	6.2	6.5	9.8	15.9	15.7
Netherlands	2.1	2.6	6.2	5	8.6	14.6	12.9
Sweden	0.2	1.7	0.5	0.7	7.5	9.1	8.7
	Other surveys		ESS	ESS			
	No contract	Year	2006/2007	2008/2009			
Latvia ^b	9.5	2006/2007	7.2				
Russia ^c	11.0	2009		7.2			
Bulgaria ^d	8.0	2009/2010		7.5			

Notes: Empty cells: data not available. Best matches between EWCS (col. 1 or 2) and ESS (col. 3 or 4) on work without contract are shown in bold. The EWCS-2005 total informality rate (col. 5) is very close either to both ESS-2004 and ESS-2006 rates (col. 6-7) or at least to one of them for most countries.

Employee sub-sample size used for calculations with EWCS data varies between 790 and 970, except for Cyprus (484), Slovenia, Estonia and Greece (540 to 640). Sub-sample size used for calculations with ESS data varies from 740 to 1200 employees, except for Cyprus (~400), Italy (500), Bulgaria, Hungary, Slovenia and Poland (550 to 690). Total sample size is in most cases about 1000 for EWCS and between 1500 and 2400 for ESS. ^a Romanian ESS data refer to 2008, whilst Lithuanian ESS data refer to 2009. Hence, lower informality rates than in EWCS-2005 are consistent with the fact that work without contract tends to be less prevalent during the recession (see Section 2.5). *Sources:* Calculation with ESS data and with data of European Foundation for the Improvement of Living and Working Conditions (2007). ^b Own calculations with the data of survey of economically active population aged 15-65 conducted for the project „Specific problems of the labour market in Latvia and its regions” of the National Program of Labor Market Studies, N=9306. ^c Slonimczyk (2011: Table 5), based on Special Supplement to Russian Longitudinal Monitoring Survey. ^d Survey of N= 6337 employees conducted by Bulgarian Chamber of Commerce and Industry reported by Novinite (2011).

Table A4 Clusters of European countries by size and composition of informal employment, 2008-2009

		<i>Composition: Share of employees without contracts in total informal employment</i>			
		< 20%	20 to 35%	38 to 51%	≥ 55%
<i>Size: Share of informal employment in extended labor force</i>	33% to 55%			Greece	Cyprus, Israel, Ireland
	19% to 23%	Italy ^a , Poland	Portugal, Spain	UK, Austria ^b	
	11% to 14%	Switzerland, Netherlands, Czech R., Slovakia, Germany, Finland, Sweden	Denmark	Ukraine, Slovenia, Bulgaria, Norway, Russia, Romania	
	6.4% to 10.5%	Belgium, Sweden	France, Estonia, Hungary, Lithuania	Latvia	

Notes: In each column, countries are arranged in descending order of the size of informal employment.

See Table 1 for definitions of informal employment and extended labor force. ^a Italian data refer to 2006. ^b

Austrian data refer to 2007. *Source:* Calculation with ESS data.

Proportion of informal employment in the labor force of European countries 2004-2009, by region



Countries by region, sorted descending by prevalence of total informal employment:
 South - Cyprus, Greece, Israel, Italy, Portugal, Spain
 West - Ireland, UK, Austria, Switzerland, Netherlands, Belgium, Germany, France
 East - Poland, Bulgaria, Ukraine, Czech R., Slovenia, Slovakia, Romania, Hungary, Russia, Latvia, Estonia, Lithuania
 North - Norway, Denmark, Finland, Sweden
 Informal employment = employees without contract + non-professional self-employed with no or <=5 employees
 Labor force extended to include discouraged workers
 Source: Calculation with ESS data

Figure A1 Variation in size of total, dependent and own-account informal employment in countries of Southern, Western, Eastern, and Northern Europe. 2004-2009

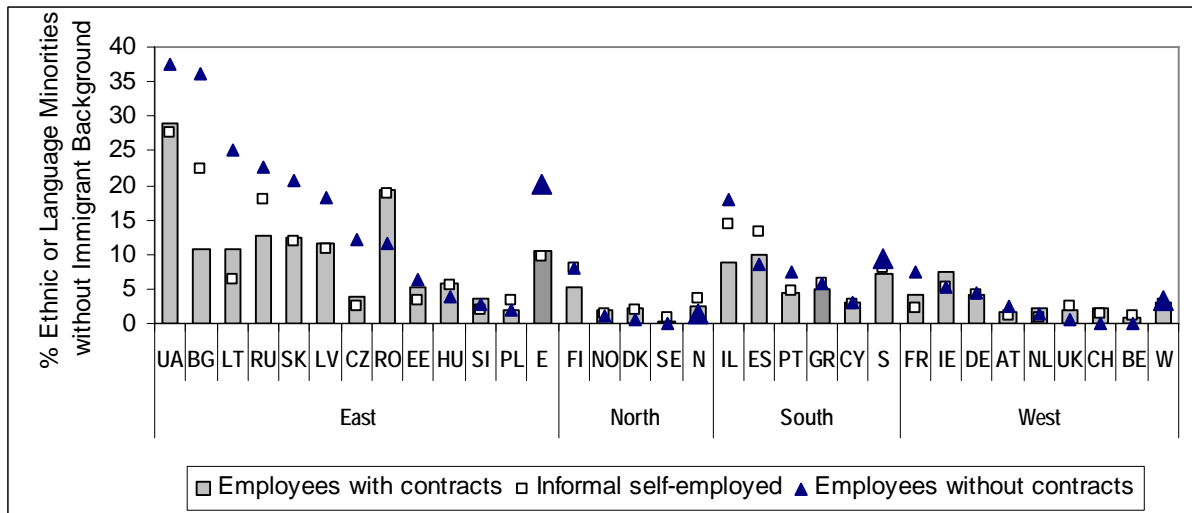


Figure A2 Ethnic minorities among formal and informal workers in European countries, 2004-2009.

