The Clustering of Countries According to Policy Measures Concerning Early Retirement

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Abstract

This article examines ways in which countries are clustered according to policy measures concerning early retirement decisions of older workers (50+). The research is conducted with of cluster analysis and a distinction is made between push and pull factors. The clustering of institutional variables is examined over several points in time (1999, 2002, 2005 and 2008) and in 17 different countries (EU-15 plus Poland and Hungary). The results are compared with the welfare state typology of Esping-Andersen (1990) and the model developed by Blossfeld and colleagues (2006). The analysis reveals clear differences in policy indicators among several types of countries over the years. Within the framework of the Lisbon objectives, social-democratic countries succeed quite well in activating older workers. Finland and the Netherlands have made important policy shifts aimed at eliminating early retirement, while this poses a considerable challenge for welfare states in Central and Southern Europe.

Keywords: Early retirement, policy measures, push and pull factors, welfare state typologies, cluster analysis.

1. Introduction

Population ageing is one of the most important challenges facing European countries (Gwozdz & Sousa-Poza, 2010; OECD, 2006a). High unemployment rates in combination with an older population, increasing life expectancies at birth, low fertility rates and low

average exit ages are posing a serious threat to the stability and sustainability of social security programmes in many European countries (Fischer & Sousa-Poza, 2006; Hagan, Jones, & Rice, 2009). In addition to demographic factors, however, institutional factors (e.g. the generosity of retirement schemes) may also play an important role in the decision to retire (or retire early) (Fischer & Sousa-Poza, 2009). Some studies even find that institutional differences between countries explain more of the cross-national differences in work and retirement than demographic factors do (Börsch-Supan, Brugiavini, & Croda, 2009).

Early retirement and labour market activation have become key features of European social policy. The Lisbon agenda of the EU called upon member states to achieve a labour force participation rate of at least 50 % among the population aged 55–64 years by the year 2010 (Arza & Kohli, 2008). This posed a serious challenge for policy makers in many European countries. At the Lisbon summit of 2000, the European Employment Strategy (EES) focused on the creation of more and better jobs for all through an 'open method of coordination.' The idea behind this strategy is that good jobs throughout life can prevent early withdrawal from the labour market. Reducing early retirement and increasing employment rates among older workers are the main objectives of the EES (Davoine, 2005). Despite progress made in developing the concept of 'active ageing' and preventing early retirement schemes, less than 46 % of people aged 55-64 are currently working, as compared to almost 80 % of the population between 25 and 54 years of age. As a consequence, older workers continue to be under-represented in the labour market (European Commission, 2010).

The main pathways for retirement (and early retirement) differ across countries (OECD, 2006b). Some of the countries examined in this paper contribute to an early-exit culture (De Vroom, 2004a). This can either occur through provisions in the pension system, through formal early retirement schemes or through disability and other welfare benefits. Other countries have an active-ageing culture that supports older workers in their efforts to continue working (Gold & Saurama, 2004).

The aim of this paper is to make a typology of countries according to policy measures concerning early retirement. Given the Lisbon targets and the differences between countries concerning early-exit strategies, countries are clustered in order to identify which ones perform well in activating older workers and which countries continue to have a culture of early exit. The importance of clustering countries lies in discovering patterns, which can be used to observe changes over time within each country, as well as differences between countries. This study is therefore limited to the institutional level. A distinction is made between push and pull factors within countries, as both types of factors have been found to influence retirement decisions at the institutional level (Shultz, Morton, & Weckerle, 1998). Pull factors or factors that encourage older workers to leave the labour market include social security or financial incentives. Job characteristics can be taken as a proxy for the push factors that drive older workers out of the labour market (Schils, 2008).

The remainder of this paper is organised as follows. After a review of the theoretical background, the data are described and the methodology is clarified. The results and findings are subsequently discussed, and the paper concludes by stating a number of significant institutional implications.

2. Theory of Clustering Countries

Clustering countries is a classification technique used to identify groups within data (Bailey, 1994). Using this method, Esping-Andersen (1990) was one of the first and most cited authors to examine welfare-state typologies. The work of Esping-Andersen has been criticised by various authors, including Leibfried (1992), Ferrera (1996) and Bonoli (1997), who added a fourth regime type, which they called Latin or Southern European countries (Warburton & Grassman, 2011). Little attention has been paid, however, to the labour market policies of European countries. Blossfeld and colleagues (2006) have argued that the welfare state perspective should be considered together with the labour market perspective. Nonetheless, clustering countries according to measures concerning early retirement and end-of-career

decisions is relatively innovative. The early retirement policies of European countries exhibit both similarities and differences. Based on these policy measures, we aim to identify the extent to which clear clusters of welfare states exist and whether such clusters are stable over time.

2.1 Policy Dimensions

In order to explain differences across European countries, it is necessary to understand the diverse contexts under which actors make their decisions. Taking into account the within-type variation, considerable similarities in policy measures also exist among European countries. We can thus observe four types of countries in Europe: Continental Europe, Anglo-Saxon countries, Latin or southern Europe and Scandinavian countries (Deleeck, 2003; Ebbinghaus, 2000a). The criteria for dividing these countries into typologies are based on formal rights and institutions, welfare efforts and welfare results.

