



Sabina Stiller & Paul de Beer

Revealing variation in employment institutions: a cluster analysis of OECD and EU countries

November 2017

© Sabina Stiller and Paul de Beer, Amsterdam

Contact: s.j.stiller@uva.nl

General contact: aias-hsi@uva.nl

Bibliographical information:

Sabina Stiller and Paul de Beer (2017), Revealing variation in employment institutions: A cluster analysis of OECD and EU countries, *AIAS-HSI Working Paper 6*.

Information may be quoted provided the source is stated accurately and clearly.

Reproduction for own/internal use is permitted.

This paper can be downloaded from our website <http://hsi.uva.nl/> under the section: Publications/AIAS-HSI Working Papers Series.

ISSN online: 2590-0145

Revealing variation in employment institutions:

A cluster analysis of OECD and EU countries

Sabina Stiller, Paul de Beer

AIAS-HSI, University of Amsterdam

Amsterdam Institute for Advanced labour Studies – Hugo Sinzheimer Institute (AIAS-HSI), University of Amsterdam.

AIAS-HSI Working Paper 6, Amsterdam, November 2017

Contents

- Revealing variation in employment institutions: 2
- Abstract 5
- 1. Introduction 6
- 2. Building blocks of employment regimes: various aspects of employment and corresponding institutions 8
- 3. Methodology 9
 - 3.1 Selection of indicators from data sources 9
 - 3.2 Preparing the dataset for the cluster analysis 10
 - 3.3 Cluster Analysis 12
- 4. Interpreting results: country clusters of employment institutions 13
- 5. Conclusion and discussion 23
- Acknowledgements 24
- References 25
- APPENDICES (A1 through A5) 28
 - A1. Overview of aspects of work, institutions and variables along with their sources 29
 - A2. Reducing the number of variables in the dataset: combined variables per aspect of work (1st step) 32
 - A3) Factor analyses on original variables 33
 - A4) Factor analyses of combined variables 36
 - A5) More disaggregated data on clusters 37

Abstract

Economic research has widely analysed the effects of institutions and policies on the economy and labour markets. However, while a lot of comparative work has been done on welfare states, there is much less theoretical work about employment institutions across countries. Better insight into these patterns of employment institutions is needed because differences between countries in that respect are possibly related to differences in the valuation of work. In order to investigate the relationship, first, the institutions concerning employment including labour relations need to be systematically examined. This paper asks the following questions: What sorts of patterns do we see for OECD and EU countries when looking at different aspects of employment institutions, which clusters of countries can be distinguished, and how do they differ? We present the results of an institutional analysis as part of a larger project on the relationship about societal appreciation of the value of work, including different types of employment, and employment institutions. To this end, we use institutional indicators in the areas of the individual employment relationship, the collective employment relationship, employment conditions, labour market transitions, and the relationship between work and care, making use of data from several comparative databases. The results show the breadth of patterns of employment institutions in developed countries in OECD and EU countries grouped together in five distinctive clusters.

Key words: Cross-national comparison, employment institutions, cluster analysis, employment relationship

1. Introduction

There is a sizeable literature on the effects of employment and labour market institutions and policies on the economy in general and the labour market in particular, both by international organizations and academics. For instance, the OECD, in its annual Employment Outlook report regularly directs attention at the effects of selected institutions and reviews empirical studies in this area. Many studies by economists and industrial relations scholar focus on the effects of one (or various) labour market institutions on different aspects of macroeconomic performance. Without trying to be inclusive, studies also consider institutional and policy effects on more specific areas such as labour market performance (worker flows, employment patterns, unemployment, extent of temporary jobs), welfare effects, productivity, wages, working hours. Some authors take a broader approach looking at several labour market institutions and related forms of regulation (Griffith, Harrison and Macartney 2007, Layard and Nickell 1999, Pries and Rogerson 2005). Others focus on the effects of trade unions and collective bargaining (Aidt and Tzannatos 2008, Calmfors and Driffill 1988, Flanagan 1999, Traxler and Brandl 2012), employment and dismissal protection (Amable, Demmou and Gatti 2011, Autor, Kerr and Kugler 2007, Bassanini and Garnero 2013, Belot, Boone and Van Ours, 2007, Boeri and Jimeno 2005, Cingano et al 2010, Howell et al 2007), and active labour market policies and activation strategies (Crepon, Dejemeppe and Gurgand 2005, De Beer and Schils (2009), Card, Kluve and Weber (2010), Larsen and Vesán (2012), Nordlund 2009). Yet others focus on the effects of job training on employment (Lechner and Wunsch 2009, Maguire et al 2009).

While this literature directs attention to institutional effects across countries and its mechanisms linking institutions and policies and macroeconomic and labour market outcomes, there has been little research until now that adopts an encompassing view of employment-related institutions in a broad sense, including legislation and policies across developed countries. Surely, there is some comparative work available that uses types of labour-related and employment regimes. For instance, Duncan Gallie (2009) analyzed which types of institutions affect the quality of work in capitalist societies. He finds that national employment regulation systems matter most (next to common capitalist dynamics and differences in production regimes) for people's experience of work. Visser (2008) refers to

employment regimes (market-based, dualist or inclusive) as part of larger industrial relations regimes (distinguishing Nordic, continental European, liberal and southern types) that include union strength, autonomy of social partners, social dialogue and state intervention as characteristics. On a different (meso) level of analysis, David Marsden's theory of employment systems zooms in on international diversity in the employment relationship within the firm, affected different areas of human resource management (Marsden, 1999). These efforts, however, stand in contrast to the large amount of comparative work that has been done on the development and reform of welfare state regimes, following the seminal work of Esping-Andersen (1990).

This paper seeks to add the above described gap, and, in a explorative way, seeks to shed more light on the patterns of institutions broadly related to employment in the Netherlands and other EU and OECD countries. More specifically, it seeks to distinguish different clusters of national-level (excluding differences on the subnational level) employment institutions and elaborate on their differences that may form the basis of a future typology of employment institution regimes. The clusters may be used in future analyses looking at the effects of employment institutions broadly speaking on economic outcomes of various sorts. Our research questions are: What sorts of patterns do OECD countries and the Netherlands show concerning various aspects of employment institutions, which clusters of countries can be distinguished, and how do these clusters differ from each other?

The paper is structured as follows. Section 2 outlines the various building blocks of the employment institutions we include in our search for institutional patterns. The third section describes the methodology used, including the selection of indicators and data sources used to assemble the dataset, and, subsequently, the methods of analysis. Section 4 reports on the results of the cluster analysis performed on the constructed data set and describes the differences between clusters on the various aspects of work. Section 5 concludes, describing a number of insights with relevance to policy makers and connecting the findings to the larger project this paper forms part of.

2. Building blocks of employment regimes: various aspects of employment and corresponding institutions

Potentially, there is a very broad scale of institutions involving and regulating employment understood in a broad way and including labour relations. To get to an encompassing overview of employment institutions, we selected a number of important areas or ‘aspects of work’. The first three aspects of work correspond to classic topics in labour law and industrial relations (REF Blanpain): the individual employment relationship (IER), the collective employment relationship (CER) and employment conditions (EmpC). Second, we also intended to cover other areas of work that matter in a modern perspective on employment and deal with specific situations of workers relating to ensuring employability, looking for a new job, or combining work and care tasks. These are: personal development and training, labour market transitions (Lmt) and the relationship between work and care, concerning work-life balance issues (RelWC). The last two aspects are related institutional provisions of the welfare state regulating individuals’ paths from one job (or the state of temporary unemployment) to another; and to countries’ institutional provisions that regulate the relationship between work time and time spent on care, whether for children or the elderly. The aspect of personal development and training was exempted from the analysis due to a lack of suitable quantitative data (but will be picked up again in subsequent steps of the greater project, see conclusion). Table 1 below summarizes the five aspects included in the analysis together with the main formal institutions that belong to each aspect, serving as a starting point for the selection of variables to be included in the dataset for the later cluster analysis. It also lists some illustrative examples of variables chosen.

Table 1. Various aspects of work, formal institutions and indicators

Aspect of work	Formal institutions	Examples of variables (illustrative)
<i>1. Individual employment relationship (IER)</i>	- dismissal law - legislation concerning forms of employment (including flexible work)	- legally mandated notice period - right to equal treatment of part-time workers compared to full-time workers
<i>2. Collective employment relationship (CER)</i>	- Legislation concerning collective labour agreements, bargaining and industrial action - Legislation concerning employee representation	- right to collective bargaining - legal status of the works council

<i>3. Employment conditions (EmpC)</i>	- Legislation concerning minimum wage, working hours and vacation	- limits to overtime working
<i>4. Labour market transitions (Lmt)</i>	- legislation concerning active labour market programmes, re-integration and unemployment provisions	- spending on active labour market programmes in % of GDP - net unemployment replacement rates
<i>5. Relationship work-care/work-life balance (RelWC)</i>	- legislation on parental and care leave; organization of professional child care; professionalization of (elderly) care	- length of paid parental leave for women and men - spending on family benefits (e.g. cash) in % of GDP

3. Methodology

This section describes the steps taken to measure the formal institutions described in table 1, the data sources used, and outlines how the dataset for the subsequent analysis was assembled.

