



# Establishments' Use of Temporary Agency Workers: The Influence of Institutions and Establishments' Employment Strategies

DOI:  
[10.1080/09585192.2016.1172655](https://doi.org/10.1080/09585192.2016.1172655)

**Document Version**  
Accepted author manuscript

[Link to publication record in Manchester Research Explorer](#)

## **Citation for published version (APA):**

Allen, M., Liu, J., Allen, M. L., & Saqib, S. I. (2017). Establishments' Use of Temporary Agency Workers: The Influence of Institutions and Establishments' Employment Strategies. *The International Journal of Human Resource Management*, 28(18), 2570-2593. <https://doi.org/10.1080/09585192.2016.1172655>

**Published in:**  
The International Journal of Human Resource Management

## **Citing this paper**

Please note that where the full-text provided on Manchester Research Explorer is the Author Accepted Manuscript or Proof version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version.

## **General rights**

Copyright and moral rights for the publications made accessible in the Research Explorer are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

## **Takedown policy**

If you believe that this document breaches copyright please refer to the University of Manchester's Takedown Procedures [<http://man.ac.uk/04Y6Bo>] or contact [uml.scholarlycommunications@manchester.ac.uk](mailto:uml.scholarlycommunications@manchester.ac.uk) providing relevant details, so we can investigate your claim.



Establishments' Use of Temporary Agency Workers: The Influence of Institutions and  
Establishments' Employment Strategies

Matthew Allen  
Alliance Manchester Business School  
[Matthew.allen@manchester.ac.uk](mailto:Matthew.allen@manchester.ac.uk)

Jiajia Liu  
Alliance Manchester Business School

Maria Allen  
Manchester Metropolitan University Business School

Syed Imran Saqib  
Alliance Manchester Business School

Acknowledgements

We are grateful to Prof. Wilkinson and three anonymous reviewers for helpful comments and guidance on previous versions of this paper.

Abstract

Comparative institutional analyses have added much to our understanding of HRM in different countries, providing powerful arguments against the need for flexible labour markets to boost economic performance. However, existing research has tended to downplay the possibility that variation within countries may result in a well-protected core of workers that grows ever smaller alongside increasing numbers of precarious workers. We draw on data from the World Economic Forum and the European Company Survey to examine how institutions influence establishments' use of temporary workers in 29 European countries plus Turkey. We analyse the data using 1) principal components analysis to categorize the countries in our analysis, 2) a two-step cluster analysis to draw up groups of establishments by their use of temporary workers, and 3) a multilevel logistic regression to examine how the

institutional setting of establishments and key establishment characteristics interact to influence workplaces' use of temporary workers. We show that institutional characteristics shape the prevalence of temporary workers in the 28 European Union member states plus FYR Macedonia and Turkey; however, institutions are not deterministic and important variation in the use of temporary workers depends upon the interaction between establishment characteristics and the establishment's business system.

## **Introduction**

The comparative institutional literature has demonstrated how institutions shape dominant patterns of economic co-ordination, including human resource management (HRM) policies and outcomes, within companies in different countries (Dore, 1999; Hall and Soskice, 2001; Whitley, 1999, 2007). Such studies have served as cogent reminders that neo-liberal policy prescriptions are not always appropriate and do not invariably lead to superior outcomes for employees and employers. Indeed, despite increasing levels of internationalization and attendant pressures to de-regulate economies, in general, and employment regulations, in particular, comparative institutional analysis (CIA) has shown how patterns of economic co-ordination continue to differ between countries (Hotho, 2014; Psychogios and Wood, 2010; Szamosi et al., 2010), supporting the view that contrasting institutional settings lead to different kinds of advantages to firms (Allen and Whitley, 2012; Schneider and Paunescu, 2012). More specifically, CIA analyses have shown how employment legislation can shape employers' investments in particular employee skills (Harcourt and Wood, 2007), how institutionalized forms of worker voice can lower employee turnover rates (Croucher et al., 2012) and collective redundancies (Brewster et al., 2015), and how institutions shape organizations' use of external training providers (Walker et al., 2014).

However, critiques of the comparative institutionalist literature have highlighted three interrelated limitations of the approach. First, existing comparative institutional research on HRM often focuses on national-level institutions, leading to uncertainty about which particular national-level institutions are 'present' within any particular organization (Mellahi and Wilkinson, 2004; Psychogios et al., 2014; Wilkinson and Wood, 2012). Second and building on the preceding point, the majority of existing comparative studies downplay employer variation, potentially creating indeterminate results: even if the majority of establishments conform to national ideal types, are those workplaces that do or those that do

not resemble the stylized company model the most likely to exhibit the anticipated HRM outcomes (Wilkinson and Wood, 2012)? Finally, increasing internationalization means that companies may no longer be able to pursue previous employment strategies (Allen and Whitley, 2012), resulting in a need to complement existing literature by examining employment types that do not conform to ideal types.

This is a particularly serious gap in the literature, as much of the theoretical expectations with CIA relate to how work and employment are likely to vary between distinctive institutional regimes (Hall and Soskice, 2001; Whitley, 1999, 2007). In particular, CIA frameworks would, in general, expect employers in more ‘co-ordinated’ forms of capitalism, such as Germany, Japan, and the Netherlands, to rely on workers who stay with their employer for relatively long periods of time. By contrast, CIA theories would, on the whole, expect employers in economies in which the market plays an even greater role in the co-ordination of economic activities to be less reliant on lower-level employees; to grant workers less voice over how work is organized; and to use the external labour market more frequently, both to cover temporary increases or decreases in production and to fill positions within the organizational hierarchy (Hall and Soskice, 2001; Whitley, 1999, 2010). The extent to which organizations use employees on a temporary basis is, however, less clear in these frameworks, downplaying an issue that is becoming increasingly prominent as a result of rising inequality and concerns over the impact of temporary workers on permanent positions (Sahadev and Demirbag, 2010; Voss et al., 2013; Wood and Horwitz, 2015).

This paper fills this gap by analysing the use of temporary agency workers within workplaces in Europe and Turkey. It will do so by 1) building a typology of European Union countries plus FYR Macedonia and Turkey, 2) examining the types of employment practices that establishments have in order to generate a typology of HRM strategies and human capital resources, and 3) identifying any pattern of establishment type by institutional setting. We

draw on data from the World Economic Forum (WEF) to classify countries, and we use European Company Survey (ECS) data to examine establishment types. Our samples, therefore, go beyond existing accounts of employer variation within countries by 1) extending the coverage of countries to the majority of European countries (all of those included in the ECS survey), 2) building on existing theoretical work to classify countries not previously included in analyses, and 3) incorporating establishment data. We can, therefore, undertake a fine-grained analysis of *establishments* rather than firms or information aggregated at the national level and analyse in more detail the varieties of employment strategies used by establishments within and across different institutional systems, both key requirements to advance comparative institutional analysis (Allen, 2013; Goergen et al., 2012).

### **Comparative institutional analyses and temporary workers: propositions**

Whilst several distinctive institutional theories exist within the broader CIA literature (e.g. Hall and Soskice, 2001; Streeck, 2009, 2012; Thelen, 2014), the business systems framework offers a useful theory that specifies the links between institutions, on the one hand, and the types of workers organizations employ and workplace employment practices, on the other (Psychogios et al., 2014; Whitley, 1999, 2007, 2010). In addition, the business systems framework differentiates between groups of similar countries (Allen, 2014; Cooke et al., 2011; Psychogios et al., 2014; Whitley, 2009), making it a useful analytical tool to examine establishment-level data across a range of countries (Psychogios et al., 2014; Wood et al., 2011).

