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WELFARE REGIMES IN THE UE 15 AND IN THE ENLARGED EUROPE:

AN EXPLORATORY ANALYSIS[*]

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ABSTRACT

The basic aim of this paper is to assess existing welfare regimes in the countries of European Union before and after the enlargement of May 2004 (EU 15 and EU 25) building on a comprehensive approach that considers different dimensions of welfare through an extended set of variables. The paper starts with a brief presentation of current debates on welfare regimes and the new social policy agenda in the European Union. It proceeds with the selection of different dimensions of social welfare and social policy and related key variables that make up the database for the following multivariate statistical analysis, used in order to produce a clustering of welfare regimes. The paper concludes with a tentative interpretation of the underlying characteristics and patterns of current welfare mix and social policies in European Union.

KEYWORDS: Welfare Regimes; Social Policy; European Union; Enlargement; Cluster analysis.

JEL CLASSIFICATION: D63; I31; I38; P52.

1. INTRODUCTION

Since the seminal work of Esping-Andersen (Esping-Andersen, 1990) much of comparative research on welfare has been conducted within the framework of welfare regimes. However, analysis has not systematically addressed all dimensions of welfare provision and its outcomes, neither being comprehensive in regard to European Union countries.

This paper aims to contribute to a broader and more consistent analysis of welfare in the context of European Union (EU) in a way that allows description as well as interpretation of underlying characteristics of the diversity of welfare mix and social policies. Therefore, our basic research questions are how to assess welfare regimes in the space of the EU and how these welfare regimes can be defined and understood. For this, patterns of welfare provision and its impacts in inequality, interest and power should be systematically covered in the analysis of all European Union countries' differences and similarities at the beginning of a new cycle of the construction of Europe.

We follow an approach inspired by an important strand of the "welfare modelling" literature (Abrahamson, 1999; Arts & Gelissen, 2002) which applies statistical multivariate methods to determine from existing socioeconomic statistics, on the relevant dimensions of welfare, groups of countries with similar characteristics (Gough, 2001; Powell & Barrientos, 2004; Saint-Arnaud & Bernard, 2003). However, previous to the exercise of any clustering technique, we need to address the analytical framework from which the concept of welfare regime takes its meaning. Our approach to the concept is twofold: it embraces the welfare mix as well as welfare outcomes and stratification effects (Gough, 2000a; Gough, 2000b). Further, we take the welfare mix in its broader sense, to comprehend the complementary interplay of family, market and state in societies' welfare provision as well as the patterns of institutionalised social policies and programmes.

In the empirical part of our research we rely mainly on harmonized statistics produced by Eurostat. Also OECD data and specific data from different studies are used for areas where available data from Eurostat are not yet comprehensive enough for the objective of our enquiry. Unfortunately, those sources still fall behind ideal data requirements of our analytical

framework[1]. Unfortunately, due to many information shortcomings, we had to excluded Luxembourg, Malta and Cyprus from the empirical analysis. We expect in a near future to improve this study building on the refinement of the quality and comprehensiveness of the underlying statistical data.

The rest of the paper is organised as follows. Section 2 gives a brief presentation of the new challenges for social policy in EU and proceeds with the description of a general approach to the analysis of welfare regimes in contemporary Europe; section 3 presents the main empirical results of multivariate analysis and discusses underlying patterns of welfare mix and social policies in the EU 15 and EU 25; section 4 concludes with a brief summary of the main results and outlines some future research developments.

2. WELFARE REGIMES IN THE EUROPEAN UNION – AN ANALYTICAL FRAMEWORK

European Union faces a common set of social and economic challenges and is trying to build a coherent set of shared responses. All EU countries are exposed to external pressures coming from globalization and integration processes and, with more differentiating patterns, from internal pressures like ageing, family and labour market transformations. EU is trying to cope with these new challenges in a way that reaffirms the originality of Europe's quality of life in economic, social and cultural terms. To increase the complexity of the task, this political process goes in parallel to the one of the widest European enlargement in its history.

However, the direction and pace in changes of welfare arrangements are far from been clear. After a period where restructuring of welfare seemed to be equivalent to retrenchment (Powell, 2004), the envisaged responses to current pressures associated with post-industrial societies are becoming more wide in scope, some even arguing than the present context in Europe can call for more, rather than less, public welfare (Jaeger & Kvist, 2003). What is almost certain is that it will call for a significant change in the way social welfare is organized in European societies.

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[1] Alternative sources to Eurostat relate mainly to the OECD countries, or just a few of the EU 15 countries.

At the time as EU is engaging in a new and broader process of enlargement, Europe is facing the emergence of what some have called new social risks (Bonoli, 2004; Esping-Andersen, 2002; Taylor-Gooby, 2004a; Taylor-Gooby, 2004b), that is, risks that are associated with new and dramatic socioeconomic dynamics of post-industrial societies. In fact, great changes are currently in place in Europe's demography (increased ethnic, culture and religious diversity, ageing, etc.), family structures (increased diversity of family types, changes in family roles) and labour markets (changing patterns of job creation/destruction due to knowledge-based society and globalization). Those changes are expected to redefine the scope of social cohesion, and social policy, in Europe, especially because social cohesion is a hallmark of the European project and has been reaffirmed as formal political objective in several recent councils after the important Lisbon Council of 2000.

In order to build the concept of welfare regime in connection with the structural characteristics of welfare in contemporary Europe, we focus our investigation on the patterns of welfare provision and welfare outcomes and stratification effects in the different countries of the enlarged European Union. As we are aiming to empirically test the proposed concept of welfare regime by way of multivariate analysis, we try to appraise welfare dimensions and its main domains in a mode appropriate for such a quantitative analysis perspective[2]; thus, we attempt to identify particular aspects that can be translated into statistical indicators. The framework of welfare dimensions and its main domains, according to this specific perspective, is summarized in Table 1.

In the welfare mix, it can be made a distinction between the role of state, market and household/family in the welfare provision and the characteristics of specific public welfare policies and programmes. In the first domain we attend to the nature of different social risks and the way the responsibility of its coverage is shared between different social welfare institutions. In the second domain, we consider the specific areas of policy normally addressed when analyzing state welfare provision, such as collective social services or universal benefits, social insurance and social assistance.

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[2] Of course a more qualitative and institutional embedded perspective would be very fruitful for understanding the actual country (and group) configurations of particular socioeconomic data and complementary to the interpretation of the results of the statistical procedures, and will be the following step in this research.

To evaluate the sharing of responsibilities in covering main social risks we focus on the core social sectors of education, health, old age, and caring for dependent persons. Indicators in these domains can take the form of ratios of public to private expenses in those areas, proportion of dependent persons covered by public supported and by private care arrangements. A more general picture of the importance of collective social services in these various social sectors can be brought by a proxy such as the share of public employment in total employment; another way of taking a macro perspective, however less easy to access, relates to the composition of the family income packaging, namely the importance of "social wage" and social and private transfers in income formation.

Table 1 Welfare Regime Dimensions

1. Patterns of welfare provision

1.1 State, market and family
- Public and private responsibilities in core domains
  (Public/Private ratio in education, health, pensions)
- Care for the dependents
  (Institutional/ private arrangements for children and dependent elderly)
- Public employment
- Income packaging
  (Market income, "social wage", social and private transfers in income formation)

1.2 Public policies and programmes
- Extension, Coverage, Duration
- Financing, Generosity, Income replacement
- Maturity, Efficiency and other institutional aspects

2. Welfare outcomes and stratification effects

2.1 Employment opportunities
- Activity, employment and unemployment (global rates, gender and age differentials)
- Precarious work (involuntary par-time, self employment, fixed term contracts)
- Risk of exclusion (long term unemployment, shadow labour market)

2.2 Inequality and poverty
- Minimum and low wages incidence and adequacy
- Wage dispersion and gender pay gap
- Inequality in income distribution
- Poverty incidence, intensity and severity
- Social transfers' poverty reduction efficiency

2.4 Life and education opportunities
- Mortality and morbidity rates, life expectancy
- Early childhood education
- Youth and Adult attainment levels
- Lifelong learning opportunities

In what concerns specifically to public policies and programmes, one can focus on main areas of social policy and considered entitlement conditions, levels of coverage and take-up; financing, generosity and duration; capability building effects and other institutional aspects. Adopting a more macro perspective lead us to choose indicators such as the level of global social expenditure in GDP, main source of social expenditure financing, social expenditure structure by main functions (income replacement, health and poverty), level of social expenditure by dependent person or coverage and replacement rates of benefits by function. Much of the statistical information on social expenditure at this macro level is now harmonized by Eurostat and very easily and promptly made available to researchers.

In the second dimension, welfare outcomes and stratification effects try to capture the most significant chains of welfare reproduction, by taking into account its impacts in social inequality and personal capabilities. We focus on three broad social domains – employment opportunities, income inequality and poverty, and healthy life and educational opportunities.

Employment is a main field of accession to market income and many other related social benefits. Economic activity is also central for capacity improvement, social networking and integration, as well as for the construction of self-esteem and symbolic self-representation. Recently it has been highlighted new pressures for deep segmentation in labour markets derived from the intensification of knowledge-based economic activities in advanced societies (Esping-Andersen, 2000; Esping-Andersen, 2004).

Consequently, the appraisal of welfare outcomes in the domain of employment focus on activity, employment and unemployment, precarious work and risk of exclusion, and incorporates a gendered perspective on those domains, since gender inequality is one of the most apparent lines of fracture in employment opportunities. Age, educational and professional differences will also be investigated, whenever meaningful and feasible.

Closely related with the employment system are the driving forces of market income. Income inequality and poverty is another domain of important outcomes of societies and we should give attention to inequality in wages and gender pay gaps, incidence and adequacy of minimum and low wages. More generally, measures of inequality of total disposable income, income poverty measures (of incidence, intensity and severity) and social transfers' efficiency in poverty reduction are central indicators of welfare outcomes.

Healthy life and educational opportunities are also crucial in understanding general welfare outcomes and stratification effects contributing to reproduce the "heavy" patterns of inequality. It is now widely accepted that early years are of enormous importance in life chances and future opportunities (Esping-Andersen, 2004), and both areas are crucial to a flourish development of human capacities since birth (or even before). Health and education are main domains where human development can be expressed and where persistent forms of inequality find theirs roots. Some usual indicators in these areas can account both for global development differences between countries and for structural inequities within each society.

3. WELFARE REGIMES IN THE EUROPEAN UNION – AN EMPIRICAL ANALYSIS

We proceed by translating the main dimensions of welfare and their distinctive domains into indicators that can be used in an exploratory analysis to produce groups of countries with similar welfare characteristics. Unfortunately it is not possible to find in the existing statistical systems, and particularly in harmonized systems like Eurostat, all the statistical data that the analytical framework would require. Nevertheless, it is possible to cover with a reasonable extension and coherence all dimensions and domains, particularly for the EU 15 countries through Eurostat and OECD databases and publications.

Table 2 presents the indicators that we were able to collect for each welfare dimension and domain previously mentioned.

EU countries before the enlargement (EU 14)

We start by analyzing the group of countries that were already members of EU before the recent enlargement of May 2004. Even if it is not possible to cover all the components of welfare dimensions that we consider adequate in terms of our theoretical framework, the existing data are fairly comprehensive. The only country exception is Luxembourg, for which a large amount of information is missing and, consequently, had to be excluded from the analysis. Therefore, instead of covering all member-states prior to the recent enlargement, in the first part of our study we focus on UE 14.