In order to get a first impression of the kind of data available on the various formal institutions per aspect of work, a wide variety of sources was consulted, including literature in the respective areas of labour law (Blanpain n.d.) and comparative reports by international institutions as the ILO, OECD and EU-related providers of data and services such as Eurostat, CEDEFORP and MISSOC. In addition, we consulted the ICTWSS database (Visser 2016) and the CBR Labour Relations Index (LRI) dataset (Adams, Bishop and Deakin, 2017). The literature search resulted in a preliminary overview showing the availability of either qualitative and quantitative data (or a mix of both) for formal institutions. In the light of time constraints and the intention to perform cluster analysis at different points in time, we decided to select indicators of formal institutions that were: a) available over a longer time span (1990 until the present), b) were available for both EU and OECD countries and c) were suitable to quantitative analysis.

3.1 Selection of indicators from data sources

The selection of indicators for the various formal institutions we intended to compare was made iteratively, looking at the available data sources available, and avoiding an overlap of

several variables measuring the same institution in various ways. Table A1 in the appendix lists the selected variables (with abbreviations) for each of the aspects of work displayed in Table 1 that were included in the dataset. The sources contributing most variables to our dataset are the CBR-LRI dataset and the ICTWSS dataset. In addition, we drew on variables from several OECD databases (Employment Protection Legislation (EPL); Labour Market Programme database; family database; tax-benefit Model dataset) and the net unemployment replacement rates database (van Vliet and Caminada 2012). Variables from the ICTWSS dataset are mostly ordinal ones coded in different ways; their values need to be interpreted in conjunction with the ICTWSS codebook. Variables taken from the CBR-LRI dataset are coded between 0 and 1, with higher values corresponding to more worker protection or worker rights and vice-versa. The dataset includes a document elaborating on the scores per country and variable, also indicating when scores have been normalized. Other variables (on spending) are measured as percentages of GDP, as percentage of total income (for net replacement rates) or indicate the number of paid parental leave in weeks.

A sizeable number of formal institutions could not be included in the quantitative analysis because of data limitations (this applies in particular to the aspects of labour market transitions, relationship work-care, and to the entire aspect of development and training). Typically, there are extended descriptions of particular aspects of labour law and industrial relations available (Blanpain, n.d.), as well as elaborate descriptions of e.g. activation strategies (OECD 2013) or features of professional child care arrangements (Eurostat 2009), but these are not available as quantitative data and for all countries desired and over time (at a later stage of the larger research project and taking a smaller sample of countries selected from clusters in a case-study design the institutions excluded from the current analysis are going to be studied in more depth).

3.2 Preparing the dataset for the cluster analysis

Given that the original number of variables was considerable and some institutions seemed to be covered by similar variables, we carried out several exploratory factor analyses in SPSS, each time including all variables under one specific aspect of work. For the resulting components in the rotated component matrices, we marked those variables with a factor

loading of 0,5 and above as belonging to the component in question (and those with values between 0,4 and 0,5 conditionally). Applying substantive considerations as well as statistical ones (using Cronbach's Alpha for a reliability check of provisional combinations of variables), we created new combined variables for each aspect of work: seven variables for individual employment relationship, six variables for collective employment relationship, three variables for employment conditions, one variable for labour market transitions and two for relationship work-care, respectively (see the appendix for the exact combination of variables in scales and their reliability, Table A2 lists the resulting combined variables).

Preliminary cluster analyses with the combined variables showed that this variation in the number of variables per aspect (IER:7 – CER:6 – EmpC:3) would lead to an overweight of the first two aspects and possibly to biased results. Therefore, in a second step, we again conducted factor analyses for the first three aspects of work (IER, CER, EmpC) to see whether the combined variables could be reduced to yet fewer dimensions and be recombined in order to retain only a few aggregate variables for each aspect of work. For the aspect 'labour market transitions', which contained only one combined variable after step 1, and the aspect 'relationship work-care', where the first step of combination had already resulted in two combined variables, further factor analyses were not necessary. Table 2 below shows the combinations suggested by this second round of factor analyses: retaining two variables each for the aspects 'individual/collective employment relationship' and one variable for 'employment conditions' (see the appendix for more details on both rounds of factor analyses and reliability scores of the scales constructed).

Table 2. Reducing the combined variables per aspect of work (2nd step)

Aspect of work	Combined variables → aggregate variable	Substantive coverage of aggregate variables (=dimensions of an aspect of work)
Individual employment relationship	IER 1, 2, 3, 4, 5, 7 → IER_D1 IER 6 → IER_D2	1: general rules on contract forms and substantive constraints on dismissal; 2: equal treatment of different types of workers/max. duration fixed-term contract; 3: regulation on regular dismissals, 4: extra dismissal regulations for employers; 5: dismissal notification and costs for dismissal of different workers; 7: legally mandated redundancy compensation 6: legally mandated notice period
Collective employment relationship	CER 1,2,3,4 → CER_D1	1: co-determination of workers/works councils/extension of collective agreements; 2: industrial relations constitutional rights/works council involvement in wage negotiations; 3: treatment of specific industrial action and lockouts; 4: regulation regarding employer obligations

	CER 5,6 → CER_D2	5: unofficial industrial action and peace obligation; 6: closed shops/regulation on pre- and post-industrial action phases
Employment conditions	EmpC 1, 2, 3 → EmpC	1: weekend work, daily/weekly limits to work, overtime pay; 2: minimum wage and wage setting mechanism (neg.); 3: entitlements to free time
Labour market transition	Lmt	spending in % of GDP on active labour market measures/spending on passive labour market measures/net unemployment replacement rate (initial, married couple, 2 children) (as in table A2, no further reduction needed)
Relationship work-care	Relwc_D1, D2	1: public expenditure in % of GDP on family cash benefits, paid parental leave for women, paid parental leave for men (neg.) 2: public expenditure in % of GDP on family services or in-kind benefits; family tax breaks (neg.) (as in table A2, no further reduction needed)

Before actually computing these combined variables, the dataset was corrected for (sporadic) missing values on the original variables in order to include as many countries as possible (n=38) in the later cluster analysis. This was done using the SPSS procedure for imputing missing values with means of the same variable which creates new variables. Moreover, we excluded two countries with more than 1/3 of missing values from the cluster analysis (Bulgaria, South Korea).

3.3 Cluster Analysis

In order to obtain robust country clusters, we performed several types of cluster analyses on the data from 2013. One was a hierarchical cluster analysis using SPSS (clustering method WAVERAGE, measure of similarity/distance: EUCLID). Choosing a cluster solution with a relatively even distribution of countries across clusters, we obtained six clusters with 12, 9, 11 and 4 countries respectively plus Denmark as a single-country cluster. We also performed analyses using two different clustering methods (the first also hierarchical, the second non-hierarchical) using Python Sci-kit software: (1) agglomerative clustering (clustering method: Ward) and, (2) k-means clustering (performed 1000 times) and checked which countries appeared in the same cluster with a probability of 90% or more (Müller and Guido 2016). Comparing the respective solutions of the three analyses for 5 and 6 clusters (here, countries were distributed more or less equally over the clusters) respectively, we obtained a basic cluster solution that represents as much overlap across the three solutions as possible. The basic clusters contain countries that were located in a cluster *by at least two of the three clustering methods*, furthermore, we avoided that countries would form a single-country

cluster (like in the hierarchical cluster solution). Table 3 shows the countries included in the basic cluster solution.

Table 3. Countries in basic cluster solution

Cluster	Countries
1	Australia, Chile, Greece, Lithuania, Mexico, New Zealand, Norway, Poland, Romania, Turkey, United States, Japan
2	Austria, Finland, (Iceland:HCA), Ireland, Luxembourg, Slovenia, (Sweden:HCA),United Kingdom, Israel
3	Belgium, Canada, France, Germany, Italy, Latvia, Netherlands, Portugal, Spain, Switzerland, (Latvia: aggl.)
4	Czech Republic, Estonia, Hungary, Slovak Republic
5	Denmark, Iceland, Sweden (Finland:k-means)

Legend: Countries between brackets were included in a cluster by one method only. The abbreviations refer to the various clustering methods. HCA=hierarchical cluster analysis, aggl.=agglomerative clustering, k-means= k-means clustering method with 1000 repetitions.