We extend theoretical arguments developed within the business systems framework to develop a set of propositions that relate to temporary agency workers. We, therefore, outline the business systems framework in this section in order to 1) highlight key areas that will

guide the classification of countries in the analysis and 2) draw out expectations about the use of temporary workers based on cardinal theoretical arguments. Temporary agency workers, whom an intermediary company employs, carry out their work for a different, client organization (Arrowsmith, 2009).

The business systems framework argues that the institutionalized ‘rules of the game’, including informal as well as formal ones, both constitute and regulate the types of organizations that exist, their priorities as well the dominant modes of interaction between an employer and other collective actors, including employees. As a result, institutions shape the kinds of workers establishments employ as well as the HRM routines, organizational capabilities, and strategies that organizations are likely to be able to implement successfully (Whitley 1999, 2007, 2010). The key institutions that underpin these workplace activities are: labour-market systems, the state, norms governing trust and authority relationships, and financial systems.

Crucial elements within labour-market systems are the centralization of wage bargaining, the forms of employee representation (if any) within workplaces, and employment protection legislation (Whitley, 1999, 2007). These factors influence the role and organizational careers of workers within companies, the mobility of workers between employers (and between sectors), and collaboration between employers and employees (Whitley, 1999, 2007), creating important differences between organizations in contrasting institutional systems and helping to establish varying business systems models.

The state can influence employer behaviour in a number of ways by, for instance, setting contract law and (not) governing in a predictable and transparent way. In addition, the state shapes product, capital and labour markets. Norms and values governing trust in formal rules, regulations as well as trust in officials to enforce legislation appropriately shape the types of organizations that emerge and their employment strategies (Whitley, 1999, 2007),

influencing employers' willingness to delegate any authority to workers as well as their use of certain types of workers (Whitley, 1999: 49).

Financial systems also influence employers' employment strategies, and have various aspects. The relative importance within economies of capital markets or banks in providing funds to companies acts as crucial distinction between institutional settings (Whitley, 1999, 2007). This dualism in corporate funding is not as distinct in practice as it is in theory (Goyer, 2011; Tylecote and Ramirez, 2006); however, this dichotomy remains a potentially useful way to classify countries and employers, especially as the ownership and control of organizations has important implications for their ability to enter into long-term, trust-based relationships with different types of employee (Whitley, 1999: 49–50; Whitley, 2007).

It is not just individual institutional elements that contribute to the characteristics of business systems; their interdependencies or complementarities do too (Crouch et al., 2005; Whitley, 1999). For example, labour-market institutions that grant employee representatives a say in strategy decisions or the organization of work within establishments are likely to influence establishments' use of temporary workers. Separately, union involvement in collective bargaining may impose conditions on the use of temporary workers (Voss et al., 2013). Theoretically, the presence of both employee representatives and union involvement in wage bargaining may complement one another and create additional pressures to limit establishments' use of temporary workers.

However, the possible existence of complementarities does not mean that all institutions within a country support a coherent logic amongst collective actors; institutional systems contain overlooked elements, 'contradictory' institutional combinations, and previously unknown capabilities (Crouch and Farrell, 2004; Deeg, 2007; Höpner, 2005). These diverse institutional elements may be present at the national or sectoral level, and they may not be coherent with ideal-typical national-level institutions (Allen, 2013; Höpner,



2005). Indeed, institutional changes in one area may lead to that institutional domain becoming ‘incoherent’, but remaining ‘compatible’, with the broader institutional system (Höpner, 2005). For example, in the area of temporary work, regulatory changes that facilitate the use of atypical workers are incoherent with policies that restrict employers’ ability to hire and fire employees relatively easily, but may be compatible with the latter policies as they may alleviate pressures to liberalize employment conditions for core employees.

Consequently, institutions that restrict employers’ abilities to fire employees and that enable employee representatives to have a say in the use of temporary workers may be neither sufficient nor necessary to limit the use of temporary workers, as other institutions, such as regulations that make the use of atypical workers relatively easy, may provide organizations with ways to overcome labour-market ‘rigidities’. This, in turn, suggests that the impact of any one national institution will depend upon the precise composition of the other institutions that influence particular organizations, leading to variation in the use of temporary workers by establishments within the same country or business system (Lane and Wood, 2009).

We now discuss how these institutions shape workplace behaviour by examining three key ideal business systems types; namely, fragmented, compartmentalized, and collaborative. Unlike collaborative and compartmentalized business systems, *fragmented business systems* develop in environments that are characterized by low levels of trust and by unreliable formal institutions (Whitley, 1999: 59), resulting in the rule of law being very limited or non-existent. This makes predicting the outcomes of any legal process exceedingly difficult and the sharing of commercial risks problematic. This, in turn, will mean that firms are likely to be small and rely on their own, limited resources and capabilities to be competitive. These capabilities are likely, precisely because of the low-trust and weak legal

environment within which employers operate, to be confined to the owner-manager's competencies. The generally low skill levels of employees within opportunistic organizations as well as the dearth of opportunities for workers to develop new skills will mean that employees carry out a limited range of simple tasks within such workplaces, leading to organizations and establishments that are not constrained by employees (Whitley, 1999).

Although some of the countries in eastern and south eastern Europe, such as Romania and Ukraine, come closest to having fragmented business systems (King, 2007), the empirical evidence on fragmented business systems is relatively limited (Harcourt and Wood, 2007; Psychogios et al., 2014; Wood and Frynas, 2006). As a result, existing research tends to downplay the role of wage-setting processes and authority sharing in fragmented business systems, even though these are highly important in other business systems (Psychogios et al., 2014; Szamosi et al., 2010), and assumes that, if the rule of law is generally weak, labour-market institutions must also be weak. However, the rule of law and workplace authority sharing may be orthogonal to one another (Psychogios et al., 2014). For example, whilst the rule of law is limited in fragmented business systems, leading employers to negotiate wages at the organizational or individual level and delegate little, if any, authority to lower-level employees (Cooke et al., 2011; Psychogios and Wood, 2010; Whitley, 1999), social and political pressures may lead to some sectoral-level wage bargaining as well as authority sharing (Cook, 2010).

This raises this possibility of two types of fragmented business system: one with more 'flexible' labour markets and another with more 'rigid' labour markets. In the former, establishments are less likely to use temporary workers than those workplaces in the latter, as the latter are likely to see temporary workers as a means 1) to put pressure on permanent employees and 2) to overcome labour-market 'rigidities'. As noted above, organizational behaviour is likely to vary amongst employers in the same business system, including

fragmented business systems (Psychogios and Wood, 2010); however, in general, and building on the preceding discussion, we propose that:

P1: Establishments in fragmented business systems with more ‘flexible’ labour markets are less likely to use temporary workers than establishments in fragmented business systems with more ‘rigid’ labour markets.

A key feature of *compartmentalized business systems*, such as the United Kingdom, is the presence of large companies under a unified ownership structure that can co-ordinate and control activities within production chains and across related sectors that are based on common skills, knowledge, and capabilities, and that can offer economies of scope and scale (Whitley, 2007: 15–16). Such organizations are largely self-sufficient and, on the whole, display little commitment to employees. These crucial features reflect ownership and control structures, as such companies are often owned and controlled by disparate groups of institutional investors and operate in countries where there are markets for corporate control (Gospel and Pendleton, 2003; Tylecote and Ramirez, 2006; Whitley, 1999).