Table 2 Indicators of Welfare Regime Dimensions

1. Patterns of welfare provision

1.1 State, market and family
- Private expenditures in health (%)
  Private expenditures in education (%)
  Private pension funds (% of GDP)
- Under 6 years old in public care/education (%)
- Public employment (% of total employment)

1.2 Public policies and programmes
- Social expenditure (% of GDP)
  Share of social expenditure in income replacement (%)
  Share of social expenditure in poverty alleviation (%)
  Share of social expenditure in health (%)
- General government share in financing (%)
- Social expenditure by dependent (% of GDP)
  Net replacement rate of pensions (%)
  Unemployment benefit coverage (%)
  Net replacement rate of unemployment benefits (%)

2. Welfare outcomes and stratification effects

2.1 Employment opportunities
- Employment rate (%)
  Gender employment relative gap (%)
  Youth employment rate (%)
  Unemployment rate (%)
  Gender unemployment relative gap (%)
- Part-time employment rate (%)
  Fixed term contracts rate (%)
  Self employment (% of total employment)
- Long-term unemployment (% of unemployment)
  Gender long term unemployment relative gap (%)
  Shadow economy estimates (% of GDP)

2.2 Inequality and poverty
- Gender pay gap (%)
  Extreme quintile shares ratio
  Poverty rate after social transfers (%)
  Social transfers' poverty reduction efficiency (%)

2.4 Life and education opportunities
- Infant mortality rate (‰)
  Life expectancy at birth (years)
- 4 years old in education (%)
- Youth attainment rate (%)
  Early school leavers (%)
  Adults with at least upper-second. Education (%)
  Adults participating in education and training (%)

The first step of cluster analysis is based on the whole set of original indicators that capture the welfare architecture in each country. Additionally, we analyse similarities within dimensions and domains of welfare and inspect the patterns association between indicators. Using principal components analysis we extract the main components which explain the variability of information in our dataset, and then perform, in a second step, a cluster analysis based on the components retained. Both steps are initiated by applying hierarchical cluster procedures, with different agglomerative methods, which will in the end be confronted with non-hierarchic ones. For economy reasons we just present the results obtained for two methods: Ward method for hierarchical clustering and k-means for non-hierarchical clustering.

Exploratory analysis performed by using hierarchical clustering on the complete set of indicators (36 variables) shows a clear division of the EU countries in two clusters (see Figure 1): the south European or Mediterranean countries (Spain, Italy, Portugal and Greece) in one cluster, and all other countries in another cluster.

Figure 1 Hierarchical Cluster Analysis of EU 14 – all indicators

```
                        Rescaled Distance Cluster Combine
     C A S E      0         5        10        15        20        25
    Label   Num   +---------+---------+---------+---------+---------+

      BE       1
      FR       6
      DE       3
      AT      10
      NL       9
      UK      14
      DK       2
      SE      13
      FI      12
      IE       7
      ES       5
      IT       8
      PT      11
      EL       4
```
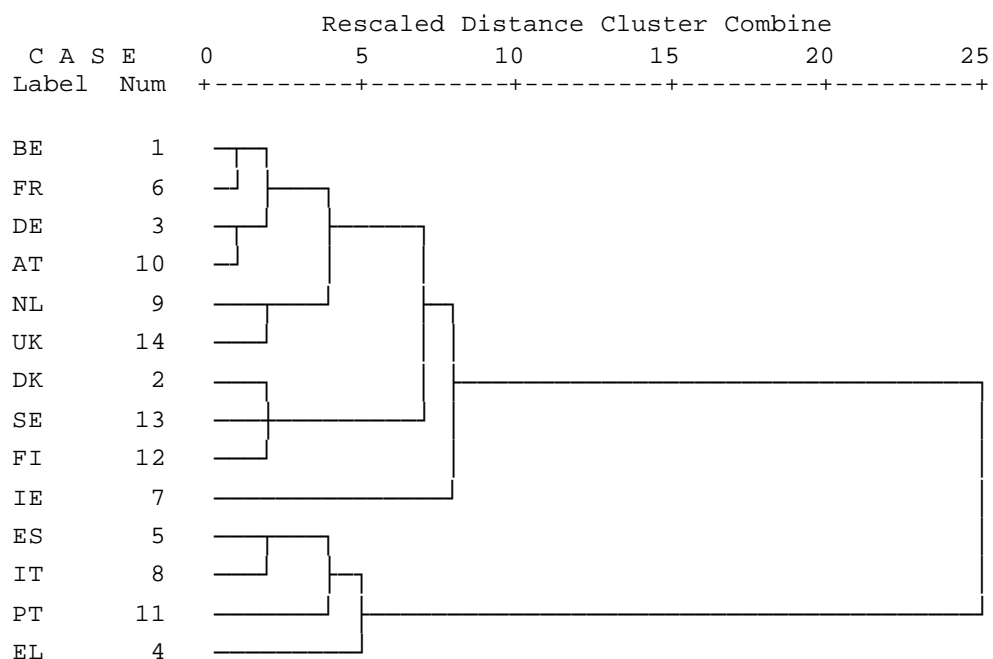
Note: Ward method; squared Euclidean distance; z-scores

This structure is very stable for alternative agglomerative methods[3]. In the more numerous' cluster one can broadly distinguish the branches of the two classical families of conservative and social democratic countries. The two European countries associated with liberal regime, Ireland and UK, have a more variable place in the agglomeration trees of hierarchical clustering methods.

A similar structure also emerges from the analysis of each one the two dimensions of welfare and even in many of the main domains previously distinguished[4]. Figure 2 and Figure 3 present the results of hierarchical clustering on the two complementary sets of indicators related with the two dimensions of welfare that we have formulated: patterns of welfare provision, and welfare outcomes and stratification effects, respectively.

Figure 2 Hierarchical Cluster Analysis of EU 14 – indicators of dimension 1

```
                    Rescaled Distance Cluster Combine
   C A S E     0         5        10        15        20        25
  Label  Num   +---------+---------+---------+---------+---------+

   BE      1     ┐
   FR      6     ┤
   FI     12     ┘
   AT     10
   DE      3
   UK     14
   NL      9
   DK      2
   SE     13
   IE      7
   ES      5
   IT      8
   PT     11
   EL      4
```
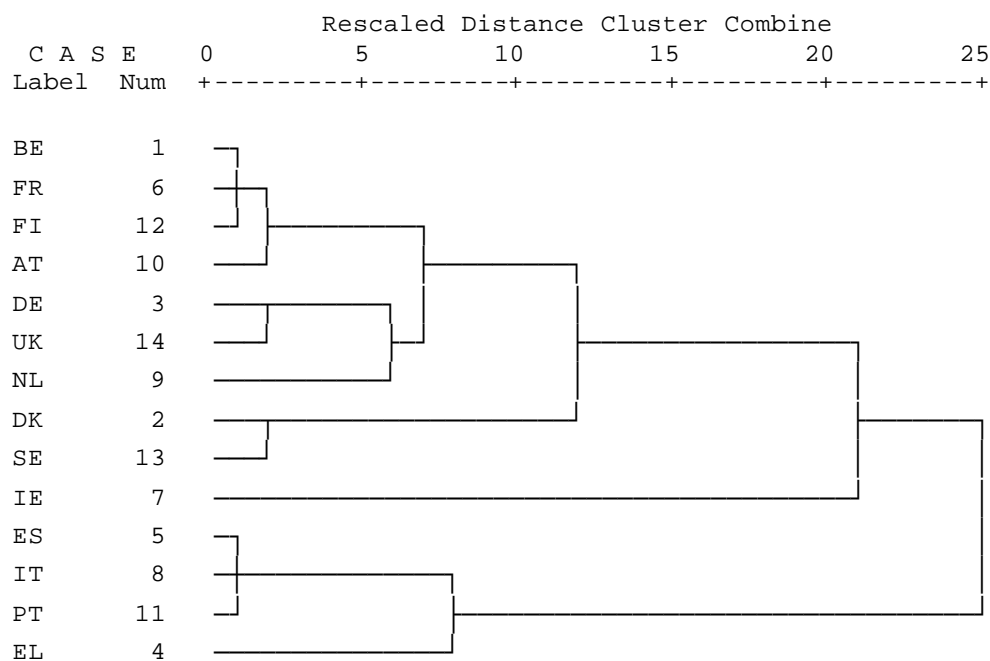
Note: Ward method; squared Euclidean distance; z-scores

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[3] Such as complete linkage and average linkage (within groups). Centroid clustering and average linkage (between groups) leads to the definition of three clusters, where Ireland accounts for the third cluster.

[4] The more diverse structures to the general pattern emerges in "state, market and family" domain; in "labour market" domain Portugal drops out from the southern cluster; in "inequality and poverty" Ireland and UK cluster together with southern countries.

Figure 3 Hierarchical Cluster Analysis of EU 14 – indicators of dimension 2

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                    Rescaled Distance Cluster Combine
   C A S E     0         5        10        15        20        25
 Label  Num    +---------+---------+---------+---------+---------+