4. Interpreting results: country clusters of employment institutions

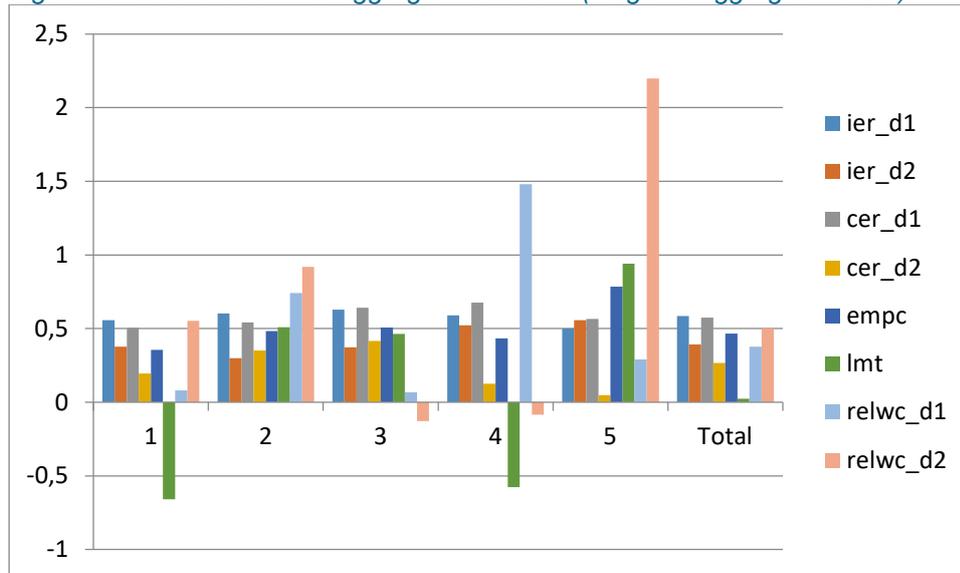
To interpret the clusters in terms of their characteristics, we first look at the level of aggregated variables. Table 4a displays the mean values of the aggregated variables used for identifying the clusters, highlighting both highest and lowest values. The latter can serve as pointers to specific characteristics on which various clusters shows different constellations or patterns of employment institutions. Figure 1 visualizes the variable values across clusters.

Table 4a. Means of combined variables per cluster (highest aggregated level)

Cluster	ier_d1	ier_d2	cer_d1	cer_d2	empc	lmt	relwc_d1	relwc_d2
1	0,5575	0,3775	<i>0,506</i>	0,1944	<i>0,3547</i>	<i>-0,6588</i>	0,08	0,553
2	0,603	<i>0,2986</i>	0,5413	0,3514	0,4828	0,5103	0,7408	0,9201
3	0,6285	0,373	0,642	0,4159	0,5072	0,464	<i>0,0675</i>	<i>-0,1274</i>
4	0,5889	0,5225	0,6762	0,1248	0,4331	<i>-0,5772</i>	1,4806	<i>-0,0841</i>
5	<i>0,5017</i>	0,5567	0,5652	<i>0,0486</i>	0,7849	0,9418	0,2914	2,1986
Total	0,5849	0,3919	0,5745	0,2666	0,4665	0,0229	0,3782	0,5017

Bold=highest mean score across clusters, *italics* = lowest mean score across clusters.

Figure 1. Cluster scores on aggregate variables (=highest aggregated level)



For further looking into the characteristics of those clusters in terms of legal protection and rights for workers (aspects of individual and collective employment relationship - ier_d1/d2, cer_d1/d2 - working conditions - empc) and generosity (aspects of labour market transitions – lmt - and relationship work-care – relwc_d1 and d2), we first focus on highest and lowest scores in each of the five clusters on the aggregate variables, as summarized in table 5.

Table 5. 'Extreme' scores per cluster on aggregate variables

<p>Cluster 1 (AUS, CL, GR, Lith, Mex, NZ, N, Pol, Rom, Tk, US, Jp)</p> <p>- No highest scores on any aggregate variables -</p> <p>Scores lowest on:</p> <ul style="list-style-type: none"> • CER (d1) co-determination of workers/works councils/extension of collective agreements; industrial relations constitutional rights/works council involvement in wage negotiations; treatment of specific industrial action and lockouts; regulation regarding employer obligations • EmpC: weekend work, daily/weekly limits to work, overtime pay (low); minimum wage and wage setting mechanism (negative contribution: a relatively high score here contributes to an overall low score on EmpC); entitlements to free time (low) • Lmt: spending on active labour market measures/spending on passive labour market measures/net unemployment replacement rate (initial, married couple, 2 children)
<p>Cluster 2 (A, Fin, Irl, Lux, Slo, UK, Israel)</p> <p>- No highest scores on any aggregate variables -</p> <p>Scores lowest on:</p> <ul style="list-style-type: none"> • IER (d2): legally mandated notice period

<p>Cluster 3 (B, Can, F, G, I, Latvia, NL, P, Sp, CH)</p> <p>Scores highest on:</p> <ul style="list-style-type: none"> • IER (d1) general rules on contract forms and substantive constraints on dismissal; equal treatment of different types of workers/max. duration fixed-term contract; regulation on regular dismissals; extra dismissal regulations for employers; dismissal notification and costs for dismissal of different workers; legally mandated redundancy compensation • CER (d2) unofficial industrial action and peace obligations; regulation on closed shops/on pre- and post-industrial action phases <p>Scores lowest on:</p> <ul style="list-style-type: none"> • ReIWC (d1) public expenditure on family cash benefits (low), paid parental leave for women (low), paid parental leave for men (negative contribution, high(er) scores contribute to an overall low score) • ReIWC (d2) public expenditure on family services/in-kind benefits (low), public expenditure on family tax breaks (negative contribution, high(er) scores contribute to an overall low score)
<p>Cluster 4 (CzR, SloVR, H, Est)</p> <p>Scores highest on:</p> <ul style="list-style-type: none"> • CER (d1) co-determination of workers/works councils/extension of collective agreements; industrial relations constitutional rights/works council involvement in wage negotiations; treatment of specific industrial action and lockouts; regulation regarding employer obligations • ReIWC (d1) public expenditure on family cash benefits (high), paid parental leave for women (high), parental leave for men (negative contribution, low(er) scores contribute to an overall high score) <p>- No lowest scores on any aggregate variables -</p>
<p>Cluster 5 (Dk, Iceland, S)</p> <p>Scores highest on:</p> <ul style="list-style-type: none"> • IER (d2): legally mandated notice period • EMPC: weekend work, daily/weekly limits to work, overtime pay (high); 2: minimum wage and wage setting mechanism (negative contribution: low scores here contribute to an overall high score); 3: entitlements to free time (high) • Lmt: spending on active labour market measures/spending on passive labour market measures/net unemployment replacement rate (initial, married couple, 2 children) • ReIWC (d2) public expenditure on family services/in-kind benefits (high), public expenditure on family tax breaks (negative contribution: low(er) scores contribute to an overall high score) <p>Scores lowest on:</p> <ul style="list-style-type: none"> • IER (d1) general rules on contract forms and substantive constraints on dismissal; equal treatment of different types of workers/max. duration fixed-term contract; regulation on regular dismissals; extra dismissal regulations for employers; dismissal notification and costs for dismissal of different workers; legally mandated redundancy compensation • CER (d2): unofficial industrial action and peace obligations; closed shops/regulation on pre- and post-industrial action phases

The information given in table 5 allows us to attempt a first substantive interpretation of cluster characteristics by focusing on a cluster's extreme scores compared to all other clusters. Where a cluster does not feature highest or lowest scores on the aggregate level, we consider whether it does so on the level of combined variables per aspect of work (see for an overview of corresponding scores per cluster in section A5 in the appendix).

Cluster 1 (12 countries) stands out by featuring lowest scores in three areas: first, on the first component of collective employment relationship variables; second, on working conditions; and, third, on the generosity of spending on labour market transitions. When focusing on the level of combined variables, this cluster scores highest of all clusters on IER1,

i.e. regulation of different forms of employment contracts and substantive constraints on dismissal. Taken together, one may call it a Liberal cluster with *weak collective rights; a low level of regulation of working conditions and high level of government intervention with minimum wages; and low support for work-to-work transitions*. The countries found here are Anglo-Saxon countries (except for the UK), some countries from the edges of the European Union (Norway, Lithuania, Greece, Romania) and three non-EU OECD countries (Chile, Mexico, Japan).