First, Continental European welfare states facilitated early retirement to such an extent that these societies became 'welfare states without work'. European welfare states that had placed the most reliance on labour shedding are now suffering from the 'Continental dilemma' (Scharpf, 1997). This term refers to a situation in which more inactive people become dependent on welfare measures financed through social contributions and general taxes, which must be paid by fewer actively employed people (Ebbinghaus, 2000b). Liberal and Anglo-Saxon welfare states, however, provide less public support. Furthermore, the social protection systems of southern countries are highly fragmented. Although there is no articulated net of minimum protection, some benefit levels are very generous (e.g. old-age pension). Moreover, in these countries, healthcare is institutionalised as a right of citizenship. In general, there is relatively little state intervention in the welfare sphere (Arts & Gelissen, 2002). Finally, Scandinavian welfare states retain their high employment levels, which is why they are often referred to as 'work societies' (Ebbinghaus, 2002; Kohli & Rein, 1991).

Retirement incentives differ across countries due to the differences in policy, legislation and institutions. Much depends on the applied pension provision, social security system and other welfare institutions (Guillemard & Rein, 1993; Heyma, 2004). Notwithstanding the differences between countries with regard to early exit from the labour market, we aim to cluster countries according to similarities in their early retirement systems. The technique of grouping countries according to similarity in characteristics has been applied as early as the 1990s by Esping-Andersen, as well as more recently by Blossfeld and colleagues (2006). We add a focus on push and pull factors, as both types of factors have proven to influence the decision to retire (or retire early). This approach also allows us to compare our results with both typologies, in addition to detecting changes over time.

2.2 Typologies of Welfare States

Given the differences among the countries in pension systems and early retirement, we must consider whether it is possible to group them into a number of clusters of countries that share the same characteristics. One stream in the literature focuses on defining a typology of welfare states, from which countries can be grouped according to similarity in various characteristics (Jeungkun, 2009). Esping-Andersen (1990) is one of the most cited and criticised authors to examine welfare-state typologies (Requena, 2010). In The Three Worlds of Welfare Capitalism, Esping-Andersen distinguishes between three types of welfare-state regimes according to the degree of decommodification and stratification. Decommodification refers to the extent to which a state offers income protection and the independence of market and family. Stratification indicates the degree of differentiation between various groups in society that is established by social protection (Schils, 2005).

In contrast to Esping-Andersen, Leibfried (1992) distinguishes four policy or poverty regimes: Scandinavian welfare states, 'Bismarck' countries, Anglo-Saxon states and Latin Rim countries. Ferrera (1996) also advocates the inclusion of a 'Southern model'. Finally, Bonoli (1997) is extremely critical of the decommodification approach. We conclude that

strong similarities exist among the three first types specified by the aforementioned authors (i.e. Leibfried, Ferrera and Bonoli) and those specified by Esping-Andersen. Leibfried, Ferrera and Bonoli, however, add a fourth, Mediterranean, type of welfare state. Based on empirical evidence, these three authors consider this type as a prototype rather than as a subcategory of the continental or corporatist model.

Table 1: Welfare-state typology of Esping-Andersen, Leibfried and Ferrera

	Esping-Andersen	**Leibfried**	**Ferrera**
Liberal	United Kingdom *Canada* *Australia* *United States*	Anglo-Saxon states: United Kingdom *Canada* *Australia* *United States*	Mixed universalist welfare states: United Kingdom *Canada* *New Zealand*
Corporatist/ conservative	Germany Austria France *Switzerland* Italy Belgium	'Bismarck' countries: Germany Austria	Pure occupational welfare states: Germany Austria France Belgium
Social-democratic	Sweden *Norway* The Netherlands	Scandinavian welfare states: Sweden *Norway* The Netherlands	Pure universalist welfare states: Sweden *Norway* Denmark Finland
Southern/ Mediterranean		Latin Rim countries: Spain Portugal Greece	Mixed occupational welfare states: Italy Netherlands *Switzerland*

Source: Esping-Andersen (1990), Bonoli (1997), Leibfried (1992) and Ferrera (1996)
Italic countries not included in our study

It is remarkable to note that Esping-Andersen's typology pays little attention to the labour market policy of the countries. In contrast, Blossfeld and colleagues (2006) argue that the welfare-state perspective should be considered together with the labour market perspective.

They distinguished four criteria: the employment relation system, the occupational system, the employment-sustaining policy and the pension system. Based on these criteria, countries are classified into five different regimes: conservative, socio-democratic, liberal, Southern-European and post-socialist. Although the terminology used is comparable to that of Esping-Andersen, we stress the fact that the theoretical underpinnings are different.

Table 2: Model of Blossfeld et al. (2006)

Regime	Countries	Early retirement routes	Probability exit age
Liberal	United Kingdom and United States	few	relatively high
Social-democratic	Sweden, Denmark and the Netherlands	rather few	relatively high
Conservative	Germany	many	relatively low
South-European	Italy and Spain	many	relatively low
Post-socialist	Hungary, Estonia and the Czech Republic	country-specific	?

2.3 The Impact of Push and Pull Factors

Retirement can either be voluntary or involuntary (Beehr, 1986; Morris & Mallier, 2003; van Solinge & Henkens, 2007). Voluntary retirement is likely to be caused by personal choices, based largely on personal characteristics or the individual context. Determinants of voluntary retirement or pension are pull factors (Shultz, et al., 1998, 46). On the other hand, forced retirement is caused by reasons outside the will of the individual, including organisational decision making (e.g. downsizing), restrictive circumstances (national laws and policy) or societal norms (van Solinge & Henkens, 2007). These reasons are referred to as push factors (Shultz, et al., 1998, 46). In practice, the difference between voluntary and involuntary retirement can be relatively vague. For example, older people can make their own decisions to retire by anticipating upcoming events (e.g. organisational downsizing). This demonstrates the difficulty of the distinction between voluntary and involuntary retirement. In this study, therefore, the distinction between push and pull factors is preferred.