Consequently, this pressure to maintain or increase short-term profitability often limits the commitments that senior managers are willing make to lower-level employees (Gospel and Pendleton, 2003; Lane, 1989), leading to lower-levels employees who can, if necessary, be replaced easily. The generally weak or limited opportunities for employee representation in many workplaces in compartmentalized business systems reinforces the relatively unimportant role of lower levels employees in making key contributions to organizations’ competitive strengths in compartmentalized business systems (Whitley, 1999, 2007, 2010). In addition, the strong rule of law within compartmentalized business systems means that dismissing employees, though relatively easy compared to collaborative business

systems, must be done within the legal framework. Consequently, lower-level employees' limited contribution to the organization's success and the requirement for organizations to adhere to legal regulations when dismissing workers are likely to make the use of temporary agency workers attractive to employers in compartmentalized business systems.

It should be noted, though, that compartmentalized business systems afford companies room for manoeuvre, resulting in some companies pursuing forms of 'welfare capitalism' (Jacoby, 1997) and leading to lower-level employees having a higher status. Relatedly, employers' concerns over retaining some workers may force organizations in compartmentalized business systems to improve employees' terms and conditions of employment (Estevez-Abe et al., 2001; Harcourt and Wood, 2007). In general, however, we propose that:

P2: Establishments in compartmentalized business systems are more likely than workplaces in business systems with more rigid labour markets to use temporary workers.

Collaborative hierarchies develop in *collaborative and highly coordinated business systems*, which are characterized by institutional supports for co-operation between collective economic actors. The greater prominence of bank-based corporate funding in collaborative business systems enables company owners, unlike institutional investors, to be committed to their enterprises, creating the conditions for long-term employment strategies that rely on continually up-grading employees' skills (Whitley, 1999). Consequently, internal labour markets will be important and any vacant positions within the organization are likely to be filled by existing employees. A corollary of these factors is that collaborative hierarchies will be constrained by lower-level employees (Whitley, 1999, 2007, 2010). Labour-market

institutions, such as works councils and sectoral collective agreements, will complement this outcome (Whitley, 1999, 2007). Building on the preceding discussion, we propose that:

P3: Establishments in collaborative business systems are less likely to use temporary workers than establishments in the other types of business system considered here.

However, the business systems framework tends to focus on core employees within collaborative hierarchies, largely downplaying other types of worker and their use by establishments (McCann et al., 2008). Indeed, recent labour-market developments have led to a bifurcation in the status of those employees on full-time contracts and those on more precarious contracts in organizations in some collaborative business systems (Allen and Whitley, 2012; Hassel, 2014; cf. Brewster et al., 2007). In these business systems, ‘producer coalitions’ of export-focused firms and core-worker representatives may drive a process that results in the increased use of temporary agency workers in order to increase productivity and enhance competitiveness (Allen and Whitley, 2012; Hassel, 2014). Drawing on these recent theoretical and empirical developments, we put forward a proposition that contrasts with P3:

P4: Establishments in collaborative business systems will be more likely than those in compartmentalized business systems to use temporary workers in order to overcome the institutional constraints associated with permanent employees.

Recently, the business systems literature has highlighted the importance of the institutional specificities of workplaces (Allen, 2013; Allen and Whitley, 2012; Lane and Wood, 2009), meaning that the particular institutional features of establishments should be taken into consideration. For instance, not all workplaces within collaborative business

systems will adhere to the ideal-typical establishment model for that system (Allen, 2004; Crouch and Farrell, 2004). In other words, not all workplaces in collaborative business systems will have employee representatives and a supra-firm level collective wage bargain. Conversely, some workplaces in compartmentalized and fragmented business systems with flexible labour markets will have employee representatives and adhere to supra-firm collective wage bargaining. The presence of these two institutions is likely to influence the establishment's use of temporary agency workers differently depending on the type of business system that the establishment is located within (Hall and Soskice, 2001; Whitley, 2007). In compartmentalized business systems and flexible business systems with rigid labour markets, employers are likely to view the presence of employee representatives and supra-firm collective wage bargaining negatively, as they impede employers' ability to exercise authority (Whitley, 2007). As a result, employers are likely to implement policies to reduce the power of employee representatives and circumvent collective wage bargains where these exist within workplaces. We, therefore, propose that:

P5: Establishments in compartmentalized business systems and fragmented business systems with 'rigid' labour markets that have employee representatives *and* adhere to a supra-firm collective wage bargain are more likely to use temporary agency workers than those establishments in the same business system without both labour-market institutions.

Existing evidence suggests that temporary agency work is less common in the public sector than it is in the private sector in many European countries, reflecting regulations that restrict its use in the public sector (Voss et al., 2013). In general, regulations in business systems with more 'rigid' labour markets are likely to be more restrictive than those in more

‘flexible’ business systems. The influence of these regulations is, therefore, likely to depend on the business system within which the establishment is located. Consequently, we propose that:

P6: Public-sector establishments in business systems with more ‘rigid’ labour markets, including collaborative business systems, are less likely than private-sector ones to use temporary agency workers.

## **Method and results**

We report the methods and results in three stages. The first examines varieties of institutional systems within 29 European countries plus Turkey. The second step develops a typology of establishment types within these countries. The third step assesses the associations between business systems and establishment types.

### ***Step 1: developing a classification of 30 countries***

#### *Method and sample*

To develop a classification of the majority of European countries (plus Turkey), we perform a principal components analysis. One advantage of this technique is that it can analyse Likert-scale data, such as those in the WEF’s reports. For our sample, we draw on data from the WEF’s Global Competitiveness Report 2009, which has been used in related studies (Aggarwal and Goodell, 2014; Feldmann, 2008). It is the most comprehensive and extensive questionnaire on the business environment in countries around the world and covers important institutional factors as well as countries not in other surveys. The survey relies on answers from senior executives, who are asked to carry out their assessments using a seven-point Likert scale. A dual-stratification strategy (size and sector) underpins the sampling frames in order to create a representative sample that also includes large organizations

(World Economic Forum, 2009). We draw on data for the 30 countries covered in the ECS 2009.

We drew on a number of *measures* to capture institutional diversity amongst these countries (Hotho, 2014). These measures reflect theoretical models (Hall and Soskice, 1999; Whitley, 1999, 2007). In the initial analysis, we used 12 measures; however, in order to overcome problems of multicollinearity (variables with  $R > 0.8$ ) within the dataset, we focused on a reduced number of measures. Excluded variables, such as intellectual property rights protection, the transparency of government policy making, and favouritism by government officials in decision making, were highly correlated to judicial independence, increasing the confidence in the first factor to emerge from the data. We, therefore, used the following questions, shown in Table 1, in the analysis. The Kaiser-Meyer-Olkin measure (0.737) is well above the threshold point of 0.6 that is used to assess the sampling adequacy of the data for factor analysis (Kaiser, 1974). Bartlett's test of sphericity was significant ( $p = 0.000$ ), indicating the suitability of using principal components analysis (Bartlett, 1954); this test is particularly appropriate to use when there are fewer than five cases per variable (Tabachnick and Fidell, 2007: 614), as is the case here.

Table 1 around here

### *Results*

The principal component analysis resulted in two uncorrelated components, shown in Table 2. We label these components 'rule of law' and 'flexible labour markets'; the former captures judicial independence as well as the availability of different forms of corporate funding, which themselves will depend upon those supplying the finance being able to use relatively predictable legal means to protect their investments. The first factor captures a component



highlighted by La Porta et al. (1999). The second factor relates to the discretion that employers have in determining wage rates and workplace employment levels. Together, these two components explain 78 per cent of the variation among the cases.

Table 2 around here

In order to classify each country along these components, we used the Anderson-Rubin method, producing composite scores for each country that are unbiased and standardized (Field, 2005). The factors scores for each country are shown in Table 3.