The second cluster (7 countries), does not feature any highest values in aggregate variables and has the lowest value on the second component of individual employment relationship variables, which corresponds to a rather short length of legally mandated notice period. Searching for salient features at the somewhat lower level of combined variables, we do observe highest values for the combined measures of co-determination of workers/works councils/extension of collective agreements (CER1) and the measures on unofficial industrial action and peace obligations (CER5). We denote it as 'Mixed cluster', since it contains a diverse group of European countries (plus Israel) with a small population, except for the United Kingdom (which diverges from average scores of the cluster on some collective workers' rights¹). This combination of countries has high scores on a measure of *co-determination and work councils plus high collective agreement coverage* as well as being *protective of unofficial industrial action and with workers facing strong peace obligations while collective agreements are in place*.

The third cluster (10 countries) features two highest values, on the first component of the individual employment relationship and the second component of the collective employment relationship. It has the lowest scores amongst all clusters on both components of the relationship work – care. All in all, it may be characterized as a largely Conservative cluster, which is *highly protective of individual employment rights as well as of certain collective employment rights combined with a low level of support for balancing work and*

¹ The UK displays (substantially) lower values than the cluster average for CER1 – co-determination and works councils etc. (-,3527), CER2 – IR constitutional rights/works council involvement in wage negotiations (-,1741) and CER3 – treatment of specific industrial action and lockouts (-0,4761). But it also features higher values, especially for CER4 – regulation of employer obligations (+0,3450), and CER5 - protection of unofficial industrial action, and of strikes during the duration of a collective agreement (lack of peace obligation) (+0,1070). This somewhat nuanced look at the UK therefore shows that even though a country belongs into a certain cluster, significant differences to other countries may be in place on some characteristics of one aspect of work.

care obligations. Countries found here include West European countries, both larger (Germany, France) and smaller ones (Netherlands, Belgium) as well as Southern European countries, joined by Canada, Switzerland and Latvia.

Cluster 4, a Central East European and Baltic cluster (including the Czech and Slovak Republics, Hungary and Estonia) scores highest on the first component of the collective employment relationship and the first component of the relationship work-care variables. As such, it is a cluster that is generally strong on collective employment rights and partially supportive of balancing work and care obligations in terms of family cash benefits and paid parental leave for women (but not for men). The cluster does not feature any lowest scores at the aggregate level, but at the level of combined variables, we find lowest scores on regulation of additional dismissal protection for employers (IER4) as well as on regulation of pre-/post-industrial action and closed shops (CER6).

Finally, cluster 5 is a Scandinavian cluster, featuring Denmark, Iceland and Sweden. This collection of countries scores highest on the length of notice period, on protective regulation of working conditions (while scoring low on level government intervention in minimum wage setting) and support for work-to-work transitions. Moreover, it features the highest scores on the second dimension of support for combining work and care (high service/in-kind benefits, but low tax breaks).

At the same time, it features the lowest level of protection on individual employment rights and collective employment rights related to unofficial industrial action and peace obligations. In sum, it may be titled as a cluster featuring *generous working conditions and job transition support while being little protective of individual employees and of specific (pre-/post) industrial action situations*.

Table 6 adds information about the variation in scores on aggregate variables between the clusters, showing which clusters differ most (and least) from the overall mean scores of specific aggregate variables. Variation between clusters is greater on the LMT and RelWC variables, which have a larger range compared to the other aggregate variables with a range from 0 to 1 as they were created from standardized variables (see table 7).

Table 6. Absolute differences between mean values of variables per cluster with total mean value per variable

Cluster	ier_d1	ier_d2	cer_d1	cer_d2	empc	lmt	relwc_d1	relwc_d2
1	0,0274	0,0144	0,0685	<i>0,0722</i>	0,1118	0,6817	0,2982	<i>0,0513</i>
2	0,0181	<i>0,0933</i>	0,0332	0,0848	<i>0,0163</i>	0,4874	0,3626	0,4184
3	0,0436	0,0189	0,0675	0,1493	0,0407	<i>0,4411</i>	0,3107	0,6291
4	<i>0,004</i>	0,1306	0,1017	0,1418	0,0334	0,6001	1,1024	0,5858
5	0,0832	0,1648	<i>0,0093</i>	0,218	0,3184	0,9189	<i>0,0868</i>	1,6969

Bold=largest difference in scores across clusters, italics = smallest difference in scores across clusters.

Table 7. Descriptive statistics of Lmt and RelWC variables

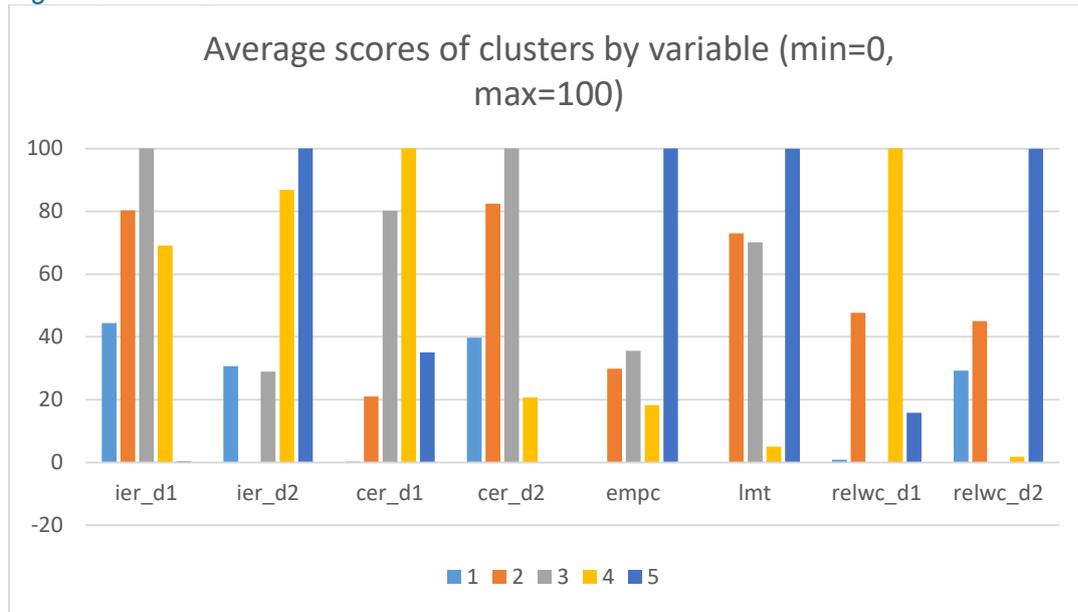
	N	Minimum	Maximum	Mean	Std. Deviation
lmt	38	-1,14	2,22	0,0000	0,75941
relwc_d1	38	-1,33	1,69	0,3333	0,65681
relwc_d2	38	-1,10	2,32	0,5000	0,76366

For instance, on the first dimension of the IER variable, cluster 5 differs most (0,0832) from the total mean score on that variable, while cluster 4 shows a value that is very close (0,004) to the total mean score. In the same fashion, we see that clusters differ somewhat more on the second dimension of the IER variable compared to the first dimension.

As for the CER variables, the differences increases across clusters (0,1017 for the first and more than twice as much for the second dimension of CER: 0,218).

Finally, most variation across clusters can be observed on the EmpC variable (0,3184), with Cluster 5 scoring highest and clusters 3 lowest on extent of protection concerning working condition.