    BE      1      ┐
    FR      6      ┼┐
    DE      3      ┘│
    DK      2      ┐├────────────────────────────────────────┐
    AT     10      ┼┐│                                        │
    NL      9      ┘├┘                                        │
    UK     14      ┐┘                                         │
    IE      7      ┘                                          │
    FI     12      ┐                                          │
    SE     13      ┘                                          │
    EL      4      ┐┐                                         │
    IT      8      ┼┘                                         │
    ES      5      ┐├─────────────────────────────────────────┘
    PT     11      ┘
```
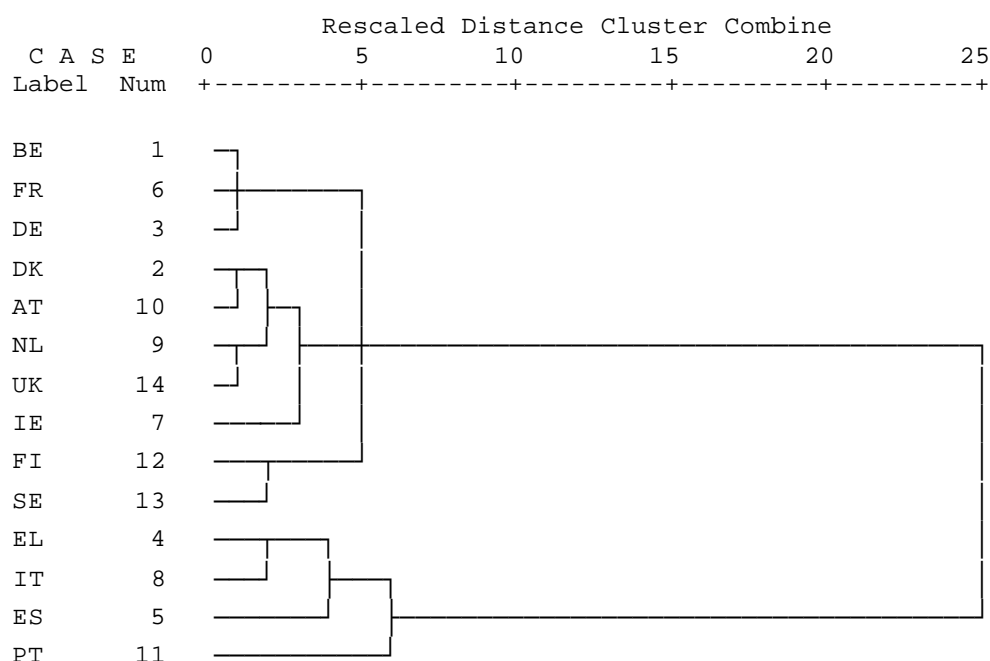
Note: Ward method; squared Euclidean distance; z-scores

Analysing variables means and variables distribution within the two clusters enable us to further understand the differences between them[5]. Variables associated with inequality and poverty prevalence are the best in discriminating between the two clusters: quintile share ratio, poverty rate, social transfers' efficiency in reducing poverty and poverty alleviation share in social expenditure means are significantly different between the two clusters at 5 per cent level. Other variables which means are significantly different between clusters are self-employment, dimension of shadow economy, unemployment benefits coverage and unemployment rate gender gap, adults educational attainment, early school leavers (at 1 per cent); and employment rate gender gap, net replacement rate of pensions and private expenditures in health (at 5 per cent). In summary, Mediterranean countries, when compared with the other EU 14 countries, present higher levels of income inequality, poverty, employment inequalities in terms of gender and formal/informal labour market; and lower levels of education attainment in all age groups.

[5] See ANOVA results in Table A.3 and Box-and-Whiskers diagrams in Figure A.1 in the Appendix.

There is a strong association between variables selected to capture the welfare architecture of European countries[6]. Given the high correlations between variables selected, we have a case for applying factor analysis in order to reduce the multidimensionality of the data and extract meaningful factors that explain the great majority of the variability in the indicators dataset. In fact, using principal components analysis one can extract thirteen factors that contain all the information of our original indicators (36 variables), as we can see in Table 3.

Table 3 Eigenvalues and Explained Variance - EU 14

Number	Eigenvalue	Percentage	Cumulative Percentage
1	15.0774	41.88	41.88
2	5.2819	14.67	56.55
3	3.3755	9.38	65.93
4	3.2025	8.90	74.83
5	2.2663	6.30	81.12
6	2.0067	5.57	86.70
7	1.6409	4.56	91.25
8	0.8370	2.32	93.58
9	0.6494	1.80	95.38
10	0.5730	1.59	96.97
11	0.4459	1.24	98.21
12	0.3971	1.10	99.32
13	0.2465	0.68	100.00

Applying the usual criteria for the determination of the number of factors to extract, namely the Kaiser criteria and the scree test (Saporta, 1990), we are conduced to retain seven factors that account for 91.25% of total variance. Table 4 further presents the correlations between the original variables and those seven principal factors.

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[6] See correlation matrix in appendix.

Table 4 Correlations Between Variables and Factors – EU 14

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
PUBEMP	0.60	0.49	-0.25	-0.44	-0.09	-0.25	-0.03
PRIVHEA	-0.70	-0.11	-0.06	0.36	-0.45	0.30	-0.06
PRIVEDU	-0.06	-0.25	0.37	0.40	0.75	0.07	-0.04
PRIVPEN	0.34	*-0.72*	0.39	0.01	-0.11	0.07	0.00
CHILCARE	0.58	0.32	0.10	-0.27	0.07	-0.47	-0.30
SEINGDP	0.41	**0.53**	0.29	0.46	-0.22	-0.22	0.11
SE_INC	-0.34	**0.67**	0.42	0.22	-0.07	-0.23	0.27
SE_POV	0.70	-0.29	-0.52	0.10	-0.09	0.03	-0.01
SE_HEALT	-0.17	*-0.68*	-0.12	-0.39	0.19	0.31	-0.38
GOVFINAN	0.39	-0.27	-0.51	-0.37	0.11	-0.40	0.25
GENEROS	0.73	-0.03	0.30	0.31	-0.48	-0.14	-0.08
REPLPEN	-0.75	-0.27	0.10	0.26	-0.31	0.20	0.18
REPLWAG	0.24	**0.68**	0.34	-0.39	-0.15	0.34	-0.21
UNEMPCOV	**0.88**	0.04	-0.15	-0.01	0.14	0.09	-0.14
EMP	**0.82**	-0.18	0.26	-0.21	-0.30	0.10	0.26
EMPGAP	**0.87**	0.18	0.00	-0.24	-0.11	0.08	0.14
UNEMP	-0.60	**0.56**	-0.18	0.09	0.41	0.13	0.05
UNEMPGAP	*-0.87*	0.22	-0.02	0.28	-0.15	0.08	0.09
LTUNEMP	-0.72	0.10	-0.08	0.37	0.21	-0.18	-0.37
LTUNGAP	*-0.88*	0.24	0.06	0.20	-0.15	0.14	0.09
YOUTEMP	-0.67	**0.52**	-0.27	0.15	0.19	-0.11	0.13
PARTIME	0.67	-0.26	0.54	0.15	-0.13	0.12	-0.23
SELFEMP	*-0.85*	-0.22	-0.15	0.16	-0.34	-0.10	0.09
FIXTERM	-0.38	0.44	0.33	-0.50	0.07	0.48	0.17
SHADOWEC	-0.75	0.34	-0.23	-0.10	-0.13	-0.28	0.04
PAYGAP	0.60	-0.08	0.16	0.20	0.38	0.47	0.38
INEQUAL	*-0.83*	-0.29	0.15	-0.30	-0.04	-0.06	0.24
POVERTY	*-0.79*	-0.49	-0.14	-0.23	0.12	-0.15	0.06
SE_EFFIC	**0.93**	0.12	0.09	0.19	-0.01	-0.01	-0.05
CHILDEDU	0.02	0.21	0.76	0.12	0.29	-0.39	-0.19
LEAVERS	-0.68	-0.06	0.45	-0.55	0.01	-0.09	0.10
YOUTHEDU	0.53	0.06	-0.56	0.52	0.03	0.08	-0.03
ADULTEDU	**0.82**	0.03	-0.13	0.48	0.16	0.09	0.13
LIFELEAR	**0.81**	0.17	-0.12	-0.12	-0.17	-0.01	0.38
MORTALIT	-0.27	*-0.78*	0.24	0.17	-0.21	-0.36	-0.10
LIFEEXP	-0.17	0.49	-0.24	-0.08	-0.32	0.31	-0.62

The first two factors account for 41.88% and 14.67% of total variance, respectively. Factor 1 is strongly positively associated with social expenditure efficiency, employment, unemployment coverage, adult up-secondary education and lifelong-earning; and is strongly negatively associated with gender differences (in unemployment, long-term unemployment and pay,

although not in employment), income differences (inequality and poverty) and self-employment. It can therefore be interpreted as a factor associated with equality of opportunities and outcomes[7].

Factor 2 is strongly positively associated with replacement rate of unemployment benefit, social expenditure share in income replacement, social expenditure share in GDP, unemployment rate and youth employment; and is strongly negatively associated with mortality, private pensions and social expenditure share in health. It can therefore be interpreted as a factor generally associated with income replacement function of social protection[8].

Using the seven factors one can perform hierarchical cluster analysis which results, presented in Figure 4, have a pattern very similar to the ones obtained from the original dataset of indicators. Once again, the four Mediterranean countries form a very distinctive group.

Figure 4 Hierarchical Cluster Analysis of EU 14 – principal components

```
                     Rescaled Distance Cluster Combine
      C A S E      0         5         10        15        20        25
     Label   Num   +---------+---------+---------+---------+---------+

      BE       1     ┐
      FR       6     ┘
      DE       3
      AT      10
      NL       9
      UK      14
      DK       2
      SE      13
      FI      12
      IE       7
      ES       5
      IT       8
      PT      11
      EL       4
```
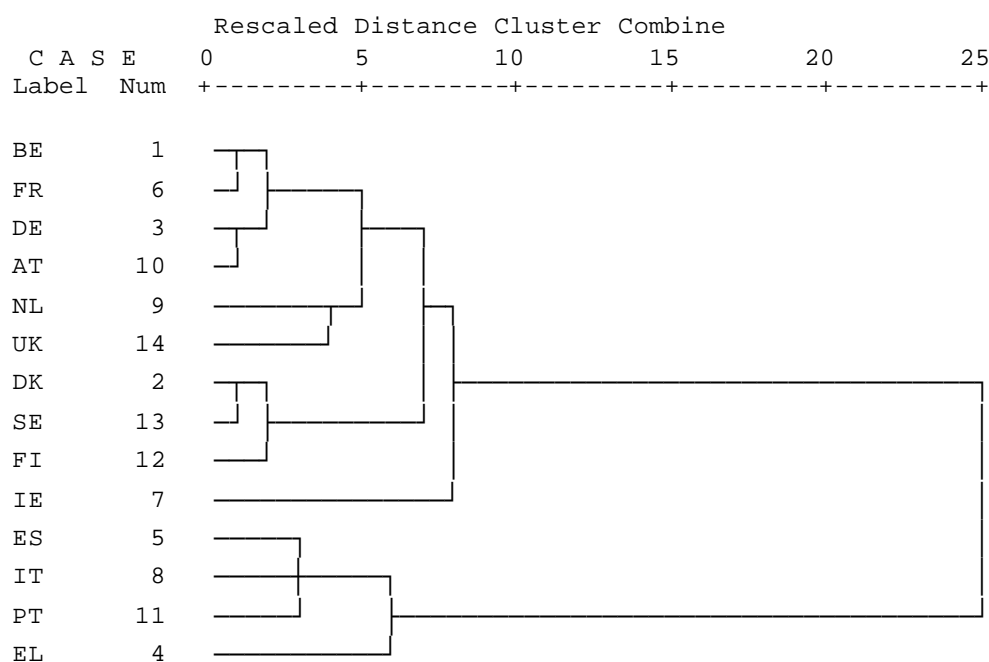
Note: Ward method; squared Euclidean distance.

[7] Denmark and Sweden in the one hand, and Greece, Spain and Italy in the other, are the countries that contribute more strongly for the first factor, positively and negatively, respectively.
[8] Sweden contributes strongly positively, and Ireland and the UK are the countries that more strongly contribute negatively to the second factor.

The results of hierarchical cluster analysis suggest that welfare indicators data structure is well described by a two clusters classification scheme. Using this information we proceed by performing a k-means analysis which allows cases (countries) to be recombined in each iteration, as opposed to the fixed allocation that prevails in hierarchical clustering procedures. The results of this classification are summarized in Table 5.

Table 5 K-means Cluster Analysis of EU 14 - Principal Components

Cluster Membership		
Cluster	Country	Distance
1	EL	5,321
1	ES	3,939
1	IT	3,042
1	PT	4,477
2	BE	3,742
2	DK	4,036
2	DE	3,548
2	FR	2,839
2	IE	7,134
2	NL	5,190
2	AT	2,259
2	FI	4,312
2	SE	4,718
2	UK	5,578

Distances between Final Cluster Centers		
Cluster	**1**	**2**
1		7,958
2	7,958	

Final Cluster Centers		
	Cluster	
	1	**2**
Factor 1	-5,6130	2,2452
Factor 2	,3787	-,1515
Factor 3	,2718	-,1087
Factor 4	-,5787	,2315
Factor 5	-,2964	,1186
Factor 6	-,1744	,0698
Factor 7	,3721	-,1488

Allowing for case recombination does not change the pattern of cluster membership. The sorting outcome is again a single cluster for the Mediterranean countries and a comprehensive cluster of all other countries. Countries' distances to clusters' centers reveal that Greece in the "Mediterranean cluster" and Ireland and UK in the main cluster are peripheric cases. Final clusters' centers show a pronounced differentiation between clusters in what concerns the first factor, related with equality in opportunities and outcomes; more weak differentiation applies to factor 4 and 7 (related with education achievement and health risk, respectively). However, ANOVA results computed for descriptive purposes[9] indicate that F test is only significant for factor 1[10].

EU countries after the enlargement (UE 22)

We proceed our analysis broadening its scope to include all member states after EU enlargement of May 2004. For the whole set of countries statistical data are now more scarce. We tried to fulfil the information gaps by searching alternative indicators and sources and we were able to collect a final database of 30 variables on the two domains of welfare[11]. Cyprus and Malta remained with a large amount of missing information and, for this reason, were droped out of the analysis, as it has been the case with Luxembourg. Therefore, instead of covering all member states after the recent enlargement, in this second part of our study we focus on the UE 22.

Again we start with hierarchical cluster analysis based on the whole set of original indicators and each of the two welfare domains in particular; principal components analysis permit to reduce the multidimensionality of the data and to focus in the main components extracted to perform further hierarchical and non- hierarchical cluster procedures.

Hierarchical clustering on the complete set of indicators (30 variables) shows now three clusters on the set of EU countries analysed: the Mediterranean countries (Spain, Italy, Portugal and Greece) maintain their position as a separate cluster; Ireland joins the main block of newcomers;

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[9] K-means clustering operates a ANOVA "in reverse" aiming to group cases in the way to get the maximum differences amo ng cases in different clusters, that is, the most significant ANOVA results (see **Sharma, S.C.** (1996), *Applied multivariate techniques*, New York, Wiley.).

[10] If we used k=3 (as results from another agglomeration techniques of hierarchical clustering) we would obtain the third cluster composed by Ireland and UK, and the first two factors discriminating well between clusters. Clusters final means on the selected indicators indicate distinctive negative values for factor 1 (equality) in the "Mediterranean cluster" and for factor 2 (income substitution) in the "Anglo-Saxon cluster", respectively.

and the Czech Republic, Hungary and Slovenia cluster together with the main block of pre-enlargement countries.

Figure 5 Hierarchical Cluster Analysis of EU 22 –all indicators