Table 3 around here

Four types of capitalism emerge from this analysis. A group where the rule of law is strong and that has ‘flexible’ labour markets and that conforms closely to the ‘compartmentalized’ ideal business system type. A second group, in which the rule of law is strong and in which labour markets are ‘rigid’, complies most closely with the ‘collaborative’ ideal business system type. In a third group, the rule of law is relatively weak and labour markets are ‘rigid’; countries in this group conform to the fragmented ideal business system type and have rigid labour markets. In the fourth and final group of countries, the rule of law is relatively weak and labour markets are ‘flexible’, complying with a fragmented ideal typical business system with flexible labour markets. The first, second, and third cluster of countries, individually, contain several countries identified in related classifications (Goergen et al., 2012; Hotho, 2014). The first cluster contains Turkey that Hotho (2014), whose analysis covers only OECD countries and does not examine hiring and firing practices, places in a ‘state-organized business system’ group. Cluster four that mainly covers states in central

and eastern Europe includes countries that overlap with a cognate cluster in Holman (2013) and with some countries in Hotho (2014), which covers a different range of countries to this paper.

## ***Step 2: Developing a taxonomy of establishment types***

### *Methods and sample*

To create a taxonomy of establishment types, we performed a two-step cluster analysis, using five employment strategy measures. The advantages of this method over other cluster techniques are threefold. First, it can incorporate categorical variables. Second, it is suitable for large data sets (Chiu et al., 2001; Norušis, 2003). Finally, the method does not rely on subjective judgements to help form clusters (Holman, 2013). In an initial stage, on the basis of maximizing a log-likelihood function, cases are assigned either to an existing cluster or to a new cluster. In a subsequent step, a standard agglomerative clustering algorithm groups these initial clusters into a number of possible clusters solutions. A Bayesian Inference Criterion (BIC) that leads to the most change in distance between the two closest cluster determines the optimal solution (or final number of clusters) from this range of possible cluster solutions.

For our *sample*, we used data from the European Company Survey (ECS) 2009 that covers 30 countries: the now 28 EU Member States, plus Turkey and the Former Yugoslav Republic of Macedonia. (The more recent, 2013 European Company Survey does not, unfortunately, pose a specific question about establishments' use of temporary agency workers, so we cannot use it to address our key research questions.) Computer-assisted telephone interviews (CATI) were used to collect data on randomly selected workplaces with 10 or more employees. The survey covered establishments in the private and public sectors, but excludes those in agriculture, fishing, and private households. The survey population was

3.2 million establishments and the sample was stratified according to size and sector. The sample size used in this analysis is 16406.

We use five *measures*, shown in Table 4, to capture the type of employment strategies within workplaces across the sampled countries. The first measure captures establishments' use of temporary agency workers. The second measure, 'supra-firm collective wage bargaining and employee representation', draws on two items within the survey, which are the level at which collective wage bargaining takes place and the presence of an employee representative. Within the ECS 2009 survey, the question on collective wage bargaining relates to different forms of group bargaining. As the theories that we draw on highlight the importance of wage negotiations at a level 'above' the organization, we transform this variable to capture only 'supra-firm' collective wage negotiations. We also include a measure to capture the establishment's sector (public or private), as regulations that govern the use of temporary agency workers often vary by sector in Europe (Voss et al., 2013).

Larger establishments are more likely than smaller ones to use temporary workers (Pedersen et al., 2007); we, therefore, include a measure of organizational size in our analysis to capture any influence that establishment size, as measured by the number of employees, has on the use of temporary workers. We also include a measure of establishment training, as the up-grading of employee skills within a workplace on a regular basis may indicate a desire to compete on quality rather than price (Whitley, 2010), leading to a reluctance to use agency workers. We include the size and training variables as controls in our analysis.

Our measures capture significant variation in the employment strategies amongst establishments. Other measures in the ECS 2009 survey, such as those that indicate an increase, decrease or no change in the workplace's employment levels and managers' views of employee representatives, can also provide an indication of the type of employment objectives pursued within workplaces; however, respondents do not always answer these

questions, leading to a significant drop in the sample size. For instance, if these variables were included in our analysis, the overall sample size would decrease by more than a third and some country samples, such as those for Greece and Portugal, would decrease by approximately 90 per cent. Therefore, in order to maintain as large a sample as possible for countries collectively and individually, we have not incorporated these variables into our analysis.

Table 4 around here

### *Results*

Four clusters emerge from the two-step cluster analysis. Table 5 provides the characteristics of the different clusters. The first cluster contains only establishments that use temporary workers. Such establishments range in size, as measured by the total number of employees. It should, however, be noted that cluster 1 contains nearly half of the large establishments (500 or more employees) in the sample. Workplaces in cluster 1 also tend to be in the private rather than the public sector. All workplaces in the cluster regularly check the need for further training in a systematic way, suggesting that such workplaces cannot be characterized in simple terms as ‘bad’ places to work. The workplaces in cluster 1 includes some of those that have both a supra-firm collective wage agreement and employee representation as well as some of those that have only one or neither of these institutions. Indeed, the ratio of those workplaces that have both institutions to those that have only one or neither is higher for this cluster than it is for the sample as a whole.

Table 5 around here

Workplaces in Cluster 2 do and do not use temporary workers. The ratio of those that do not use temporary workers to those that do is approximately three to one within the cluster. Establishments in the cluster are more likely to be small or medium sized (fewer than 250 employees) than large, and are more likely to be in the private sector than the public sector. Interestingly, all of the workplaces in cluster 2 do not regularly check the training needs of their employees in a systematic way, indicating that such workplaces do not emphasize the up-grading of employees' skills. Workplaces in cluster 2 are also more likely to not have a supra-firm collective wage bargain as well as employee representation than they are to have these two institutions. The ratio of those establishments that have only one (or none) of these two institutions to those that have both is higher for this cluster than it is for the sample in general.

Cluster 3 includes only those workplaces that do not use temporary workers. It covers the range of workplaces in terms of size, with no single category being substantively over-represented. Although establishments in cluster 3 are more likely to be in the private sector than they are in the public sector, establishments in the latter sector are substantially over-represented in this cluster compared to the sample as a whole. All workplaces in cluster 3 regularly check the training needs of their employees in a systematic way. Cluster 3 contains workplaces have both a supra-firm collective wage agreement in place and employee representation; there are no establishments that have only one or neither of these institutions. Such workplaces, therefore, conform to an important element of ideal typical employers within collaborative business systems.

Cluster 4 contains only those workplaces that do not use temporary workers. Workplaces in cluster 4 are, on the whole, small with 50 or fewer employees compared to the complete sample. Workplaces in cluster 4 come from the private and public sectors, in a ratio roughly equal to that for the sample as a whole. All workplaces in the cluster regularly check

the training needs of their employees in a systematic way. All workplaces do not have either a supra-firm collective wage bargain or employee representation (or both). The distribution of establishments by business system type and cluster is shown in Table 6; it reveals both the percentage and the absolute number of workplaces in a specific country and particular cluster.

Table 6 around here

### ***Step 3: The links between institutional systems and establishment types***

In order to assess how the influences of establishment variables on the use of temporary agency workers potentially differ between business-system contexts, we perform a multi-level logistic regression with a random effect to account for intra-business system variation. Establishments represent one level in our analysis; business-system type, another. The dichotomous dependent variable is the use (or ‘non-use’) of temporary agency workers by establishments. The multi-level logistic regression enables us to capture potential commonalities across establishments that are located within the same business system, reflecting the shared institutional pressures on companies. In other words, establishments within the same business system are not statistically independent from one another: they are likely to share features as a result of being located within the same business system (Whitley, 1999, 2010). However, as noted above, we do not expect establishments within the same business system to be identical. Incorporating a random effect into our multilevel logistic regression enables us to take establishment diversity within any particular variety of capitalism into consideration (Gelman and Hill, 2007). We also analyse if key establishment characteristics interact with their business-system type to influence the use of temporary workers differently in the various business-system types that we identified in step 1 of our analysis.