Pull factors are described as 'positive considerations, such as the desire to pursue leisure interests, that attract older workers towards retirement' (Shultz, et al., 1998, p. 46). These factors are characterised by social security measures and financial incentives, which pull older workers into retirement (OECD, 2006a). Pull factors are marked by their level of flexibility and generosity (Petrovici & Muffels, 2008). A more flexible system offers more opportunities for exit from the labour market and increases the probability of retiring earlier (Gruber & Wise, 1997). A more generous pension system consequently also encourages people to retire earlier (Fischer & Sousa-Poza, 2006). The most straightforward indicator of the generosity of pension benefits, which will also be used in the analyses, is the replacement rate (Fischer &

Sousa-Poza, 2009; Hagan, et al., 2009; Kim & Lee, 2008). This indicator corresponds to the ratio of annual benefits to earnings immediately prior to retirement (Duval, 2003). From this perspective, it can be stated that both Belgium and the Netherlands are known for their relatively flexible and very generous early retirement schemes when compared with other European countries (Schils, 2008). We therefore examine the pull factors from an economic perspective, distinguishing between countries with high or low financial incentives or pension expenditures and net or gross replacement rates.

Other reasons are external to the individual, including organisational decision-making (e.g. downsizing), restrictive circumstances (national laws and policy) and societal norms (van Solinge & Henkens, 2007). These reasons are referred to as push factors, or 'negative considerations, like poor health or dislike of one's job, that induce older workers to retire (or not)' (Shultz, et al., 1998, p. 46). The strictness of overall employment protection and changing work hours (shift work) can be taken as a proxy for push factors that drive older workers out of the labour force (OECD, 2006a; Schils, 2008). Push and pull factors (and more specifically, employment protection as a push factor) lead to the distinction between 'insiders' and 'outsiders'. While protecting the insiders (long-term employed people) from dismissal, age-specific employment protection rules can have the opposite effect for outsiders (currently unemployed people) (Ebbinghaus, 2002; Kim & Lee, 2008).

3. Data and Methods

3.1 Data

A large set of policy indicators is drawn from different databases such as the Labour Force Survey (LFS), provided by EUROSTAT, and OECD data. Some of the determinants are also described in seminal papers, including works by Auer and Fortuny (2000) and by Blöndal and Scarpetta (1997). The longitudinal character of the metadata is particularly important. The indicators present annual data from 1996 to 2008. Countries that are selected consist of the EU-15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom), along with Hungary and Poland.

3.2 Methods

Cluster analysis is used to match countries with a particular type of regime (Schröder, 2009). This is a multivariate method of classification used for dividing observations into groups or clusters according to their similarity, such that each cluster is as homogeneous as possible with respect to the clustering variables (Yang & HU, 2008). The goal of classification methods is to maximise both within-group homogeneity and between-group heterogeneity (Bailey, 1994).

In cluster analysis, no single method is considered 'the best,' although Euclidean distance is the most commonly used distance measure (Khattree & Naik, 2000) and Ward's Minimum Variance is a popular hierarchical method for clustering cases (Nikandrou, Apospori, & Papalexandris, 2005). In this study, we first used the average linkage method, in which the distance between two clusters is defined as the average distance between the pairs of observations, with one observation in each cluster. Second, Ward's Minimum Variance was used. This method defines the distance between two clusters as the sum of squares between the clusters across all variables. It minimises the variance within groups, thereby maximising their homogeneity. A non-hierarchical method of clustering was applied later, in order to verify whether different countries cluster optimally with the number of groups suggested by Ward's method. To determine the optimal number of clusters, the cubic clustering criterion, the pseudo F test and pseudo T² test were used.

The use of a classification technique presents both advantages and disadvantages (Bailey, 1994). The advantages include the fact that such techniques are excellent descriptive tools and that they reduce complexity, allow the identification of similarities and differences between

cases and facilitate the comparison of types. The fact that classification is the most prominent descriptive tool can also be seen as a disadvantage in empirical research. Another disadvantage may be that the classification is static rather than dynamic.

3.2.1 Measuring Clusters over Time

Cluster analysis is typically conducted with data from a single point in time for each variable (Bauserman, Albertson, Holschuh, & McCarthy, 2007). In contrast, this study examined multiple measurements over time. We were interested in describing the cluster structure of the data at each time point, and we expected to observe the ways in which countries shift between clusters over time. One way to cluster such data sets is to cluster the data from each time point separately. This method avoids the problem of correlated observations due to the inclusion of the same subjects at multiple points in time, although it may generate complex results. We obtained data from 1999 to 2008. We therefore performed three-yearly analyses (in 1999, 2002, 2005 and 2008) and compared the results from each of these points in time.