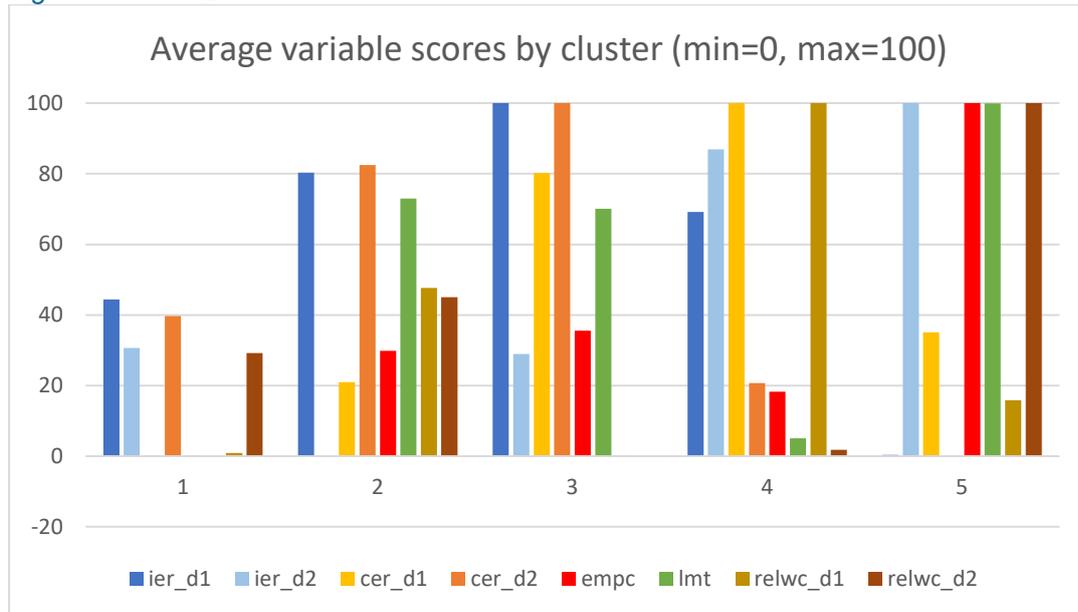
Figure 2. Visualization of differences of cluster scores across variables on a scale from 0-100



To better visualize the differences between clusters, figure 2 is based on applying a 0 to 100 scale, showing the different cluster values on each of the eight aggregate variables. Therefore, a sort of ranking per aspect of work is created and higher and lower scoring clusters per variable appear. For instance, on the first dimension of the individual employment relationship (ier_d1), Cluster 3 ('conservative') ranks highest, followed by cluster 2 ('mixed') and cluster 4 (Eastern European).

Conversely, figure 3 (also using a 0 to 100 scale) groups together the different variable scores on aspects of work for each of the five clusters. Thus, both highest and lowest scores on variables in each cluster become apparent.

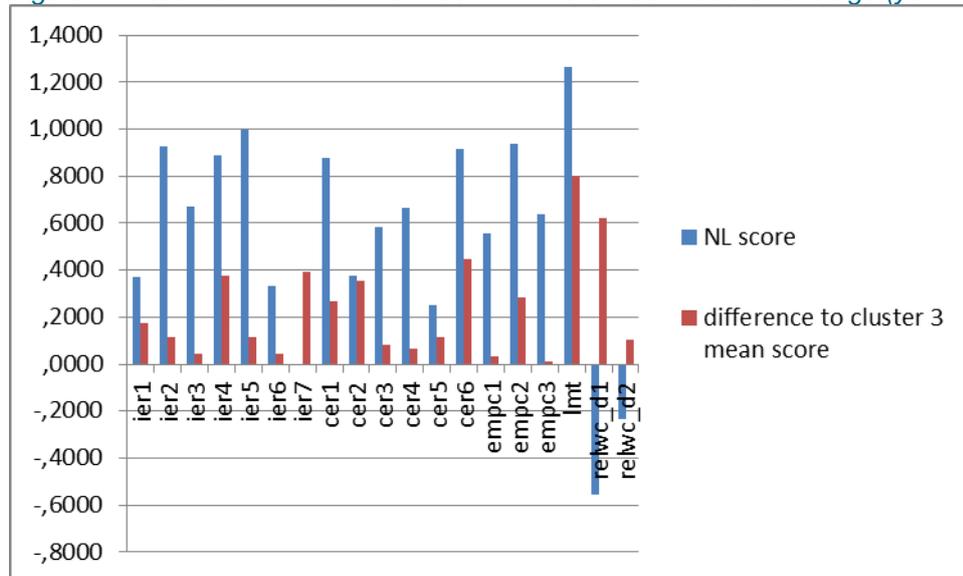
Figure 3. Visualization of differences between variable scores across clusters on a scale from 0-100



Underscoring the characteristics we reported in table 5, the most ‘extreme’ clusters are: the liberal cluster with overall low scores and very low ones on three aggregate variables (cer_d1, empc, RelWC_d1), and the Scandinavian cluster with very high scores on three aggregate variables (empc, lmt and RelWC_d2).

Finally, we zoom in on the ‘conservative’ cluster, in which the Netherlands is situated. To recall its general characteristics, it is highly protective of rights regarding the individual employment relationship and of certain collective employment rights (protection of unofficial industrial action and right to strike during collective agreements and worker-friendly regulation on closed shops/on pre- and post-industrial action phases) combined with low financial support (and limited paid parental leave) for balancing work and care obligations. To what extent does the Netherlands ‘conform’ to that picture? Figure 4 shows the country’s position compared to average scores in that cluster (further containing Belgium, Canada, France, Germany, Italy, Latvia, Portugal, Spain and Switzerland) on the various aspects of work. We now consider the three largest differences (red columns)

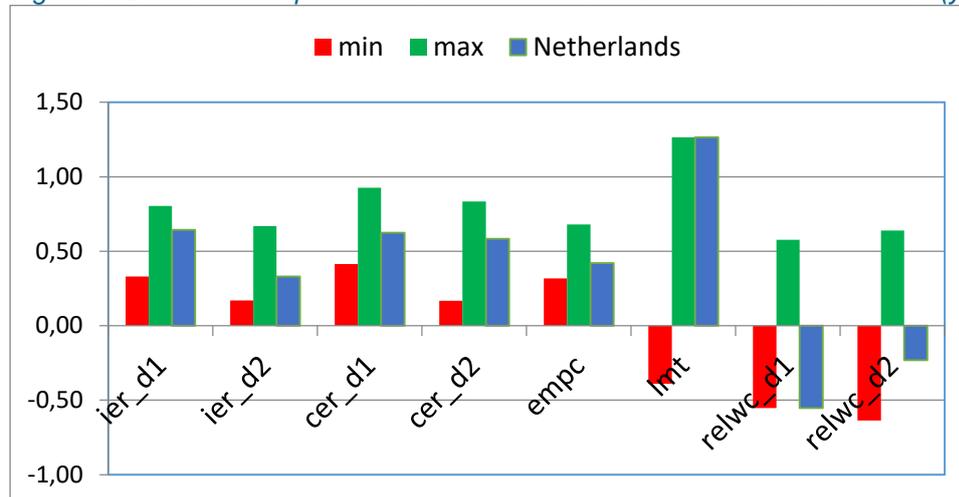
Figure 4. Visualization of Dutch scores and differences to cluster average (year=2013)



We find that the Netherlands differs most from the average score of the ‘conservative’ cluster in the areas of, first, labour market transitions (Lmt: active and passive labour market spending; unemployment benefit net replacement rates), where the Dutch score is much higher (1,26 vs. 0,46), corresponding to more generosity in this area. This particular feature brings the Netherlands closer to the average of countries in the Scandinavian cluster (0,94). Second, we see that for the first dimension of relationship work-care (Rel_WC1: public expenditure on family cash benefits, length paid parental leave for women/men), Dutch scores are considerably lower (-0,55 vs -0,13), i.e. cash spending on family benefits and on statutory parental leave is even less generous than one could expect from the low scoring ‘conservative’ cluster countries (note that because of the calculation of the overall variable, relatively high scores on paid parental leave for men (changed in 2009 to 26 weeks), together contribute to an overall lower score on Rel_WC1). Therefore, on this dimension the Netherlands can be said to be more ‘conservative’ than the rest of the cluster. Third, the Dutch score on the variables capturing regulation on closed shops and regulation of pre- and post-industrial action phases (CER6) is about double the cluster average (0,92 vs 0,47 on a scale from 0 to 1), meaning much better protection of collective workers’ rights in that particular area, where the ‘conservative’ cluster already features the highest averages compared to the other clusters.

To continue the analysis, we look at the Dutch position in the cluster from a slightly different angle, namely comparing it to the cluster's minimum and maximum values on aggregate variables representing the five aspects of work (figure 5).

Figure 5. Dutch relative position to minimum and maximum scores in cluster 3 (year=2013)



This comparison shows that the Dutch scores (shown in blue) on aggregate variables mostly fall in between the extreme values in cluster 3 except for labour market transitions (where it features maximum values). Furthermore, the Netherlands scores relatively close to the maximum values (0,64 vs 0,80 as maximum) on the first dimension of the individual employment relationship (ier_d1) corresponding to all variables but one (= legally mandated notice period) in that area. Moreover, it scores lowest within the cluster on the first dimension of relationship work-care (-0,55 vs. 0,58 as maximum), as shown already in figure 4 and also relatively low on the second dimension of that aspect (-0,23 vs. 0,64 as maximum and lower than the cluster average of -0,12).