Our model, therefore, has the business-system type as the higher level. The lower level relates to establishment features. We analyse the influence of organizational size (as measured by the number of employees and grouped into five categories), whether the establishment is in the public or private sector, the systematic assessment of employees' further-training needs within the establishment, and the presence of both an employee representative and supra-firm level wage bargain in the establishment. We also assess interactions between the two levels. Of particular interest are the interactions between labour-market institutions (the presence of both an employee representative and a supra-firm wage bargain) and, because of variation in the regulations on the use of temporary workers in different sectors, the interaction between the establishment's sector (public or private) and the type of business system in which the establishment operates. The results of our analysis are shown in Table 7.

Table 7 about here

The results of the fixed effects regression indicate that there is, based on the sample averages for the individual business systems, no statistically significant difference on the use of temporary agency workers for workplaces in different business systems. The business system type variable is not statistically significant. This is a surprising result as the business systems framework would anticipate statistically significant variation at this level of analysis. We, therefore, find no support for propositions 1 to 4 (inclusive) at this level of analysis.

However, the fixed effects regression does indicate that there are important interactions between establishment-level variables and the different business systems types: both of the interaction terms in the model are statistically significant at the one-per-cent level, suggesting that the influence of 1) the presence of employee representatives and collective

wage bargains within establishments and 2) the establishment's sector on the use of temporary agency workers depends upon the type of business system that the establishment is in. This provides evidence in support of propositions 5 and 6. Below, we examine the fixed coefficients for interactions involving particular business systems, enabling us to comment in more details on how an establishment's characteristics and business-system environment influence its use of temporary agency workers.

Other variables, including are control variables, are, as anticipated, statistically significantly associated with an increased likelihood that the establishment uses temporary workers. For instance, the establishment's size and sector, and the assessment of employees' training requirements are statistically significant at the one-per-cent level, indicating that some workplace characteristics, on average, influence the use of temporary agency workers. At this level of analysis, public-sector workplaces are more likely to use temporary workers than private-sector ones.

Table 8 provides the fixed coefficient results for the multilevel logistic regression. The results indicate that there are no statistically significant differences for the individual establishments' use of temporary workers across the different business systems. Propositions 1 to 4 are not supported by these results. Establishments in no one business system are either more or less likely to use temporary agency workers than those in any of the other business systems.

Table 8 about here

Evidence in Table 8 does, however, support propositions 5 and 6. The evidence indicates that the use of temporary workers by establishments that have both an employee representation and a supra-firm collective wage bargaining depends on the business system



within which the workplace is located. Workplaces with these two institutions that are in either a compartmentalized or a fragmented business system with rigid labour markets are more likely to use temporary agency workers than those establishments with one or neither of these institutions. These associations are statistically significant at the one- and five-per-cent levels, respectively. This finding suggests that establishments that are located in business systems that, in general, provide a great deal of flexibility to organizations do not wish to be constrained by permanent workers who may inhibit management's prerogative either in the day-to-day running of the establishment via employee representatives or in wage setting via supra-firm collective wage negotiations. By contrast, workplaces in collaborative business systems that have these institutions are not statistically significantly different to those establishments with one or neither of these institutions in their use of temporary agency workers, indicating either that employers in these business systems do not see the presence of employee representatives and supra-firm collective wage bargaining as a impediment to their decision making or that employers and employees in workplaces with such institutions see the use of temporary workers as a way to protect core employees (Höpner, 2005).

We find that the use of temporary agency workers by public-sector workplaces depends on the business system within which the establishment is located. For example, public-sector workplaces in compartmentalized business systems are more likely to use temporary workers compared to their private-sector counterparts. By contrast, public-sector workplaces in collaborative and in fragmented business systems with rigid labour markets are less likely to use temporary agency workers than their private-sector counterparts. All of these associations are statistically significant at the one-per-cent level. These results indicate that establishments' use of temporary workers depends on the workplace's sector as well as the business system that it is located within.

## **Conclusion**

The paper has addressed the issue of temporary agency work, in many instances a form of insecure and contingent employment, and how its prevalence varies across all 28 European Union countries plus FYR Macedonia and Turkey. In doing so, we developed a novel typology of institutional types for countries to complement existing studies. We also drew on a large dataset to establish varieties of employment strategies across workplaces in those 30 countries. We then examined the links between business systems, establishment characteristics, and their interactions, on the one hand, and the use of temporary agency work, on the other.

One of our main findings is that establishments' use of temporary agency workers is not, in general, influenced by the business system within which the workplace operates. We found no evidence of statistically significant differences in the use of temporary workers by business-system type, reflecting wide variation in establishments' use of temporary workers in different countries but within the same business system type. This indicates that national institutional frameworks should not be seen as coherent and complementary systems, but as a mixture of sometimes coherent and sometimes incoherent, but compatible elements that can enable the same outcome to be achieved in different ways in contrasting institutional settings (Höpner, 2005). Our findings also reinforce the perspective that national-level institutions do not determine important firm-level outcomes (Allen, 2013; Crouch and Farrell, 2004), and support the view that national institutional influences on establishment outcomes are conditional upon the establishment's specific characteristics and institutional setting.

Indeed, our examination of how establishment characteristics influence the use of temporary agency workers reveals important variations that depend upon the specific institutional setting of the workplace. This paper, therefore, contributes significantly to the HRM literature by highlighting the salience of the establishment's specific institutional

context within which different policies and practices are implemented. For instance, we found that, in compartmentalized business systems, which have flexible labour-market systems, and in fragmented business systems with ‘rigid’ labour markets, the presence of both employee representatives *and* a supra-firm level wage bargain is strongly associated with an increased use of temporary agency workers. By contrast, these two factors are not statistically associated with either higher or lower levels of temporary agency worker use in collaborative business systems, indicating that how managers respond to these two institutions depends on their broader institutional environment: senior managers in business systems that, in general, promote organizational flexibility would appear to view these two institutions negatively, but that is not the case for employers in business systems that facilitate greater employer-employee co-operation.

Similarly, the links between an establishment’s sector and the use of temporary agency workers depends on the workplace’s business system. Public-sector establishments in compartmentalized business systems are more likely to use temporary agency workers than their private-sector counterparts. By contrast, in collaborative and in fragmented business systems with ‘rigid’ labour markets, public-sector workplaces are less likely to use temporary agency workers than their private-sector counterparts. This finding has two important implications for future HRM research, as it suggests that a workplace’s broader institutional context as well as firm institutional specificities interact to influence key outcomes. First, future research should take the particular institutional contexts of organizations and establishments into consideration when analysing the effects of HRM policies on important outcomes. As we have shown, sector-specific regulations in compartmentalized business systems may actually encourage the use of temporary agency workers, but limit their use in collaborative business systems and fragmented business systems with ‘rigid’ labour markets in the public sector. Second, future studies should examine organizations’ employment

policies, including employee representation and wage bargaining, in a comparative institutional perspective, as the outcome associated with any particular policy can vary significantly, depending on the establishment's institutional context that can differ nationally, sectorally and by individual organizations.