```
                      Rescaled Distance Cluster Combine
    C A S E      0         5        10        15        20        25
  Label   Num    +---------+---------+---------+---------+---------+

     BE      1       ─┐
     FR      8       ─┼─┐
     DE      4       ─┤ ├───┐
     AT     15       ─┘ │   │
     NL     14       ───┘   ├───┐
     HU     13       ─┐     │   │
     SI     18       ─┼─┐   │   │
     CZ      2       ─┘ ├───┘   │
     FI     20       ─┐ │       ├─────────────────────────┐
     SE     21       ─┼┐│       │                         │
     DK      3       ─┘├┘       │                         │
     UK     22       ──┘        │                         │
     ES      7       ───┐       │                         │
     IT     10       ───┼─┐     │                         │
     PT     17       ───┘ ├─────┘                         │
     EL      6       ─────┘                               │
     LV     11       ─┐                                   │
     LT     12       ─┼─┐                                 │
     PL     16       ─┘ ├─────┐                           │
     EE      5       ─┐ │     ├───────────────────────────┘
     SK     19       ─┼─┘     │
     IE      9       ─────────┘
```
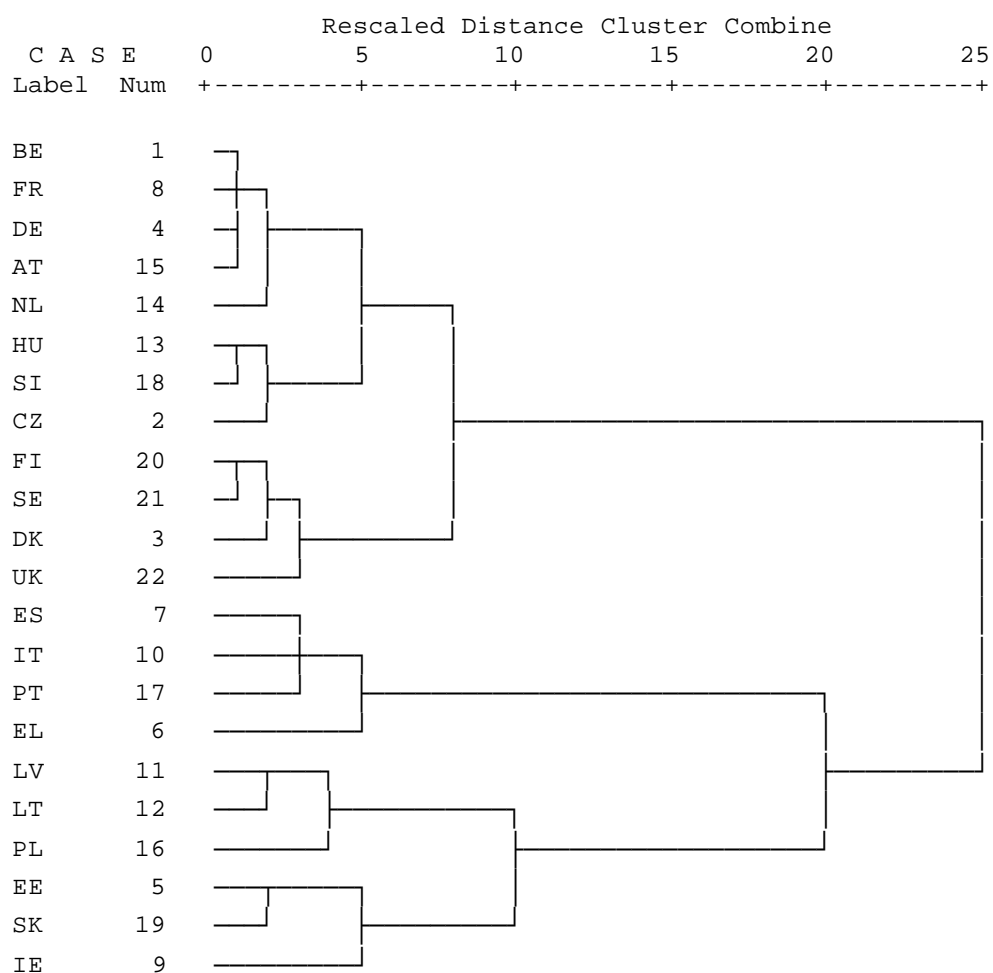
Note: Ward method; squared Euclidean distance; z-scores

In this last cluster one can broadly distinguish two branches: one including the classical family of conservative countries plus the Czech Republic, Hungary and Slovenia; and the second one including the Scandinavian countries and the UK.

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[11] Six variables could not be completed or substituted and two proxys were brought into the dataset. See Table A1 in the Appendix for details.

A slightly different structure emerges from the analysis of the first of the two dimensions of welfare previously distinguished (patterns of welfare provision). In this case, the most numerous of the clusters is joined by Greece and abandoned by the Czech Republic and Hungary; Poland and Latvia join the three remaining Mediterranean countries.

Figure 6 Hierarchical Cluster Analysis of EU 22 – indicators of dimension 1

```
                Rescaled Distance Cluster Combine
   C A S E    0         5        10        15        20        25
   Label  Num  +---------+---------+---------+---------+---------+

    DE      4   ─┐
    FR      8   ─┤
    AT     15   ─┤
    SI     18   ─┘
    BE      1   ───┐
    NL     14   ───┤
    EL      6   ───┘
    FI     20   ──┐
    SE     21   ──┤
    DK      3   ──┤
    UK     22   ──┘
    ES      7   ─┐
    PT     17   ─┤
    IT     10   ─┤
    LV     11   ─┤
    PL     16   ─┘
    CZ      2   ─┐
    SK     19   ─┤
    LT     12   ─┤
    HU     13   ─┤
    EE      5   ─┤
    IE      9   ─┘
```
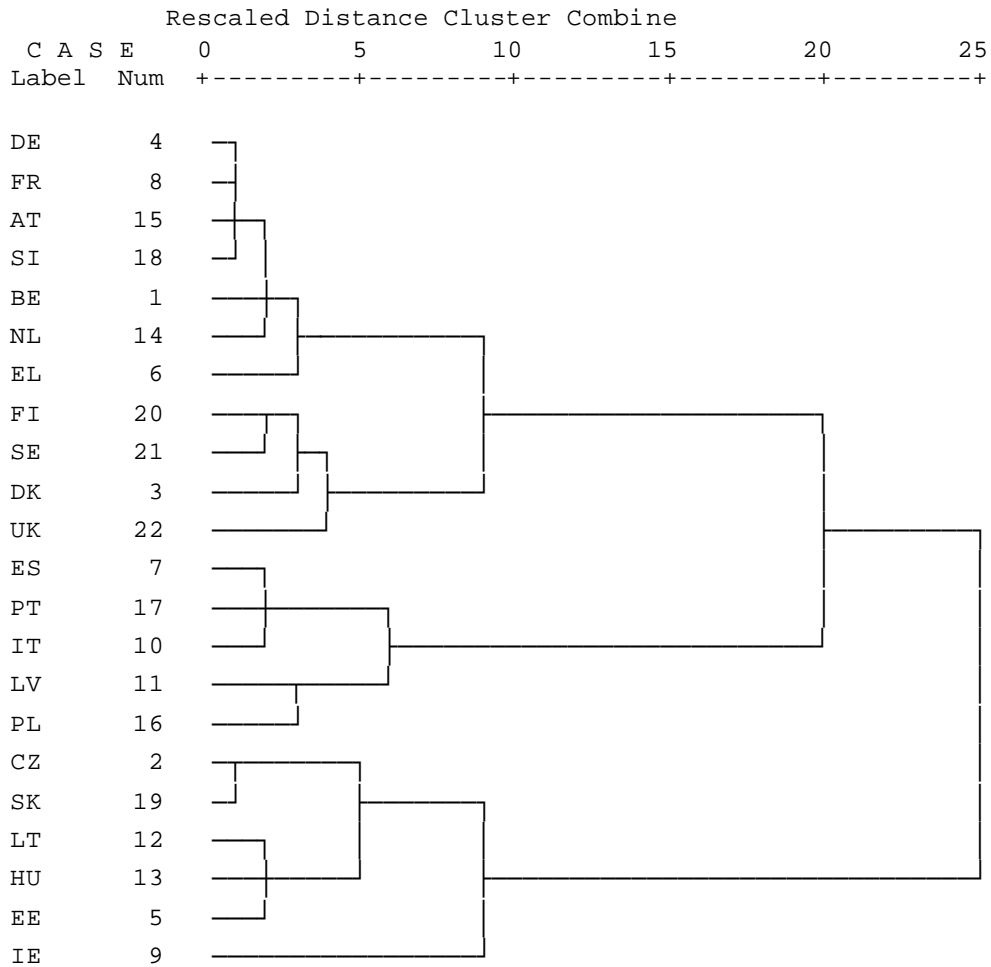
Note: Ward method; squared Euclidean distance; z-scores

In the second dimension of welfare (welfare outcomes and stratification effects) the pattern of clustering is much similar to the global one, with the only exception of Ireland's position. In the dendogram of cluster analysis in this dimension a reshape of classical regime division can be found: an enlarged cluster formed by conservative, social democratic and social democratic traditional branches; a cluster of the main block of the newcomers; and the Mediterranean cluster.

Figure 7 Hierarchical Cluster Analysis of EU 22 – indicators of dimension 2

```
                     Rescaled Distance Cluster Combine
   C A S E       0         5        10        15        20        25
  Label   Num    +---------+---------+---------+---------+---------+