3.3 Selection of Variables

Based on relevant literature and our hypotheses, several push and pull factors were selected. These variables formed part of the European Employment Strategy (EES) that was established at the Lisbon summit and that aims at the creation of more and better jobs for all (Davoine, 2005). The variables comprised six push factors and ten pull factors, along with the average exit age. Only non-missing and consistent data that are easily comparable across the countries and that lead to an unambiguous interpretation were selected. Push factors that encourage older workers to leave the labour market are as follows: total long-term unemployment rate, unemployment rate of older workers, shift work, share of non-activity (50+) and the strictness of overall employment protection (version 1 & 2). Pull factors are observed from an economic perspective as a rational choice. These factors constitute financial incentives, including expenditures on care for older workers, expenditures on pensions, investments in the education and training of older workers, expenditures on social protection, public expenditure on labour market policy (as a percentage of GDP) and total current pension expenditures. Together with the poverty rate of older workers (50-64), old-age dependency ratios and (gross and net) replacement rates are also admitted as pull factors, as these measures are the most straightforward indicators of the generosity of pension benefits (Fischer & Sousa-Poza, 2009).

Table 3: List of Variables

Indicator	Label	Source	Type
1	Average exit age	Blöndal & Scarpetta; Auer & Fortuny; Eurostat	
2	Expenditure on care for the elderly	Eurostat	Pull factor
3	Expenditure on pension	Eurostat	Pull factor
4	Expenditure on social protection	Eurostat	Pull factor
5	Public expenditure on education (% of GDP)	Eurostat	Pull factor
6	Gross replacement rate	OECD	Pull factor
7	Net replacement rate	OECD	Pull factor
8	Total current pension expenditure	Eurostat	Pull factor
9	Old-age dependency ratios	Eurostat	Pull factor

10	Poverty rate	Eurostat	Pull factor
11	Public expenditure on LMP as a percentage of GDP	OECD	Pull factor
12	Strictness of employment protection version 1 (1985-2008)	OECD	Push factor
13	Strictness of employment protection version 2 (1998-2008)	OECD	Push factor
14	Shift work	OECD	Push factor
15	Share of non-activity (50+)	Eurostat	Push factor
16	Unemployment rate of older workers	Eurostat	Push factor
17	Total long-term unemployment rate	Eurostat	Push factor

3.3.1 Operationalisation

First, the selected variables were standardised to prevent the data analysis from being dominated by the broad range of absolute values of the determinants. Second, push factors were analysed using average linkage method and Ward's Minimum Variance. As stated in Section 3.2, the latter minimises the variance within groups, thereby maximising their homogeneity (Saint-Arnaud & Bernard, 2003). The cubic clustering criterion, the pseudo F test and the pseudo T^2 test were used to determine the optimal number of clusters. Pull factors were then analysed separately, using the same methods. Finally, push and pull factors were modelled together.

3.4 Expectation Pattern

Based on the typologies developed by Blossfeld and colleagues (2006) and by Esping-Andersen (1990) and given the focus on push and pull factors, four types of countries can be expected. From a comparative perspective, each national system of social protection differs in the availability of various early retirement pathways, as well as in their generosity, eligibility and selectivity (Kohli & Rein, 1991). Clear differences thus exist across welfare regimes. The Southern European countries and liberal welfare regime offer high employment protection legislation and have low pension expenditures. The liberal welfare states provide low employment protection, but they also have relatively low expenditures on pension. The continental or corporatist countries and the Scandinavian social security regimes on the other hand, have rather high expenditures on pension, but they differ in their level of employment protection legislation (Ebbinghaus, 2000b). The Netherlands is classified between the continental and social-democratic welfare states. This country is primarily classified with the social-democratic countries according to their social assistance model, although other measures (e.g. the extent of social and family services) suggest that the Netherlands is more closely aligned with the conservative type (Esping-Andersen, 1999; Saint-Arnaud & Bernard, 2003) (see Fig. 1).
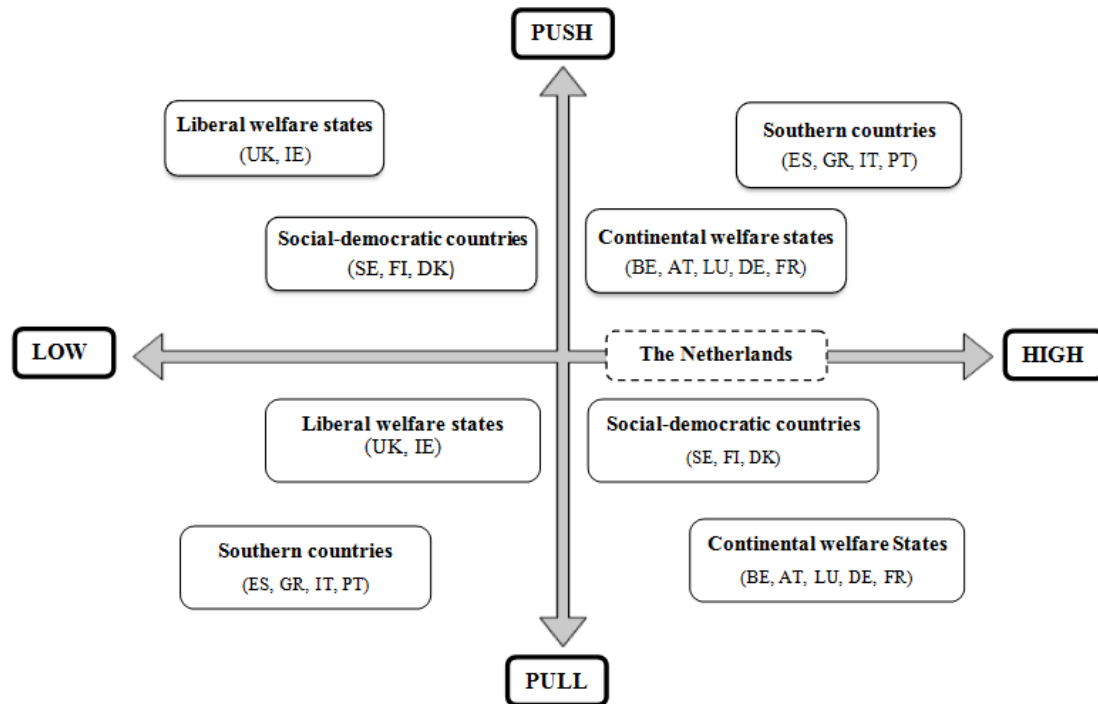
Fig. 1: Expectation pattern of clustering countries based on policy measures