Our analysis relied on data from a number of countries from one year, enabling us to reveal important associations between establishment characteristics and institutional settings. However, institutional environments are not static (Sahadev and Demirbag, 2010; Whitley, 2010). Future research could assess how changes in the institutional environment in different business systems influence the outcomes associated with HRM practices. For instance, institutional environments have changed in several countries as a result of the recent global financial and eurozone crises (Psychogios et al., 2014). For instance, Greece's previously 'rigid' labour market has become more flexible in recent years (Kornelakis and Voskeristian, 2014), resulting in an economy that adheres more closely to a fragmented business system with a flexible labour market than a fragmented business system with a rigid labour market. Future research could examine Greece as well as other countries that have undergone significant institutional change in recent years to assess the impact of those changes on the use of temporary agency workers.

A change in a country's business system can have profound implications for the prevalence of establishments' use of temporary workers. Whilst we have found that business systems *per se* are not associated with higher or lower use of temporary workers by workplaces, other institutional factors that vary by establishment do interact with the type of business system that the organization is located within to influence the use of temporary agency workers. Changes in the prevalence of precarious work within different countries depend, in other words, on the institutional features of the business systems and the institutional specificities of establishments.

## References

- Aggarwal, R., & Goodell, J.W. (2014). Cross-national differences in access to finance: influence of culture and institutional environments. *Research in International Business and Finance*, 31, 193–211.
- Allen, M.M.C. (2013). Comparative capitalisms and the institutional embeddedness of innovative capabilities. *Socio-Economic Review*, 11, 771–794.
- Allen, M.M.C., (2014). Business systems theory and employment relations. In A. Wilkinson, G. Wood, & R. Deeg (eds), *The Oxford handbook of employment relations* (pp. 86–113). Oxford: Oxford University Press.
- Allen, M.M.C., & Whitley, R. (2012). Internationalization and sectoral diversity: The roles of organizational capabilities and dominant institutions in structuring firms' responses to semi-globalization. In C. Lane & G.T. Wood (eds), *Capitalist diversity and diversity within capitalism* (pp. 97-120). London: Routledge.
- Arrowsmith, J. (2009). *Temporary agency work and collective bargaining in the EU*. Retrieved from:  
[http://www.eurofound.europa.eu/sites/default/files/ef\\_files/docs/eiro/tn0807019s/tn0807019s.pdf](http://www.eurofound.europa.eu/sites/default/files/ef_files/docs/eiro/tn0807019s/tn0807019s.pdf)
- Bartlett, M.S. (1954). A note on the multiplying factors for various Chi square approximations. *Journal of Royal Statistical Society*, 16(Series B), 296–298.
- Brewster, C., Wood, G., & Georgen, M. (2015). Institutions, unionization and voice: The relative impact of context and actors on firm level practice. *Economic and Industrial Democracy*, 36, 195-214.
- Brewster, C., Croucher, R., Wood, G., & Brookes, M. (2007). Collective and individual voice: Convergence in Europe? *The International Journal of Human Resource Management*, 18, 1246-1262.
- Chiu, T., Fang, D.P., Chen, J., Wang Y., & Jeris, C (2001). A robust and scalable clustering algorithm for mixed type attributes in large database environment. *Proceedings of the 7th ACM 33 SIGKDD international conference on knowledge discovery and data mining*, pp. 263–268.
- Cook, L.J. (2010). More rights, less power: Labor standards and labor markets in east European post-Communist states. *Studies in Comparative International Development*, 45, 170-197.
- Cooke, F.L., Wood, G., Psychogios, A.G., & Szamosi, L.T. (2011). HRM in emergent market economies: Evidence and implications from Europe. *Human Resource Management Journal*, 21, 368-378.
- Crouch, C., & Farrell, H. (2004). Breaking the path of institutional development? Alternatives to the new determinism. *Rationality and Society*, 16, 5-43.
- Crouch, C., Streeck, W., Boyer, R., Amable, B., Hall, P. A. and Jackson, G. (2005). Dialogue on 'institutional complementarity and political economy'. *Socio-Economic Review*, 3, 359–382.
- Croucher, R., Wood, G., Brewster, C. and Brookes, M. (2012). Employee turnover, HRM and institutional contexts. *Economic and Industrial Democracy*, 33, 605–620.
- Deeg, R. (2007). Complementarity and institutional change in capitalist systems. *Journal of European Public Policy*, 14, 611-630.
- Dore, R. (2000). *Stock market capitalism: Welfare capitalism*. Cambridge: Cambridge University Press.

- Estevez-Abe, M., Iversen, T. and Soskice, D. (2001). Social protection and the formation of skills: A reinterpretation of the welfare state. In P.A. Hall & D. Soskice (eds), *Varieties of capitalism: The institutional foundations of comparative advantage* (pp. 145-183). Oxford: Oxford University Press.
- Field, A. (2005). *Discovering statistics using SPSS*. London: Sage.
- Feldmann, H. (2008). The quality of industrial relations and unemployment around the world. *Economics Letters*, 99, 200–203.
- Gelman, A. and Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge: Cambridge University Press.
- Goergen, M., Brewster, C., Wood, G. and Wilkinson, A. (2012). Varieties of capitalism and investments in human capital', *Industrial Relations*, 51(S1), 501–527.
- Gospel, H. and Pendleton, A. (2003). Finance, corporate governance and the management of labour: A conceptual and comparative analysis. *British Journal of Industrial Relations*, 41, 557-582.
- Goyer, M. (2011), *Contingent capital: Short-term institutional investors and the evolution of corporate governance in France and Germany*. Oxford: Oxford University Press.
- Guest, D.E. (2011). Human resource management and performance: still searching for some answers. *Human Resource Management Journal*, 21, 3–13.
- Hall, P.A., and Soskice, D. (2001). Introduction. In P.A Hall & D. Soskice (eds) *Varieties of capitalism: The institutional foundations of comparative advantage* (pp. 1–68). Oxford: Oxford University Press.
- Harcourt, M. and Wood, G. (2007). The importance of employment protection for skill development in coordinated market economies. *European Journal of Industrial Relations*, 13, 141–59.
- Hassel, A. (1999). The erosion of the German system of industrial relations. *British Journal of Industrial Relations*, 37, 483-505.
- Hassel, A. (2014). The paradox of liberalization: Understanding dualism and the recovery of the German political economy. *British Journal of Industrial Relations*, 52, 57-81.
- Holman, D. (2013). Job types and job quality in Europe. *Human Relations*, 66, 475-502.
- Höpner, M. (2005). What connects industrial relations and corporate governance? Explaining institutional complementarity. *Socio-Economic Review*, 3, 331-358.
- Hotho, J.J. (2014). From typology to taxonomy: A configurational analysis of national business systems and their explanatory power. *Organization Studies*, 35, 671-702.
- Jacoby, S.M. (1997). *Modern manners: Welfare capitalism since the New Deal*. Princeton, NJ: Princeton University Press.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39, 31–36.
- King, L.P. (2007). Central European capitalism in comparative perspective. In B. Hancké, M. Rhodes, & M. Thatcher, (eds), *Beyond varieties of capitalism: Conflict, contradictions, and complementarities in the European economy* (pp. 307-327). Oxford: Oxford University Press.
- Kornelakis, A., & Voskeristian, H. (2014). The transformation of employment regulation in Greece: Towards a dysfunctional liberal market economy? *Relations Industrielles/Industrial Relations*, 69, 344-365.
- La Porta, R., Florencio, L.d.S., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance*, 54, 471–517.
- Lane, C. (1989). *Management and labour in Europe*. Cheltenham: Elgar.
- Lane, C., & Wood, G. (2009). Capitalist diversity and diversity within capitalism. *Economy and Society*, 38, 531-551.
- McCann, L., Morris, J., & Hassard, J. (2008). Normalized intensity: The new labour process of middle management. *Journal of Management Studies*, 45, 343-371.