     BE      1      ┐
     FR      8      ┤─┐
     DE      4      ┐ ┤
     AT     15      ┤─┤
     CZ      2      ┘ │
     HU     13      ┐ │
     SI     18      ┘─┘
     DK      3      ┐
     SE     21      ┤─┐
     FI     20      ┘ ┤
     NL     14      ┐ │
     UK     22      ┤─┤
     IE      9      ┘─┘
     EE      5      ┐
     SK     19      ┤─┐
     LV     11      ┐ ┤
     LT     12      ┤─┤
     PL     16      ┘─┘
     EL      6      ┐
     IT     10      ┤─┐
     ES      7      ┘ ┤
     PT     17      ──┘
```
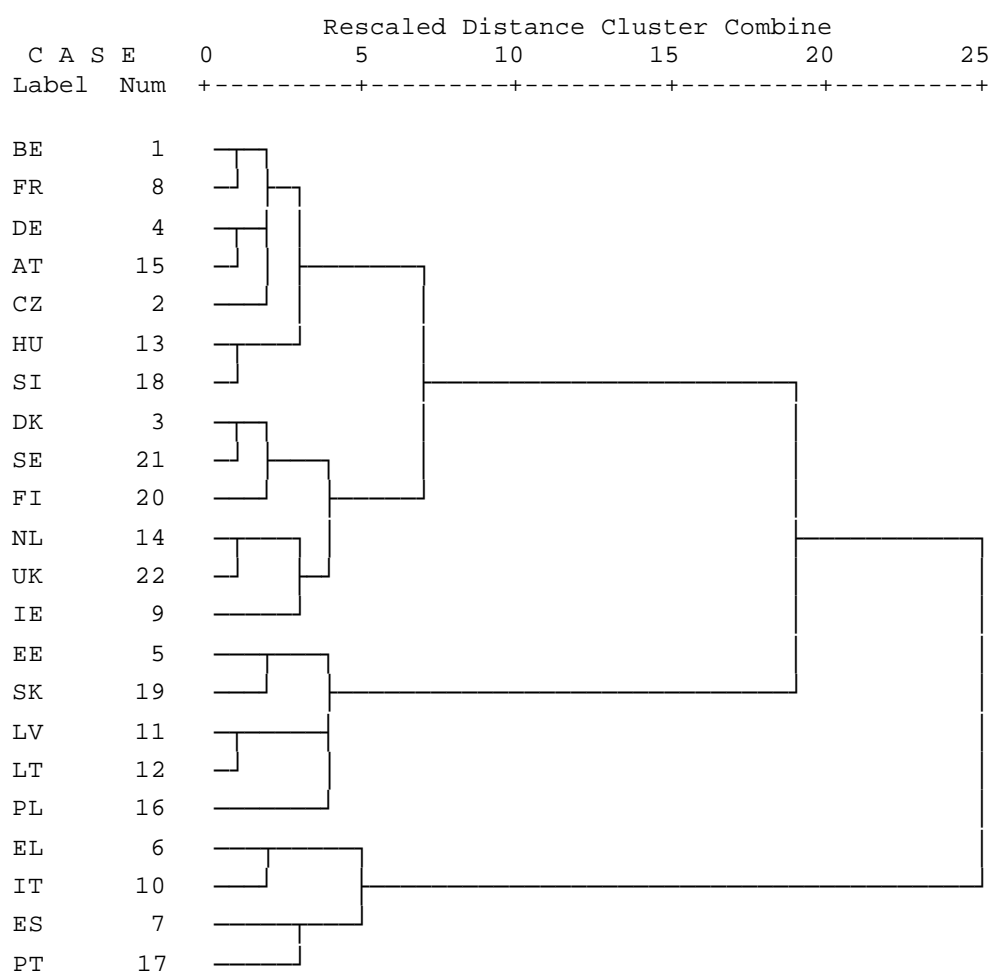
Note: Ward method; squared Euclidean distance; z-scores

As before, it is useful to undertake a descriptive analysis of variable means between clusters and variable distribution within clusters for better understanding of the significant differences between them[12]. Variables associated with poverty and with education are the ones that better discriminate between the three clusters. Differences in clusters means are significant for social transfers' efficiency in reducing poverty and poverty alleviation share in social expenditure (at 1 per cent), poverty rate (at 5 per cent), early childhood education, youth attainment rates, adult level of education and early school leavers (at 1 per cent).

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[12] See ANOVA results in Table A.5 and Box-and Whiskers diagrams in Figure A.2 in the Appendix.

In summary, the main cluster presents the highest levels of social transfers' efficiency in reducing poverty and life-learning in association with the lowest levels of income poverty and inequality. The Mediterranean cluster presents higher levels of in income inequality and poverty; and lower levels of education attainment, both for youths and adults, as well as early school leavers. The main block of newcomers (plus Ireland) presents in general middle values in the aforementioned variables, as well as the lowest levels of life expectancy and the highest in mortality.

Applying factor analysis in order to reduce the multidimensionality of the data and extract meaningful factors that explain the majority of the variability in the indicators dataset now leads to the selection of six factors that account for 82.39% of total variance (Table 6). The correlations between the original variables and those six principal factors are presented in Table 7.

Table 6 Eigenvalues and Explained Variance - EU 22

Number	Eigenvalue	Percentage	Cumulative Percentage
1	9.6795	32.27	32.27
2	5.9976	19.99	52.26
3	3.2499	10.83	63.09
4	2.6003	8.67	71.76
5	1.7734	5.91	77.67
6	1.4175	4.72	82.39
7	0.9661	3.22	85.61
8	0.9524	3.17	88.79
9	0.9113	3.04	91.83
10	0.5157	1.72	93.55
11	0.4757	1.59	95.13
12	0.3815	1.27	96.40
13	0.3023	1.01	97.41
14	0.2266	0.76	98.17
15	0.2126	0.71	98.87
16	0.1102	0.37	99.24
17	0.0814	0.27	99.51
18	0.0604	0.20	99.71
19	0.0524	0.17	99.89
20	0.0227	0.08	99.96
21	0.0107	0.04	100.00

The first two factors account for 32.27% and 19.99% of total variance, respectively.[13] Factor 1 is strongly positively associated with self employment, inequality and long-term unemployment gap; and is strongly negatively associated with employment, life-long learning and social

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[13] ANOVA results (descriptive purposes only) indicate that F test are significant for these two factors.

expenditure efficiency. It can therefore be interpreted as a factor associated with inequality of opportunities and outcomes.[14]

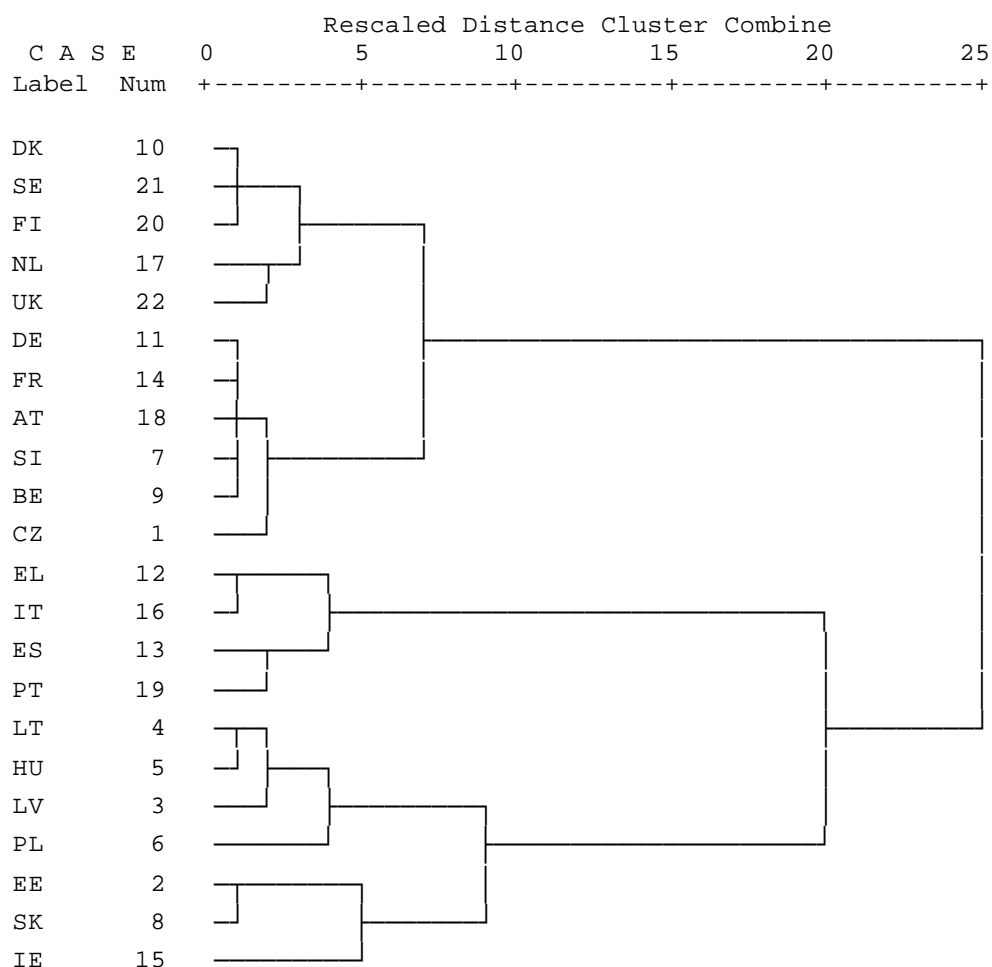**Table 7 Correlations Between Variables and Factors – EU 22**

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
PRIVHEA2	0.62	0.02	-0.21	0.50	-0.06	0.06
PRIVEDU2	0.41	-0.36	0.38	0.30	0.15	0.29
SEINGDP	-0.46	*-0.65*	0.39	-0.13	0.05	-0.12
SE_INC	0.38	-0.36	0.66	0.39	-0.24	-0.09
SE_POV	-0.61	0.51	-0.24	-0.02	0.27	0.15
SE_HEALT	-0.05	0.12	-0.72	-0.52	0.12	0.01
GOVFINAN	-0.31	0.08	-0.09	0.25	0.73	-0.26
GENEROS	-0.66	*-0.62*	0.17	-0.12	0.16	0.10
EMP	*-0.79*	-0.32	-0.26	0.25	-0.04	-0.03
EMPGAP	-0.60	0.44	0.13	0.45	-0.03	-0.12
UNEMP	0.58	0.51	0.32	-0.04	-0.06	-0.48
UNEMPGAP	0.61	-0.49	0.13	-0.42	-0.05	0.01
LTUNEMP	0.67	0.36	0.19	-0.43	-0.08	0.10
LTUNGAP	**0.71**	-0.42	0.12	-0.34	-0.14	-0.01
YOUTEMP	0.65	0.40	0.37	-0.14	0.03	-0.45
PARTIME	-0.63	-0.41	-0.04	0.24	-0.14	0.03
SELFEMP	**0.76**	-0.23	0.14	-0.07	0.36	0.20
FIXTERM	0.25	-0.59	0.22	0.11	-0.04	-0.47
SHADOWEC	0.64	0.10	0.40	0.29	0.15	0.29
PAYGAP	-0.42	0.44	-0.26	0.01	-0.46	-0.34
INEQUAL	**0.73**	0.04	-0.46	0.26	-0.06	-0.24
POVERTY	0.69	0.07	-0.52	0.07	0.25	-0.22
SE_EFFIC	*-0.78*	0.12	0.41	0.05	-0.12	0.01
CHILDEDU	-0.24	-0.49	-0.22	-0.17	-0.60	0.13
LEAVERS	0.47	*-0.63*	-0.44	0.38	-0.12	-0.06
YOUTHEDU	-0.35	**0.62**	0.38	-0.48	0.15	0.02
ADULTEDU	-0.48	**0.74**	0.29	-0.03	-0.21	-0.01
LIFELEAR	*-0.79*	-0.16	0.17	0.25	0.20	-0.22
MORTALIT	0.44	**0.63**	0.01	0.43	-0.08	0.26
LIFEEXP	-0.34	*-0.78*	0.05	-0.31	0.22	-0.22

Factor 2 is positively associated with adult up-secondary education, youth attainment rate and mortality; and is negatively associated with life expectancy, social expenditure's share in GDP,

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[14] As in factors analysis for the UE 14, now Denmark and Sweden contribute strongly negatively to the first factor, and Greece, Spain and Italy contribute strongly positively to it.

GDP per dependent and early school leavers. It can therefore be interpreted as a factor generally associated with education achievement.[15]

Figure 8 Hierarchical Cluster Analysis of EU 22 – principal components