Source: Calculation with ESS data

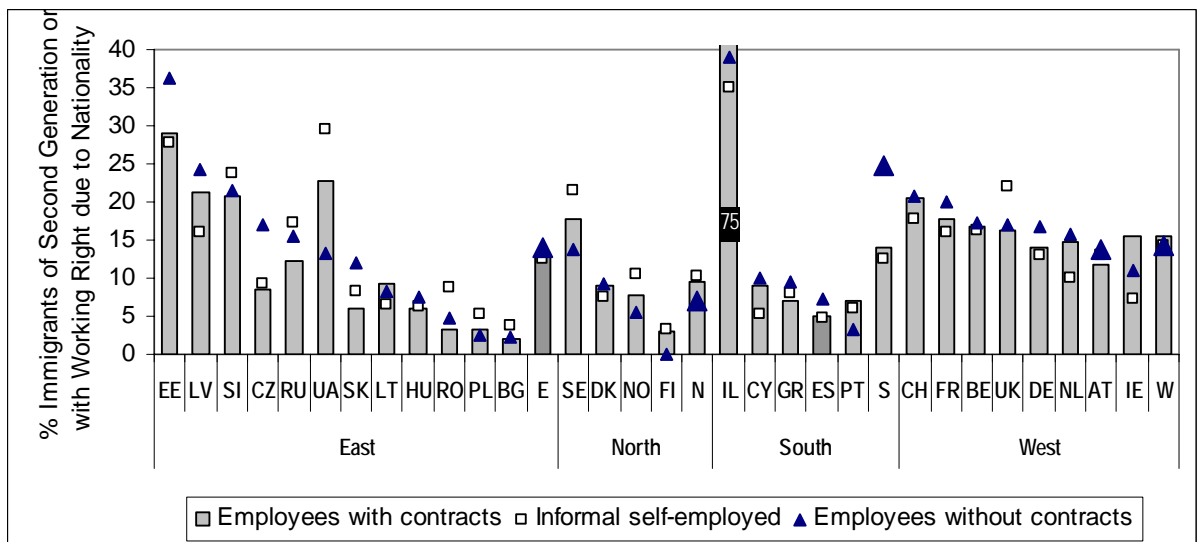
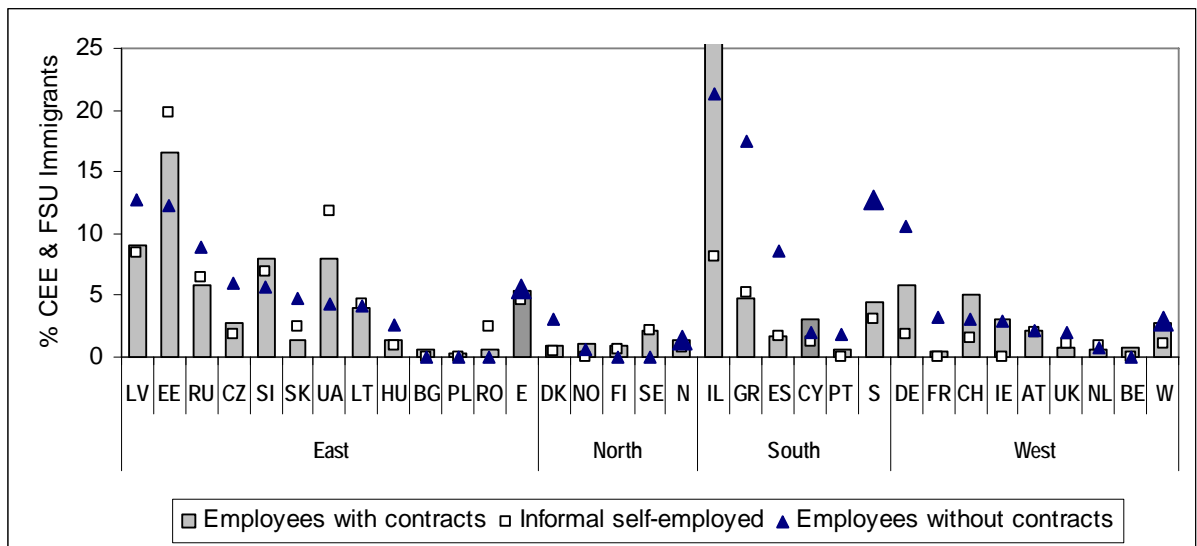


Figure A3 Population with immigrant background among formal and informal workers in European countries, 2004-2009.

Top: Immigrants from Central and Eastern Europe and former Soviet Union

Middle: Immigrants not covered by the free movement of labor provisions

Bottom: Immigrants covered by the free movement of labor provisions and second generation immigrants

Source: Calculation with ESS data