- Mellahi, K., & Wilkinson, A. (2004). Organizational failure: A critique of recent research and a proposed integrative framework. *The International Journal of Management Reviews*, 5, 21-41.
- Norušis, M.J. (2003). *SPSS 12.0 statistical procedures companion*. Up. River, NJ: Prentice-Hall.
- Pedersen, H.S., Hansen, C.B., & Mahler, S. (2007). *Temporary agency work in the European Union*, available at: [http://www.eurofound.europa.eu/sites/default/files/ef\\_files/ewco/reports/TN0408TR01/TN0408TR01.pdf](http://www.eurofound.europa.eu/sites/default/files/ef_files/ewco/reports/TN0408TR01/TN0408TR01.pdf).
- Psychogios, A.G., & Wood, G. (2010). Human resource management in Greece in comparative perspective: Alternative institutionalist perspectives and empirical realities', *The International Journal of Human Resource Management*, 21, 2614-2630.
- Psychogios, A., Brewster, C., Missopoulos, F., Kohont, A., Vatchkova, E., & Slavic, A. (2014). Industrial relations in south-eastern Europe: Disaggregating the contexts. *The International Journal of Human Resource Management*, 25, 1592-1612.
- Sahadev, S., & Demirbag, M. (2010). A comparative analysis of employment practices among post-Communist and capitalist countries in south eastern Europe. *Employee Relations*, 32, 248-261.
- Schneider, M. R., & Paunescu, M. (2012). Changing varieties of capitalism and revealed comparative advantages from 1990 to 2005: A test of the Hall and Soskice claims. *Socio-Economic Review*, 10, 731-753.
- Streeck, W. (2009). *Re-forming capitalism: Institutional change in the German political economy*. Oxford: Oxford University Press.
- Streeck, W., & Hassel, A. (2003). The crumbling pillars of social partnership. *West European Politics*, 26, 101-124.
- Szamosi, L.T., Wilkinson, A., Wood, G., & Psychogios, A.G. (2010). Developments in HRM in south-eastern Europe. *The International Journal of Human Resource Management*, 21, 2521-2528.
- Tabachnick, B. G., & Fidell, L. S. (2007), *Using multivariate statistics* (5th ed.). Boston, MA: Allyn and Bacon.
- Thelen, K., (2014). *Varieties of liberalization and the new politics of social solidarity*. Cambridge: Cambridge University Press.
- Tylecote, A., & Ramirez, P. (2006). Corporate governance and innovation: The UK compared with the US and 'Insider' Economies. *Research Policy*, 35, 160-180.
- Voss, E., Vitols, K., Farvaque, N., Broughton, A., Behling, F., Dota, F., Leonardi, S., & Naedenoen, F. (2013). The role of temporary agency work and labour market transitions in Europe: Institutional frameworks, empirical evidence, good practice and the impact of social dialogue. *Final report for the joint Eurociett/UNI Europa Project: 'Temporary Agency Work and Transitions in the Labour Market'*. Retrieved from: [http://www.ciett.org/fileadmin/templates/eurociett/docs/Social\\_dialogue/Transitions\\_project/Report/2013.02.08\\_-\\_Full\\_report\\_on\\_the\\_role\\_of\\_TAW\\_and\\_labour\\_market\\_transitions.pdf](http://www.ciett.org/fileadmin/templates/eurociett/docs/Social_dialogue/Transitions_project/Report/2013.02.08_-_Full_report_on_the_role_of_TAW_and_labour_market_transitions.pdf).
- Walker, J. T., Brewster, C., & Wood, G. (2014). Diversity between and within varieties of capitalism: Transnational survey evidence. *Industrial and Corporate Change*, 23, 493-533.
- Whitley, R. (1999). *Divergent capitalisms: The social structuring and change of business systems*. Oxford: Oxford University Press.
- Whitley, R. (2007). *Business systems and organizational capabilities: The institutional structuring of competitive competences*. Oxford: Oxford University Press.

- Whitley, R. (2010). The institutional construction of firms. In G. Morgan, J.L. Campbell, C. Crouch, O.K. Pedersen, & R. Whitley (eds), *The Oxford handbook of comparative institutional analysis* (pp. 453-495). Oxford: Oxford University Press.
- Wilkinson, A., & Wood, G. (2012). Institutions and employment relations: The state of the art. *Industrial Relations*, 51, 373-388.
- Wood, G., & Frynas, G. (2006). The institutional basis of economic failure: Anatomy of the segmented business system. *Socio-Economic Review*, 4, 239-77.
- Wood, G., & Horwitz, F. (2015). Theories and institutional approaches to HRM and employment relations in selected emerging markets. In P. Budhwar & P. Horwitz (eds), *Handbook of human resource management in emerging markets* (pp. 19-41). Cheltenham: Edward Elgar.



Table 1 Questions Used in Principal Components Analysis and Relationship to Business Systems Framework

Measure	Question and Scale	Relevant Concept in Business Systems Framework
Flexibility of wage determination	In your country, how are wages generally set? [1 = by a centralized bargaining process; 7 = by each individual company]	Union strength
Judicial Independence	In your country, to what extent is the judiciary independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent]	State co-ordination of economic activities
Financing through local equity market	In your country, how easy is it for companies to raise money by issuing shares on the stock market? [1 = extremely difficult; 7 = extremely easy]	Type of financial system
Ease of access to loans	In your country, how easy is it to obtain a bank loan with only a good business plan and no collateral? [1 = extremely difficult; 7 = extremely easy]	Type of financial system
Venture capital availability	In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = extremely difficult; 7 = extremely easy]	Type of financial system
Hiring and firing practices	In your country, how would you characterize the hiring and firing of workers? [1 = heavily impeded by regulations; 7 = extremely flexible]	Authority sharing with skilled workers

Source of questions: World Economic Forum (2009); source of business system concepts: (Whitley 2000).

Table 2 Developing a Typology of Countries Principal Component Analysis

	Component	
	1 'Rule of Law'	2 'Flexible Labour Markets'
Judicial Independence	.937	-.097
Venture capital availability	.835	.273
Financing through local equity market	.829	-.086
Ease of access to loans	.775	.417
Hiring and firing practices	-.023	.896
Flexibility of wage determination	-.591	.623

Source: World Economic Forum (2009); own calculations.