The picture arising from this more fine-grained analysis of the Netherlands is one of a fairly average 'conservative' cluster country except for two points: First, its generous support for labour market transitions that is closer to values found in the Scandinavian clusters, and, second, its very low support in the dimension relationship work-care, especially concerning cash family support and statutory paid leave for women and men (despite improvements of the right for men in the late 2000s)

5. Conclusion and discussion

Adopting an explorative approach, this paper has proposed a clustering of OECD and EU countries based on an encompassing view on employment institutions that includes five aspects of work. Following three different types of cluster analyses with various methods and based on data from 2013, we distinguish five clusters that differ on legislation on individual and collective employment relations, working conditions, labour market transitions and the relationship between work and care. A first Liberal cluster of Anglo-Saxon and other countries features relatively weak collective rights, low protection in terms of working conditions and low levels of support for work-to-work transitions. A second and geographically 'mixed' cluster is rather protective of co-determination and work councils, has a high collective agreement coverage and protects unofficial industrial action while featuring strong peace obligations for workers. A third Conservative cluster, containing the Netherlands, Germany and Belgium among others, is highly protective of individual employment rights and certain collective employment rights, combined with low levels of support for balancing work and care obligations. The fourth cluster features three Eastern European countries and one Baltic one. It is rather protective of collective employment rights and shows strong support for balancing work and care obligations. The fifth cluster of three Scandinavian countries features generous working conditions and job transition support, yet it offers low protection in how the individual employee relationship is regulated and specific (pre-/post) industrial action situations.

Finally, using as an example the 'conservative cluster', we analysed the position of a single country, the Netherlands, within a cluster, showing how it differs on different aspects of work from the general cluster 'story'.

The first steps taken in this paper to interpret the patterns of employment institutions within clusters could be followed up by looking more systematically at the cluster characteristics in terms of variables at a lower level of aggregation, e.g. IER1, IER2 etc.), and, second, comparing and contrasting specific countries from each cluster more in-depth, in the form of case studies (as will be done within another paper belonging to this project for six countries including the Netherlands).

Admittedly, there are some limitations to the dataset and the scope of the analysis. First, we focused on a 'snapshot' of clusters at one moment in time (with 2013 as the most recent year given limitations of the main data source), therefore we cannot say much at this point about more recent developments in employment institutions. Another paper (co-authored with Wieteke Conen) will compare developments across clusters over time (1990-2013) and relating them to developments over time in the values of work. Second, the reader should keep in mind the CBR-LRI data represents rights and legislation on paper rather than their application in practice, therefore it may be that levels of worker protection may look better than they are in daily practice. Third, in part, our dataset contains data that reflects country spending or generosity levels rather than being fully representative of institutions in those areas, which have many more features such as eligibility criteria that cannot easily be quantified (this caveat applies to work-to-work transitions and the relationship work-care).

To conclude, better insight into patterns of employment institutions are needed because institutional differences between countries may be related to differences in the valuation of different sorts of employment and of different aspects of work by employees. In the Netherlands, two examples spring to mind: first, the high degree of appreciation for part-time work, which is seen as typical for the country, and, second, temp agency work as a broadly accepted sort of work. In both cases, the introduction of legal regulation and the emergence of societal approval for these types of work were more or less parallel processes. In order to investigate the relationship between patterns of employment institutions and their appreciation by the general public cross-nationally, employment institutions need to be systematically examined, and this paper has taken a first step in this direction.

Acknowledgements

This paper is based on the project "The value of work" and was financially supported by the Goldschmeding Foundation.

References

- Adams, Z., Bishop, L. and Deakin, S. (2017) CBR Labour Regulation Index (Dataset of 117 Countries) Cambridge: Centre for Business Research.
- Aidt, T.S. and Z. Tzannatos (2008), "Trade Unions, Collective Bargaining and Macroeconomic Performance: A Review", *Industrial Relations Journal*, Vol. 39, No. 4, pp. 258-295.
- Amable, B., L. Demmou and D. Gatti (2011), "The Effect of Employment Protection and Product Market Regulation on Labour Market Performance: Substitution or Complementarity?", *Applied Economics*, Vol. 43, pp. 449-464.
- Autor, D., W. Kerr and A. Kugler (2007), "Does Employment Protections Reduce Productivity? Evidence from US States", *Economic Journal*, Vol. 117, No. 521, pp. 189-217
- Bassanini, A. and R. Duval (2009), "Unemployment, Institutions, and Reform Complementarities: Re-assessing the Aggregate Evidence for OECD Countries", *Oxford Review of Economic Policy*, Vol. 25, No. 1, pp. 40-59.
- Belot, M., J. Boone and J.C. Van Ours (2007), "Welfare Effects of Employment Protection", *Economica*, Vol. 74, pp. 381-396.
- Blanchard, O. and J. Wolfers (2000), "The Role of Shocks and Institutions in the Rise of European Unemployment: the Aggregate Evidence", *Economic Journal*, Vol. 110, pp. 1-33.
- Blanpain, R. (n.d.). International encyclopaedia for labour law and industrial relations. Retrieved March 17, 2017, from <http://www.kluwerlawonline.com.ru.idm.oclc.org/toc.php?pubcode>
- Boeri, T. and J. Jimeno (2005), "The Effects of Employment Protection: Learning from Variable Enforcement", *European Economic Review*, Vol. 49, pp. 2057-2077.
- Calmfors, L. and J. Driffill (1988), "Bargaining Structure, Corporatism and Macroeconomic Performance", *Economic Policy*, Vol. 3, No. 6, pp. 13-62.
- Card, D., J. Kluve and A. Weber (2010), "Active Labour Market Policy Evaluations: A Meta-Analysis", *Economic Journal*, Vol. 120, pp. F452-F477, November
- Cingano, F. et al. (2010), "The Effects of Employment Protection Legislation and Financial Market Imperfections on Investment: Evidence from a Firm-Level Panel of EU Countries", *Economic Policy*, Vol. 61, pp. 117-163
- Crépon, B., M. Dejemeppe and M. Gurgand (2005), "Counseling the Unemployed: Does It Lower Unemployment Duration and Recurrence?", IZA Discussion Paper, No. 1796, Bonn.

De Beer, P., and T. Schils (2009), *The Labour Market Triangle. Employment Protection, Unemployment Compensation and Activation in Europe*, Edward Elgar, Cheltenham/Northampton.

Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

Flanagan, R.J. (1999), "Macroeconomic Performance and Collective Bargaining: A Macroeconomic Perspective", *Journal of Economic Literature*, Vol. 37, pp. 1150-1175.

Gallie, Duncan (2009). *Employment Regimes and the Quality of Work*. Oxford: OUP.

Griffith, R., R. Harrison and G. Macartney (2007), "Product Market Reforms, Labour Market Institutions and Unemployment", *Economic Journal*, Vol. 117, No. 519, pp. C142-C166.

Howell, D.R. et al. (2007), "Are Protective Labor Market Institutions at the Root of Unemployment? A Critical Review of the Evidence", *Capitalism and Society*, Vol. 2, No. 1, Article 1.

Kluve, J. (2010), "The Effectiveness of European Active Labour Market Programs ", *Labour Economics*, Vol. 17, pp. 904-918.

Larsen, C. and P. Vesán (2012), "Why Public Employment Services Always Fail: Double-Sided Asymmetric Information and the Placement of Low-Skill Workers in Six European Countries", *Public Administration*, Vol. 90, No. 2, pp. 466-479.

Layard, R. and S. Nickell (1999), "Labour Market Institutions and Economic Performance ", in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3C (Amsterdam, North-Holland), pp. 3029-3084.

Lechner, M. and C. Wunsch (2009), "Are Training Programs More Effective When Unemployment Is High?" , *Journal of Labor Economics*, Vol. 27, No. 4, pp. 653-69.

Maguire, S. et al. (2009), "Job Training That Works: Findings from the Sectoral Employment Impact Study", *PPV In Brief*, 7 May.

Marsden, David (1999). *A theory of employment systems. Micro-Foundations of Societal Diversity*. Oxford: OUP.

Müller, Andreas and Guido, Sarah (2016) *Introduction to Machine Learning with Python. A Guide for Data Scientists*. Farnham: O'Reilly Media.

Nordlund, M. (2009), "What Works Best When? The Role of Active Labour Market Policy Programmes in Different Business Cycles", *International Journal of Social Welfare*, Vol. 20, pp. 43-54.

Pries, M. and R. Rogerson (2005), "Hiring Policies, Labor Market Institutions, and Labor Market Flows", *Journal of Political Economy*, Vol. 113, pp. 811-839.

Traxler, F. and B. Brandl (2012), "Collective Bargaining, Inter-Sectoral Heterogeneity and Competitiveness: A Cross-National Comparison of Macro-economic Performance", *British Journal of Industrial Relations*, Vol. 50, pp. 73-98.