4. Empirical Results and Findings

First, descriptive results of 2005 are presented, followed by a cluster analysis of the 2005 data. The stability of these regimes is then evaluated according to additional analyses of the same variables in 1999, 2002 and 2008. The reference year is 2005, as it is easy to compare the data before and after 2005. The tree diagrams present a distinction between push and pull factors. With regard to push factors, stronger employment protection and higher unemployment rates indicate higher early retirement rates. With regard to pull factors, the higher the expenditures on pension and the more generous a country is, the greater is the likelihood of early retirement (Fischer & Sousa-Poza, 2006).

4.1 Descriptive Data

The use of mean scores allows the characterisation of the four welfare regimes from our expectation pattern using averages for each variable computed for all of the country groupings (see Table 4). These data generally confirm the descriptions of the regimes, as presented earlier. Southern European countries have a high unemployment rate among older workers and high long-term unemployment rates. They also present high scores on employment protection legislation. Moreover, Southern countries have the lowest expenditures on care, education and on pension. By contrast, they score high on the old-age dependency ratio and they present high poverty rates and replacement rates.

Caution is necessary in the interpretation of Liberal welfare states, as the results are based primarily on the United Kingdom. Nonetheless, both long-term unemployment rates and the unemployment rate among older workers are low, and this type of countries has the lowest levels of employment protection. The UK has a relatively high average exit age, a high poverty rate and rather high expenditures on care. On the other hand, pension expenditures are relatively low. Moreover, the UK has low replacement rates and low expenditures on labour market policy.

With regard to push factors, Continental welfare states have high levels of long-term unemployment, training of older workers and employment protection legislation. Investment in the public sphere is relatively high, as these countries present high expenditures on pension, education and social protection. Expenditures on care are relatively low, while old-age dependency ratios are relatively high. Finally, Social-democratic countries have high scores on shift work and unemployment (as in Southern European countries). They are also characterised by high expenditures on care, pension, education, social protection and labour market policy.

Table 4: Descriptive pattern of clustering countries based on policy measures

1) **Southern countries** Spain, Greece, Italy and Portugal	2) **Liberal welfare states** United Kingdom (Anglo-Saxon countries)
PUSH: high employment protection legislation **PULL**: low expenditures on pension	**PUSH**: low employment protection legislation **PULL**: relatively low expenditures on pension
3) **Continental welfare states** Belgium, Austria, Germany and France (Central- and West-Europe)	4) **Social-democratic countries** Sweden, Finland and Denmark (Scandinavian countries)
PUSH: rather high employment protection legislation **PULL**: high expenditures on pension	**PUSH**: rather low employment protection legislation **PULL**: relatively high expenditures on pension
HIGH EARLY EXIT[1]	**MEDIUM/LOW EARLY EXIT**

Other countries: Poland, Ireland, Luxembourg and Hungary

4.2 Results from 2005

With regard to push factors and a five-cluster perspective suggested by the cubic clustering criterion, Pseudo F test and Pseudo T² test, Poland occupied an outlier position (see Table 5). This was due to the very high long-term unemployment rate and the high unemployment rate of older workers, with both unemployment rates being the highest among the selected countries. Poland was also characterised by a high rate of shift work and relatively low employment protection. In the first and second cluster, continental welfare states (e.g. Belgium and Germany) clustered together with Southern countries (e.g. Spain and Portugal). Both types of countries were characterised by high levels of employment-protection legislation. Next, cluster 3 and 4 consist of social-democratic countries (e.g. Sweden, Finland, Denmark and the Netherlands), with their low long-term unemployment rates, and liberal

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[1]   Early exit is defined as the mobilization and institutionalization of a process in which older workers will leave employment before the official age of retirement (usually the pension age) but through a complex variety of mechanisms (De Vroom, 2004a).

welfare states (e.g. Ireland and the United Kingdom), which were characterized by a low level of strictness in employment protection.

The pull factors presented in Table 5 provide a more diverse picture. The first cluster is a combination of continental countries (Belgium, Germany, France and the Netherlands), Southern countries (Greece, Italy and Portugal) and the United Kingdom (as a Liberal welfare state). Second, a group of post-socialist countries (Hungary and Poland) clusters together with Luxembourg and Spain, due to the high replacement rate of Spain. A third cluster consists of Sweden and Denmark, which are both social-democratic countries. Finally, Ireland occupies an outlier position, for reasons including the very low pension expenditures (indicating that Ireland is a relatively ungenerous country), old-age dependency ratio, expenditures on social protection and low replacement rates. Ireland also has the highest poverty rate of the 17 European countries.