Table 3 Anderson-Rubin Factor Scores for Each Country, Grouped by Type of Capitalism

Type of Capitalism and Country	'Rule of Law' Factor	'Flexible Labour Markets' Factor
<b>'Compartmentalized'</b>		
Turkey	0.071	0.862
Cyprus	0.295	0.133
Estonia	0.306	1.131
Luxembourg	0.780	0.102
UK	1.162	1.383
Denmark	1.455	2.522
Finland	1.683	0.243
<b>'Collaborative'</b>		
France	0.277	-0.988
Belgium	0.326	-0.558
Germany	0.510	-2.043
Austria	1.039	-0.593
Ireland	1.046	-0.135
Netherlands	1.558	-0.548
Sweden	1.879	-0.477
<b>'Fragmented with "Rigid" Labour Markets'</b>		
Italy	-0.926	-2.371
Greece	-0.293	-1.195
Slovenia	-0.216	-0.522
Spain	-0.110	-0.574
Malta	-0.067	-0.224
Portugal	-0.067	-0.897
<b>'Fragmented with "Flexible" Labour Markets'</b>		
FYR Macedonia	-1.708	0.084
Bulgaria	-1.284	1.212
Latvia	-1.252	0.496
Hungary	-1.200	0.201
Romania	-1.090	0.419
Croatia	-1.041	0.201
Slovakia	-0.902	1.208
Czech R.	-0.784	0.216
Poland	-0.741	0.428
Lithuania	-0.704	0.288

Table 4 Measures Used to Develop a Typology of Establishment Types

Measure	Question	Data Type
Temporary workers	Have there been any of the following groups working in your establishment in the last 12 months?	Dichotomous (Yes = 1)
Supra-firm collective wage bargaining and employee representation	Temporary (agency) workers Created by combing answers from: 'Is this collective agreement negotiated at the establishment or company level or at a higher level than the company?' and 'Which of the following forms of formal employee representation do currently exist in your establishment?'.	Dichotomous (Yes if supra-firm level wage bargaining <i>and</i> any form of employee representation)
Sector	Does this establishment belong to the public sector?	Dichotomous (Yes = 1)
Establishment size	Size of establishment in 5 categories	Categorical (10 to 19, 20 to 49, 50 to 249, 250 to 499, and 500 +)
Training	Is the need for further training periodically checked in a systematic way in your establishment?	Dichotomous (Yes = 1)

Source: European Company Survey (2009).

Table 5 Cluster Distribution in Per Cent and Absolute Numbers by Characteristics

	Cluster				Row total	
	1	2	3	4	Percentage	Absolute number
Cluster Distribution						
Percentage of total sample in cluster	27	22	17	34	100	16406
Use of Temporary Workers?						
Percentage of total sample in cluster - No	0	17	17	34	68	11091
Percentage of total sample in cluster - Yes	27	5	0	0	32	5315
Percentage of total sample in the category						
Size Category						
10 to 19	2.8	7.6	2.8	9.7	22.9	3757
20 to 49	4.7	6.8	4.3	9.8	25.6	4200
50 to 249	9.8	5.4	5.9	9.5	30.7	5032
250 to 499	5.1	1.3	1.8	3.2	11.5	1885
500 +	4.6	0.9	1.8	2.1	9.3	1532
Private or public sector?						
Private	21.4	18.0	9.2	25.9	74.5	12226
Public	5.7	4.0	7.4	8.4	25.5	4180
Is the need for further training periodically checked in a systematic way in your establishment?						
No	0	22	0	0	22	3611
Yes	27	0	17	34	78	12795
Supra-Firm Collective Wage Agreement and Employee Representation?						
No, neither or just one	16	16	0	34	66	10898
Yes, if both	11	6	17	0	34	5508

**Table 6 Cross-Tabulation of Business Systems Type by Country and by Cluster in Percentages**

Type of Business System and Country	Cluster					Number of Cases
	Temporary Workers? (N, Y, Mix)					
	1 Y	2 Mix	3 N	4 N	3 + 4 N	
<b>'Compartmentalized'</b>						
Turkey	3	21	19	56	75	216
Cyprus	12	19	16	53	69	217
Estonia	3	19	10	68	78	62
Luxembourg	22	33	25	20	45	265
UK	51	11	5	34	39	522
Denmark	43	25	17	16	33	771
Finland	30	25	27	19	46	954
<i>Unweighted average for business system</i>	<i>23</i>	<i>22</i>	<i>17</i>	<i>38</i>	<i>55</i>	
<b>'Collaborative'</b>						
France	49	14	17	19	36	1031
Belgium	49	24	11	16	27	744
Germany	29	25	24	22	46	1212
Austria	28	30	13	29	42	765
Ireland	24	14	19	43	62	377
Netherlands	42	16	21	21	42	777
Sweden	34	16	23	27	50	902
<i>Unweighted average for business system</i>	<i>36</i>	<i>20</i>	<i>18</i>	<i>25</i>	<i>44</i>	
<b>'Fragmented' with 'Rigid' Labour Markets</b>						
Italy	27	29	15	29	44	1400
Greece	8	33	4	55	59	829
Slovenia	18	18	23	41	64	485
Spain	29	13	25	33	58	1367
Malta	13	22	11	54	65	83
Portugal	20	23	5	53	58	573
<i>Unweighted average for business system</i>	<i>19</i>	<i>23</i>	<i>14</i>	<i>44</i>	<i>58</i>	
<b>'Fragmented' with 'Flexible' Labour Markets</b>						
FYR Macedonia	5	41	3	51	54	395
Bulgaria	20	14	16	50	66	125
Latvia	8	16	16	60	76	156
Hungary	14	19	11	56	67	260
Romania	5	33	8	53	61	343
Croatia	3	36	29	32	61	287
Slovakia	10	18	13	59	72	213
Czech R.	21	9	4	66	70	384
Poland	5	17	18	60	78	598
Lithuania	9	23	3	66	69	93
<i>Unweighted average for business system</i>	<i>10</i>	<i>23</i>	<i>12</i>	<i>55</i>	<i>67</i>	
<b>Total</b>	<b>27</b>	<b>22</b>	<b>17</b>	<b>34</b>		<b>16406</b>

Notes: Row percentages may not total 100 due to rounding errors.

Source: European Company Survey 2009; own calculations.

Table 7 Results of Multilevel Logistic Regression, Fixed Effects

Source	F
Corrected model	98.614***
Business system type	0.390
Size	951.495***
Private or public sector (public = 1)	72.160***
Is the need for further training periodically checked in a systematic way in your establishment? (Yes = 1, No = 0)	22.424***
Employee representative and supra-firm level bargaining (Yes = 1, No = 0)	0.007
Employee representative and supra-firm level bargaining*business system type	4.629***
public or private sector*business system type	30.315***

Notes: The dependent variable is dichotomous response to the question ‘Have there been any [temporary agency workers] working in your establishment in the last 12 months?’ (Reference category = no); N = 16406; ‘\*\*\*’ denotes statistical significance at the 1 per-cent level.

Table 8 Results of Multilevel Logistic Regression, Fixed Coefficients

Model Term	Coefficient	Exp(coefficient)
Intercept	-3.371**	0.034
Compartmentalized business system (reference = fragmented with flexible labour markets)	2.099	8.161
Collaborative business system (reference = fragmented with flexible labour markets)	1.140	3.128
Fragmented business system with rigid labour market (reference = fragmented with flexible labour markets)	0.873	2.394
Size (5 categories)	0.476***	1.61
Private or public sector (reference category = public)	0.210**	1.234
Is the need for further training periodically checked in a systematic way in your establishment? (Reference = yes)	-0.211***	0.810
Employee representative and supra-firm level bargaining (reference = yes)	0.083	1.086
Employee representative and supra-firm level bargaining*compartmentalized business system (reference = both employee representation and supra-firm bargaining)	-0.436***	0.646
Employee representative and supra-firm level bargaining*collaborative business system (reference = both employee representation and supra-firm bargaining)	-0.128	0.880
Employee representative and supra-firm level bargaining*fragmented business system with rigid labour markets (reference = both employee representation and supra -firm bargaining)	-0.345**	0.708
private or public sector*compartmentalized business system (reference = public)	-0.365***	0.694
private or public sector*collaborative business system (reference = public)	0.752***	2.122
private or public sector*fragmented business system with rigid labour markets (reference = public)	0.284**	1.329

Notes: The dependent variable is dichotomous response to the question ‘Have there been any [temporary agency workers] working in your establishment in the last 12 months?’ (Reference category = no); ‘\*\*\*’ denotes statistical significance at the 1 per-cent level; ‘\*\*’, at the 5 per-cent level.