Visser, J. (2016). ICTWSS Data base. version 5.1 (September 2016). Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam.

Visser, J. (2009). 'Chapter 1: Europe's industrial relations in a global perspective' In: *Industrial Relations in Europe 2008*, EU Commission DG Employment. Luxembourg: Office for Official Publications of the European Communities, 2009

APPENDICES (A1 through A5)

A1. Overview of aspects of work, institutions and variables along with their sources

Aspect of work	Formal institutions	Variables taken from ICTWSS and OECD datasets	Variables taken from CBR-LRI Dataset (Adams, Bishop and Deakin 2017 ²)
1. Individual employment relationship	Dismissal law (regulation (CBR-LRI; strictness (EPL indices) Legislation concerning forms of employment including flexible work (contract types covered)	OECD EPL index (version 1) -individual dismissal of workers with regular contracts (epr_v1) -regulation of temporary contracts (ept_v1)	Sub-index C: Regulation of dismissal 1. Legally mandated notice period (v16) 2. Legally mandated redundancy compensation (v17) 3. Min qualifying period for general protection against unjust dismissal (v18) 4. Law imposes procedural constraints on dismissal (v19) 5. law imposes substantive constraints on dismissal (v20) 6. reinstatement normal remedy for unfair dismissal (v21) 7. notification of dismissal (v22) 8. redundancy selection (v23) 9. priority in re-employment (v24) Sub-index A: different forms of employment 1. Law as opposed to contracting parties determines legal status of worker (v1) 2. Part-time workers have the right to equal treatment with Full-time workers (v2) 3. cost of dismissing part-time workers is equal to cost of dismissing full-time worker (v3) 4. Fixed-term contracts are allowed only for work of limited duration (v4) 5. Fixed-term workers have right to equal treatment with Permanent workers (v5) 6. Maximum duration of fixed-term contracts (v6) 7. Agency work is prohibited or strictly controlled (v7) 8. Agency workers have the right to equal treatment with Permanent workers of the user undertaking (v8)

² An updated version of the original 2016 CBI-LRI dataset became available during the process of assembling our dataset, changing the codings of variables for the Netherland, Finland and Israel based on feedback on the original codings.

Aspect of work	Formal institutions	Variables taken from ICTWSS (Visser, 2016) and OECD datasets	Variables taken from CBR-LRI Dataset (Adams, Bishop and Deakin 2017)
2. <i>Collective employment relationship</i>	<p>Legislation concerning collective labour agreements, bargaining and industrial action</p> <p>Legislation concerning employee representation</p>	<p>ICTWSS variables: bargaining coverage - predominant level at which wage bargaining takes place (level) - right to strike</p> <p>ICTWSS variables: works councils - status of works council (wc) - rights of WC (wc_rights) - involvement WC in wage negotiations (wc_negot)</p>	<p>Sub-Index D: employee representation 2. Right to Collective Bargaining (v26) Sub-index E: industrial action 1. Unofficial industrial action (v32) 2. Political industrial action (v33) 3. Secondary industrial action (v34) 4. Lockouts (v35) 5. Right to industrial action (v36) 6. Waiting period to industrial action (v37) 7. Peace obligation (v38) 8. Compulsory reconciliation or arbitration (v39) 9. Replacement of striking workers (v40)</p> <p>Sub-Index D: employee representation 1. Right to Unionization (v25) 3. Duty to Bargain (v27) 4. Extension of collective agreements (v28) 5. closed shops (v29) 6. co-determination: board membership (v30) 7. co-determination: information/consultation workers (v31)</p>
3. <i>Employment conditions</i>	Legislation concerning minimum wage, hours worked, vacation etc.	<p>ICTWSS variables: wage setting - National minimum wage (nwm) - type of minimum wage setting (nms)/0s and ILO working conditions law report 2012) - Statutory max daily/weekly working hours - days of annual paid vacation</p>	<p>Sub-Index B: regulation of working time 1. Annual leave entitlements (v9) 2. Public Holiday entitlements (v10) 3. Overtime Premiums (v11) 4. Weekend Working (v12) 5. Limits to Overtime Working (v13) 6. Duration of normal working week (v14) 7. Maximum daily working time (v15)</p>
4. <i>Labour market transitions</i>	Job placement/re-integration; unemployment provisions	<p>OECD Labour Market Programme Database (2004-2013) - spending on active and passive labour market programmes in OECD countries (two variables)</p>	No indicators

	Generosity unemployment provisions	<p>Net unemployment replacement rates dataset 1970-2009 (van Vliet and Caminada 2012) - net unemployment replacement rate for an average production worker, one earner couple, two children (Raw)</p> <p>OECD Tax-Benefit Model dataset (2003-2014) - net unemployment replacement rate for married couple, two children, initial rate, 100% of earnings (IPE)</p>	
<i>5. Relationship work-care and work-life balance</i>	<p>Legislation on parental and care leave</p> <p>Legislation on family benefits</p>	<p>OECD family database (2001-2013) - Length of paid maternity and parental leave available to mothers in weeks - Length of paid paternity and parental leave reserved for fathers in weeks</p> <p>OECD family database (2001-2013) - Public expenditure on cash benefits for families as a % of GDP - Public expenditure on services and in-kind benefits for families as a % of GDP - Public expenditure on tax breaks for families as a % of GDP</p>	No indicators

A2. Reducing the number of variables in the dataset: combined variables per aspect of work (1st step)

Aspect of work	Combined variables	Substantive coverage of combined variables
Individual employment relationship	IER 1, 2, 3, 4, 5, 6, 7	1: general rules on contract forms and substantive constraints on dismissal 2: equal treatment of different types of workers/max. duration fixed-term contract 3: regulation on regular dismissals 4: extra dismissal regulations for employers 5: dismissal notification and costs for dismissal of different workers 6: legally mandated notice period (single variable) 7: legally mandated redundancy compensation (single variable)
Collective employment relationship	CER 1,2,3,4,5,6	1: co-determination of workers/works councils/extension of collective agreements 2: industrial relations constitutional rights/works council involvement in wage negotiations 3: treatment of specific industrial action and lockouts 4: regulation regarding employer obligations 5: unofficial industrial action and peace obligation 6: closed shops/regulation on pre- and post-industrial action phases
Employment conditions	EmpC 1, 2, 3	1: weekend work, daily/weekly limits to work, overtime pay 2: minimum wage and wage setting mechanism 3: entitlements to leave
Labour market transitions	Lmt	spending on active labour market measures/spending on passive labour market measures/net unemployment replacement rate (initial, married couple, 2 children)
Relationship work-care	Relwc 1, 2	1: public expenditure on family cash benefits, paid parental leave for women/men 2: public expenditure on family services/in-kind benefits, public expenditure on family tax breaks

A3) Factor analyses on original variables

Rotated Component Matrix^a							
	Component						
	1	2	3	4	5	6	7
V16	-0,010	0,128	0,022	0,000	-0,109	0,908	-0,051
V17	0,189	0,029	0,178	-0,116	0,117	-0,104	0,816
V18	0,094	0,113	0,582	0,425	-0,241	-0,024	0,315
V19	0,090	-0,046	0,329	0,827	-0,091	-0,075	0,008
V20	0,408	0,429	0,182	0,375	-0,237	-0,131	0,287
V21	0,168	0,154	0,796	0,128	0,149	0,092	-0,059
V22	-0,032	0,093	0,307	-0,045	0,785	-0,298	-0,020
V23	0,120	0,476	-0,149	0,487	0,273	-0,383	-0,088
V24	0,239	0,189	0,111	0,625	0,184	0,327	-0,227
V1	0,674	-0,017	0,469	0,239	-0,054	-0,099	-0,080
V2	0,100	0,774	0,134	-0,214	-0,085	0,094	-0,294
V3	0,113	0,081	-0,099	0,035	0,873	0,058	0,134
V4	0,781	0,200	0,028	-0,030	0,149	-0,324	-0,162
V5	0,026	0,831	0,090	0,224	0,177	0,164	0,063
V6	0,334	0,421	0,242	-0,036	-0,066	-0,213	-0,563
V7	0,599	0,045	0,394	0,134	0,235	0,257	0,143
V8	0,401	0,596	0,331	0,145	0,289	0,004	0,160
epr_v1	0,280	0,492	0,611	0,170	0,100	-0,071	0,177
ept_v1	0,843	0,170	0,045	0,145	-0,050	0,204	0,225
Extraction Method: Principal Component Analysis.							
Rotation Method: Varimax with Kaiser Normalization. ^a							
a. Rotation converged in 12 iterations.							