Table 5: Descriptive results based on mean scores of the welfare state regimes in 2005

Mean scores	Southern	Liberal	Continental	Social-democratic
PUSH factors				
Long-term unemployment	3,7	1,0	3,8	1,1
Share of non-active 50+	69,7	61,5	70,7	58,5
Unemployment rate of older workers	7,3	3,3	6,5	7,0
Shift work	15,9	19,0	12,6	17,8
EPL 1	2,7	0,8	2,3	1,9
EPL 2	2,9	1,1	2,5	2,2
PULL factors				
Average exit age	61,7	62,6	60,2	62,1
Expenditure on care	0,2	1	0,4	1,6
Expenditure on pension	24,3	26,3	29,9	29,5
Old-age dependency ratio	26,4	24,3	25,6	24,3
Expenditure on education	5,4	5,4	5,5	6,6
Expenditure on social protection	23,7	26,3	28,5	28,7
Poverty rate (50-64)	16,5	16	11	6
Gross replacement rate	69,9	37,1	54,4	57
Net replacement rate	80,7	47,6	74,2	64,6
Expenditure on labour market policy (% of GDP)	1,5	0,6	2,8	3,1

When countries are clustered according to push and pull factors, a clear distinction emerges between two types of groups, as shown in Figure 2. On the left side, a cluster of Continental and South European welfare states appears, characterised by high early exit rates. On the right side, Social-democratic countries (e.g. Denmark and Sweden) cluster together with Liberal welfare states (e.g. Ireland and the UK) based on their medium or low rates of early

retirement. Placing both the push and pull factors in a single model clearly reveals the level of early retirement as the most important indicator for distinguishing among several types of countries.
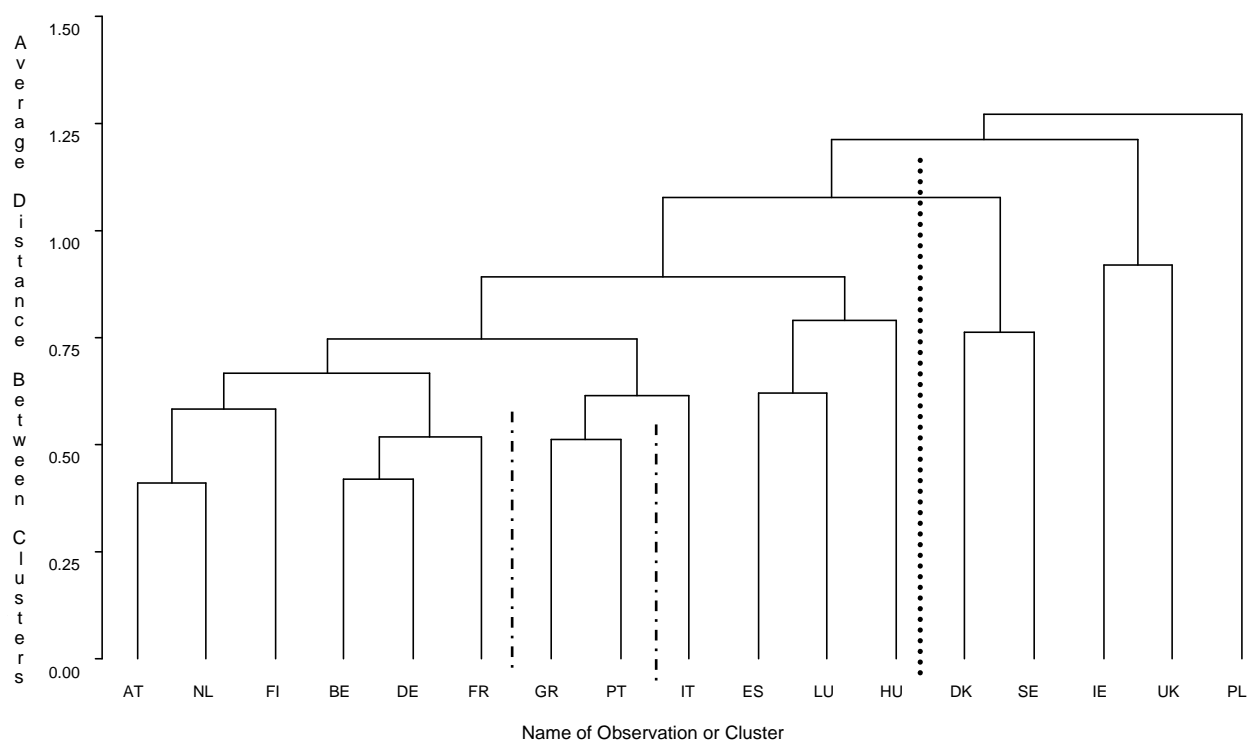

Fig. 2: Tree Diagram of Hierarchical Cluster Analysis Based on Push and Pull Factors (2005)

4.3 Results from 1999, 2002 and 2008

The pseudo F test and pseudo T² test suggest that a five-cluster solution might be optimal for 1999, as presented in Table 6. As observed for 2005, Ireland and Poland are outliers. Although there were some differences with regard to 2005 and a few irregularities (e.g. Hungary and the United Kingdom in the second cluster), the same four clusters (see expectation pattern) kept returning. These clusters consist of Continental countries (e.g. Belgium, Germany and France), the United Kingdom (as a Liberal welfare state), Southern countries (Spain, Greece, Italy and Portugal) and Social-democratic welfare states (Denmark and Sweden).