```
                   Rescaled Distance Cluster Combine
   C A S E     0        5        10       15       20       25
  Label  Num   +---------+---------+---------+---------+---------+

   DK      10   ─┐
   SE      21   ─┼─┐
   FI      20   ─┘ ├───┐
   NL      17   ───┤   │
   UK      22   ───┘   ├───────────────────────────────────────┐
   DE      11   ─┐     │                                        │
   FR      14   ─┤     │                                        │
   AT      18   ─┼─┐   │                                        │
   SI       7   ─┤ ├───┘                                        │
   BE       9   ─┘ │                                            │
   CZ       1   ───┘                                            │
   EL      12   ─┐                                              │
   IT      16   ─┼─┐                                            │
   ES      13   ─┤ ├───────────────────────────────┐           │
   PT      19   ─┘ │                                │           │
   LT       4   ─┐─┤                                │           │
   HU       5   ─┼─┐                                ├───────────┘
   LV       3   ─┘ ├─────┐                          │
   PL       6   ───┘     │                          │
   EE       2   ─┐       ├──────────────────────────┘
   SK       8   ─┴─┐     │
   IE      15   ───┴─────┘
```

Note: Ward method; squared Euclidean distance.

Hierarchical cluster analysis using the six main factors results in a pattern very similar to the one obtained by using the original indicators, except for the position of Hungary that joins the newcomers (plus Ireland) cluster. Once again, the four Mediterranean countries form a very distinct group and Ireland is the only other old EU member that does belong to the largest cluster.

---

[15] In what concerns the second factor, Slovenia, Estonia and Lithuania have a strong positive contribution, and Portugal and Spain a strong negative one.

Using the information of hierarchical cluster analysis to define the "right" number of clusters, we proceed by performing a k-means cluster analysis. The results of this classification are summarized in Table 8. Allowing for case recombination only slightly change the pattern of cluster membership, since the Czech Republic also drops out from the largest cluster to join the newcomers (plus Ireland) cluster. The result is that all newcomers except Slovenia now cluster together (plus Ireland).

Countries distances to clusters' centers reveal that Ireland and Poland are peripheric cases of the newcomers (plus Ireland) cluster. Factors final clusters centers show pronounced differentiation between clusters in the first two factors, which relates to inequality in opportunities and outcomes and education achievement, respectively. The Mediterranean cluster stands as the cluster with more inequality and less education achievement and the newcomers (plus Ireland) cluster the one with better education achievement.

Table 8 K-means Cluster Analysis of EU 22
   –   **Principal Components**

Cluster Membership		
Cluster	Country	Distance
1	BE	3,076
1	DK	3,116
1	DE	1,735
1	FR	2,121
1	NL	3,080
1	AT	1,008
1	SI	3,125
1	FI	2,716
1	SE	3,154
1	UK	3,170
2	IE	6,142
2	CZ	4,486
2	EE	3,406
2	LV	5,147
2	LT	1,693
2	HU	2,723
2	PL	5,937
2	SK	3,881
3	EL	3,487
3	ES	2,912
3	IT	1,558
3	PT	3,765

Distances between Final Cluster Centers			
Cluster	**1**	**2**	**3**
1		5,294	7,576
2	5,294		6,910
3	7,576	6,910	
Final Cluster Centers			
	1	**2**	**3**
Factor 1	-2,6380	1,0800	4,4325
Factor 2	-,8930	2,7425	-3,2525
Factor 3	,5700	-,3662	-,6900
Factor 4	,0260	,0737	-,2100
Factor 5	-,1050	,0037	,2575
Factor 6	-,0620	,2388	-,3225

4. CONCLUSION

The empirical analysis performed in this paper highlights different systems of welfare in the EU, both before and after its recent enlargement. When we restrict the analysis to "old" EU[16], the different clustering techniques applied reveal a basic scheme of two main groups of countries: the four Mediterranean countries on the one hand, and all the remaining countries on the other.

This result is quite robust, as it prevails for different hierarchical and non-hierarchical cluster procedures, for clusters based on original indicators or principal components, and for partial analysis of each dimension and for most of its domains. Even if the restriction of the analysis to European Union seems to blur classical distinctions between continental/conservative, liberal and social democratic welfare regimes, southern European or Mediterranean countries seem to maintain sharp differentiating characteristics in this comparative study.

Expanded analysis to enlarged EU[17] results in a clear diversity of welfare types, although, quite surprisingly, some of the new countries cluster with the main group of old EU countries. Mediterranean countries continue to cluster in a special group and a new cluster appears, formed by the majority of the newcomers included in the analysis as well as Ireland.

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[16] Excluding Luxembourg, due to many missing data on the relevant indicators.
[17] Excluding further Cyprus and Malta for the same reasons of Luxembourg.

Table 9 presents the level of GDP per capita (in PPS) for all EU countries in 2003 in relation to EU 25 average[18]. This indicator ranges from 40.5 in Latvia to 212.4 in Luxembourg, showing a great variability in economic levels of development within the enlarged EU. However, even if this variable is significant in contrasting old and new EU members[19], it does not at all discriminate between the clusters of welfare found in UE 22.

Table 9 GDP per capita (PPS) in EU, 2003

COUNTRY	GDP per capita in PPS (EU25=100)	EU 15 MEMBER (YES=1)
Latvia	40.5	0
Lithuania	45.3	0
Poland	45.5	0
Estonia	48.0	0
Slovakia	51.8	0
Hungary	59.4	0
Czech Republic	69.2	0
Malta	72.3	0
Portugal	73.9	1
Slovenia	76.0	0
Greece	80.3	1
Cyprus	81.3	0
Spain	98.8	1
Italy	105.8	1
Germany	108.8	1
France	111.8	1
Finland	112.5	1
Sweden	114.0	1
Belgium	116.5	1
United Kingdom	117.9	1
Netherlands	119.7	1
Austria	120.6	1
Denmark	121.1	1
Ireland	131.0	1
Luxembourg	212.4	1

It is expected that the ongoing process of integration give rise to a certain kind of convergence, not only in levels of economic performance, but also in social welfare systems. Even if social policy in Europe is, specially since the definition of the "Lisbon Strategy", more committed to a

[18] Eurostat online Structural Indicators [accessed in 02.06.2005].
[19] At 1 per cent level.

common set of objectives and a specific method of coordination, the process is still subject to a fundamental tension that proceeds from the unstable balance between economic and welfare concerns of governments (Taylor-Gooby, 2003).

The convergence exists much more as a political goal; countries' singularities and different political compromises between social and economic objectives imply different country trajectories and an overall intermittent process of convergence (Bouget, 2003; Jaeger & Kvist, 2003). Besides common purposes, in each moment the impact of economic and social pressures is filtered in each country into distinct policy responses, giving way to a complex, nonlinear process of social policy tuning within the EU. Furthermore, at national and European levels, a mainstream economic agenda of competition and market oriented priorities tend to engulf full employment and social cohesion objectives, which will be of much difficult enforcement without further steps in European-level governance.