Scales formed	Original variables	Cronbach's Alpha	decisions on variables that may belong to various components
IER1	V1,V4,V7,ept_v1,V20	0.544	V20 added on statistical (increases scale reliability) and substantial grounds
IER2	V2,V5,V8,V6	0.747	V6 added on substantial grounds
IER3	V18, V21, epr_v1	0.595	-
IER4	V19, V24, V23	0.679	V23 added on substantial grounds
IER5	V22, V3	0.501	-
IER6	V16	NA	-
IER7	V17	NA	-

Rotated Component Matrix ^a						
	Component					
	1	2	3	4	5	6
V25	0,333	0,472	0,180	0,263	0,065	-0,402
V26	-0,158	0,832	-0,131	0,008	-0,136	0,035
V27	-0,177	0,031	-0,101	0,894	-0,069	-0,186
V28	0,508	0,348	-0,125	0,233	-0,066	0,348
V29	-0,033	-0,259	-0,022	0,012	0,033	0,680
V30	0,833	-0,213	0,148	0,113	-0,202	-0,183
V31	0,768	0,163	0,147	0,065	-0,031	0,285
V32	0,371	-0,030	0,221	-0,029	0,618	0,149
V33	0,186	-0,051	0,892	-0,125	0,132	-0,005
V34	0,377	-0,069	0,610	-0,021	0,022	-0,387
V35	-0,042	0,373	0,691	0,307	-0,059	0,208
V36	0,212	0,810	0,088	0,281	-0,024	-0,095
V37	0,249	0,473	-0,116	-0,290	0,474	0,506
V38	-0,218	-0,049	-0,044	0,033	0,874	-0,009
V39	0,229	0,110	0,187	-0,178	0,439	0,554
V40	0,065	0,270	0,138	0,766	0,036	0,100
level	0,603	0,122	0,342	-0,450	0,124	0,147
wc	0,765	0,270	0,123	-0,146	0,268	-0,241
wc_rights	0,870	0,033	0,073	-0,231	0,139	0,007
wc_negot	0,171	0,643	0,306	0,019	0,261	-0,230
Extraction Method: Principal Component Analysis.						
Rotation Method: Varimax with Kaiser Normalization. ^a						
a. Rotation converged in 19 iterations.						

Scales formed	Original variables	Cronbach's Alpha
CER1	V28,V30,V31,level,wc,wc_rights	0.725
CER2	V25,V26,V36,wc_negot.	0.607
CER3	V33,V34,V35	0,619
CER4	V27,V40	0.580
CER5	V32,V38	0.439
CER6	V29,V37,V39	0.354

Rotated Component Matrix^a

	Component		
	1	2	3
V9	-0,032	-0,168	0,882
V10	0,222	-0,109	0,761
V11	0,740	-0,248	-0,222
V12	0,783	-0,107	0,189
V13	0,694	-0,122	0,317
V14	0,247	-0,244	0,271
V15	0,554	0,312	0,486
nmw	-0,162	0,925	-0,108
nms	-0,102	0,910	-0,135

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 6 iterations.

Scales formed	Original variables	Cronbach's Alpha
EmpC1	V11, V12, V13, V14, V15	0,507
EmpC2	nmw, nms	0,658
EmpC3	V9,V10	0,768

Component Matrix	
	Component
	1
act_mes_10_70	0,803
pas_mes_80_90	0,826
IPE	0,676
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Rotated Component Matrix ^a		
	Component	
	1	2
pub_exp_cash_ben	0,710	0,417
pub_exp_ser_ben	0,171	0,744
pub_exp_tax_breaks	0,242	-0,744
l_paid_par_leave_f	0,666	-0,046
l_paid_par_leave_m	-0,550	0,105
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization. ^a		
a. Rotation converged in 3 iterations.		

Scales formed	Original variables	Cronbach's Alpha
Lmt	Act_mes_10-70_z, pas_mes_80-90_z, IPE_z	0,633
Rel_wc_d1	Pub_exp_cash_ben, l_paid_par_leave_f, l_paid_par_leave_m	0,067
Rel_wc_d2	Pub_exp_ser_ben, pub_exp_tax_breaks	-0,399 (NB: negative factor loading)

A4) Factor analyses of combined variables

IER: Rotated Component Matrix^a

	Component	
	1	2
ier1	0,814	-0,036
ier2	0,659	0,308
ier3	0,732	0,013
ier4	0,771	0,030
ier5	0,588	0,121
ier6	0,026	0,949
ier7	0,420	-0,175

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.^a

a. Rotation converged in 3 iterations.

CER: Rotated Component Matrix^a

	Component	
	1	2
cer1	0,623	0,252
cer2	0,801	-0,040
cer3	0,616	0,205
cer4	0,575	-0,450
cer5	0,187	0,718
cer6	0,041	0,815

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.^a

a. Rotation converged in 3 iterations.

Component Matrix^a

	Component 1
empc1	0,792
empc2	-0,400
empc3	0,866

Extraction Method:
PCA

- a. 1 component extracted.

Scales formed	Variables	Cronbach's Alpha
IER_d1	IER1,2,3,4,5,7	0,704
IER_d2	IER 6	NA
CER_d1	CER1,2,3,4	0,543
CER_d2	CER5,6	0,544
EmpC	EmpC1,2,3	-0,045

A5) More disaggregated data on clusters

Table 1. Means of combined variables across the five country clusters

cluster	ier1	ier2	ier3	ier4	ier5	ier6	ier7	cer1	cer2	cer3	cer4	cer5	cer6
1,00	,5782	,5348	,6017	,4075	,7788	,3775	,4442	,2966	,5064	,3283	,8925	,2429	,1458
2,00	,5664	,7757	,5796	,4048	,8586	,2986	,4329	,6299	,4041	,4762	,6550	,3929	,3100
3,00	,5450	,8125	,6253	,5140	,8845	,3730	,3900	,6071	,7283	,4997	,7330	,3625	,4693
4,00	,5544	,6656	,6619	,3817	,7725	,5225	,4975	,5524	,7500	,4025	1,0000	,2288	,0208
5,00	,3608	,8000	,6075	,4067	,7517	,5567	,0833	,5837	,5061	,5044	,6667	,0417	,0556
Total	,5459	,6954	,6111	,4336	,8207	,3919	,4028	,5000	,5752	,4276	,7951	,2869	,2462

Cluster	empc1	empc2	empc3	lmt	relwc_d1	relwc_d2
1,00	,3932	,8229	,4938	-,6588	,0800	,5530
2,00	,4543	,6639	,6579	,5103	,7408	,9201
3,00	,5274	,6563	,6505	,4640	,0675	-,1274
4,00	,4105	,8750	,7638	-,5772	1,4806	-,0841
5,00	,6473	,0625	,7700	,9418	,2914	2,1986
Total	,4654	,6881	,6222	,0229	,3782	,5017

Table 2. Scores of the Netherlands on combined variables and absolute differences with mean scores in cluster 3 (yellow=largest differences)

ier1	ier2	ier3	ier 4	ier5	ier 6	ier 7	cer1	cer2	cer3	cer 4	cer 5	cer6	em pc1	emp c2	em pc3	lmt	relwc_d1	relwc_d2
,3715	,9250	,6681	,890	1,000	,330	0,00	,8750	,3750	,5833	,6650	,2500	,9167	,5580	,9375	,6400	1,2648	-,5531	-,2318
0,17345	0,1125	0,042823	0,376	0,1155	0,043	0,039	0,267944	0,35325	0,083667	0,068	0,1125	0,447333	0,0306	0,28125	0,0105	0,800781	0,620651	0,104445

AIAS-HSI Working Paper Series

The AIAS-HSI working paper series consists of several publications of AIAS-HSI staff and AIAS-HSI guests on a wide variety of subjects in the fields of labour economics, sociology of work, labour law, and health and safety.

Information on AIAS-HSI

AIAS-HSI is a merger of two research institutes: The Amsterdam Institute for Advanced Labour Studies (AIAS) and the Hugo Sinzheimer Institute (HSI).

AIAS-HSI is an institute for multidisciplinary research and teaching at the University of Amsterdam (UvA), the largest university in the Netherlands. AIAS-HSI has as its objective the coordination, implementation and stimulation of interdisciplinary research into the practice of labour law and social security law. Therefore it combines insights from the social sciences, legal dogmas and legal theories in its research. To put the multidisciplinary objectives of the institute into practice, AIAS-HSI initiates and conducts research, gives advice and organises meetings, conferences, courses, etc.

See for more information our website www.aias-hsi.uva.nl

Postal address

PO Box 15966
1001 NL Amsterdam
The Netherlands

Visiting address

Nieuwe Achtergracht 166
1018 WV Amsterdam
The Netherlands