The results from 2002 are very similar to those of 1999 (see Table 6). Ireland and Poland again occupied an outlier position. Hungary and the United Kingdom once more clustered together based on their relatively low pension expenditures and low level of employment protection. Furthermore, the clusters of Social-democratic countries, Southern countries and Continental welfare states returned in this analysis as well.

Table 6: Cluster results of cluster analysis (Euclidean distance, Ward's method) of push and pull factors (2005, 17 countries)

Push factors				Pull factors			
CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4
AT	ES	DK	FI	AT	ES	SE	
HU	FR	NL	SE	FI	HU	DK	
IT	LU	IE		NL	LU		
BE	PT	UK		BE	PL		
DE				FR			
GR				DE			
				GR			
				IT			
				PT			
				UK			
Outlier				**Outlier**			
PL				IE			

As shown in Table 7, the tree diagram of push factors in 2008 reveals two clear clusters based on the distinction between high and low early retirement rates. The first cluster consists of Social-democratic and Liberal welfare states, while the second contains Continental, Southern and Post-socialist countries. The tree diagram of push and pull factors presents divergent results, with three clusters based on the cubic clustering criterion and pseudo T² test. The prominence of the Liberal and Social-democratic welfare states is remarkable, while Continental, Southern and Post-socialist countries are all a part of the second cluster. These results are in line with the typology of Esping-Andersen (1990), which contains three types of countries.

Table 7: Cluster results of cluster analysis (Euclidean distance, Ward's method) of push and pull factors combined (1999 and 2002, 16 countries: Luxembourg not included)

1999				2002			
CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4
AT	HU	ES	DK	AT	ES	HU	DK
NL	UK	GR	SE	NL	GR	UK	SE
BE		IT		FI	IT		
DE		PT		BE	PT		
FR				DE			
FI				FR			
Outliers				**Outliers**			
IE	PL			PL	IE		

5. Discussion

The results indicate that clustering countries according to push and pull factors concerning early retirement reveals clear groups of countries. These results are generally consistent with our expectations, as they allow us to distinguish Southern and Liberal welfare states with low pension expenditures from the relatively generous Continental and Social-democratic countries, with their active labour market policies. The tree diagram of push and pull factors in 2005 clearly shows, this division produces a cluster of countries with high early retirement rates (Central and South Europe), in contrast to the welfare states with relatively few patterns of early retirement (Scandinavian and Anglo-Saxon countries). It is also remarkable that the results of clustering countries according to either push factors or pull factors are less accurate. The combination of both push factors and pull factors thus adds greater value to the analyses. In addition to the four clusters mentioned above, Ireland and Poland occupy a clear outlier position. On the one hand, Ireland is characterised by very low pension expenditures, low replacement rates and a very high poverty rate. On the other hand, Poland has high unemployment rates. In some cases, however, Poland shares a cluster with Post-socialist countries, which brings us to a second remark.

One group of countries that we overlooked in our expectation pattern of clustering, but which is part of the model developed by Blossfeld and colleagues (2006), comprises the cluster of Central European or Post-socialist countries (e.g. Hungary and Poland). This type of country is characterised by a low average exit age and low pension expenditures. In addition to the average retirement age, the legal pension age in Hungary (62 years) is also considered relatively low. The high rate of non-activity among older workers and the relatively high rate of long-term unemployment are particularly remarkable (Széman, 2004). In 1998, several reforms were enacted in the attempt to overcome both the high unemployment rate and the problem of early exit from the labour market (Cerami, 2011). Based on our results, however, it is clear that early withdrawal continues to exist in Hungary, and the average retirement age (which was 59 years in 2002) remains low in comparison to the other European countries included in our study (with an average retirement age of 60.5 years). In Poland, the average exit age is even lower (57 years in 2002), although it increased to 59.5 in 2005.

Overall, our analysis reveals a relatively stable pattern of clustering countries. The cluster results from 1999 are very similar to those from 2002. In 2005 and 2008, the difference between low and high early exit rates yielded only two or three clusters. The distinction between countries according to early retirement has thus become clearer in recent years. This has important policy implications. As expected, Social-democratic welfare states cluster together with Liberal welfare states, based on low early retirement rates. In contrast, Southern and Continental countries have relatively generous regimes that provide multiple pathways to early retirement (Ebbinghaus, 2000a).

It is remarkable that Austria, Finland and the Netherlands float somewhere between the Continental countries (in 1999 and 2002) and the Social-democratic welfare states (in 2008). Although little has been written about Austria, this country is characterised by high replacement rates (Blöndal & Scarpetta, 1997). It is also one of the countries in which the standard age of eligibility for pension benefits for females is still lower than it is for males (Duval, 2003). As are the Scandinavian countries and Germany, Austria is characterised by a flexible transition between work and retirement (Börsch-Supan, et al., 2009). Moreover, Austria (together with Southern European countries) is one of the countries with a relatively low average exit age, and it is characterised by a high prevalence of early retirees. All of these characteristics make it difficult to fit Austria into a typology.