Welfare literature in Europe tends to highlight the process of diffusion of specific social policies (minimum incomes, activation policies, etc) and not so much the role of political cultures in welfare arrangements, which seem determinant in the persistent of different clusters of welfare regimes in Europe, and elsewhere. However, this issue, in association with the question of political legitimacy and the rise of popular unrest spread in Europe towards the balance between open markets and welfare citizenship (Taylor-Gooby, 2003), seems to be central to the understanding of the recent evolution of welfare in an enlarged Europe and, even more, its future.

Those are new areas to bring in consideration in deepening the analysis of welfare regime(s) in the European Union.

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Table A.1 Indicators of Welfare – Variable Codes, Reference Years and Sources

		Code	Year	Source
1.1 State, market and family				
Private expenditures in health (%)	**(a)**	PRIVHEA	2002	OECD
Private expenditures in education (%)	**(b)**	PRIVEDU	2002	OECD
Private pension funds (% of GDP)	**(c)**	PRIVPEN	2002	OECD
Under 6 y-old in public care/education (%)	**(c)**	CHILCARE	2000	OECD
Public employment (% of total employment)	**(c)**	PUBEMP	2000	OECD
1.2 Public policies and programmes				
Social expenditure (% of GDP)		SEINGDP	2001	EUROSTAT
Share of social exp. in income replace. (%)		SE_INC	2001	EUROSTAT
Share of social exp. in poverty alleviation (%)		SE_POV	2001	EUROSTAT
Share of social expenditure in health (%)		SE_HEALT	2001	EUROSTAT
General government share in financing (%)		GOVFINAN	2001	EUROSTAT
Social expenditure by dependent (% of GDP)		GENEROS	2001	EUROSTAT
Net replacement rate of pensions (%)	**(c)**	REPLPEN	2002	EUROSTAT
Unemployment benefit coverage (%)	**(c)**	UNEMPCOV	1995	EUROSTAT
Net replacement rate of unempl. benefits (%)	**(c)**	REPLWAG	2002	EUROSTAT
2.1 Employment opportunities				
Employment rate (%)		EMP	2003	EUROSTAT
Gender employment relative gap (%)		EMPGAP	2003	EUROSTAT
Youth employment rate (%)		YOUTEMP	2003	EUROSTAT
Unemployment rate (%)		UNEMP	2003	EUROSTAT
Gender unemployment relative gap (%)		UNEMPGAP	2003	EUROSTAT
Part-time employment rate (%)		PARTIME	2003	EUROSTAT
Fixed term contracts rate (%)		FIXTERM	2003	EUROSTAT
Self employment (% of total employment)		SELFEMP	2003	EUROSTAT
Long-term unemployment (% of unemployment)		LTUNEMP	2003	EUROSTAT
Gender long term unemployment relative gap (%)		LTUNGAP	2003	EUROSTAT
Shadow economy estimates (% of GDP)		SHADOWEC	2001/2	(Schneider, 2003)
2.2 Inequality and poverty				
Gender pay gap (%)		PAYGAP	2003	EUROSTAT
Extreme quintile shares ratio		INEQUAL	2001	EUROSTAT
Poverty rate after social transfers (%)		POVERTY	2001	EUROSTAT
Social transfers' poverty efficiency (%)		SE_EFFIC	2001	EUROSTAT
2.3 Life and education opportunities				
Infant mortality rate (‰)		MORTALIT	2002	EUROSTAT
Life expectancy at birth (years)		LIFEEXP	2001	EUROSTAT
4 years old in education (%)		CHILDEDU	2002	EUROSTAT
Youth attainment rate (%)		YOUTHEDU	2002	EUROSTAT
Early school leavers (%)		LEAVERS	2002	EUROSTAT
Adults with at least upper-second. Education (%)		ADULTEDU	2003	EUROSTAT
Adults participating in education/training (%)		LIFELEAR	2002	EUROSTAT

Notes: (a) Replaced by PRIVHEA2- Expenditures in health (% of total household expenditure) from EUROSTAT 2001 (ECHP) in the analysis of UE 22;
(b) Replaced by PRIVEDU2- Expenditures in education (% of total household expenditure) from EUROSTAT 2001 (ECHP) in the analysis of UE 22;
(c) Not used in the analysis of UE 22.

Table A.3 ANOVA – Cluster of EU 14

	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
Zscore: PUBEMP	2,270	1	,894	12	2,538	,137
Zscore: PRIVHEA	3,680	1	,777	12	4,738	,050
Zscore: PRIVEDU	,090	1	1,076	12	,083	,778
Zscore: PRIVPEN	1,478	1	,960	12	1,539	,238
Zscore: CHILCARE	2,741	1	,855	12	3,206	,099
Zscore: SEINGDP	1,484	1	,960	12	1,546	,237
Zscore: SE_INC	2,773	1	,852	12	3,254	,096
Zscore: SE_POV	7,164	1	,486	12	14,728	,002
Zscore: SE_HEALT	,012	1	1,082	12	,011	,919
Zscore: GOVFINAN	,664	1	1,028	12	,646	,437
Zscore: GENEROS	5,768	1	,603	12	9,571	,009
Zscore: REPLPEN	6,529	1	,539	12	12,106	,005
Zscore: REPLWAG	,084	1	1,076	12	,078	,785
Zscore: UNEMPCOV	10,372	1	,219	12	47,372	,000
Zscore: EMP	4,723	1	,690	12	6,847	,023
Zscore: EMPGAP	7,007	1	,499	12	14,029	,003
Zscore: UNEMP	3,091	1	,826	12	3,743	,077
Zscore: UNEMPGAP	8,929	1	,339	12	26,324	,000
Zscore: LTUNEMP	3,482	1	,793	12	4,390	,058
Zscore: LTUNGAP	9,014	1	,332	12	27,134	,000
Zscore: YOUTEMP	4,304	1	,725	12	5,940	,031
Zscore: PARTIME	5,679	1	,610	12	9,309	,010
Zscore: SELFEMP	7,629	1	,448	12	17,046	,001
Zscore: FIXTERM	3,504	1	,791	12	4,428	,057
Zscore: SHADOWEC	8,205	1	,400	12	20,533	,001
Zscore: PAYGAP	4,470	1	,711	12	6,288	,028
Zscore: INEQUAL	8,916	1	,340	12	26,200	,000
Zscore: POVERTY	6,439	1	,547	12	11,777	,005
Zscore: SE_EFFIC	9,978	1	,252	12	39,615	,000
Zscore: CHILDEDU	,006	1	1,083	12	,005	,943
Zscore: LEAVERS	8,085	1	,410	12	19,739	,001
Zscore: YOUTHEDU	5,658	1	,612	12	9,249	,010
Zscore: ADULTEDU	9,193	1	,317	12	28,975	,000
Zscore: LIFELEAR	4,455	1	,712	12	6,257	,028
Zscore: MORTALIT	,426	1	1,048	12	,407	,536
Zscore: LIFEEXP	,087	1	1,076	12	,081	,781

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Table A.5 ANOVA – Cluster of EU 22

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
PRIVHEA2	,427	2	,199	19	2,150	,144
PRIVEDU2	,894	2	1,186	19	,754	,484
SEINGDP	67,274	2	27,166	19	2,476	,111
SE_INC	67,002	2	53,230	19	1,259	,307
SE_POV	90,609	2	9,132	19	9,922	,001
SE_HEALT	2,190	2	31,176	19	,070	,932
GOVFINAN	37,265	2	145,049	19	,257	,776
GENEROS	,295	2	,086	19	3,428	,054
EMP	98,247	2	32,828	19	2,993	,074
EMPGAP	,027	2	,007	19	3,670	,045
UNEMP	45,392	2	12,673	19	3,582	,048
UNEMPGAP	,385	2	,128	19	3,001	,074
LTUNEMP	315,095	2	160,274	19	1,966	,167
LTUNGAP	,961	2	,296	19	3,243	,061
YOUTEMP	202,168	2	59,486	19	3,399	,055
PARTIME	266,821	2	76,080	19	3,507	,051
SELFEMP	260,747	2	50,529	19	5,160	,016
FIXTERM	147,205	2	30,093	19	4,892	,019
SHADOWEC	230,683	2	37,325	19	6,180	,009
PAYGAP	56,767	2	21,635	19	2,624	,099
INEQUAL	3,861	2	,828	19	4,664	,022
POVERTY	79,275	2	11,406	19	6,950	,005
SE_EFFIC	1121,314	2	95,623	19	11,726	,000
CHILDEDU	3449,943	2	121,492	19	28,396	,000
LEAVERS	533,583	2	21,759	19	24,523	,000
YOUTHEDU	736,532	2	52,175	19	14,117	,000
ADULTEDU	2118,788	2	117,659	19	18,008	,000
LIFELEAR	104,968	2	69,886	19	1,502	,248
MORTALIT	6,618	2	2,631	19	2,516	,107
LIFEEXP	26,973	2	14,046	19	1,920	,174

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Table A.2 Correlation Matrix - Indicators of Welfare Regime Dimensions in EU 14

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1 - PUBEMP	1,00																																		
2 - PRIVHEA	-0,65	1,00																																	
3 - PRIVEDU	-0,50	-0,16	1,00																																
4 - PRIVPEN	-0,22	-0,08	0,23	1,00																															
5 - CHILCARE	0,74	-0,68	-0,15	0,08	1,00																														
6 - SEINGDP	0,32	-0,21	-0,01	-0,20	0,31	1,00																													
7 - SE_INC	-0,05	0,18	-0,02	-0,45	-0,03	0,47	1,00																												
8 - SE_POV	0,35	-0,34	-0,17	0,27	0,31	0,08	-0,72	1,00																											
9 - SE_HEALT	-0,26	0,06	0,19	0,39	-0,25	-0,74	-0,76	0,09	1,00																										
10 - GOVFINAN	0,42	-0,59	-0,20	0,06	0,33	-0,22	-0,46	0,60	0,10	1,00																									
11 - GENEROS	0,29	-0,25	-0,16	0,41	0,42	0,70	-0,07	0,47	-0,35	0,02	1,00																								