In our expectation pattern, we mentioned the difficulty of positioning the Netherlands. In studies by Esping-Andersen (1990) and by Blossfeld and colleagues (2006), the Netherlands is classified as a social-democratic regime, while other authors have placed it among the Continental welfare states, due to its relatively high early retirement rates (in contrast to

Sweden or similar countries). In recent decades, the Netherlands was characterised as having an 'early-exit culture' with a complex system of early retirement pathways:2 an early retirement scheme, an occupational disability programme and an unemployment programme (De Vroom & Blomsma, 1991; Kohli, Rein, Guillemard, & Van Gunsteren, 1991). The disability scheme proved the most important exit pathway for older workers. As a result, the Netherlands was labelled a 'sick country'. Since 1995, the 'culture of early exit among older workers' was increasingly interpreted as a fundamental problem for the welfare state (De Vroom, 2004b). Various policies were implemented to reduce the number of disability schemes. The new disability routes are undoubtedly less attractive to partially disabled unemployed workers than they were before the policy reforms (De Vroom & Blomsma, 1991). The change in early retirement culture is a result of programmatic, contextual and institutional changes. This resulted in impressive increases in the rate of female labour market participation, which had long been among the lowest in Europe. These changes and reforms can partly explain the shift from a Continental to a Social-democratic regime. The recent increase in the official retirement age from 65 to 67 years confirms this trend.

Finland shares the basic characteristics of the Scandinavian or Social-democratic welfare state model: universal coverage, favourable income replacement rates, scope of citizenship rights and service intensity (Gold & Saurama, 2004). When compared with other Scandinavian countries (e.g. Sweden and Denmark), however, Finland lagged behind with regard to the development of the welfare state (Esping-Andersen, 1990). In the 1990s, Finland opted to manage both the de-industrialisation process and the economic crisis by reducing the supply of labour through massive early retirement rather than by investing in active labour market measures (Blöndal & Scarpetta, 1997). As a result, more than half of the older workers (55–64 years) retired, and the employment rate (especially for men) was among the lowest in Europe (OECD, 2004). Finland suffered enormously from long-term unemployment and, in the future, it is expected to have the most rapidly ageing population of all EU countries. To overcome these problems, various national programmes have been launched to change early retirement into late retirement (Elovainio, et al., 2005; Gold & Saurama, 2004). In general, Finland is characterised by a policy shift towards greater flexibility and individuality (Blöndal & Scarpetta, 1997). Reforms have created a shift from the paradigm of early exit as a social right to a paradigm of work as a duty within a context of individual flexibility. Finland is therefore tending towards the cluster of Social-democratic countries, which is in line with the typology of Ferrera (1996) and with our expectations.

6. Conclusion

In this paper, various types of countries were clustered according to policy indicators concerning early retirement. A distinction was made between push and pull factors, as both types of factors have been found to influence retirement (and early retirement) decisions. Data were collected from 17 countries on 16 variables, largely from the Labour Force Survey provided by Eurostat. In addition to between-country comparisons, the indicators were studied over time. The focus was on the cross-national and longitudinal character of the data. First, data for the year 2005 were clustered, after which these results were compared with observations from 1999, 2002 and 2008. By clustering countries over time, we sought to gain additional insight into European end-of-career policy based on individual theories with policy implications, including rational choice and life-cycle theory.

From a comparative perspective, the typology developed by Esping-Andersen (1990) was confirmed only by the data from 2008. The other years also presented a cluster of Southern countries, in accordance to the typologies proposed by Leibfried (1992) and Ferrera (1996). One cluster that seemed to stand out was that of the Social-democratic countries, but its composition changed over the years. Although Sweden and Denmark were relatively solid,

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2   Pathways are considered as one or more institutional arrangements (generally in combination) that bridge the financial gap between the exit of older workers from the labour market and their retirement (De Vroom & Blomsma 1991).

Finland and the Netherlands floated somewhere between the Social-democratic and the Continental welfare states.

Returning to the Lisbon targets, 2010 was a crucial moment. We have established that Social-democratic countries have made most progress and presented the highest employment rates. Because Sweden had an employment rate of 70 % among older workers (55 years and older) in 2007, it could easily reach the target of 50 % by 2010, followed by Finland with almost 59 %. The Netherlands, which has an employment rate of 51 % among older workers, together with Finland, has made the most progress in activating older workers. Continental and Post-socialist countries, however, are found to do much worse, with an active older population of only one third. The Southern countries could also barely reach the target. Overall, we establish that considerable work remains with regard to activating older workers and creating more and better jobs for all (Arza & Kohli, 2008). Some activating policy measures clearly need further attention, including an increase in the legal pension age, the elimination of special early retirement programmes, a reduction in the generosity of disability benefits and a reversal of gradual and part-time retirement (Ebbinghaus, 2000a). By eliminating early retirement programmes and increasing the legal retirement age, Finland and the Netherlands have made a shift towards the cluster of Social-democratic countries. Countries should therefore focus on generosity and flexibility, but they should also prevent people from being pushed out of the labour market by high unemployment rates and low levels of employment-protection legislation. Policy reforms based on transforming the culture of retirement from early exit into activation (through active ageing and active labour market policy) clearly matter when clustering countries according to policy measures, and they are an important factor in achieving the Lisbon targets.

One potential shortcoming of our research is that Hungary and Poland are the only Post-socialist countries to be included, with the United Kingdom as the only Liberal country. The United States could not be included, as no data are available for all indicators, given that we used European data. Further research could therefore include more Post-socialist countries and the US.

Overall, we can conclude that countries tend to cluster according to particular push and pull factors. Institutional characteristics thus offer at least a partial explanation for the retirement decisions of older workers. It is nevertheless important to bear in mind that individual and household characteristics also play a major role in retirement decisions. Multilevel analyses at the individual, household and country level are recommended; such analyses could take into account the temporal shifts that we observed in our cluster analysis.

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