12 - REPLPEN	-0,71	0,77	0,08	0,01	-0,72	-0,22	0,16	-0,44	0,18	-0,38	-0,30	1,00																							
13 - REPLWAG	0,49	-0,24	-0,28	-0,27	0,37	0,36	0,28	-0,19	-0,22	-0,30	0,20	-0,34	1,00																						
14 - UNEMPCOV	0,60	-0,59	-0,03	0,13	0,47	0,27	-0,38	0,64	-0,05	0,29	0,49	-0,78	0,21	1,00																					
15 - EMP	0,41	-0,52	-0,19	0,52	0,37	0,31	-0,29	0,54	-0,09	0,36	0,73	-0,41	0,29	0,58	1,00																				
16 - EMPGAP	0,70	-0,64	-0,28	0,12	0,47	0,46	-0,23	0,57	-0,20	0,32	0,62	-0,73	0,48	0,77	0,80	1,00																			
17 - UNEMP	-0,15	0,28	0,18	-0,66	-0,18	-0,04	0,41	-0,42	-0,19	-0,35	-0,67	0,19	0,12	-0,44	-0,74	-0,43	1,00																		
18 - UNEMPGAP	-0,55	0,74	0,04	-0,41	-0,51	-0,12	0,48	-0,57	-0,15	-0,43	-0,50	0,80	-0,14	-0,83	-0,70	-0,81	0,64	1,00																	
19 - LTUNEMP	-0,51	0,48	0,34	-0,42	-0,37	-0,09	0,29	-0,49	0,04	-0,39	-0,48	0,38	-0,26	-0,53	-0,86	-0,71	0,58	0,64	1,00																
20 - LTUNGAP	-0,51	0,77	0,01	-0,38	-0,49	-0,13	0,50	-0,63	-0,12	-0,53	-0,52	0,79	-0,07	-0,81	-0,69	-0,78	0,66	0,98	0,58	1,00															
21 - YOUTEMP	-0,10	0,39	-0,02	-0,64	-0,23	0,00	0,51	-0,47	-0,28	-0,32	-0,61	0,28	-0,06	-0,54	-0,81	-0,49	0,90	0,67	0,62	0,70	1,00														
22 - PARTIME	0,12	-0,30	0,21	0,75	0,37	0,31	-0,23	0,28	0,06	-0,16	0,76	-0,34	0,21	0,52	0,68	0,49	-0,66	-0,61	-0,46	-0,57	-0,72	1,00													
23 - SELFEMP	-0,59	0,81	-0,13	-0,14	-0,65	-0,31	0,18	-0,40	0,11	-0,25	-0,43	0,78	-0,46	-0,76	-0,61	-0,73	0,29	0,76	0,63	0,74	0,50	-0,53	1,00												
24 - FIXTERM	0,01	0,14	-0,07	-0,24	-0,10	-0,19	0,35	-0,56	0,03	-0,38	-0,46	0,20	0,62	-0,36	-0,13	-0,12	0,51	0,37	-0,05	0,48	0,33	-0,23	0,04	1,00											
25 - SHADOWEC	-0,06	0,43	-0,22	-0,49	-0,16	-0,18	0,43	-0,49	-0,15	-0,11	-0,57	0,40	-0,08	-0,62	-0,68	-0,59	0,60	0,73	0,60	0,72	0,76	-0,67	0,72	0,32	1,00										
26 - PAYGAP	0,02	-0,39	0,45	0,32	0,02	0,18	-0,19	0,41	-0,10	0,09	0,27	-0,34	0,10	0,56	0,56	0,51	-0,16	-0,44	-0,50	-0,44	-0,41	0,46	-0,60	0,02	-0,64	1,00									
27 - INEQUAL	-0,50	0,50	0,02	-0,05	-0,54	-0,49	0,14	-0,60	0,35	-0,19	-0,62	0,67	-0,29	-0,74	-0,47	-0,62	0,28	0,56	0,37	0,63	0,39	-0,50	0,76	0,39	0,56	-0,48	1,00								
28 - POVERTY	-0,54	0,43	0,10	0,00	-0,49	-0,71	-0,14	-0,38	0,54	0,04	-0,71	0,62	-0,57	-0,71	-0,59	-0,75	0,24	0,50	0,44	0,51	0,35	-0,57	0,71	0,11	0,48	-0,54	0,87	1,00							
29 - SE_EFFIC	0,48	-0,57	0,01	0,26	0,61	0,53	-0,17	0,66	-0,36	0,25	0,77	-0,71	0,27	0,83	0,73	0,77	-0,47	-0,70	-0,58	-0,72	-0,59	0,67	-0,79	-0,36	-0,68	0,63	-0,87	-0,87	1,00						
30 - CHILDEDU	-0,04	-0,28	0,46	0,11	0,45	0,36	0,49	-0,46	-0,27	-0,33	0,20	-0,10	0,20	-0,09	-0,03	-0,14	0,04	0,01	0,10	0,05	-0,03	0,33	-0,29	0,11	-0,10	-0,02	-0,04	-0,13	0,14	1,00					
31 - LEAVERS	-0,31	0,22	0,01	-0,07	-0,24	-0,38	0,31	-0,73	0,24	-0,20	-0,52	0,41	0,12	-0,66	-0,29	-0,44	0,24	0,41	0,26	0,48	0,23	-0,34	0,46	0,61	0,45	-0,43	0,85	0,64	-0,69	0,25	1,00				
32 - YOUTHEDU	0,30	-0,14	-0,05	0,00	0,16	0,25	-0,29	0,65	-0,18	0,20	0,34	-0,28	-0,23	0,54	0,12	0,28	-0,12	-0,29	-0,23	-0,34	-0,06	0,16	-0,36	-0,56	-0,33	0,31	-0,71	-0,46	0,50	-0,29	-0,95	1,00			
33 - ADULTEDU	0,30	-0,49	0,24	0,19	0,28	0,52	-0,22	0,67	-0,31	0,25	0,61	-0,48	-0,02	0,73	0,54	0,60	-0,33	-0,55	-0,43	-0,62	-0,41	0,50	-0,66	-0,50	-0,65	0,72	-0,84	-0,75	0,83	-0,03	-0,88	0,77	1,00		
34 - LIFELEAR	0,72	-0,60	-0,30	0,23	0,47	0,37	-0,12	0,53	-0,33	0,45	0,54	-0,53	0,25	0,63	0,76	0,77	-0,45	-0,62	-0,81	-0,62	-0,40	0,43	-0,63	-0,13	-0,38	0,49	-0,62	-0,68	0,68	-0,15	-0,55	0,50	0,67	1,00	
35 - MORTALIT	-0,57	0,33	0,21	0,56	-0,22	-0,23	-0,26	0,01	0,36	0,03	0,12	0,43	-0,63	-0,32	-0,03	-0,40	-0,40	0,12	0,24	0,09	-0,27	0,18	0,52	-0,43	0,03	-0,27	0,46	0,53	-0,24	0,11	0,28	-0,31	-0,28	-0,43	1,00
36 - LIFEEXP	0,17	0,28	-0,39	-0,45	0,09	-0,01	0,07	-0,10	0,00	-0,25	-0,08	0,04	0,54	-0,08	-0,27	-0,12	0,27	0,32	0,28	0,29	0,17	-0,18	0,07	0,27	0,31	-0,37	-0,22	-0,19	-0,08	-0,17	-0,07	0,05	-0,21	-0,18	-0,40

Table A.4 Correlation Matrix - Indicators of Welfare Regime Dimensions in EU 22

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1 - PRIVHEA2	1,00																													
2 - PRIVEDU2	0,25	1,00																												
3 - SEINGDP	-0,45	0,16	1,00																											
4 - SE_INC	0,32	0,49	0,28	1,00																										
5 - SE_POV	-0,29	-0,31	-0,09	-0,71	1,00																									
6 - SE_HEALT	-0,22	-0,44	-0,33	-0,84	0,20	1,00																								
7 - GOVFINAN	-0,03	-0,24	0,10	-0,19	0,39	-0,04	1,00																							
8 - GENEROS	-0,49	0,05	0,88	-0,01	0,12	-0,09	0,18	1,00																						
9 - EMP	-0,33	-0,26	0,42	-0,27	0,38	0,07	0,24	0,64	1,00																					
10 - EMPGAP	-0,32	-0,19	0,03	-0,16	0,50	-0,16	0,21	0,08	0,48	1,00																				
11 - UNEMP	0,21	0,07	-0,38	0,26	-0,23	-0,17	-0,10	-0,66	-0,71	-0,04	1,00																			
12 - UNEMPGAP	0,20	0,34	0,11	0,34	-0,55	-0,04	-0,35	-0,06	-0,34	-0,79	0,12	1,00																		
13 - LTUNEMP	0,13	0,10	-0,35	0,10	-0,32	0,11	-0,35	-0,53	-0,83	-0,39	0,65	0,35	1,00																	
14 - LTUNGAP	0,29	0,38	-0,01	0,37	-0,60	-0,05	-0,47	-0,20	-0,44	-0,75	0,24	0,97	0,39	1,00																
15 - YOUTEMP	0,19	0,12	-0,30	0,32	-0,32	-0,20	-0,12	-0,61	-0,78	-0,16	0,94	0,25	0,69	0,36	1,00															
16 - PARTIME	-0,31	0,07	0,52	-0,02	0,12	-0,07	0,04	0,69	0,69	0,24	-0,52	-0,34	-0,62	-0,40	-0,59	1,00														
17 - SELFEMP	0,43	0,56	-0,13	0,33	-0,49	-0,08	-0,11	-0,21	-0,52	-0,61	0,24	0,67	0,47	0,69	0,40	-0,36	1,00													
18 - FIXTERM	0,13	0,37	0,26	0,44	-0,62	-0,14	-0,09	0,12	-0,04	-0,21	0,14	0,38	-0,15	0,44	0,14	0,05	0,19	1,00												
19 - SHADOWEC	0,42	0,44	-0,32	0,50	-0,42	-0,37	-0,09	-0,45	-0,54	-0,16	0,37	0,29	0,42	0,37	0,39	-0,47	0,55	0,16	1,00											
20 - PAYGAP	-0,12	-0,47	-0,17	-0,37	0,48	0,15	-0,08	-0,15	0,37	0,41	0,08	-0,35	-0,22	-0,34	-0,10	0,19	-0,59	-0,26	-0,52	1,00										
21 - INEQUAL	0,66	0,14	-0,47	0,10	-0,33	0,11	-0,16	-0,59	-0,33	-0,31	0,41	0,29	0,29	0,40	0,42	-0,32	0,47	0,08	0,21	-0,03	1,00									
22 - POVERTY	0,56	0,07	-0,44	-0,09	-0,21	0,28	0,10	-0,50	-0,44	-0,47	0,40	0,26	0,35	0,32	0,41	-0,35	0,48	-0,01	0,18	-0,16	0,87	1,00								
23 - SE_EFFIC	-0,48	-0,23	0,37	-0,03	0,41	-0,27	0,21	0,49	0,50	0,54	-0,23	-0,47	-0,41	-0,54	-0,32	0,50	-0,54	-0,13	-0,36	0,34	-0,75	-0,81	1,00							
24 - CHILDEDU	-0,12	-0,27	0,39	0,07	-0,18	0,04	-0,31	0,38	0,29	-0,24	-0,47	0,11	-0,20	0,08	-0,44	0,35	-0,38	0,02	-0,35	0,06	-0,17	-0,22	0,10	1,00						
25 - LEAVERS	0,50	0,30	-0,02	0,29	-0,56	0,02	-0,09	-0,08	0,03	-0,40	-0,16	0,36	-0,14	0,41	-0,14	0,03	0,33	0,48	0,16	-0,30	0,60	0,48	-0,58	0,32	1,00					
26 - YOUTHEDU	-0,44	-0,36	-0,04	-0,31	0,50	0,05	0,07	0,00	-0,15	0,24	0,20	-0,26	0,17	-0,28	0,21	-0,17	-0,27	-0,44	-0,12	0,24	-0,53	-0,36	0,43	-0,30	-0,96	1,00				
27 - ADULTEDU	-0,26	-0,42	-0,13	-0,20	0,54	-0,13	0,04	-0,11	0,12	0,61	0,19	-0,52	0,02	-0,53	0,07	0,05	-0,50	-0,54	-0,16	0,61	-0,41	-0,47	0,61	-0,21	-0,84	0,74	1,00			
28 - LIFELEAR	-0,39	-0,24	0,50	-0,05	0,38	-0,23	0,43	0,60	0,74	0,56	-0,46	-0,43	-0,76	-0,51	-0,46	0,52	-0,53	0,04	-0,30	0,22	-0,52	-0,54	0,55	0,05	-0,29	0,22	0,29	1,00		
29 - MORTALIT	0,49	0,10	-0,65	0,10	0,05	-0,18	-0,09	-0,65	-0,45	0,12	0,50	-0,23	0,39	-0,10	0,38	-0,29	0,20	-0,37	0,54	0,05	0,41	0,36	-0,21	-0,37	-0,05	0,04	0,27	-0,43	1,00	
30 - LIFEEXP	-0,38	0,03	0,80	0,06	-0,18	0,05	0,21	0,79	0,40	-0,32	-0,46	0,28	-0,39	0,13	-0,37	0,49	-0,02	0,38	-0,38	-0,21	-0,33	-0,18	0,15	0,37	0,17	-0,15	-0,41	0,41	-0,80	1,00

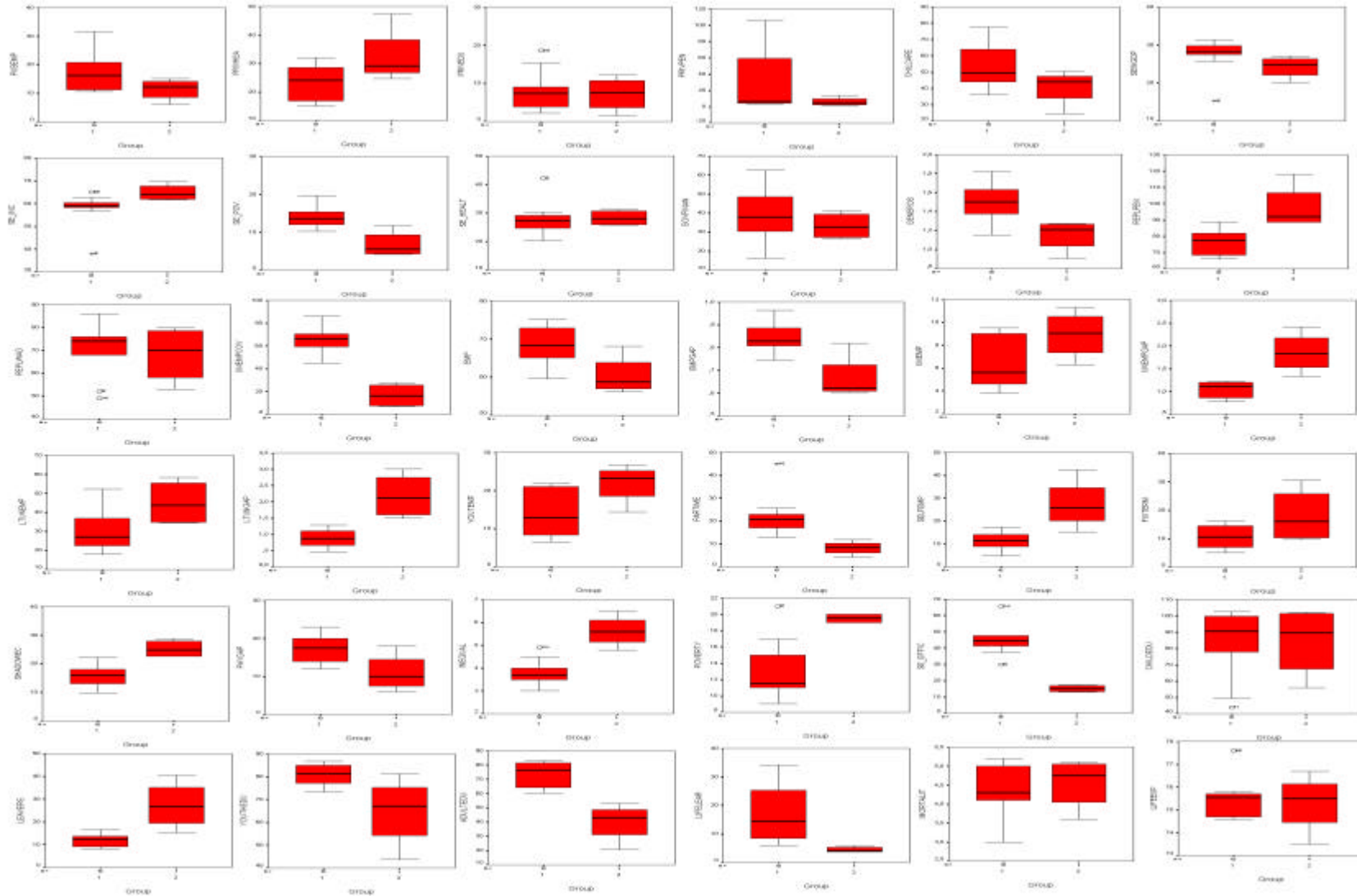**Figure A.1 Box-and-Whiskers for EU 14 hierarchical clusters**

Figure A.2 Box-and-Whiskers for EU 22 hierarchical clusters